# Coastal Dune Restoration Environmental Assessment

## *Response to Comments*

**April 2015**

**Directory of Response to Comments to Coastal Dune Restoration Environmental Assessment.** *Comments were submitted on different documents (i.e., EA, letter announcing release of EA). To find comment, please refer to Document Number (62179=EA; 63294=EA release letter; 63389=Figure 2) and Letter or Comment Number, which refers to submission number assigned by PEPC when comment or letter submitted.*

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| **Purpose and Need** | |
| 70 | There is no way to restore the habitat to what it was once before non-indigenous humans invaded it, even if all human habitations and constructions, were removed. Invasive humans have changed the environment too much for restoration to be possible. |
| | ***Response***: The proposed project outlined in the EA does not attempt to restore habitat to historic conditions, but to remove invasive non-native plant species that are having extremely adverse impacts on the park's native dune vegetation communities and associated plants and wildlife, including federally listed threatened and endangered species that the park is mandated to protect and conserve. As in other restoration planning efforts, the park acknowledges that a return to historic conditions would be most likely infeasible given the number of changes in the ecosystem. For this reason, the park emphasizes restoration of natural process, function, and, to some extent, condition in its restoration efforts. The alternatives span a range of restoration of natural process, function, and condition within dune systems. |
| **Alternatives** | |
| 1 | Annual follow-up control for many years must be part of restoration plan. Funds must be kept aside to pay for removal of resprouts. Unless funds are set aside, work will be in vain and a waste of money and resources. |
| | ***Response:*** The EA notes on p. 31 in Chapter 2 that, "all restoration efforts would require long-term follow-up to reduce invasive plant cover at less than 1%." Re-treatment approaches are discussed in Chapter 2 for Alternative B (p. 47), Alternative C (p. 49), and Alternative D (p. 63). The re-treatment approaches acknowledge that annual follow-up will be necessary for a number of years. It is often difficult to obtain separate funding for follow-up maintenance, but the park has been emphasizing maintenance of previously restored areas in its annual work plans and funding proposals. |
| 14 | Because the Hwang and Young (2011) study revealed that full-strength concentration of glyphosate-Competitor mixture remained on vegetation after at least three months, there is no way to determine half-life or to determine when safe levels would be achieved, therefore, warning signs should be posted for at least a full year for the sake of safety to the public, and the taped off at each end of the spray site. The signs should include complete information for members of the general population who are at particularly at high risk for adverse health reactions such as fertile women, embryos, neonates, hepatic diseased, immune-system compromised, and patients under treatment for a variety of diseases. |
| | ***Response***: The study conducted by Hwang and Young (2011) for the Marin Municipal Water District (MMWD) investigated the decay of glyphosate in soils and transport of glyphosate in stormwater run-off and through soil infiltration. Based on a review of the cited document, the results cited in this comment letter actually refer to concentrations of glyphosate found by the researchers in the leaves of treated leaves, not necessarily on the leaves. Herbicides such as glyphosate are effective in killing plants, because they "quickly penetrate into the internal structure of plant leaves" (Gougler and Geiger 1981, Feng et al. 1998, 1999 in Hwang and Young 2011). Herbicides such as glyphosate or imazapyr that target key biochemical pathways as a mode of action would not be maximally effective unless they penetrated the leaves. During this study, the applied herbicide mixture dried within several hours after application; once the applied mixture dried, "exposure of humans to the mixture through gentle brushing up against treated vegetation is expected to be substantially less than exposure to wet herbicide mixture" (Hwang and Young 2011). The authors noted that "extra cautions are needed" during the period of "several hours" after application "to avoid any possible elevated exposure of humans to the applied mixture" (Hwang and Young 2011). As noted on p. 62 in Chapter 2, all herbicide retreatment areas would be closed to the public for a minimum of 24 hours even if no Restricted Entry Interval (REI)l is specified by the label on the chemical, with longer closure periods implemented in accordance for chemicals stipulating longer REIs. |
| 30 | The EA states that formulations of glyphosate that incorporate a surfactant will not be used, but a so-called technical grade glyphosate will be used instead. This statement ignores the fact that |

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| | glyphosate will be mixed with a surfactant and will not just be glyphosate alone. |
| | ***Response:*** As stated on p. 53, para. 5, in Chapter 2, the NPS would not use a product that had a surfactant incorporated into the mixture at the time of manufacturing – an integrated surfactant – but would, instead, use a separate surfactant that would be added to the mixture shortly before application. As noted in this paragraph, 'because there are concerns that surfactants in glyphosate formulations such as Roundup® may be even more toxic than glyphosate or enhance the toxicity of glyphosate (SERA 2011a), the park typically does not use formulations of glyphosate that incorporate a surfactant, but uses so-called technical grade glyphosate formulations such as AquaMaster® (currently marketed as Roundup Custom®)." The proposed mixture -- including use of the non-ionic modified vegetable oil surfactant, Competitor® -- is discussed prior to this statement on p. 53 in para. 4. |
| 33 | The park should minimize potential impacts to visitor experience by posting notices on the website, at the Visitor Center, at trailheads, and by contact with known birding organizations. |
| | ***Response:*** Please see Chapter 2, p. 45, for a discussion on public information measures taken to minimize impacts to the visitor experience. These include posting notices on the park's website, at the Visitor Center, and at trailheads. |
| 34 | The EA does not specify the monitoring criteria that would be used to trigger such additional mitigation measures should restoration efforts result in sand movement and impacts to threatened and endangered species dune swale habitat at AT&T. Clear criteria would be key to insure that additional mitigation (if needed) begins early enough to insure that the swale will not be buried. |
| | ***Response:*** To clarify the procedure for adoption of additional mitigation measures, the following information on monitoring criteria has been incorporated into the Errata section of the EA to clarify the mitigation information regarding the AT&T swale first discussed on p. 254 in Chapter 4 under "Possible Additional Mitigation Measures." This clarification will be formally adopted as part of the Finding of No Significant Impact (FONSI). A number of measures have been proposed to eliminate impacts to the AT&T swale. Prior to project implementation, the perimeter of the swale would be GPSed and also marked with permanent poles. During implementation, staff would routinely reassess the perimeter and look for active signs of slumping into the swale. Should there appear to be more than a 1% change in areal extent as determined by the perimeter, active measures would be taken to further stabilize sand within the buffer such as installation of biodegradable erosion control blankets, and slumped sand may then be carefully removed from the swale to reverse effects. This action would require full-time construction monitoring under the supervision of qualified California red-legged frog and Sonoma alopecurus biologists. |
| 37 | There are other alternatives to Roundup and the other dangerous herbicides that you are proposing to expand usage of. Please look more closely into alternatives. |
| | ***Response:*** Please see Chapter 2, pp. 21-29, for a detailed discussion on the park's research of alternative means for removing European beachgrass and iceplant, the two primary invasive threats to the Seashore's dune systems, European beachgrass and iceplant. The NPS has reviewed literature – including a detailed review of potential removal methodologies prepared by California Department of Parks and Recreation (CDPR 2012) -- and has had extensive conversations with other resource agencies attempting to restore dune systems. The NPS follows a very strict Integrated Pest Management approach at the park that emphasizes uses of non-chemical means first (and always) unless non-chemical means prove ineffective and threaten park resources through continued spread of non-native, invasive species. The park has tried both manual and mechanical removal since 2000. The biology of European beachgrass makes it a very difficult species to remove by hand, because it roots anywhere from 3- to more than 12-feet deep and easily resprouts from the smallest of rhizome fragments. In 2007, park staff estimated that 20% of the treated areas re-grew within in as little as six months, and some areas required as many as 15- to 20 repeat treatments before control appeared to be achieved (J. Rodgers, NPS, *in* Point Reyes Light 2007, Peterson 2004). Mechanical removal is more effective, but it is very, very costly, which reduces both the acreage of areas that can be |

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| | restored and the likelihood that grant applications will be funded. In addition, mechanical can have repercussions on adjacent habitats and land uses. The objective is to restore dunes in such a way that plant and animal resources are benefited without incurring impacts to other habitats and adjacent ranching operations. |
| 38 | Alternative means such as using goats, landscaping crews, and prison crews should be employed instead. |
| | ***Response:*** Please see Chapter 2, p. 46, for a discussion on manual removal under Alternative B. Under this alternative, manual removal would be performed either by contractor crews (e.g., landscaping crews) or by park staff. Use of prison crews could be possible, but would require further discussion with law enforcement rangers regarding possible impacts on public safety. One of the new – or perhaps, more correctly, resurrected – tools for control of invasive species is targeted grazing by goats, cattle, or sheep. Certain types of livestock will preferentially target seemingly even unpalatable species. In general, cattle do not eat established European beachgrass (Department of Agriculture-Australia. 1896): they may eat young shoots, but young shoots are likely to represent only a small proportion of plants or biomass within an established beachgrass stand. Ranchers have reported similar anecdotal observations regarding the palatability of beachgrass; in some cases, they will apparently eat iceplant, though, but not in a targeted fashion. There is no established literature on grazing of European beachgrass by either goats or sheep. Grazing animals such as goats, cattle, or sheep may reduce the biomass but it would not be effective alone, as European beachgrass resprouts from below-ground rhizomes (CDPR 2012). Iceplant leaves are salty and astringent, and the stems are woody and fibrous, making it unlikely that grazing would be an effective control for iceplant (Albert 2000 *in* CDPR 2012). Grazing animals are also highly non-selective, so grazing could potentially impact native and even rare plant species that are intermixed or adjacent to European beachgrass and iceplant stands. This information has been added to the EA as part of the Errata section for Chapter 2, Alternatives Considered, but Dismissed. |
| 44 | Has the park conducted a meta-analysis on all the possible ways to get rid of invasive plants -- including a global search? |
| | ***Response:*** Please see response to Questions 37 and 38. Even prior to development of this EA, the NPS did a literature review on European beachgrass, iceplant, and ways to control these species. Most of the information readily available are published studies, but some unpublished reports were available, as well, including the Integrated Pest Management Analysis performed by CDPR (2012). Care has to be taken with extrapolating from control efforts in other parts of the world where these species are considered invasive non-natives as well, because the invasion dynamics may be different in terms of physical and biological controls on plant germination and growth. |
| 46 | The Seashore should not use glyphosate until the EPA has completed its review of this substance. |
| | ***Response***: The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. The SERA (2011a) risk assessment report for glyphosate did a thorough review of the scientific literature, including not only USEPA information, but also studies from the peer-reviewed literature, current to 2010. It also includes new information from USEPA for potential effects on some special status species.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 49 | The EA is inadequate because it fails to provide an explanation as to why buffers are necessary and how the proposed buffers and restrictions were developed, including the science behind the buffers/restrictions. Specifically, what is the science behind the average wind speed (10 mph), snowy plover nesting (500 feet), nesting birds (100 feet), occupied California red-legged frog habitat (60 feet), wetlands (25 feet), organic pastures (25 feet), rare plants (10 feet), wind gusts (10 mph), and rain (20% chance of rain). Also, how frequent must the gusts be to qualify as frequently? |
| | ***Response:*** Buffers are a commonly used tool to reduce the potential for adverse impacts of an |

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| | activity on a resource using spatial separation or distance, while other impacts are minimized using climatic restrictions such as thresholds or ranges of condition under which an activity can take place. Some of the most commonly discussed buffers are those set up for wetlands and riparian areas when adjacent development is proposed, but buffers can be used also for other habitats and animals. Some buffers are ones that are standardly employed for a particular habitat or species, and others may be developed specifically for a project in formal consultation with the USFWS and, thereby, continue to be proposed and used for future projects.<br>The 500-foot buffer for Western snowy plover was developed in consultation with USFWS for the Abbotts Lagoon project (NPS 2009): These buffer distances relate to the distance at which approaching humans or equipment would potentially cause flushing of a bird from its nest. At the South Bay Salt Pond Restoration Project, researcher Lynn Trulio found that nesting snowy plovers were among the most sensitive of species to disturbance, with birds flushing from the nests when people approached closer than about 500 feet (SBSPRP 2013). The 100-foot buffer for nesting birds and 10-foot rare plant buffer also originated from discussions with USFWS during completion of the formal consultation for the Abbotts project and has been used for that project and subsequent ones. Based on results and discussions with wildlife biologists who performed monitoring, these protections appeared adequate for this environment. The California red-legged frog buffer was also developed after consultation with USFWS for several projects and is in compliance with the buffers established by the U.S. Environmental Protection Agency (USEPA) as a result of a court injunction.<br>Wetland buffer widths vary widely. There is no generally accepted width, as width is typically determined by the type of activity or project, quality of resource to be protected, goal of protection (e.g., water quality, human disturbance, etc.), site conditions, and other factors. The 25-foot buffer was developed in consultation with USFWS and was in part predicated on the fact that the NPS is using an aquatic-label herbicide that is actually approved for use in wetlands and waters. The Organic Crop Workbook published by National Center for Appropriate Technology (NCAT) stated that no standardized buffer widths for spraying of herbicide and adjacent areas certified as Organic Crop or Organic Livestock have been developed, but 25-feet is the most common buffer width applied (NCAT 2004). This buffer has been previously agreed to as being sufficient by both the ranching operators and the Marin County Department of Agriculture (John DiGregoria, former NPS, *pers. comm*.).<br>In terms of climatic restrictions on spraying, the USEPA issued guidance in 2001 on spray and dust drift statements for herbicide labels. For hand-held equipment, the guidance stipulated, “Apply only when wind speed is not more than 10 mph.” Typically, labels for products advise keeping the range of application between 3 and 10 mph. Because Point Reyes is quite windy, and winds are often constant throughout a day, NPS staff added on an additional requirement for ceasing spray operations when wind gusts frequently exceed 10 mph. “Frequently” has not been quantified in the past, but, based on practices in the field, gusts would need to be less than once every 15 min. The California Department of Pesticide Regulation does not incorporate restrictions on wind gusts or spraying restriction intervals before or after rainfall events. Typically, labels specify that plants must be dry. The Seashore has incorporated these extra measures to increase environmental and human protection. |
| 50 | The EA fails to specify what surfactant will be used. |
| | ***Response:*** This information can be found in the EA on pp. 53 - 54 in Chapter 2. The proposed surfactant is a non-ionic modified vegetable oil-based product, Competitor®. |
| 51 | The EA states that Alternative C is 10 times cheaper than Alternative B and Alternative D, and, yet, the costs provided -- $52,879/acre for hand pulling; $28,000 - $33,000/acre for chemical treatment; and $28,000 - $33,000/acre for mechanical removal -- suggest that the cost differential is much closer. |
| | ***Response:*** Please see p. 58 in Chapter 2, first paragraph. Because Alternatives C and D incorporate multiple approaches to invasives removal, there were are multiple cost ranges provided for these two alternatives. For initial and follow-up herbicide treatment, estimates were $4,500 per |

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| | acre for European beachgrass and up to $2,000 per acre for iceplant. For buffer areas where mechanical removal would be used – a much smaller proportion of the total project area under Alternative C relative to Alternative D – the costs per acre would range from $28,000 - $33,000. These costs are discussed in the second paragraph on p. 58. |
| 57 | The EA release letter should have disclosed that imazapyr and glyphosate are the herbicides to be used (and any others, if there are any) and included the MSDS sheets on the herbicides. |
| | ***Response:*** Comment is noted. The NPS does not typically include MSDS sheets with letters announcing release of documents dealing with herbicide use. The webpage links for the MSDS sheets are now referenced in the EA in the Errata section for Chapter 2, pp. 53-54. |
| 58 | The EA should consider using an alternative such as vinegar. |
| . | ***Response:*** Vinegar works as a non-selective, post-emergence, contact herbicide causing rapid desiccation of plant tissues following application as the result of damage to cell membranes (Barker and Prostak 2008). Vinegar is most effective at killing weeds when applied as a foliar spray at concentrations ranging 10 to 20% vinegar and when the weeds are about 6 to 9 inches tall or less (Radhakrishnan et al., 2002; Doll, 2002 *in* Barker and Prostak 2008). Generally 80 to 100% kill rates can be expected for small annual and perennial weeds, but perennial species with persistent root systems will begin to re-grow within several weeks (Barker and Prostak 2008). Young (2002 *in* Barker and Prostak 2008) tested a number of natural-based herbicides including vinegar against glyphosate as post-emergence treatments to roadside annual and perennial weeds in northern California. Two applications of vinegar were deemed marginally effective at controlling annual species (vinegar resulted in about a 70% reduction in weed plant growth compared to an untreated weeds) and were not effective at controlling perennial species (Young 2002 *in* Barker and Prostak 2008). It was reported that soil pH was reduced significantly (from a range of pH 5.9 to 6.6 to a range of pH 4.7 to 5.2) on a temporary basis (at least a month), following vinegar treatment (Barker and Prostak 2008). Vinegar would not appear to be an effective choice to eradicate European beachgrass, as European beachgrass is a deeply rooted perennial species well over 6 to 9 inches tall. Treatment would require repeated applications of vinegar, which could acidify soils and have impacts on soil microbiota and organisms (DiTomaso 2013). This information has been added to the EA as part of the Errata section for Chapter 2, Alternatives Considered, but Dismissed. |
| 60 | Alternatives such as planting species that could compete with the European beachgrass should be considered. |
| . | ***Response:*** The difficulties with planting species to compete with European beachgrass is that few native – and even non-native – species have proven to be able to compete with this aggressive import from Europe. Beachgrass typically grows taller than most dune herbs and taller than most of the shrub species, as well, eliminating the potential for natives to "shade out" this species. It spreads very rapidly through its deeply rooted rhizomes, laterally expanding as much as 3 to 14 feet in a year (see EA p. 96 in Chapter 3). This eliminates open space for native dune species to take hold and try to establish. As discussed in the EA on p. 181 in Environmental Consequences, a number of studies have documented displacement of native species and communities by both beachgrass and iceplant. While the native coyotebrush (*Baccharis pilularis*) and mock heather (*Ericameria ericoides*) might be able to compete somewhat with this species, as they are also considered fast establishers under the right conditions, a community dominated by these shrubs would not support rare federally listed dune plant species or common native dune plant species that serve as nectar sources for the federally endangered butterfly, Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*). Retreatment efforts are also complicated when revegetation is conducted too early in the restoration process. This information has been added to the EA as part of the Errata section for Chapter 2, Alternatives Considered, but Dismissed. |
| 61 | The siting of restored dune habitat should not be limited to historic acreage or footprint as delineated in the EA, but should take into account sea level rise and climate change and allow for natural expansion of this habitat. |

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| | ***Response:*** Sea level rise and climate change are considered in the document as part of "Natural Physical Processes and Soils," which are described in Chapter 3 starting on p. 135 and evaluated in Chapter 4 starting on p. 307. The NPS has attempted to balance the objective of restoring natural dune processes and functions with that of ensuring that restoration efforts do not impact adjacent land use. Where dunes border active ranchlands, this means that dune restoration may be limited to the current dune extent and possibly even only the "oceanward" portion of dunes. However, where dunes do not border ranchlands, it may be possible to allow for more natural expansion of dune habitat. |
| 62 | Exclusionary fencing between dune habitat and pastures needs to be improved, otherwise, it may not be wise to invest so much effort/resources into dune restoration. |
| | ***Response:*** To date, all dune areas restored have been fenced off from adjacent pastures, and future restoration areas proposed in the EA are also currently fenced off from adjacent pastures. However, the Seashore's harsh, marine-influenced environment results in the need for frequent repair and maintenance of livestock fencing, whether it occurs next to dune areas or not. The NPS staff notifies adjacent ranchers if they notice that maintenance of fenceline is needed. |
| 64 | The parks needs to conduct annual monitoring of restored areas, conduct regular follow-up for retreatment (two years may not be enough), and adopt a long-term adaptive management program. |
| | ***Response:*** Please see comment #1 with regards to re-treatment. Treatment effectiveness monitoring is conducted as part of the re-treatment process. Annual monitoring of restored areas to evaluate success of restoration efforts is conducted as funding allows: separate funding for monitoring efforts is typically very difficult to secure. The Seashore routinely adopts a long-term adaptive management program for its restoration efforts, continuing to look for ways to improve the efficacy of restoration efforts in future years. |
| 65 | If straw is used for sand stabilization purposes, please consider using rice straw. |
| | ***Response:*** The NPS is strongly committed to using weed-free materials in its stabilization and revegetation efforts. Rice straw is at the top of the list of weed-free materials considered for use. |
| 66 | Please ensure that all sand or soil disturbed by project activities is regraded at the completion of construction to ensure that these areas blend in smoothly into the surrounding grade. |
| | ***Response:*** During the Abbotts Lagoon Coastal Dune Restoration Project, the NPS actually stipulated in its Specifications that the contractor NOT perform fine regrading of mechanically treated areas. The reason that this was stipulated was that it was anticipated that the winds would naturally re-work constructed areas into the surrounding landscape. While contractor crews did perform blending of treated areas with adjacent dunes, some of these areas were immediately re-worked by wind and wave, therefore reinforcing our thinking that fine regrading of sands is not necessary, as long as sands are not left in an unnaturally elevated or stockpiled condition, but rather tapered roughly to meet surrounding elevation grades. |
| 67 | Conducting active revegetation with native species rather relying on natural recruitment would reduce likelihood of recolonization by iceplant or European beachgrass. |
| | ***Response:*** Please see response to Comment #60. |
| 68 | The park should include some public outreach, such as informational posters in the public parking lots near the treated area, to explain in layman's language why iceplant and other non-native plants are undesirable. |
| | ***Response:*** The NPS does provide background to the visiting public on the need for dune restoration within the Seashore through the Seashore's website, but these efforts to relay the "big picture" about dune restoration to the public could certainly be increased. |
| 72 | The EA should consider use of thick layers of chips or black plastic sheeting to eradicate "non-native" species. |
| | ***Response:*** Use of thick layers of chips or black plastic sheeting is typically only feasible for very |

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| | small weed infestations (<1 acre; CDPR 2012). Success rates have been equivocal, with no documented success for beachgrass and variable success for iceplant (CDPR 2012). Use of plastic sheeting and even chips is very difficult to areas subject to high winds, as even staked down plastic sheeting can be loosened by strong gusts and then blown across the landscape, creating trash that could be a hazard to wildlife and other plants. At least one study found "significant physical, chemical, and biological changes in the soil that can last up to several years" (Tu et al. 2001 *in* CDPR 2012). During mechanical removal, approximately 3 feet of clean sand is required to "cap" areas of buried rhizomes, as European beachgrass can re-grow very quickly even through fairly thick sand layers: application of a layer of mulch or chips at a depth of 3 feet would be logistically infeasible at the scale that projects would be conducted. This information has been added to the EA as part of the Errata section for Chapter 2, Alternatives Considered, but Dismissed. |
| 76 | The NPS should not immediately turn to increased herbicide use to restore habitat rather than doing anything possible to find another option. |
| | ***Response:*** Please see response to comment #37. Early on, park staff worked on removal of European beachgrass from the mouth of Abbotts Lagoon, and, starting in 2002, iceplant was removed from 100 acres of rocky coastal bluff near the Lighthouse. During the first few years of restoration at Abbotts, removal efforts focused on manually digging up European beachgrass, which has deep rhizomes that can extend anywhere from 3 to 12 feet or more. Because it was difficult to dig deeper than 1.5- to 3 feet manually, the beachgrass rapidly regrew. In 2007, park staff estimated that 20% of the treated area re-grew within as little as six months, and some areas required as many 15- 20 repeat treatments before control appeared to be achieved (J Rodgers, NPS, *in* Point Reyes Light 2007, Peterson 2004). These issues encouraged the Seashore to explore other approaches for removing at least European beachgrass. In 2004, a 20-acre mechanical project was conducted in the same vicinity as the hand removal ones, but with more successful results: It appeared to be more practical – and perhaps more effective -- than hand removal ones, particularly for larger areas. This approach was ultimately selected for the Abbotts Lagoon Coastal Dune Restoration Project, located south of the original Abbotts project. However, costs of this approach were so high that the scale of restoration had to be reduced from 132 to 80 net acres. In addition, flipping of sands did cause impacts to adjacent native dune, wetland, and grassland areas, because mechanical removal abruptly buried the sand-stabilizing rhizomes beneath a cap of clean sand, which were more prone to remobilization particularly during the dry, high spring wind conditions that occurred immediately after the project was implemented. In keeping with the objectives of NPS's IPM program, chemical control is the method of last resort in dealing with invasive non-native species issues. |
| 78 | Chemical control cannot be successfully implemented and retain native plant species as can be done with manual removal, because selective spraying with herbicides is difficult or impossible, so revegetation would be required, and this would increase the cost of the chemical control alternative. |
| | ***Response:*** The NPS has actually had great success with selective spraying, particularly with use of drift shields, such that many plants that are even directly adjacent to European beachgrass and iceplant plants are not harmed during spray operations and continue to flourish. These native plant individuals or patches provide a viable source for fast recolonization of herbicide-treated areas, thereby negating the need for any active revegetation in most, if not all, areas. Backdune areas may need more revegetation effort to develop the desired late successional or dune scrub communities and minimize incursion by upland non-native weeds, but, even in these areas, revegetation of native plant species occurs rapidly. |
| **Environmental Consequences** | |
| 2 | The plan's safety assumptions rely on EPA evaluation of glyphosate and upon label instructions, the last time that EPA evaluated glyphosate was more than 20 years ago. Glyphosate is currently undergoing an EPA re-registration process that hasn't been completed yet. The problems inherent in relying on an evaluation performed so long ago are not addressed in the EA. |
| | ***Response:*** Use of the risk assessment worksheets developed by Syracuse Environmental |

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| | Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) to assess risk associated with glyphosate applications ensures that current information on glyphosate toxicity, environmental fate,, and exposure are being used. SERA (2011a) prepared a comprehensive document on glyphosate and did a thorough review of the scientific literature, including not only information from the U.S. Environmental Protection Agency (USEPA), but also studies from the peer-reviewed literature, current to 2010. It includes new information from USEPA from the following documents:<br>1) The 2010 and 2008 (USEPA 2008) USEPA endangered species Effects Determinations for glyphosate for the California red-legged frog (CRLF). This assessment provided Toxicity Reference Values for amphibians (the CRLF itself), mammals, terrestrial and aquatic invertebrates (food sources for the CRLF), fish (the surrogate for the aquatic phase of the CRLF), birds (the surrogate for the terrestrial phase of the CRLF), and plants, which serve as habitat for the CRLF.<br>2) Information from the 2006 USEPA human health risk assessment for use of glyphosate on safflower and sunflower that provided new information utilized in the new endangered species Effects Determinations (USEPA 2006).<br>3) The 2009 USEPA Registration Review documents for glyphosate (USEPA 2009). Labels are continually being updated by USEPA, as the agency makes policy decisions regarding what information must be included on a label, how warnings are phrased, and to include new language for existing hazards. For example, since 2003, there have been 15 label updates for Roundup Custom®, also formerly known as AquaMaster®, based on information in the USEPA's Pesticide Label Database (USEPA 2015a).<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 3 | The plan makes no reference to glyphosate endocrine disruption effects, but the EPA is concerned enough that they are studying them at the present time. The references in the EA do not appear to acknowledge the demonstrated negative endocrine effects of glyphosate. |
| | ***Response:*** Glyphosate was one of the first set of chemicals to be tested for endocrine disrupting effects by the U.S. Environmental Protection Agency (USEPA) as part of the USEPA Endocrine Disruptor Screening Program (EDSP, USEPA 2012). The USEPA selected chemicals for inclusion in the list based on exposure potential, and the criterion for selecting chemicals for the initial list was the presence of the chemical in at least three of the four exposure pathways where food and occupational exposure pathways were represented (USEPA 2015b). USEPA described the selection process as follows: "This list should not be construed as a list of known or likely endocrine disruptors. Nothing in the approach for generating the initial list provides a basis to infer that by simply being on this list these chemicals are suspected to interfere with the endocrine systems of humans or other species, and it would be inappropriate to do so (USEPA 2012)."<br>No data are yet available from the studies required under this program. USEPA staff has indicated that data from this program will be incorporated into the registration review process and reviewed as part of the risk assessment revision.<br>Over the past few years, glyphosate and glyphosate formulations -- that is, products containing surfactants and other ingredients -- have been tested for cellular and endocrine toxicity in various cell culture systems (including human-derived cells) and, to a lesser degree, in whole animals. Some of the surfactants studied include polyoxyethyleneamine (POEA), which is used in some of the formulations of Roundup® standardly available to the general public at hardware stores. The following list represents the major studies on toxicity conducted in the recent past.<br>*Richard et al*. "Differential effects of glyphosate and Roundup on human placental cells and aromatase " (2005)<br>*Benachour et al*. "Time- and Dose-Dependent Effects of Roundup on Human Embryonic and Placental Cells" (2007b)<br>*Benachour and Séralini*, "Glyphosate formulations induce apoptosis and necrosis in human umbilical, embryonic, and placental cells" (2009)<br>*Hokanson et al*. "Alteration of estrogen regulated gene expression in human cells induced by the agricultural and horticultural herbicide glyphosate" (2007)<br>*Gasnier et al*. "Glyphosate-based herbicides are toxic and endocrine disruptors in human cell lines" |

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| | (2009)<br>*Clair et al*, "A glyphosate-based herbicide induces necrosis and apoptosis in mature rat testicular cells in vitro, and testosterone decrease at lower levels" (2012)<br>*Cavalli et al*. "Roundup disrupts male reproductive functions by triggering calcium-mediated cell death in rat testis and Sertoli cells" (2013)<br>*Thongprakaisang et al*. "Glyphosate induces human breast cancer cells growth via estrogen receptors" (2013)<br>Considering the available data, there is substantial evidence in tests involving cell cultures for cellular toxicity of glyphosate when formulated with POEA surfactants. The weight-of-evidence also suggests that glyphosate alone is cytotoxic, albeit only at substantially higher concentrations than observed for glyphosate-surfactant formulations. Interpretation is further complicated by results demonstrating that POEA surfactants without glyphosate also produce cytotoxic responses, suggesting that POEA alone could cause the observed response.<br>It is possible that the POEA surfactant used in some formulations is facilitating the uptake of glyphosate in cultured cells. In general, surfactants are designed to increase the permeability of membranes to allow otherwise polar chemicals to cross membrane lipids (fatty molecules). However, the results with POEA are not relevant to the proposed project, because no herbicide products containing that ingredient are being considered for use. None of the studies evaluated used modified seed oil surfactants like Competitor®, so it is not clear if the same effects would be observed. In aquatic toxicity tests that serve as a measure of surfactant reactivity and ability to facilitate membrane transport, Competitor® is far less toxic – as much as 5X -- than many other surfactants (Smith et al. 2002 *in* Entrix 2003, Entrix 2003).<br>Based on a review of the available cellular toxicity studies in the scientific literature, it appears that at relatively high concentrations (0.1–1%) in the cell culture medium of glyphosate, glyphosate formulated with POEA surfactant, and POEA surfactant alone all have the potential to initiate programmed cell death, induce autophagic (intracellular degradation) responses, and generally induce necrosis leading to cell death. It is not possible to determine the dose at which such effects might be expected to occur in humans or animals from the available cell-culture studies, because the concentrations used cannot be directly translated to a dose in milligrams per kilogram of body weight. When results of these studies are considered in total, these specialized toxicity tests do suggest that endocrine cells would likely be affected if sufficient levels of glyphosate, glyphosate formulated with POEA surfactant, and the POEA surfactant alone were achieved in the target cells in an intact animal. In turn, these chemicals might cause endocrine toxicity specific to mimicking physiological hormones such as estrogen or inhibiting aromatase activity, an enzyme involved in the conversion of estrogen to testosterone. While results from studies are still somewhat inconclusive, cumulative evidence from the the past few years points to glyphosate having some potential for causing endocrine toxicity in laboratory experiments.<br>However, the high concentrations used for testing in cell culture systems are not likely to be encountered in any weed management applications. Only an acute poisoning event could reach even somewhat comparable concentrations. An example of acute poisoning scenario would be if a person consumed at least half a cup of a 44% glyphosate product, which would be equivalent to the 1% used in many of the cell culture tests. Therefore, these laboratory study results do not quantitatively affect the risk estimates used in this risk assessment and are not relevant to the risk conclusions.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 4 | The research by Hwang and Young shows that glyphosate, when mixed with the surfactant that the plan proposes to use and when sprayed on vegetation, remains at full strength on vegetation for at least 3 months. The proposed plan makes no mention of this fact, nor does it give recognition to the fact that, during this prolonged period, people, including pregnant women and children, will be hiking, picnicking among the sprayed vegetation and could come into contact either through skin absorption or through ingestion if food is handled by contaminated hands. |
| | ***Response:*** Please see response to Comment #14. |
| 5 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate- |

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| | spraying aspect of the plan with great dangers to the public -- specifically, increase in miscarriage rate due to placental damage (Savitz 1997, Arbuckle 2001, Seralini et al. 2005) |
| | ***Response***: The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>Two of the referenced studies – Savitz et al.1997, Arbuckle et al. 2001 – were discussed in the document on glyphosate (SERA 2011a). The SERA report noted that, for both studies, which were part of the Ontario Farm Health Study, the "risk of miscarriage was unrelated to self-reported exposures to glyphosate formulations" (SERA 2011). The Savitz et al. (1997) study analyzed self-reported spontaneous miscarriages of 3,984 pregnancies among 1,898 couples who self-reported exposures to glyphosate formulations within a period beginning 2 months before pregnancy and ending the month of conception (Savitz et al. 1997 *in* SERA 2011a). The second study, Arbuckle et al. (2001), focused on rates of spontaneous abortions among 2,110 women and 3,936 pregnancies and disaggregated the herbicide exposures into pre- and post conception and spontaneous abortions into early- (< 12 wk) and late-term (12-19 wk) abortions (Arbuckle et al., 2001 *in* SERA 2011(a)). Spontaneous abortions were not associated with post-conception glyphosate formulation exposure; however, the odds ratio for abortions and post-conception exposure was 1.4 (1.0-2.1), and for late-term abortions was 1.7 (1.0-2.9; SERA (2011a)). The latter odds ratios were not adjusted for maternal age which is a risk factor for spontaneous abortion. When maternal age was considered in a regression tree analysis, spontaneous abortions were found to be unrelated to glyphosate formulation use (SERA 2011a). As summarized in SERA (2011a), "of those studies that specifically address potential risks from glyphosate exposures, none has demonstrated a statistically significant association between exposure and adverse reproductive effects." |
| 6 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, decrease in sperm count (Yousef 1992) and abnormal fetal development (Marc 2002). |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>The 1992 study by Yousef and the 2002 study by Marc cited by the Commenter do not appear in the SERA (2011a) document. However, it does discuss two other later studies by Yousef and colleagues that focus on sperm count issues. The first study, Yousef et al. (1995), which was conducted on rabbits, observed substantial decreases in libido, ejaculate volume, sperm concentrations, semen initial fructose, and semen osmolality, as well as increases in abnormal and dead sperm after acute exposures to glyphosate (SERA 2011a). A serious limitation of this study is that the authors report the doses as proportions of 0.01 and 0.1 of the LD50 (lethal dose; 50%), but do not specify the actual doses (SERA 2011a). In addition, Yousef et al. (1995) do not specify the type of glyphosate tested—i.e., acid, salt, or formulation. "In the absence of information on dose as well as the test material (i.e., |

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| | glyphosate or a formulation), the Yousef et al. (1995) study does not contribute substantially to the hazard identification" (SERA 2011a).<br>In a subsequent *in vitro* (cell culture) study, Yousef et al. (1996) report that glyphosate may reduce sperm motility in the range of from 116 to about 300 *µ*M (micromolar) in protein free media and from 500 to about 740 *µ*M in a media with protein (SERA 2011a). Again, however, Yousef et al. (1996) do not specify the form of glyphosate tested (SERA 2011a). The concentrations, however, do appear to be expressed in units of a.e. or acid equivalent, which refers to the active acid portion of the formulation (SERA 2011a). The lowest reported effect concentration, 116 µM, corresponds to a concentration of about 19.6 mg a.e./L (milligrams acid equivalent/liter; SERA 2011a). Assuming a linear relation between dose and concentration in testes tissue, a concentration of 19.6 mg a.e./L corresponds to a dose of about 1200 mg a.e./kg bw (kilograms body weight; SERA 2011a). The current Forest Service risk assessment adopts the RfD (Reference Dose) of 2 mg/kg bw/day from U.S. EPA/OPP (1993a,b, 2000 *in* SERA 2011(a)), which is considerably lower than 1200 mg a.e./kg bw. (The Reference Dose is the USEPA's estimate of the maximum oral dose of a toxic substance that is likely to be without appreciable risk of deleterious effects during a lifetime.) SERA (2011a) noted that, while these studies may impact the perception of risk, they do not have a substantial impact on the hazard identification because concerns for reproductive function are adequately encompassed by the current RfD for glyphosate. |
| 7 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, promotion of breast cancer cell growth (Unk. Ref. 2013). |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>The Commenter did not provide specific author or citation information. However, based on information provided, the citation appears to be, "Thongprakaisang S1, Thiantanawat A, Rangkadilok N, Suriyo T, Satayavivad J., 2013, Glyphosate induces human breast cancer cells growth via estrogen receptors. Food Chem Toxicol. 2013 Sep;59:129-36. doi: 10.1016/j.fct.2013.05.057. Epub 2013 Jun 10." As this study was published in 2013, it could not be incorporated in the risk assessment study used, as the USFS risk assessment was completed in 2011. The authors state that, "results indicated that low and environmentally relevant concentrations of glyphosate possessed estrogenic activity" (Thongprakaisang et al. 2013).<br>Previous studies are discussed in SERA (2011a). Both glyphosate and Roundup were inactive as estrogen receptor agonists (i.e., the substances did not exhibit estrogenic activity) in MCF-7 human breast cancer cells (Lin and Garry 2000 *in* SERA 2011(a)). Similarly, glyphosate did not evidence binding to estrogen receptors in trout fish (Petit et al. 1997 *in* SERA 2011(a)). The study by Petit et al. (1997) is a survey of the activity of several different pesticides, and it does not clearly identify the form of glyphosate tested or whether it was a glyphosate formulation (SERA 2011(a)). |
| 8 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, irregular heart rhythm and inflammation of eyes, skin, and digestive system (Cal EPA Yr?). |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide |

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| | during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>The Commenter did not provide specific author or citation information. A web search was conducted to try and find the relevant citation, but information could not be found, so this particular citation cannot be addressed specifically. There were no specific references to irritation of the digestive system or "irregular heart rhythm" in the SERA (2011a) report. However, the SERA risk assessment does address inflammation of the eyes and skin (2011a). Specifically addressed in the report are two published studies that link ocular irritation with use of glyphosate formulations (Acquavella et al. 1999b; Goldstein et al. 2002 *in* SERA 2011(a)). The study by Acquavella et al. (1999b) covers calls to U.S. poison control centers from 1993 to 1997, with a total of 1513 calls involving ocular effects associated with use of Roundup (SERA 2011a). A published report by Goldstein et al. (2002) reviewed calls reported to the California EPA Pesticide Illness Surveillance Program (SERA 2011a). Out of a total of 815 calls involving glyphosate, about 30% (250) involved reports of skin irritation of which 54 were classified as skin irritation that was definitely associated with exposure to glyphosate formulations (SERA 2011a).<br>Both studies involved glyphosate formulations. Technical grade glyphosate causes only slight skin irritation and is classified as Category IV (the least hazardous category; U.S. EPA/OPP 1993b *in* SERA 2011a). In the SERA (2011a) report, the author concludes that, "it is likely that the irritant effects of some glyphosate formulations to the skin are due to the surfactants in the formulations." POEA and other surfactants used in glyphosate formulations may be severely irritating to the eyes, skin, and other mucosal surfaces such as the gastrointestinal tract and lungs (SERA 2011a). The NPS is proposing to use technical grade glyphosate with a non-integrated surfactant (Competitor®) that is classified by the MSDS prepared by Wilbur-Ellis as being minimally irritating to the eyes and moderately irritating to skin, although the MSDS also notes that it is not toxic or irritating to the skin if overexposure occurs.<br>Based on several eye irritation studies submitted to the U.S. EPA as part of the registration process, U.S. EPA/OPP (1993c) classifies glyphosate as mildly irritating to the eyes (Category III; SERA 2011a). As with skin irritation, however, some formulations of glyphosate are classified by the U.S. EPA/OPP as corrosive (Category I – corneal opacity not reversible within 7 days) or severe eye irritants (Category II – corneal opacity reversible within 7 days or other eye irritation persisting for 7 days or more; SERA 2011a). As with dermal irritation, surfactants are probably the cause for the irritation to or corrosive effects on eyes associated with some glyphosate formulations. The earlier referenced study by Goldstein et al. (2002) noted similar results in an analysis of calls involving glyphosate exposure reported to the California EPA Pesticide Illness Surveillance Program: About half of the calls (399 or 48.9%) involved reports of eye irritation (SERA 2011a). Of these, slightly more than half were classified as eye irritation definitely associated with exposure to glyphosate formulations (223 of 399 or about 56%; SERA 2011a). The most severe cases of eye irritation appear to involve accidental exposures in which the glyphosate formulation was sprayed into eyes under pressure (SERA 2011a). As previously noted, the NPS is proposing to use technical grade glyphosate with a non-integrated modified vegetable oil surfactant (Competitor®) that is classified by the MSDS prepared by Wilbur-Ellis as being minimally irritating to the eyes. |
| 9 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, interference with the liver's cytochrome P450 oxidase enzyme system, which can affect hormone balance and stimulate cancer (Hietanen 1983). |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for |

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| | evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>On p. 419 in Chapter 4, the EA references that certain doses of even technical grade glyphosate can cause inhibition of some enzymes (e.g., P450), although the Hietanen (1983) paper is not specifically cited. The SERA (2011a) report does discuss this particular citationCommenter, however. The risk assessment report notes that some the effects of glyphosate may involve inhibition of mixed-function oxidases such as P450 (SERA 2011a). This is a class of enzymes comprised of various isozymes (e.g., multiple forms) of cytochrome P450 which is involved in the metabolism of various endogenous (internal) compounds as well as xenobiotics (foreign chemical substances; SERA 2011a). There are a large number of human cytochrome P450 enzymes, with six variants responsible for the metabolism of approximately 90 percent of commonly used drugs (Nebert and Russell 2002). Most chemicals are metabolized by more than just a single variant of cytochrome P450. Inter-individual differences in cytochrome P450 enzyme structure are common, resulting in differing abilities of individuals to detoxify foreign chemicals in the body. Production of cytochrome P450 enzymes can be inhibited or induced by chemical substances, resulting in either a reduction in or enhancement of the capacity to metabolize foreign chemicals. Inhibition of cytochrome P450 activity can lead to an inability of the body to metabolize and excrete chemical substances such as pharmaceuticals.<br>In the paper cited by the Commenter, decreases in hepatic mixed function oxidase activity of live rats were noted after doses of 500 mg/kg/day of formulated glyphosate (as Roundup 360 g/L) for 4 days followed by doses of 300 mg/kg/day for 6 days (Hietanen et al. 1983 *in* SERA 2011a). The dose of the surfactant was not mentioned in the paper, likely because this information was not available to the researchers, because it is considered to be the manufacturer's trade secret. However, the surfactant and numerous other unmonitored variables may also be playing a role in the cytochrome P450 inhibition, so it is unclear to what extent glyphosate was responsible for the observed effects. This decrease in mixed function oxidase activity may be only suggestive of cytochrome P450 inhibition, as a general decrease in mixed function oxidase activity could also be caused by direct liver damage (SERA 2011a). *In vitro* (cell culture) studies, however, have demonstrated the inhibition of P450 activity in both mammalian cells (Richard et al. 2005 *in* SERA 2011a) and plant cells (Lamb et al. 1998 *in* SERA 2011a).<br>Abass et al. (2009) provides direct measurements of the inhibition of ten human cytochrome P450 enzyme variants present in human liver cells by18 different pesticides, including glyphosate. Glyphosate had detectable inhibitor activity for CYP2C9, marginal inhibitor activity for CYP2C8, and no effect at any concentration on the eight other cytochrome P450 variants tested. The CYP2C9 variant represents approximately 15–18% of the total cytochrome P450 enzymes in the human liver and is involved in the metabolism of a number of common pharmaceuticals, including non-steroidal anti-inflammatory medications (NSAIDs), drugs used to treat high blood pressure, drugs used to treat diabetes, some chemotherapy and antidepressant drugs, and at least one of the statins used for treatment of high cholesterol.<br>One of the various isozymes of cytochrome P450 is aromatase, which is involved in the synthesis of sex hormones from cholesterol, specifically the conversion of male hormones (i.e., androgens such as androstenedione and testosterone) to female hormones (i.e., estrogens such as estrone and estradiol) (e.g., Bulun et al. 2003 *in* SERA 2011a). There are two studies (Benachour et al. 2007b; Richard et al. 2005) that indicate that glyphosate and glyphosate formulations may alter the activity of aromatase (SERA 2011a). Benachour et al. (2007b) assayed glyphosate and a 480 g glyphosate IPA/L Roundup formulation in human embryonic cells and human placental microsomes (SERA 2011a). Glyphosate caused a slight stimulation of activity at concentrations less than 1000 mg/L and about 50% inhibition at concentrations of 8000 mg/L (Benachour et al. 2007b *in* SERA 2011a). The |

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| | Roundup formulation is somewhat more active, causing a 50% inhibition of aromatase at about 1800 mg a.e./L in human placental microsomes (Benachour et al. 2007b *in* SERA 2011a). These concentrations of glyphosate are far higher than credible *in vivo* or "live" subject concentrations (SERA 2011a).<br>Richard et al. (2005) assayed the effect of glyphosate and a formulation of Roundup (360 mg a.e./L from Monsanto, Belgium) on aromatase in a human placental cell preparation (SERA 2011a). In these assays, glyphosate caused no significant inhibition of aromatase and no significant changes in messenger RNA (mRNA) associated with the synthesis of aromatase (Richard et al. 2005 i*n* SERA 2011a). In an 18-hour assay, the Roundup formulation caused a concentration-related inhibition in aromatase activity (from about a 15 to 55% decrease) over a concentration range of about 0.01 to 0.04% formulation (i.e., 100- 400 ppm (parts per million) formulation or about 36-144 mg a.e./L; Richard et al. 2005 *in* SERA 2011a). Higher concentrations of up to about 800 ppm formulation (≈288 mg a.e./L) did not result in a greater inhibition of aromatase activity (Richard et al. 2005 *in* SERA 2011a). In a 1-hour assay, formulation concentrations of 0.01-0.2% (100-2000 ppm formulation or about 36- 720 mg a.e./L) resulted in a significant but not a concentration-related increase in aromatase activity to about 140% of normal activity (Richard et al. 2005 *in* SERA 2011a). Similar to the study by Benachour et al. (2007b), the concentrations used in the Richard et al. (2005) assays are higher than typical *in vivo* ("live" subject) concentrations (SERA 2011a).<br>Gasnier et al. (2009) also assayed glyphosate and four glyphosate formulations from Belgium for the inhibition of aromatase activity as well as levels of aromatase mRNA (SERA 2011a). Gasnier et al. (2009) do not provide detailed data on these assays, but, based on graphical results, glyphosate had no substantial or significant effect on either aromatase activity or mRNA (Gasnier et al. 2009 *in* SERA 2011a). The four glyphosate formulations did appear to generally inhibit aromatase activity and increase levels of mRNA (Gasnier et al. 2009 *in* SERA 2011a), but the concentration-response curves are not consistent among the formulations, and there is an absence of concentration-dependent patterns (SERA 2011a).<br>In summary, SERA (2011a) concludes in its risk assessment report that, "doses of technical grade glyphosate that exceed around 300 mg/kg bw may cause signs of toxicity, including decreased body weight gain, changes in certain biochemical parameters in blood as well as tissues, and inhibition of some enzymes (i.e., P450) involved in the metabolism of both endogenous and exogenous compounds." However, these doses greatly exceed that posed by accidental exposure of visitors to sprayed vegetation. Based on the paper by Arass et al. (2009), the glyphosate concentration that inhibited the enzyme by 50 percent (IC50) for the only cytochrome P450 clearly affected (CYP2C9) was 3.7 $\mu$m (micromolar), equivalent to a concentration of 0.60 mg/L in a cell culture medium. To approach a blood serum concentration of 0.60 mg/L of glyphosate, a 70 kg adult male with a typical blood volume of 5 liters would need to be exposed to a dose of at most 0.04 mg/kg of body weight. (This calculation provides a low-end estimate of dose required to achieve the serum concentration of 0.60 mg/L, because it assumes all glyphosate would be circulating in the blood stream and not excreted or distributed to tissues, and that chemical uptake by isolated cells bathed in culture medium is not an overestimate of uptake by each cell in the cell-dense tissues of a human body.) For comparison, the maximum estimated dose from contact with glyphosate-treated vegetation for a woman wearing shorts and a T-shirt is 0.001 to 0.01 mg/kg body weight, a factor of 4 to 40 lower than the dose at which CYP2C9 was inhibited.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 10 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, interference with the liver's cytochrome P450 oxidase enzyme system, which can affect blood level and toxicities of many medications for cancer, heart failure, blood pressure, cholesterol, infections, blood clots, psychiatric conditions, AIDs, and diabetes. |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide |

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| | during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>The SERA (2011a) report does reference toxicological interactions. Specifically, it notes that, based on its possible effects on aromastase, it "seems reasonable to speculate that glyphosate could have an impact on the metabolism of exogenous (external) compounds, such as pesticides, which are also metabolized by cytochrome P450 enzymes" (SERA 2011a). This inhibition of P450 enzymes could enhance or diminish the toxicity of other compounds, depending on whether metabolism increases or decreases the toxicity of the other compound (e.g., Lewis et al. 1998 *in* SERA 2011a). |
| 11 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, interference with the liver's cytochrome P450 oxidase enzyme system in the intestines, which controls absorption of medications and thereby lead to toxic levels of medications cited in Comment #10 (Unknown Ref 2000, Samsel and Seneff 2013). |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. These reports discuss in extensive detail many of the medical and public health studies that have been conducted and incorporate this information into development of public health risk assessments for the respective herbicides. The EA is not intended to be an encyclopedic discussion of all of the studies that have been conducted, but instead leverages the information and conclusions from these reports and from the associated risk assessment worksheets to assess potential risks to human health and other factors from application of the identified herbicides to the visiting public.<br>Please see response to Comment #10. The Commenter references two citations, one of which does not contain an author and, therefore, could not be located. The second, Samsel and Seneff (2013), was published after the USFS risk assessment was produced (2011). The Samsel and Seneff paper is a review article – meaning no new data are presented – that hypothesizes that glyphosate is responsible for a variety of common diseases or conditions, including gastrointestinal disorders, obesity, diabetes, heart disease, depression, autism, infertility, cancer and Alzheimer's disease. The proposed mechanism of glyphosate toxicity for all of these conditions is based on a combination of one or more of three factors: 1) the inhibition of cytochrome P450, CYP (a set of enzymes which among other actions, contribute to drug detoxification in the body); 2) disruption of aromatic amino acid synthesis by gut bacteria, and 3) impairment of serum sulfate transport.<br>Two research studies published in 2013 perhaps lend scientific credence to the link between intestinal issues and glyphosate (Krüger et al. 2013; Shehata et al. 2012). These studies by a group of researchers at Leipzig University are not discussed in the USFS risk assessment, because they were also published after it was prepared. The Krüger et al. (2013) paper researched the possible link between glyphosate and inhibition of *Enterococcus* spp. in the intestine, which generally produce bacteriocines that are effective against *Clostridium* spp.: *Clostridium*-related diseases have been on the rise in cattle in Germany, and ingestion of strong biocides like glyphosate could be an explanation for the observed increase (Krüger et al. 2013). Similar conclusions were reached by Shehata and colleagues (2012) in studying impacts of glyphosate on potential pathogens and beneficial members of poultry microbiota *in vitro* (cell culture). The study led by Shehata used Roundup UltraMax ® (Monsanto, USA), which is an IPA (isopropylamine salt) form of glyphosate that apparently incorporates an integrated surfactant: The label states that surfactants should not be added, but does not specify the surfactant used. The Shehata et al. (2012) study did not use a glyphosate product without a surfactant, as the Krüger et al. (2013) study did. Use of "pure" glyphosate in studies, as well as glyphosate formulations including surfactants, enables researchers to better discern effects of |

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| | glyphosate relative to the surfactant.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 12 | The plan makes no references to specific research on glyphosate toxicity that endow the glyphosate-spraying aspect of the plan with great dangers to the public -- specifically, die-off of beneficial intestinal bacteria, leading to intestinal infections (Kruger et al. 2013). |
| | ***Response:*** Please see response to Comment #11. |
| 13 | The plan does not address the fact that there has been no research on whether Competitor when mixed with glyphosate could increase the skin absorption of glyphosate, thereby increasing glyphosate toxicity problems. |
| | ***Response:*** Competitor® is a non-ionic surfactant, with 98% of the product comprised of a mixture of the ethyl ester of oleic acid (ethyl oleate, CAS number 111-62-6), sorbitan alkylpolyethoxylate, and dialkyl polyoxyethylene glycol (PEG; Wilbur-Ellis label). All of the ingredients of Competitor® are either found in the diet or are commonly used in consumer or pharmaceutical products and are approved as food additives by the U.S. Food and Drug Administration (USFDA), because they exhibit low toxicity. Because of the use patterns, widespread exposure to these chemicals, both singly and in mixtures, is likely for the general population, simply from everyday exposure through food, drugs and cosmetics. More detail on ingredients in this surfactant product is provided below in response to Comment # 17.<br>The basic assumption in mixture analysis is concentration addition, i.e., the toxicity of the mixture is simply the sum of the toxicity of the ingredients, based on concentration of the components in the mixture (Mumtaz 2010). Both synergistic and antagonistic effects are also possible and are usually a result of inhibition or induction of the enzymes responsible for detoxification (Lynch and Price 2007). Whether or not additive or synergistic interactions between chemicals in mixtures causes higher toxicity than the individual components depends on the toxicity of the individual components in the mixture and the rate at which they are metabolized and/or excreted. Synergism may enhance the toxicity of a compound by delaying metabolism and/or excretion, with the factor by which the toxicity is increased being a function of these two processes. Although there is not much data in the technical literature, a number of studies indicate a lack of synergistic effects between surfactants and pesticides (Bakke 2007);<br>There are several reasons why the toxicity of the mixture of glyphosate and components in Competitor® surfactant is unlikely to exceed levels of concern. First, research studies have shown that, in general, non-ionic surfactants such as Competitor® have less of an effect on the skin and, hence, absorption than anionic or cationic surfactants (Bakke 2007): An example of cationic surfactant is polyoxyethyleneamine (POEA), which is used in some of the formulations of Roundup® standardly available to the general public at hardware stores and is now considered to be a fairly toxic surfactant (SERA 2011a). Secondly, the active ingredient -- glyphosate isopropylamine (IPA) salt -- and the three compounds present in Competitor® are polar and, therefore, sufficiently water soluble to be easily excreted without needing to be metabolized first. Lastly, the acute toxicity of the individual components is low, with LD50 -- lethal dosage 50% or the individual dose required to kill 50 percent of a population of test animals -- values exceeding 2,000 mg/kg. Thus, even if the toxicity of the mixture were enhanced by some type of synergistic interaction by a factor of 10, the acute toxicity of the mixture would still remain low. Indeed, the LD50 of the mixture that comprises Competitor® is >5,000 mg/kg, indicating that the acute toxicity of the mixture is comparable to that of the individual components (Wilbur-Ellis 2010). For glyphosate products like Aquamaster® (now marketed as Roundup Custom®) containing water and glyphosate isopropylamine (IPA) salt, the LD50 is also >5,000 mg/kg (Monsanto 2013).<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 15 | Because the Hwang and Young (2011) study revealed that full-strength concentration of glyphosate-Competitor mixture remained on vegetation after at least three months, the federal government should carry out its own persistence studies to determine how long warning signs should be posted beyond one year. |

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| | ***Response:*** The observation of glyphosate in the plants tested by Hwang and Young (2011) after the passage of four months indicates that the glyphosate was absorbed by the plant and, as a result, was not exposed to microbes and not on leaf surfaces where it could be washed off of the plant or degraded by oxidation or photolysis. Because the analytical method to measure the glyphosate content of the plants involves macerating the plant material, the residues were detectable, but this does not mean they are accessible for skin transfer from contact with the surface of the plant. This is consistent with the systemic nature of this herbicide, a characteristic on which its efficacy is based. Research has been done on the absorption and translocation of glyphosate from the surface on which it is sprayed to the rest of the plant in the presence and absence of different surfactants. One study found that 15–30 percent of applied glyphosate is absorbed after one day and 20–40 percent after five days for soybeans and 20–30 and 30–45 percent after eight hours and one day, respectively, in wheat (Gaskin and Holloway 1992). Use of surfactants enhanced the uptake of glyphosate into plant tissue, with the percent absorbed ranging from 28–94% in soybeans after 5 days (Gaskin and Holloway 1992). The percent of glyphosate absorbed from the leaf surface was a function of the plant species, the type of surfactant, and the concentration of glyphosate in the applied solution. The peer-reviewed literature is replete with studies on the absorption and translocation of glyphosate in plants (Shaner 2009). Thus, it does not seem necessary for the NPS to conduct additional experiments.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 16 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP (PRI 2008, 2010). |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. The reports referred to by the Commenter were only used for background information on toxicity of the proposed surfactant, Competitor®, and the dye product, not for glyphosate or imazapyr. |
| 17 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, the report states that the percentage concentrations of the constituents of Competitor are not known, but fails to note that one cannot discern possible toxic effects without knowing the mixture. |
| | ***Response:*** Competitor® is a non-ionic surfactant, with 98% of the product comprised of a mixture of the ethyl ester of oleic acid (ethyl oleate, CAS number 111-62-6), sorbitan alkylpolyethoxylate, and dialkyl polyoxyethylene glycol (PEG). A brief summary of the properties and toxicity of the ingredients is given below.<br>**Ethyl oleate**: Ethyl oleate is a fatty acid ester prepared by reacting oleic acid derived from seed oils (e.g. corn, soybean, sunflower, canola) with ethanol (the same alcohol in beer, wine and liquor). Ethyl oleate is both metabolized and synthesized by the human body. Metabolism of ethyl oleate occurs rapidly to produce ethanol and oleic acid, with a half-life in rats of less than 24 hours (DePergola et al. 2006). Both ethanol and oleic acid are metabolized further to produce energy for the organism, just as if the two separate ingredients had been ingested in the diet. In the presence of high concentrations of ethanol in the body, e.g., when alcohol is consumed, enzymes in the mammalian system produce ethyl oleate (DePergola et al. 2006). The U.S. Food and Drug Administration (USFDA) has approved the use of ethyl oleate as a food additive (USFDA 2008). The methyl, ethyl, propyl and butyl esters of oleic acid are used as emollients in cosmetics and other personal care products and as lubricants (Rohm and Haas 2008).<br>**Sorbitan alkylpolyethoxylate**: The class of chemicals known as the alcohol ethoxylates (AEs) are among the highest production volume chemicals in the U.S. These non-ionic surfactants are used in detergents and other household products, in foods and pharmaceuticals as emulsifiers, and in lubricants (NTP 2006, Wong et al. 1997). They are ubiquitous in the environment due to their discharge through wastewater treatment systems, but are readily degraded by microbes. |

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| | Sorbitan alkylpolyethoxylate is a non-ionic surfactant prepared by reacting sorbitol, a sugar occurring naturally in fruits, with a carboxylic acid (often a fatty acid) and ethylene oxide. The type of carboxylic acid and the number of moles of ethylene oxide in the surfactant alters the properties of the surfactant. The identity of the carboxylic acid bound to sorbitol in Competitor® is not specified. The "Tween" and "Polysorbate" family of surfactants are representative members of the sorbitan alkylpolyethoxylate class of surfactants, and some of these compounds are used in foods, injectable and ingestible drugs, and personal care products. The USFDA has approved the use of several of the polysorbates as food additives (USFDA 2008).<br>**Dialkyl polyoxyethylene glycol (PEG)**: PEG is widely used in cosmetics, toothpastes, and drugs. Representative clinical uses of PEG and PEG derivatives include laxatives, skin creams, bowel irrigation, interferon alpha, and as a nerve repair agent.<br>All of the ingredients of Competitor® are either found in the diet or are commonly used in consumer or pharmaceutical products and are approved as food additives by the FDA because they exhibit low toxicity. Because of the use patterns, widespread exposure to these chemicals, both singly and in mixtures, is likely for the general population, simply from everyday exposure through food, drugs and cosmetics. Any additional exposure from coming into contact with treated vegetation at the park is likely to be substantially lower than exposure through direct ingestion in the diet and use of cosmetics and pharmaceuticals. The requirement of posting and notification of herbicide use also provides a warning for hikers to avoid the treatment areas, further reducing an already low probability of exposure from weed management activities.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 18 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, that the reports acknowledge that there are no studies on the effects of the glyphosate-Competitor mixture, but does not acknowledge that this information is necessary to evaluate possible toxic effects of the mixture. |
| | ***Response:*** Please see response to Comment #13. |
| 19 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, that the report makes the assumption that, because some mixtures of non-ionic surfactants with glyphosate do not result in increased skin absorption rate, the mixture of Competitor and glyphosate also do not result in an increased skin absorption rate. The effect of one chemical mixture cannot be expected to reflect the effects of a different mixture. |
| | ***Response:*** Skin absorption is a function of the compounds in the mixture. The rate of absorption of a chemical through the skin is governed by the diffusion coefficient of the chemical in the stratum corneum (the top layer of the skin), the dissolved effective concentration of the chemical in the mixture, the partition coefficient between the formulation and the stratum corneum, and the membrane thickness (Williams and Barry 2004). Several of these factors will change with a change in the composition of a mixture.<br>**I**n general, as noted under Comment #13, research studies have shown that non-ionic surfactants have less of an effect on the skin and, hence, absorption than anionic or cationic surfactants (Bakke 2007): An example of cationic surfactant is polyoxyethyleneamine (POEA), which is used in some of the formulations of Roundup® standardly available to the general public at hardware stores and is now considered to be a fairly toxic surfactant (SERA 2011a). While studies have not been conducted specifically on this non-ionic surfactant (Competitor®) and its chronic effects or effect on skin absorption, exposure to the compounds present in this surfactant is common through the diet, cosmetics, and pharmaceuticals.<br>In transdermal drug delivery (where these principles have been studied in great detail), the three components of Competitor® (ethyl oleate, sorbitan alkylpolyethoxylate, and dialkyl polyoxyethylene glycol (PEG) are typically used to enhance the permeability of non-polar substances (Pandey 2014, Pathan and Setty 2009, Roberts et al. 2008). In contrast, glyphosate isopropylamine (IPA) salt is a polar, hydrophilic substance. Chemical penetrants that are most effective at enhancing dermal |

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| | penetration of hydrophilic substances like glyphosate isopropylamine salt are N-methyl pyrrolidine, urea, DMSO, and surfactants with polar head groups such as sodium lauryl sulfate. These chemicals are not components of Competitor®. Thus, while the precise dermal absorption rates of the mixture of glyphosate isopropylamine salt, water, ethyl oleate, sorbitan alkylpolyethoxylate, and dialkyl polyoxyethylene glycol are not known, the combination of a polar, hydrophilic compound such as glyphosate isopropylamine salt with non-polar, non-ionic surfactants such as those in Competitor® would not be expected to significantly enhance dermal absorption.<br>The Reference Dose (RfD) is the U.S. Environmental Protection Agency's estimate of the maximum oral dose of a toxic substance that is likely to be without appreciable risk of deleterious effects during a lifetime. Risks to the general public, wildlife, and plants from accidental and non-accidental exposures are often expressed in hazard quotients (HQs), in which a HQ of 1 is considered the threshold level of concern. The HQs calculated for different exposure scenarios indicate that even a direct spray to bare skin would not exceed 4% of the RfD (assuming maximum skin absorption parameters), and non-accidental exposures from contacting treated vegetation are less than 1% of the RfD. Given that most dermal penetration enhancers provide a two to five-fold enhancement of absorption at most if they are working well, the likelihood of the Competitor®-glyphosate mixture exceeding or even coming close to exceeding the RfD is very small.<br>*-- With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 20 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, the report states that, for the surfactant to increase the absorption of another compound, it must affect the upper layer of skin, because, otherwise, there would be no change in absorption compared to the other compound alone. No proof exists that the combination of Competitor and glyphosate couldn't have its own effects on skin absorption and that Competitor doesn't increase skin absorption of the herbicide. |
| | ***Response:*** Please see response to Comment #19. |
| 21 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, that these reports rely on research studies that were incorrectly interpreted by the authors. The same defects in terms of misinterpretation of research reports that occur in the MMWD reports also apply to the Point Reyes Dune Restoration Plan being contemplated. |
| | ***Response:*** The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. The reports referred to by the Commenter were only used for background information on toxicity of the proposed surfactant, Competitor®, and the dye product, not for glyphosate or imazapyr. The SERA reports do quote some of the same references or studies as the Pesticide Research Institute (PRI) reports that are contested by this Commenter, but the SERA reports do not necessarily use all of these references as the basis for risk assessment criteria in the risk assessment worksheets, or the reports may use them, but for criteria that is not pertinent to this EA. |
| 22 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the glyphosate skin binding study conducted by Wester et al. (1991) in that it 1) used cadaver rather than living skin, 2) human skin absorption study used a different surfactant, 3) Rhesus monkey study used a different surfactant; 4) Rhesus monkey study involved washing off with soap and water 12 hours after exposure to Roundup with integrated POEA. |
| | ***Response***: The EA principally relies on the risk assessment reports prepared by Syracuse Environmental Research Associates (SERA) in 2011 for the U.S. Forest Service (USFS) for evaluation of potential impacts to the ecosystem and human health and safety from use of herbicide during dune restoration. The SERA (2011a) risk assessment provides several estimates of dermal |

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| | absorption for glyphosate -- one through a Quantitative Structure-Activity Relationship (QSAR) and consideration of physical properties; and the other by evaluation of studies in humans and other primates. The QSAR method provides a first-order dermal absorption rate (ka) ranging from 0.000086 to 0.0033 per hour, and the laboratory studies provide values ranging from 0.00041 to 0.001 per hour. In order to be protective, the USFS selected the higher dermal absorption estimates to provide a worst-case estimate of exposure.<br>In a subsequent meta-analysis of worker biomonitoring studies released in 2014 (USFS/SERA 2014), the USFS determined a first-order dermal absorption rate range between 0.0002 and 0.00045 per hour based on actual worker exposures. The values from these studies were based on measured urinary excretion of absorbed glyphosate and are within an order of magnitude of the dermal absorption rates from the laboratory studies. In fact, higher dermal absorption is observed in the laboratory studies than in actual human studies by an order of magnitude. Therefore, in this case, the cadaver skin and Rhesus monkey experiments provide a more protective measure of dermal absorption compared to the worker biomonitoring studies from actual human exposure. The effect of a different surfactant from the one used in the studies will likely alter the dermal absorption as the Commenter suggests, but it is unlikely to modify the dermal absorption rate sufficiently to exceed the RfD from even the direct spray exposure scenario. (The Reference Dose is the USEPA's estimate of the maximum oral dose of a toxic substance that is likely to be without appreciable risk of deleterious effects during a lifetime.) Please see response to Comment # 19 for more information.<br>-- *With assistance from Dr. Susan Kegley at Pesticide Research Institute* |
| 23 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the study involving *in vitro* (cell culture) percutaneous absorption of glyphosate and Malathion from cotton fabric onto skin study conducted by Wester et al. (1996) -- 1) used cadaver rather than living skin; 2) glyphosate was not mixed with surfactant; 3) reports ignored fact that, when sheets with dried glyphosate were re-wetted, glyphosate absorption increased 360%. |
| | ***Response:*** Please see response to Comment #22. |
| 24 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the study conducted by Curwin et al. (2007a). The study 1) evaluated subjects exposed to any one of six (6) different pesticides; 2) used a different surfactant that would be expected to have differences in skin absorption properties; and 3) farmers assumably wore protective clothing and washed after treatment, whereas park visitors would not be expected to be doing the same. |
| | ***Response:*** The Curwin et al. (2007a) document referred to by the Commentor is not directly cited in the EA. It is cited -- along with a companion study (Curwin et al. 2007b; see Comment #25) -- in the risk assessment for glyphosate prepared by SERA (2011a), which is used as the principal risk assessment source for the EA. In the SERA (2011a) risk assessment prepared for USFS, the Curwin et al. (2007a) study is discussed as part of a section discussing the likelihood and magnitude of exposure for the general public (p. 93 in SERA 2011a). The report notes that, "based on the peak concentrations of glyphosate in urine, the highest estimated dose to an individual is 0.00034 mg/kg bw (Curwin et al. 2007b *in* SERA 2011a)." However, the estimates from this study or studies principally authored by Curwin are not used in the USFS risks assessment worksheets characterizing the potential magnitude of public exposure. As described in SERA (2011a), "much higher non-accidental, daily doses are estimated in this Forest Service risk assessment i.e., up to 1.35 mg/kg bw for acute exposures and up to 0.74 mg/kg bw/day for longer-term exposures. It is usual for Forest Service risk assessments to estimate much higher doses for members of the general public than are typically estimated from dietary surveys such as those used by Harris and Gaston (2004) and U.S. EPA/OPP (1993b)." |
| 25 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the study conducted by Curwin et al. (2007b). The study 1) used a different surfactant that would be |

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| | expected to have differences in skin absorption properties; and 2) farmers wore protective clothing and washed after treatment, whereas park visitors would not be expected to be doing the same. |
| | ***Response:*** See Response to Comment #24. |
| 26 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the study conducted by Jauhiainen et al. (1991). The study 1) used a different surfactant with then expected differences in skin absorption properties; and 2) forestry workers wore protective clothing and washed after treatment, whereas park visitors would not be expected to be doing the same. |
| | ***Response:*** The Jauhianinen et al. (1991) study is not directly cited in the EA. It is cited by in the risk assessment for glyphosate prepared by SERA (2011a), which is used as the principal risk assessment source for the EA. SERA (2011a) used this study as a basis for calculating worker exposure, not general public exposure. The EA does not address worker exposure, only public exposure. Worker safety concerns and exposure minimization procedures are analyzed through other avenues, including a Job Hazard Analysis (JHA) and, for contractors, Accident Prevention Plans. (Results from this study were not used to estimate rates of worker exposure in the USFS Risk Assessment worksheets; higher rates were used (SERA 2011(a))). |
| 27 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the study conducted by Lavy et al. (1992). The study 1) used a different surfactant with then expected differences in skin absorption properties; and 2) forestry workers wore protective clothing and washed after treatment, whereas park visitors would not be expected to be doing the same. |
| | ***Response:*** The Lavy et al. (1992) study is not directly cited in the EA. It is cited by in the risk assessment for glyphosate prepared by SERA (2011a), which is used as the principal risk assessment source for the EA. SERA (2011a) used this study as a basis for calculating worker exposure, not general public exposure. The EA does not address worker exposure, only public exposure. Worker safety concerns and exposure minimization procedures are analyzed through other avenues, including a Job Hazard Analysis (JHA) and, for contractors, Accident Prevention Plans. (Results from this study were not used to estimate rates of worker exposure in the USFS Risk Assessment worksheets; higher rates were used (SERA 2011(a))). |
| 28 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the study (Ref 73 - No citation provided). The study 1) used a different surfactant with then expected differences in skin absorption properties; and 2) forestry workers wore protective clothing and washed after treatment, whereas park visitors would not be expected to be doing the same. |
| | ***Response:*** The Reference 73 cited by the Commenter is, "Cowell JE, Steinmetz JR. 1990. Assessment of forest worker exposures to glyphosate during backpack foliar applications of Roundup herbicide. Monsanto Report No. MSL-9656." The reference number refers to the fact that it is a citation that was used in the MMWD WPHIP. However, the Cowell and Steinmetz (1990) study is not cited in the EA or in the risk assessment for glyphosate prepared by SERA (2011a), which is used as the principal risk assessment source for the EA. |
| 29 | There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal and that were prepared in support of the MMWD WPHIP -- specifically, with regards to the studies conducted by the Farm Family Exposure Study, specifically References 74 and 75. The study 1) used a different surfactant with then expected differences in skin absorption properties; and 2) failed to distinguish between degrees of protection, but averaged results. Park visitors would not be expected to be wearing protection. |
| | ***Response:*** Reference 74 cited by the Commenter is, "Baker BA, Alexander BH, Mandel JS, et al. 2005. Farm Family Exposure Study: methods and recruitment practices for a biomonitoring study of pesticide exposure. J Expo Anal Environ Epid 2(5): 802." Reference 75 is, "The Farm Family Exposure Study. Bayer, Dow Agrosciences, DuPont, FMC, Monsanto, Syngenta, and the American |

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| | Chemistry Council. http://www.farmfamilyexposure.org." The reference numbers refer to the fact that both of these studies were cited in the MMWD WPHIP. However, neither of these studies (References 74 or 75) is directly cited in the EA. While Baker et al. (2005) is listed in the citation section of the risk assessment for glyphosate prepared by SERA (2011a), which is used as the principal risk assessment source for the EA, it does not appear to be discussed in the risk assessment, nor is it used as the basis for analyzing exposure risk of the public to herbicide. A related study, "Acquavella JF; Alexander BH; Mandel JS; Gustin C; Baker B; Chapman P; Bleeke M. 2004. Glyphosate Biomonitoring for Farmers and Their Families: Results from the Farm Family Exposure Study. Environ Health Perspect. 112(3):321-6" is discussed in the SERA (2011a) document and addresses the same study -- the Farm Family Exposure Study. In the SERA (2011a) report, the Farm Family Exposure Study was discussed in the context of analyzing worker exposure, not general public exposure. (Results from this study were not used to estimate rates of worker exposure in the USFS Risk Assessment worksheets; higher rates were used (SERA 2011(a))). The EA does not address worker exposure, only public exposure. Worker safety concerns and exposure minimization procedures are analyzed through other avenues, including a Job Hazard Analysis (JHA) and, for contractors, Accident Prevention Plans. |
| 30 | Although the EA notes that the glyphosate being used does not incorporate a surfactant that is known to increase the toxicity of glyphosate, it does not acknowledge that there is no research indicating whether the surfactant planned for use will have the same effect of increasing toxicity of glyphosate. |
| | ***Response:*** Please see response to Comment #13. |
| 32 | While the EA provides a maximum acreage and maximum volume per acre per year for glyphosate, the EA fails to quantify the number of years that these amounts would be applied per acre, therefore, the maximum amount of glyphosate cannot be known from the EA as it currently exists. |
| | ***Response:*** In Chapter 2, on p. 49, it notes that full re-treatment for European beachgrass would be expected to take two to three additional spray events after the initial treatment and that re-treatment for iceplant would be conducted manually. Due to special status species constraints, treatment occurs one time annually in the fall or spring (p. 55; Chapter 2). Therefore, treatment of at least European beachgrass would be expected to extend up to three years after the initial treatment fpr a total of four years. Based on past experience, however, the total amount of European beachgrass remaining to be treated in subsequent years should be greatly reduced, with only 5- 8% remaining untreated (or undertreated) after the initial spraying. |
| 40 | The very idea of removing the non-native vegetation through chemical means is counter productive to the need of allowing dunes to move as with nature. Dune stability is dependent upon particle aggregation due to microorganisms secretion/growth. Chemicals, in particular glyphosate, kill microorganisms through chelation and interference in the shikimate chemical pathway. |
| | ***Response:*** This potential impact is discussed in Chapter 3, p. 319, under "Natural Physical Processes and Soils." Based on the risk assessment reports prepared by SERA, glyphosate has adversely impacted microorganisms in laboratory settings, but results from field studies have been more equivocal (SERA 2011a). The potential for longer-term effects on soil microorganisms from imazapyr seems possible where imazapyr persists in soils, although this effect has not been demonstrated in field studies (SERA 2011b). The SERA reports concluded that glyphosate and imazapyr do not pose a clear hazard to soil microorganisms (SERA 2011a,b), particularly at the application rates proposed for the Preferred Alternative in the EA. |
| 45 | Consideration of the toxicologic effects of the combined glyphosate-Competitor mixture should not be considered without actually testing the effects of the proposed mixture on skin absorption of glyphosate. |
| | ***Response:*** Please see responses to Comment #13 and #19. |
| 48 | The EA fails to discuss that herbicide will be sprayed onto the sand surrounding the individual beach plants. It also does not address the environmental and health effects of migration of sand and |

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| | beachgrass detritus, laden with recently sprayed glyphosate and imazapyr, on humans and all of the endangered species of concern considered in the EA. |
| | ***Response:*** The EA discusses the potential impacts of wind erosion in several locations in Chapter 4, Environmental Consequences, including pp. 192 and 335. The potential for impacts from wind erosion depends on several factors, including application rate of the herbicide, depth of its incorporation into the soil, the amount of time the herbicide persists in the soil, wind speed, and topographic and surface conditions of the soil (SERA 2011a). An earlier USFS risk assessment (SERA 2003 *in* NPS 2009) calculated that for a reasonable worst case scenario – a sandy surface with high winds and arid conditions – only approximately 0.54% of the glyphosate applied would be lost to wind erosion. Use of chemical control in treating European beachgrass and iceplant substantially reduces the potential for wind erosion, because, even after treatment, the European beachgrass and iceplant do not immediately decompose, and their roots and rhizomes hold the soils in place while other plants establish. Beachgrass is notoriously very slow to decompose, therefore, it is extremely unlikely that detritus "laden with recently sprayed" herbicide would be available for wind transport to other locations: Standing dead beachgrass stalks remains for up to approximately two to three years after treatment, breaking down very gradually. Risks to the general public, wildlife, and plants from accidental and non-accidental exposures are often expressed in hazard quotients (HQs), in which a HQ of 1 is considered the threshold level of concern. Based on the USFS risk assessment worksheets, which focus only on potential impacts to sensitive and tolerant plant species, HQs range from 0.0001 to 0.4, well below the threshold level of concern (1.0). Wind erosion does not appear to be a likely route of exposure of herbicide to either Species of Special Concern or humans. The EA addressed the impacts of wind erosion for Vegetation and Wetlands and Water Resources. |
| 52 | The EA fails to adequately address the effects of the proposed actions on other threatened and endangered species that could be adversely affected, including Sonoma spineflower. Effects of this species are not analyzed, because the EA states that the species' populations are more than 0.5 miles away, but sand blowing inland could affect this species. Why are effects on frogs, which is not expected to be proximate in dune areas, analyzed and not those on Sonoma spineflower? |
| | ***Response***: There are very few populations of Sonoma spineflower (*Chorizanthe valida*), and all of them occur in the park. The main or "wild" population of this species occurs in the northern portion of G Ranch and would not be impacted by activities proposed in this EA, the nearest action of which is at AT&T, approximately 1 mile away to the northeast. Sonoma spineflower has also been introduced at F Ranch, with the nearest colony being approximately 1 mile south of the AT&T. Lastly, this species was also reintroduced at two sites in 2011 in the eastern section of AT&T, which are approximately 0.7 miles south of the AT&T project area. These sites are not considered self-sustaining or successful at this time.<br>The effects of blowing sand would be greatest under Alternative D with use of mechanical removal, although some sand may be remobilized under Alternative C. The proposed project would implement a number of impact avoidance and minimization measures to prevent sand from remobilizing into adjacent lands, including phasing of backdune restoration efforts, revegetation of backdune areas, tapering of grading efforts, and other measures. However, even largely without these measures, results of monitoring sand movement at Abbotts shows that almost all of the sand remobilized by mechanical removal deposited within the larger project area or directly inland of the dunes, although finer sand particles could be transported further. Wind direction also plays a role. During the course of a year, the prevailing wind direction in this area of the Point Reyes Peninsula tends to be from the northwest (>36% of the time), but the winds can switch direction, with winds blowing from the southeast approximately 21% of the time (WRCC; Pt Reyes RCA data). Winds very rarely blow from the southwest in a northeasterly direction (~8% of the time; WRCC; Pt Reyes RCA data), which is the wind direction that would have the most potential to affect the AT&T Spineflower colonies. Therefore, in terms of sand burial, populations or colonies of Sonoma spineflower that are more than 0.7 miles away would not be expected to be impacted by sand burial, and the proposed project at AT&T and other project areas would not have an effect on Sonoma spineflower. Please see Chapter 4, Environmental Consequences, Natural Physical Processes and Soils, for more information. This is |

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| | information has been amended in the EA through incorporation into the Errata section of Chapter 4, Environmental Consequences. |
| 53 | While the EA recognizes that a different EA analysis must be performed for its wilderness, the EA fails to discuss and perform that analysis properly pursuant to Section 6.3.5 of NPS Management Policies. It fails to determine which one of the possible actions will have the minimum impact on the wilderness environment. |
| | ***Response:*** As with other regulatory permitting and consultations required for project implementation, the Minimum Tool/Minimum Requirements analysis is conducted subsequent to release of the FONSI, which describes the Selected Action. Potential impacts on wilderness are addressed in Chapter 4, Environmental Consequences, under "Wilderness." The range of impacts on wilderness is also summarized in Table 2 in Chapter 2 on p. 84. Implementation of Alternative D would have the highest level of adverse impacts over the short-term, but, over the long term, Alternative A (No Action Alternative) would have the greatest potential to adversely impact wilderness through the unabated spread of non-native invasive species. |
| 54 | The EA fails to acknowledge and discuss the requirements of Section 6.3.6.2 of NPS Management Policies, which do not allow the proposed actions in the wilderness areas unless the NPS possesses the knowledge and tools to accomplish clearly articulated goals. Many of the actions contemplated by the EA are based upon inadequate knowledge of the actual effects that will result and on experimental invasives removal methods. |
| | ***Response:*** The approaches proposed in the EA have been used at other coastal dune systems in California or elsewhere. The EA provides a detailed discussion of previous projects aimed at the removal of European beachgrass and iceplant on pp. 21-29. None of these approaches could be considered experimental. Because of projects conducted at the Seashore and at other dune systems, the knowledge base for evaluating potential impacts of the proposed action is quite high. |
| 55 | While the EA recognizes that restoration could result in more sand blowing inland than presently occurs and that this blowing sand could fill wetlands, the EA fails to adequately evaluate the environmental effects of the wetland behind Limantour Beach being filled by blown sand. |
| | ***Response:*** The EA discusses the potential impacts of sand remobilization under Water Resources in Chapter 4, Environmental Consequences, starting on p. 325. The highest potential for sand remobilization would be under Alternative D, which uses mechanical removal as the primary restoration approach, although some potential exists under Alternatives C and, to a much lesser degree, Alternative B. Under Long-Term Effects of Alternative D, the EA characterizes the potential for negligible to moderate adverse impacts at Limantour and some of the other project areas, with the potential for more than 0.25 acres of wetland loss due to sand remobilization. The potential for impacts at AT&T was considered greater than at Limantour or the other project areas (possibly >1 acre), because more wetlands are present within the dune system itself, and the dunes are larger with more accumulated sands. Predominant wind direction must be taken into account in evaluating the potential for impacts from remobilized sand: the primary wind direction at Limantour is from the northwest-west, therefore winds would be blowing remobilized sand away/towards the wetlands behind Limantour Beach (Limantour Marsh/Limantour Pond; WRCC, Pt Reyes Lighthouse). At AT&T, these potential impacts were proposed to be mitigated by selective retention of some European beachgrass-dominated wetland buffers; regrading of steep slopes; and active revegetation. Based on this comment, the NPS is proposing to extend these mitigation measures to the wetlands behind Limantour Beach (Limantour Marsh/Limantour Pond). . This is information has been amended in the EA through incorporation into the Errata section of Chapter 4, Environmental Consequences. |
| 46 | While the EA concedes that some wetland loss may occur as a result of the proposed actions, it fails to discuss how the NPS must and will respond to these losses. Under Section 4.6.5 of the NPS Management Policies, the NPS is required to create 1 acre of wetland for every 1 acre of wetlands destroyed by a NPS action. How and where will the NPS create the compensating wetlands? |
| | ***Response:*** Impacts to wetlands are discussed in Chapter 4, Environmental Consequences, Water |

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| | Resources, starting on p. 325. Were wetlands to be lost as part of this action, the loss would result from indirect rather than direct impacts due to remobilization of accumulated sands in restored dunes. For this reason, this type of loss may not be subject to oversight by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act, as it only regulates direct impacts from fill and, in certain circumstances, dredging. Based on NPS Management Policies, mitigation may be required if the proposed restoration project has the potential to have either direct or indirect impacts on more than 0.25 acre of wetlands. Other agencies such as California Coastal Commission and Regional Water Quality Control Board may also regulate indirect wetland impacts and require mitigation, although the mitigation requirement may be different than that for direct wetland fills or dredging activities. The NPS has found that mitigation planning for wetlands impacts is typically an activity that needs to be worked out with several agencies to reach mutual agreement and is, therefore, more efficiently conducted with permitting/consultation phase of environmental compliance, which occurs subsequent to the approval of the FONSI. The proposed projects would need to secure regulatory approval of both the proposed restoration and mitigation plan before any project could proceed. It should be noted that, under the Selected Action in the FONSI, mitigation may not be necessary due to the proposed implementation of a number of impact avoidance and minimization measures. . This is information has been amended in the EA through incorporation into the Errata section of Chapter 4, Environmental Consequences. |
| 71 | Herbicides pose health risk for children as they drift into water. |
| | ***Response:*** As discussed in Chapter 2, Alternatives, on p. 58 and 60, the NPS would maintain a 25-foot buffer between spray activities and wetlands and waters. The NPS would also implement a number of impact avoidance and mitigation measures to minimize drift, including use of a backpack sprayer with a calibrated nozzle to direct spray, cessation of spraying when average wind speed at plant level exceeds 10 mph or when winds gust frequently above 10 mph. Also, there would be no spraying during heavy fog conditions. Based on the USFS risk assessment worksheets developed by SERA (2011a), application of the 4.0 pounds a.e./acre of glyphosate proposed to be applied under this project using a backpack sprayer could result in drift of 0.8% (0.033 lbs a.e./acre) of the applied solution within 25 feet of the application area. For imazapyr, the corresponding percentage from the USFS risk assessment worksheets at an application rate of 1.0 pound a.e./acre would be 0.008 lbs a.e./acre. For glyphosate, this would equate to approximately 0.0037 mg/L based on USFS risk assessment worksheets. For non-accidental acute exposures, which includes drift from herbicide application, the upper end of the exposure range for a reproductive woman -- considered one of the more sensitive receptors – swimming in waters for 1 hour would be 0.00000055 mg kg/event. The upper end of the exposure range for a child – another sensitive receptor -- consuming waters would be 0.037 mg kg/event. Risks to the general public, wildlife, and plants from accidental and non-accidental exposures are often expressed in hazard quotients (HQs), in which a HQ of 1 is considered the threshold level of concern. The corresponding HQs for non-accidental acute exposures for a woman swimming in herbicide drift-affected waters would be 0.0000003 and for a child consuming water would be 0.02, both of which are well below the threshold level of 1. The HQs for the same situation with imazapyr are all even lower than those for glyphosate. The only instances in which HQs approach or exceed the level of concern are for 1) consumption of contaminated vegetation shortly after glyphosate application (HQ >1) and consumption of contaminated water after imazapyr accidentally spilled into pond (HQs range between 0.2 and 5.0). Sprayed areas are posted closed to the public for at least 24 hours after a spray event, and consumption of beachgrass or iceplant by the public would seem very unlikely regardless. Also, accidental spills into a pond are unlikely as well, because of the 25-foot buffer between spray applications and any wetlands or waters. This is information has been amended in the EA through incorporation into the Errata section of Chapter 4, Environmental Consequences. |
| 73 | Roundup is lethal to birds, butterflies, bees, and other creatures. |
| | ***Response:*** The EA conducts a very detailed analysis of potential impacts to wildlife from application of herbicide. The analysis is too complicated to entirely replicate here, but the Commenters are |

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| | directed to Chapter 4, Environmental Consequences, Special of Special Concern and Wildlife sections starting on p. 200 and continuing through p. 307. In summary, as listed in Table 2 in Chapter 2, Alternatives (EA p. 79), most potential implementation-related impacts under Alternative C to wildlife species, both listed and otherwise, were characterized at most as negligible to minor adverse. Possible moderate impacts to California red-legged frog could result from mechanical removal in wetland buffer areas, although impact avoidance and minimization measures would be instituted at AT&T and possibly other dune swale or adjacent wetlands. Application of herbicide could cause temporary minor impacts to terrestrial invertebrates that forage of European beachgrass, iceplant, or non-target species within beachgrass or iceplant stands/patches. Small mammals may suffer temporary minor to possibly moderate adverse impacts from possible prescribed burning or pre- or post-treatment mowing activities. Small mammals sometimes eat seeds of European beachgrass, but not the foliage (Pitts and Barbour 1979). European beachgrass primarily reproduces through vegetative means (e.g., spread of rhizomes) and is not a prolific flowering/seeding species. All of these potential implementation-related impacts would be short-term in nature. |
| 74 | Chemicals from herbicide spraying will run-off into waters of Estero, Limantour, and Millterton Head, causing damage to wildlife. |
| | ***Response:*** Please see response to Comment #73. Impact analyses took into account the potential for herbicide drift or accidental spills into waters and effects on aquatic species or species that use waters. It should be noted that no spraying would occur at or near Millerton Head under this proposal. Based on the USFS risk assessment worksheets, which use the USEPA's AgDRIFT model to estimate drift (SERA 2011a), application of the proposed concentrations could result in drift of only 0.8% of the applied solution within 25 feet of the application area, which would correspond to 0.033 lbs a.e./acre for glyphosate and 0.008 lbs a.e./acre. Risks to the general public, wildlife, and plants from accidental and non-accidental exposures are often expressed in hazard quotients (HQs), in which a HQ of 1 is considered the threshold level of concern. Based on USFS risk assessment worksheets for backpack-applied glyphosate, the potential HQs for either accidental (spill of herbicide into waters) or non-accidental (spray drift) acute exposures into water bodies such as Estero de Limantour or Drakes Estero would only generally approach the level of concern (1.0) for sensitive fish and amphibian species (0.9 to 1.1), with the rest of the HQs below and mostly well below 0.6. Based on USFS risk assessment worksheets for imazapyr, the potential HQs for either accidental (spill of herbicide into waters) or non-accidental (spray drift) acute exposures into water bodies such as Estero de Limantour or Drakes Estero would only exceed the level of concern (1.0) for macrophytes (e.g., eelgrass), with HQs ranging from 2 - 7. HQs for aquatic species were almost all well below 0.2. Again, the NPS would implement impact avoidance and minimization measures that would prevent accidental spills into adjacent waters and greatly minimize the potential for drift such as maintaining a 25-foot buffer between wetlands and spray activities; use of backpack sprayers with calibrated nozzles; and cessation of spraying when average wind speeds at plant level exceed 10 mph, or when winds frequently gust more than 10 mph, or when moderate to heavy fog conditions exist. Therefore, potential impacts to wildlife species in these water bodies were characterized as at most minor and short-term. This is information has been amended in the EA through incorporation into the Errata section of Chapter 4, Environmental Consequences. |
| 77 | Glyphosate can get into groundwater, and use of spot spraying cannot eliminate this. |
| | ***Response:*** This issue is addressed in relation to the Preferred Alternatives in Chapter 4, Environmental Consequences, Water Resources, starting on p. 336. The impact analysis notes that herbicides can affect groundwater through percolation and that groundwater infiltration rates depend on soil adsorption rates, depth to groundwater, and fate of chemicals once in soil or groundwater. The use of spot spraying minimizes the volume of herbicide applied, but it does not eliminate the potential for percolation. In predominantly sand soils, glyphosate may penetrate to a depth of 8- 18 inches, depending on rainfall rates (SERA 2011a). While soil adsorption characteristics are more complex, imazapyr typically remains within the top 20 inches of the soil surface (USFS 2007). Based on this information, imazapyr would be more likely to percolate downwards than glyphosate, but the |

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| | depth of percolation is considerably slightly shallower than the groundwater table in treatment areas, which is probably typically deeper than 2- to 3 feet below the soil surface. Also, the groundwater table within dunes typically flows in an oceanward direction rather than an inland direction, which would minimize potential for impacts to adjacent dune swale and freshwater marsh wetlands, water bodies such as Drakes or Estero de Limantour, and groundwater resources in the park. |
| 41 | Partially stabilized dunes following herbicide use will not have the same ecosystem role as those restored mechanically. Davis Property and Limantour could be restored (mechanically) without having or with having only minimal impacts on adjacent ranchlands. |
| | ***Response:*** This issue is discussed for the Preferred Alternative in Chapter 4, Environmental Consequences, Natural Physical Processes and Soils, starting on p. 314. The impact analysis acknowledges that Alternative C "would appear to have less potential for restoring natural dune physical processes than mechanical removal," characterizing benefits as ranging from negligible to minor. In addition to having potential impacts on adjacent ranchlands, removal of invasives using mechanical means does not necessarily "re-set" the dune evolutionary process, as "flipping" of the soil horizons to bury European beachgrass represents a very unnatural step in attempts to make dunes more natural. This action buries not only invasive plants, but all of the soil horizons containing nutrients, minerals, soil biota, and other important constituents of "topsoil" layers. In addition to high winds and low rainfall, vegetation reestablishment within mechanically restored dunes may be precluded partially by the low-nutrient capacity of the soils. Therefore, mechanical restoration may not necessarily represent an optimal evolutionary jumping-off point for dunes. |
| **Process** | |
| 47 | The NPS web page improperly confused members of the public and caused many members of the public to send public comments to the wrong location. Public confusion resulted and public comments were lost. |
| | ***Response:*** Some members of the public interpreted the information on the PEPC web page as directions to send comments via email to Lorraine Parsons rather than entering the comments directly into the online PEPC database itself. After a complaint was submitted, the NPS acknowledged that there was some ambiguity in the wording of the information on PEPC and decided to accept all email comments sent to Lorraine Parsons by February 9, 2015. No public comments were lost or deemed invalid due to the delivery method. |
| 79 | The public comment period for the EA was too short. It should have been longer than 30 days. |
| | ***Response:*** Based on the NPS Director's Order (DO) 12 NEPA handbook, "the EA is to be sent out for review by the interested and affected public, including affected agencies and tribes, for a minimum of 30 days." The availability of the EA should be "made broadly known to the public," including being published in the local newspaper of record, posted on the NPS web site, or noticed in the Federal Register. "The notice should appear in a visible location in the paper (i.e., not in the legal notices section). This action, coupled with public distribution through mailing, begins the 30-day review period (DO 12)." A letter announcing availability was sent to 302 people on January 9, 2015, with directions for review and commenting. The *Point Reyes Light* newspaper published an article on the project on January 15, 2015. The *Marin Independent Journal* ran a front-page story on Saturday, January 17, 2015, followed by publishing of an editorial cartoon the following weekend. The West Marin Citizen published a story on January 15, 2015, an opinion piece on January 22, 2015, and a letter-to-the-editor on February 5, 2015, with specific information provided on how to comment and the comment period deadline. |
| 80 | A public meeting should have been held. |
| | ***Response***: Based on the NPS's Director Order (DO) 12 NEPA handbook, "workshops, meetings, "hearings, or other opportunities to give oral input on an NPS EA are not required, but they may be appropriate if there is large-scale interest in a proposal. If such a meeting is scheduled, it should take place no sooner than 15 days from the time it is advertised or the notice of availability of the EA is |

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| | published in the local paper of record, whichever is later." That is, the date of a public meeting needs to be set prior to release of the letter announcing that the EA is available for public review. Decisions on whether to hold public meetings are often made on the basis of prior public interest in a topic. In 2009, a public meeting was held during the release period for the Abbotts Lagoon Coastal Dune Restoration Project EA: this project incorporated not only an alternative that primarily would have used herbicide to control invasive non-native plant species, but clearly stipulated that spot-spraying of herbicide would be used for follow-up treatment following initial removal of European beachgrass using mechanical means, which was the preferred alternative identified in the EA. At that meeting, which was well-noticed in local papers, approximately three (3) members of the public attended, including two reporters from local papers. |
| 69 | A Coastal Act consistency determination will need to be prepared for the proposed coastal dune restoration program and submitted to the California Coastal Commission. |
| | ***Response***: The NPS acknowledged this requirement in the document in Chapter 5 on p. 440. |
| 39 | The Citation index is extremely difficult to use when investigating assertions. In a normal paper, there would be at least numbers to which references apply. |
| | ***Response***: There are many different types of citation systems in use. These include (1) notes and bibliography and (2) author-date (Chicago Manual of Style 2010). The author-date system has long been used by those in the physical, natural, and social sciences (Chicago Manual of Style 2010). In this system, sources are briefly cited in the text, usually in parentheses, by author's last name and date of publication. The short citations are amplified in a list of references, where full bibliographic information is provided. In its NEPA documents and reports, the Seashore typically uses the author-date system. |
| **Other** | |
| 35 | The EA contains a typographical error on p. 296: "This risk assessment indicated that no direct effects wee expected." |
| | ***Response***: The error is acknowledged and will be corrected in the Errata of the EA for Chapter 4. |
| 36 | The EA needs to update list of elected officials on p. 443. and the organization distribution list on p. 444 |
| | ***Response***: The error is acknowledged and will be corrected and will be corrected in the Errata of the EA for Chapter 5. |
| 59 | The Commenter read article in Marin IJ, dated 1/18/2015. The herbicide to be used was not identified. |
| | ***Response***: The NPS has no control over what is or is not printed in newspapers or journals. The herbicide to be used is identified in the EA that was released by the NPS for public review. |
| 63 | Does the Dune EA include plans for deconstructing the main residence at Davis and the parcel in general? What is the cleanup plan for all the debris (mostly Navy and Coast Guard) adjacent to the main residence and the bluffs? |
| | ***Response***: The Dune EA does not incorporate any plans for the Davis Property other than the removal of non-native invasive species. The main residence and garage at Davis was deconstructed in mid-March 2015, because these structures had become a safety and environmental hazard due to nearby cliff erosion. According to Paul Engel, the park's archaeologist, the park plans to preserve in place and maintain the Naval Radio Compass Station building on an adjacent hill. There are no immediate plans to remove any other structures or to remove the debris, some of which has cultural resource significance. |

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**Correspondence ID:** 1 **Project:** 44082 **Document:** 62179
**Address:** Woodacre,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,19,2015 15:34:04
**Correspondence Type:** Web Form
**Correspondence:** I strongly support option C (the careful use of chemicals, etc) in order to treat the largest possible area of dunes. It is crucial to our wildlife to restore this landscape as quickly as possible. Doing small areas by more expensive methods will not result in the necessary eradication or ongoing control of the invasive target species for this dune system.

My only concern is that enough funds be kept aside to pay for follow up removal of resprouts. On a recent visit to Abbott's Lagoon we were excited to see the resurgence of native plants where pilot projects removed invasives a few years ago. However, my husband and I found ice plant resprouts along the west shore of the far lagoon (many of which we pulled) and dune grass resprouts in the area west of the bridge between lagoons and north of the western lagoon. We could not hand pull these as they are rooted too deeply. Soon they will spread and retake these dunes and again crowd out the lupines and other native flora. Unless funds are set aside and sites are checked annually any amount of work will ultimately be in vain and a waste of time and money.

Annual follow up control (for many years if not indefinitely) must be part of any responsible plan for restoration of these important dune communities.

Thank you.

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**Correspondence ID:** 2 **Project:** 44082 **Document:** 62179
**Address:** Corte Madera,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,19,2015 18:07:21
**Correspondence Type:** Web Form
**Correspondence:** Under no circumstances should herbicides ever be sprayed on these beaches that are an absolute treasure. If money is a problem, just restore 60 acres with mechanical means instead of all 600, with the use of herbicides.

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**Correspondence ID:** 3 **Project:** 44082 **Document:** 62179
**Address:** Oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,22,2015 18:38:25
**Correspondence Type:** Web Form
**Correspondence:** Plan A, No Action, is the only plan that would not cause serious damage to the Point Reyes National Seashore ecosystem. "Restoration" is a misnomer. There is no way to restore the habitat to what it was before non-indigenous humans invaded it, even if you removed all human habitations and constructions, including roads-which, of course, is not part of the plan. Invasive humans have changed and damaged the environment far too much for restoration to be possible.

Any further attack on plants now only perpetuates the destructive practice of trying to manipulate nature to achieve self-interested goals set up by humans. Killing non-native plants also destroys habitat for many animals, including indigenous ones, killing them too. Every place that I've seen subjected to this kind of "restoration" project has been devastated. Even years later native species of birds and other animals who had adapted to the non-native plants are no longer there, there are less trees and other plants, and much less variety of any living thing.

Using herbicides/pesticides makes the destruction far worse, and this proposed plan names "chemical control" as the preferred method. That's a euphemism for using Imazapyr and Glyphosate, which are toxic chemicals, as all herbicides/pesticides are. There is abundant information available about the harm these manufactured chemicals do to all forms of life, including humans. They're biocides. They kill, they spread, they accumulate. Our environment is already so full of toxic chemicals that it makes no sense to add more.

Mechanical removal of plants would also be a toxic and destructive invasion of Point Reyes National Seashore area, because of the machinery used. Manual removal would still be habitat-destroying and unnecessary. Taxpayer money should not be spent on this project. Point Reyes National Seashore is designated as a protected area, a place where the natural environment can be respected and enjoyed, not a place to be further harmed by humans' projects.

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**Correspondence ID:** 4 **Project:** 44082 **Document:** 62179
**Address:** Oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,24,2015 16:14:36
**Correspondence Type:** Web Form
**Correspondence:** I would vote for A, except that I see that it still allows "previously permitted projects." My real vote is: leave the animals, plants, and land alone.

Hasn't enough damage has been done to Pt. Reyes already? The bulldozing in the endangered Snowy Plover habitat was horrific. And then the spraying, and now plans to do more devastation, with herbicide spraying being most likely since it's the cheapest. And why? What is worth terrorizing and poisoning the poor animals who live in and migrate to the Abbott's Lagoon area? Sometimes there are countless species of birds, with over a hundred white and brown pelican species at one time. Now river otters live there, as well as so many other species, such as bobcats, coyotes, weasels, badgers, red-legged frogs, voles, gophers, etc. Of course the poison will move into the food chain of animals.

It has been upsetting to know that all of this has been going on for years, but it's even worse to see the sign at the trailhead to Abbott's Lagoon, showing the enormous extent of the spraying, from the west side of the Lagoon right to the ocean, contaminating both land and water.

I'm curious if the project on the ranch side of the fence, just south of the boardwalk had anything to do with testing for herbicide spread? No one working on it would ever answer what they were testing, as if we were to believe they actually had no idea what they were doing - - or more likely were told to not tell anyone.

Why is there not an option for no more wasting of money to damage the environment and the animals who so desperately need this space to be left alone?

I will never believe that any herbicide is safe, after seeing a California newt dying a horrible death after crawling through an area sprayed with Glyphosate.

How could anyone believe any poisons are safe with the history of the pesticide industry's lies and manipulations? We know that Monsanto is an enormous corporation which has a history of poisoning the environment, humans, animals, and plants. They use their substantial economic power to prevent people from having the legal right to know if the food we are sold is contaminated with Monsanto's GMO products. They even bully farmers who refuse to buy their mutated seed and then sue them if their GMO seed lands on the farmers' fields. Why would anyone trust such a company or participate in adding to their fortune?

A close doctor friend worked for a business whose sole agenda was to prove that toxic and carcinogenic substances were actually safe. Their clients were companies which made money by putting toxic waste incinerators in heavily populated poor neighborhoods. Of course they had to comply with regulations, so they hired the business, with their degrees and "studies," to prove safety when the opposite was true. The polluter usually won the contract.

How can there ever be justification for using poisons when the result is chronic illness and cancer, for those exposed and for those subjected to the toxins from the factories where the poison is made? (The promoters of the toxins have no idea how long the the contamination remains. I can still smell the pesticide used at a friend's house for termites 40 years ago, which was likely the now-banned chlordane, and which was completely unnecessary since it's quite easy to eliminate termites safely. Could that be why my friend has had two separate rare, extremely invasive cancers?)

What is also ignored in "safety studies" is the cumulative effect of multiple poisons on animals, plants, and the environment. People are using toxic products that go down the drains to the bay and then ocean. Other toxic substances are being vented into the air, in spite of regulations. People have no idea how poisonous these many substances are when combined. Recently, there have been hundreds of water birds in the Bay Area found dead or dying, from an unknown substance. Aren't the animals and plants suffering enough to stop the adding of more toxins and more deaths and mutations? What could possibly justify this other than money or obsession?

It's bad enough that our local parks are heavily sprayed, including alongside and in the bay, for no reason, leaving ugly swaths of dead grass, when elsewhere, the grass is finally green after rain. Pt. Reyes seemed like a rare refuge in this polluted area.

Considering that most of Pt. Reyes is privately owned by ranchers whose cattle continue to destroy the environment, and who will continue to spread non-native seeds, this plan is impossible to accomplish. Those who work for the Seashore can't even keep the cattle from breaking through the fences where they damage the land and water, yet money is spent on this travesty?

Native animals have adapted and often choose non-native plants for food and shelter. The much-maligned Eucalyptus are chosen by raptors as a preferred tree to nest since they are high and protected, with open canopy so that the young eagles and hawks are less likely to die from injury when learning to fly. Monarch butterflies prefer roosting in them. Hummingbirds drink their nectar, etc. Yet, the myth that eucalyptus is not used by native animals continues. Do those involved in this project even know what the Snowy Plover and other native animals prefer in their habitat? (By the way, it is a rare relief to see the re-planting of Monterey Cypress and Eucalyptus at the Pierce Pt. Ranch, so thank you for this. It's a wonderful bird habitat.)

Every project I have seen that supposedly was to help specific species or the environment has done the opposite. I was a docent with Audubon to try to improve the Burrowing Owl habitat at Cesar Chavez Park in Berkeley. The first thing they did, under advice from "experts" at UC Berkeley, was to destroy the plant cover that the owls prefer and need. (Those of us who know the owls were horrified, and Audubon later apologized for this.) When I asked why they'd done this, the Audubon person in charge said something about removing "invasive" plants. When I asked why then had they cut all the Baccharis down, it became clear that she had no idea what was native and what wasn't, or that the park was full of millions of dollars in non-native landscaping that were never going to be removed.

Then, in the small habitat that Audubon cordoned off, a $100,000 "art project" included fence that still allowed in small dogs who attacked the owls and also a concrete platform with benches that was placed on one of the last two owls' burrows. (They return to the same burrow each year.) Then the remaining burrow was paved over for no apparent reason. As at Abbott's Lagoon, heavy machinery was involved in damaging this already fragile habitat. The final death blow seems to have come from an attempt to poison all the remaining native California Ground Squirrels, without any awareness that if there are no squirrels, there are no burrows, and therefore no owls.Some of us protested and stopped that plan, but something else has been done that greatly reduced the squirrel population. It was heart-breaking to no longer see these wonderful little owls close up each year in their same preferred burrows. Some of us used to lead tours to show people. I believe the owls would be there still if not for Audobon's interference and the reducing of the Ground Squirrel population.

Those of us who have seen this kind of devastation do not trust any agencies who are damaging the environment, whatever their reason. Another example is the plan to kill thousands of healthy trees in the East Bay hills on the pretext of fire prevention, ignoring that the result would be far more fires, ruined and poisoned parks along the entire East Bay hills, and uncountable native animal deaths do to the loss of habitat, damage from heavy machinery, and herbciding. People have not been notified to vote about changing our beautiful forest parks into barren grassland, and most have no idea that the majority of these parks are non-native trees. The project ignores that the "exotic" trees slated for killing include nearby Monterey area species who have greatly increased East Bay animal and plant diversity, compared to the native oak/bay woodlands, which are dying from disease. Better to have parched hillsides of non-native grass and poison hemlock than beautiful California and other magnificent exotic trees well-adapted to increasing drought. The project of course will get millions of dollars from FEMA, yet will cause landslides, fires, and environmental devastation. Re-planting trees is not part of the plan.

The fight to kill "invasive" species is a classic example of double standard because many park headquarters and all city, county, state, etc. plantings usually are with non-native plants

Isn't it bad enough that nativist fanatics already caused the destruction of one of the most magical and beautiful places at Pt. Reyes, which was the little lake near Limantour, a rare fresh water refuge along the coast. Great Egrets would nest and roost there, Kingfishers hunted, as well as many other birds. It was an important source of fresh water for so many animals, with so much bio-diversity. Even a mountain lion lived and ate near there. But the entire eco-system was simply destroyed. The trees and animals are gone, and the theoretical stream in its place was about an inch deep when I last looked. It was a wasteland. And why? Because it wasn't "natural"? The buildings and road are still there. The non-native humans and dogs are allowed. The war seems to be only against the native animals. Even if they replace some of this habitat, animals suffered and died.

Why don't the nativists stop being hypocritical with their double standards for themselves versus the native animals? If they so hate introduced plant species, why do they usually have a garden full of exotics, from roses to fruit trees to vegetable and herb gardens? Why do they allow non-native animals to terrorize and kill native animals? Why are they themselves still here?

Bev Jo

Another view of who is native: http://www.planetarianperspectives.net/?p=1042

This excellent blog explains more of what is wrong with the Pt. Reyes and similar plans:

http://milliontrees.me/

Native plant advocates believe their projects benefit the environment. We do not see the benefit they claim. This is what we see:
â€¢ Increasing use of toxic pesticides is required to kill non-native vegetation. These pesticides are inherently hazardous and their incompetent use makes them even more hazardous.
â€¢ The wildlife that lives in our open spaces is being poisoned by these pesticides and they are losing their homes and their sources of food.
â€¢ The results of these projects do not justify these dangerous practices. The projects often look more dead than alive.

Imazapyr disasters: http://milliontrees.me/2013/03/12/when-the-cure-is-worse-than-the-disease-incompetent-pesticide-use/

http://milliontrees.me/2014/02/25/american-corporations-prevent-the-regulation-of-pesticides/

Glyphosate: http://www.washingtonpost.com/national/health-science/roundup-is-tied-to-infertility-and-cancer-herbicides-maker-calls-it-safe/2013/04/29/ac86ced6-ae71-11e2-98ef-d1072ed3cc27_story.html

http://articles.mercola.com/sites/articles/archive/2013/06/09/monsanto-roundup-herbicide.aspx

http://www.scientificamerican.com/article/weed-whacking-herbicide-p/

http://www.greenmedinfo.com/blog/roundup-herbicide-125-times-more-toxic-regulators-say

http://milliontrees.me/2013/10/01/glyphosate-aka-roundup-is-damaging-the-soil/

http://milliontrees.me/2012/02/28/escalating-pesticide-use-by-the-unnatural-natural-areas-program/

http://www.naturescountrystore.com/roundup/

http://naturalsociety.com/still-eating-agent-orange/

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RoundUp " kills weeds because glyphosate (a salt compound) inhibits enzyme pathways, preventing plants from synthesizing amino acids necessary for growth. It basically stops plants from eating, so they die." It is probable that Monsanto and other companies who use this substance under other names besides RoundUp are now dumping more than 300 million pounds of this toxic poison into our soil annually. It's use has at least tripled since 1990.
http://naturalsociety.com/human-blood-round-ready/
Just try to escape from glyphosate (N-(phosphonomethyl)glycine) - the main ingredient in Round Up, Monsanto's best selling poison. It is utterly toxic, in the parts per trillion range. Even infinitesimally small amounts of this stuff can cause cancer, inhibit proper endocrine function, cause birth defects, and inflict infertility upon unsuspecting women.

The weed-killer has been found in people's blood in 18 different countries, but glyphosate isn't the only problem. The 'inactive' ingredients are just as harmful, making 'RoundUp Ready' chemicals a toxic blood-venom none of us can ignore.

For example, rats fed Monsanto's maize developed massive breast tumors in the first-ever lifetime feeding study published last year. Other recently published studies demonstrate glyphosate's toxicity to cell lines, aquatic life, food animals, and humans - such as damaging human embryo cells.
http://naturalsociety.com/human-blood-round-ready/#ixzz3PWcsBONk

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They (and other researchers before them) came to the determination that the mixtures of herbicide ingredients and metabolites are anywhere from 20 to 1,000 times more toxic than regulators believe, as the toxic potentials of these ingredients depended largely on their physiochemical environment.

http://naturalsociety.com/roundup-banned/#ixzz3PWdRi45F

http://wtfrly.com/2014/09/22/roundup-agent-orange-dr-oz-calls-out-epa-over-glyphosate-2-4-d-combo-herbicide-enlist-duo/#.VMCJJ5t16Xg

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**Correspondence ID:** 5 **Project:** 44082 **Document:** 62179
**Address:** oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,24,2015 16:23:44
**Correspondence Type:** Web Form
**Correspondence:** I would vote for A, except that I see that it still allows "previously permitted projects." My real vote is: leave the animals, plants, and land alone.

Hasn't enough damage has been done to Pt. Reyes already? The bulldozing in the endangered Snowy Plover habitat was horrific. And then the spraying, and now plans to do more devastation, with herbicide spraying being most likely since it's the cheapest. And why? What is worth terrorizing and poisoning the poor animals who live in and migrate to the Abbott's Lagoon area? Sometimes there are countless species of birds, with over a hundred white and brown pelican species at one time. Now river otters live there, as well as so many other species, such as bobcats, coyotes, weasels, badgers, red-legged frogs, voles, gophers, etc. Of course the poison will move into the food chain of animals.

It has been upsetting to know that all of this has been going on for years, but it's even worse to see the sign at the trailhead to Abbott's Lagoon, showing the enormous extent of the spraying, from the west side of the Lagoon right to the ocean, contaminating both land and water.

I'm curious if the project on the ranch side of the fence, just south of the boardwalk had anything to do with testing for herbicide spread? No one working on it would ever answer what they were testing, as if we were to believe they actually had no idea what they were doing - - or more likely were told to not tell anyone.

Why is there not an option for no more wasting of money to damage the environment and the animals who so desperately need this space to be left alone?

I will never believe that any herbicide is safe, after seeing a California newt dying a horrible death after crawling through an area sprayed with Glyphosate.

How could anyone believe any poisons are safe with the history of the pesticide industry's lies and manipulations? We know that Monsanto is an enormous corporation which has a history of poisoning the environment, humans, animals, and plants. They use their substantial economic power to prevent people from having the legal right to know if the food we are sold is contaminated with Monsanto's GMO products. They even bully farmers who refuse to buy their mutated seed and then sue them if their GMO seed lands on the farmers' fields. Why would anyone trust such a company or participate in adding to their fortune?

A close doctor friend worked for a business whose sole agenda was to prove that toxic and carcinogenic substances were actually safe. Their clients were companies which made money by putting toxic waste incinerators in heavily populated poor neighborhoods. Of course they had to comply with regulations, so they hired the business, with their degrees and "studies," to prove safety when the opposite was true. The polluter usually won the contract.

How can there ever be justification for using poisons when the result is chronic illness and cancer, for those exposed and for those subjected to the toxins from the factories where the poison is made? (The promoters of the toxins have no idea how long the the contamination remains. I can still smell the pesticide used at a friend's house for termites 40 years ago, which was likely the now-banned chlordane, and which was completely unnecessary since it's quite easy to eliminate termites safely. Could that be why my friend has had two separate rare, extremely invasive cancers?)

What is also ignored in "safety studies" is the cumulative effect of multiple poisons on animals, plants, and the environment. People are using toxic products that go down the drains to the bay and then ocean. Other toxic substances are being vented into the air, in spite of regulations. People have no idea how poisonous these many substances are when combined. Recently, there have been hundreds of water birds in the Bay Area found dead or dying, from an unknown substance. Aren't the animals and plants suffering enough to stop the adding of more toxins and more deaths and mutations? What could possibly justify this other than money or obsession?

It's bad enough that our local parks are heavily sprayed, including alongside and in the bay, for no reason, leaving ugly swaths of dead grass, when elsewhere, the grass is finally green after rain. Pt. Reyes seemed like a rare refuge in this polluted area.

Considering that most of Pt. Reyes is privately owned by ranchers whose cattle continue to destroy the environment, and who will continue to spread non-native seeds, this plan is impossible to accomplish. Those who work for the Seashore can't even keep the cattle from breaking through the fences where they damage the land and water, yet money is spent on this travesty?

Native animals have adapted and often choose non-native plants for food and shelter. The much-maligned Eucalyptus are chosen by raptors as a preferred tree to nest since they are high and protected, with open canopy so that the young eagles and hawks are less likely to die from injury when learning to fly. Monarch butterflies prefer roosting in them. Hummingbirds drink their nectar, etc. Yet, the myth that eucalyptus is not used by native animals continues. Do those involved in this project even know what the Snowy Plover and other native animals prefer in their habitat? (By the way, it is a rare relief to see the re-planting of Monterey Cypress and Eucalyptus at the Pierce Pt. Ranch, so thank you for this. It's a wonderful bird habitat.)

Every project I have seen that supposedly was to help specific species or the environment has done the opposite. I was a docent with Audubon to try to improve the Burrowing Owl habitat at Cesar Chavez Park in Berkeley. The first thing they did, under advice from "experts" at UC Berkeley, was to destroy the plant cover that the owls prefer and need. (Those of us who know the owls were horrified, and Audubon later apologized for this.) When I asked why

they'd done this, the Audubon person in charge said something about removing "invasive" plants. When I asked why then had they cut all the Baccharis down, it became clear that she had no idea what was native and what wasn't, or that the park was full of millions of dollars in non-native landscaping that were never going to be removed.

Then, in the small habitat that Audubon cordoned off, a $100,000 "art project" included fence that still allowed in small dogs who attacked the owls and also a concrete platform with benches that was placed on one of the last two owls' burrows. (They return to the same burrow each year.) Then the remaining burrow was paved over for no apparent reason. As at Abbott's Lagoon, heavy machinery was involved in damaging this already fragile habitat. The final death blow seems to have come from an attempt to poison all the remaining native California Ground Squirrels, without any awareness that if there are no squirrels, there are no burrows, and therefore no owls.Some of us protested and stopped that plan, but something else has been done that greatly reduced the squirrel population. It was heart-breaking to no longer see these wonderful little owls close up each year in their same preferred burrows. Some of us used to lead tours to show people. I believe the owls would be there still if not for Audobon's interference and the reducing of the Ground Squirrel population.

Those of us who have seen this kind of devastation do not trust any agencies who are damaging the environment, whatever their reason. Another example is the plan to kill thousands of healthy trees in the East Bay hills on the pretext of fire prevention, ignoring that the result would be far more fires, ruined and poisoned parks along the entire East Bay hills, and uncountable native animal deaths do to the loss of habitat, damage from heavy machinery, and herbciding. People have not been notified to vote about changing our beautiful forest parks into barren grassland, and most have no idea that the majority of these parks are non-native trees. The project ignores that the "exotic" trees slated for killing include nearby Monterey area species who have greatly increased East Bay animal and plant diversity, compared to the native oak/bay woodlands, which are dying from disease. Better to have parched hillsides of non-native grass and poison hemlock than beautiful California and other magnificent exotic trees well-adapted to increasing drought. The project of course will get millions of dollars from FEMA, yet will cause landslides, fires, and environmental devastation. Re-planting trees is not part of the plan.

The fight to kill "invasive" species is a classic example of double standard because many park headquarters and all city, county, state, etc. plantings usually are with non-native plants

Isn't it bad enough that nativist fanatics already caused the destruction of one of the most magical and beautiful places at Pt. Reyes, which was the little lake near Limantour, a rare fresh water refuge along the coast. Great Egrets would nest and roost there, Kingfishers hunted, as well as many other birds. It was an important source of fresh water for so many animals, with so much bio-diversity. Even a mountain lion lived and ate near there. But the entire eco-system was simply destroyed. The trees and animals are gone, and the theoretical stream in its place was about an inch deep when I last looked. It was a wasteland. And why? Because it wasn't "natural"? The buildings and road are still there. The non-native humans and dogs are allowed. The war seems to be only against the native animals. Even if they replace some of this habitat, animals suffered and died.

Why don't the nativists stop being hypocritical with their double standards for themselves versus the native animals? If they so hate introduced plant species, why do they usually have a garden full of exotics, from roses to fruit trees to vegetable and herb gardens? Why do they allow non-native animals to terrorize and kill native animals? Why are they themselves still here?

Bev Jo

Another view of who is native: http://www.planetarianperspectives.net/?p=1042

This excellent blog explains more of what is wrong with the Pt. Reyes and similar plans:

http://milliontrees.me/

Native plant advocates believe their projects benefit the environment. We do not see the benefit they claim. This is what we see:
â€¢ Increasing use of toxic pesticides is required to kill non-native vegetation. These pesticides are inherently hazardous and their incompetent use makes them even more hazardous.
â€¢ The wildlife that lives in our open spaces is being poisoned by these pesticides and they are losing their homes and their sources of food.
â€¢ The results of these projects do not justify these dangerous practices. The projects often look more dead than alive.

Imazapyr disasters: http://milliontrees.me/2013/03/12/when-the-cure-is-worse-than-the-disease-incompetent-pesticide-use/

http://milliontrees.me/2014/02/25/american-corporations-prevent-the-regulation-of-pesticides/

Glyphosate: http://www.washingtonpost.com/national/health-science/roundup-is-tied-to-infertility-and-cancer-herbicides-maker-calls-it-safe/2013/04/29/ac86ced6-ae71-11e2-98ef-d1072ed3cc27_story.html

http://articles.mercola.com/sites/articles/archive/2013/06/09/monsanto-roundup-herbicide.aspx

http://www.scientificamerican.com/article/weed-whacking-herbicide-p/

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http://milliontrees.me/2012/02/28/escalating-pesticide-use-by-the-unnatural-natural-areas-program/

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http://naturalsociety.com/roundup-banned/#ixzz3PWdRi45F

http://wtfrly.com/2014/09/22/roundup-agent-orange-dr-oz-calls-out-epa-over-glyphosate-2-4-d-combo-herbicide-enlist-duo/#.VMCJJ5t16Xg

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**Correspondence ID:** 6 **Project:** 44082 **Document:** 62179
**Address:** Belvedere,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,26,2015 20:08:21
**Correspondence Type:** Web Form
**Correspondence:** Subject: Comments for consideration regarding Point Reyes National Seashore Coastal Dune Restoration Environmental Assessment
Date: January 26,2015
From: William Rothman, MD. 14 Cliff Road. Belvedere, Ca 94920. Tel: 415-435-1096
Email: w1rothman@gmail.com

To: "Coastal Dune Restoration EA" c/o Superintendent, Point Reyes National Seashore, 1 Bear Valley Road, Point Reyes Station, CA 94956."

Please also see attached U.C. Davis, Marin Municipal Water District report, (Hyun-Min Hwang and Thomas M. Young), relevant to Item (3), below.
Link: http://www.marinwater.org/DocumentCenter/View/244 (See, especially, fig. 4 on page 12)

I would first like to bring to your attention the fact of an apparent basic process defect in the instance of the Environmental Assessment aspect of the Point Reyes National Seashore Costal Dune Restoration proposal. This process defect resides in the following:
Although the total report is more than 500 pages long, and contains in its 40 page Literature Cited section, more than 420 references, there are no numbers to be found anywhere in the text of the report, which would enable the reader to associate any information stated in the text to any of the references in the Literature Cited section, which references are also not numbered, although they are supposedly to serve as substantiation of statements to be found in the more than 500 page report.
This lack obviously creates a circumstance of gross obfuscation for members of the public seeking to provide, through the legally required Environmental Assessment process, meaningful input for the plan. I therefore request that, before this process moves any further along, this failure to follow the spirit of the legally required process be remedied.

Input regarding apparent failures in the information provided in the Environmental Assessment:
1) Although the plans safety assumptions rely on the EPA evaluation of glyphosate, and upon label instructions, the last time that the EPA evaluated Glyphosate, was more than 20 years ago, and no label changes have been considered by EPA since then. Although glyphosate it is currently undergoing an EPA re-registration process, that process has not yet been completed.
The problems inherent in relying on an evaluation performed so long ago are not addressed in any of the references shown in Point Reyes National Seashore Coastal Dune Restoration Environmental Assessment
2) Although the plan information makes no reference to glyphosate endocrine disruption effects, the EPA is concerned enough about such effects to be studying them at the present time. Furthermore, effects shown in research referred to later in this submission, show there are negative endocrine effects of glyphosate.
The references in the Point Reyes National Seashore Coastal Dune Restoration Environmental Assessment do not appear to acknowledge the demonstrated negative endocrine effects of glyphosate.
3) The attached U.C. Davis Research, by Hyun-Min Hwang and Thomas M. Young

Environmental Quality Laboratory Department of Civil and Environmental Engineering
University of California, Davis, shows that when glyphosate is mixed with the surfactant the plan proposes to use, and is sprayed on vegetation, it remains at full strength concentration on that vegetation for at least 3 months (glyphosate persistence chart, figure 4, on page 12). The proposed plan makes no mention of this fact, nor does it give recognition to the fact that during this prolonged period, since people, including pregnant women and children, will be hiking, picnicking, etc, among the sprayed vegetation in the Point Reyes National Seashore, they will, when, as is inevitable, they come in contact with sprayed vegetation they will get the material on their skin and clothes. In the skin contact situation, they will absorb the glyphosate through their skin, and if they are picnicking, when they get it on their hands and touch their sandwiches, etc, they will then not only face the danger of absorbing glyphosate through their skin, but also the danger derived from eating it on their food.
Of course this long glyphosate persistence/skin contact situation will make all of the dangers shown below, all the more dangerous to people exposed.
The references in the Point Reyes National Seashore Coastal Dune Restoration Environmental Assessment do not acknowledge the MMWD-research-demonstrated extremely long persistence of glyphosate when it is applied, mixed with the non-ionic surfactant being considered.

4) The plan analysis, as shown, makes no reference to the research-shown, referenced glyphosate toxicities listed as follows, below, all of which will endow the glyphosate-spraying aspect of the plan with great dangers for the public.
( Note:The references in the Point Reyes National Seashore Coastal Dune Restoration Environmental Assessment do not acknowledge any of the demonstrated negative effects of glyphosate which are demonstrated in research reflected in items (A) - (G), below
A) Glyphosate increases miscarriages, due to placental damage. (Negative impact on placental aromatase) (David Savitz, M.D. Am. Jnl. Of Epidemiology, vol. 146, 1997, and T.E. Arbuckle, Environmental Health Perspectives, vol. 109, 2001). and (Seralini et al. Environmental Health Perspectives. June 2005).
B) 25% dp in sperm count (M.I. Yousef, Ph.D. NIH, 1992) and abnormal fetal development (Julie Marc, Ph.D. Jnl of the American Chemical Society vol. 15. 2002).
C) Promotion of Breast Cancer cell growth (Food Chemical Toxicology. June 8, 2013).
D) Irregular heart rhythm and inflammation of the eyes, skin and digestive system. (Cal EPA).
E) Glyphosate interferes with the liver's cytochrome P450 oxidase enzyme system, which controls levels of hormones, including estrogen and testosterone. Excess estrogen is known to promote breast cancer, and excess testosterone stimulates prostate cancer (Ref: E. Hietanen, Ph.D. Acta Pharmacol. et Toxicol. 1983, vol. 53).
Furthermore, that same Enzyme also effects the blood levels and toxicities of many medications, and thereby the glyphosate use proposed would, due to skin contact and possible ingestion of the glyphosate, as shown in (3), above, potentially interfere with achieving proper levels of medication used for: Cancer (Chemotherapeutic Medications), Heart failure and Blood Pressure, High Cholesterol, Infections, Blood Clots. Psychiatric conditions, AIDS and Diabetes.
F) Glyphosate also interferes with the intestinal role of Cytochrome P450 oxidase, which controls the absorption of many medications. This, due to the factors cited in (3), above could lead to toxic blood levels of such drugs. (European Journal of Pharmaceutical Sciences 2000 Nov;12(1):3-12. And: Entropy 2013, 15, 1416-1463; Glyphosates Suppression of Cytochrome P450 Enzymes and Amino Acid Biosynthesis by the Gut Microbiome) Anthony Samsel and Stephanie Seneff.
G) Glyphosate kills beneficial intestinal bacteria, leading to intestinal infections.
There is a normal balance of important bacteria in the intestinal tract, with beneficial strains of Enterococcus bacteria keeping in check potentially harmful bacteria, such as Clostridia. Unfortunately, Glyphosate, due to the persistence/human contact/ingestion factors cited in (3), above, because it kills beneficial enterococcal bacteria could potentially upset that intestinal bacterial balance leading to the proliferation of harmful Clostridia bacteria, and other harmful bacteria, with devastating consequences. Kruger, M. Shehata, AA, Anaerobe, Vol. 20, pages 74-78, April 2013.
H) Toxicity problems posed by using mixture of glyphosate and Competitor. There has never been any research concerning the degree to which the presence of Competitors constituents, in a mixture of glyphosate and Competitor (a non-ionic surfactant), enhances the skin absorption of glyphosate. Under the circumstances cited in (3), above, the role of Competitor-enhancement of glyphosate skin absorption could increase the many glyphosate toxicity problems cited in paragraphs (A) through (G).
I) A thorough review of the scientific research literature reveals that the only study dealing with the persistence on vegetation of glyphosate, when it is applied mixed with Competitor, is the work cited in (3), above. That study revealed persistence on vegetation, at full strength concentration, for at least three months, at the end of which time observations ended. Because full strength concentration was found at the end of that time, there is logically no way to determine, from that only-research-example that exists, what the half-life time period is, and when it occurs beyond the three months for which observations were made. Lacking half-life time figures, it is, of course, impossible to determine how much time beyond three months would be required to even attain a decrease to one-half strength, much less to safe levels.
Even if one were to hypothesize (and how could this be possible) that by the fourth month after spraying half-life was attained, it would still, for the sake of safety to the public, be necessary to post warning signs for at least a full year, to allow a decline to safe levels of glyphosate exposure.
Based upon the research referred to in (3), and the fact that that is the only persistence research relevant to the glyphosate mixture being considered, it is clearly necessary for the Federal Government, if it wishes to employ the mixture of glyphosate and Competitor, to carry out its own persistence studies to determine for how long beyond one year, warning signs should be posted.

J) There are significant defects in the only two human risk assessment reports cited in the Point Reyes proposal: (It is important to note that the two versions of the study, cited below, are now being considered in the development of the MMWD WPHIP (Wildfire Prevention and Habitat Improvement Plan) Draft EIR, but have already been subject to significant challenge in the input into the WPHIP).
PRI. 2008. Marin Municipal Water District Vegetation Management Plan: Herbicide Risk Assessment:
Draft August 26, 2008. Prepared by S. Kegley, E. Conlisk, and M. Moses, Pesticide
Research Institute, Berkeley, CA.
PRI. 2010. Marin Municipal Water District Vegetation Management Plan: Herbicide Risk Assessment:
Draft Final January 1, 2010. Prepared by S. Kegley, E. Conlisk, and M. Moses,
Pesticide Research Institute, Berkeley, CA.

Among those defects are the following:
1) Doctor Kegley states that she does not know the percentage concentrations of the constituents of Competitor, but fails to note that without that knowledge, one cannot possibly discern what the possible toxic effects of the mixture would be.

2) Doctor Kegley admits that she is unaware of any studies on the effects of the particular chemical mixture being considered, and yet fails to acknowledge the obvious need to have that information before one can evaluate the possible toxic effects of the mixture.

3) Doctor Kegley comes to the illogical conclusion (page 8-14 of Chapter 8,) that, since some non ionic surfactants do not increase the skin absorption of some chemicals, the mixture of Competitor would not increase the absorption of glyphosate, or any of the other herbicides being contemplated for use. The terrible illogic of such a statement is evident when one considers that as soon as one is considering the effect on skin absorption of a mixture of chemicals,

in this instance the mixture of the chemicals in Competitor with the chemicals in each of the herbicides, one, logically, must consider that the effect of the mixture of one group of chemicals on skin absorption can in no way be expected to reflect the effect of a different mixture where the chemicals involved are different.

4) Also on page 8-14, Doctor Kegleys statement, What research there is show that for a surfactant to increase the absorption of another compound, the surfactant must affect the upper layer of the skin. Without some physical effect to the skin, there will be no change in absorption as compared to the other compound alone., which statement she offers in support of her contention that the mixture of Competitor with each of the herbicides being considered for use, would not pose dangers through increased herbicide skin absorption, is faulty in that it fails to recognize that although, for a surfactant to increase the skin absorption of some chemicals, the surfactant used alone must effect the outer layer of the skin, one cannot possibly say, since each and every different mixture of different chemicals, in different concentrations, will have its own chemical effects on skin absorption, that in the case of each of the herbicide/competitor mixtures being considered, the skin absorption of the herbicide would not be increased by Competitors presence in the mixture.

Further defects in Doctor Kegleys interpretation of the references in her report, shown below, and which she incorrectly claimed showed that the use of Glyphosate and Competitor would not create human toxicologic dangers:( As you see, from the Point Reyes Study reference list, the PRI evaluation (Doctor Kegley) was done for the Marin Municipal Water District, but the same defects in her interpretation of the research reports she cited, and which defects are referred to below, apply to the Point Reyes Dune Restoration plan being contemplated.
Evaluation of Susan kegleys Referenced studies shown in:
Marin Municipal Water District Vegetation Management Plan
DRAFT-1/1/2010Herbicide Risk Assessment Chapter 3 Glyphosate

With respect to Reference 60:

Defects in considering findings in Reference 60 (Glyphosate Skin Binding, Absorption, Residual Tissue Distribution. Ronald C Wester, et al. U.C.S.F. Fundamental and Applied Toxicology, Vol 16 725-732 (1991), to be relevant to Point Reyes National Seashore using glyphosate/competitor mixture, as per toxicology discussed in DRAFT1/1/2010 Herbicide Risk Assessment

1) Human skin absorption study used cadaver skin, from people dead for up to 5 days, not living skin, as would be true for Point Reyes use.
2) Human skin absorption study used a different surfactant than Competitor, the surfactant that would be used by Point Reyes plan.
3) Rhesus Monkey absorption study used a different surfactant than Competitor, the surfactant that Point Reyes would use.
4) Rhesus Monkey study involved washing the glyphosate off with soap and water within 12 hours of exposure to Roundup (Glyphosate POEA surfactant).
With Respect to Reference 61

Defects in considering findings in Reference 61 (In Vitro Percutaneous Absorption of Model Compounds Glyphosate and Malathion from Cotton Fabric into and through Human Skin. R.C. Wester et al U.C.S.F. Food and Chemical Toxicology vol 34 1996. 731-735) to be relevant to Point Reyes using glyphosate/competitor mixture, a per toxicology discussed in DRAFT1/1/2010 Herbicide Risk Assessment

1) The study involved cadaver skin, not skin of living people, which is different from Point Reyes proposed use of glyphosate where people coming into contact with glyphosate would be alive.
2) The glyphosate was not mixed with any surfactant, thereby making the situation different than Point Reyes proposal, where surfactant would be used and would increase absorption.
3) Very significant is the fact that when the sheets on which the glyphosate had been permitted to dry were re-moistened absorption of glyphosate was increased 360%.With respect to Ref 69
NIOSH:In 2001, NIOSH sponsored a study investigating take-home pesticide exposure in farm and non-farm families in Iowa.
Curwin BD, Hein MJ, Sanderson WT, et al. 2007. Urinary pesticide concentrations among children, mothers and fathers living in farm and non-farm households in Iowa. Ann Occ Hyg 51(1): 53-65.

Defects in considering Ref 69 as being considered applicable to proposed Point Reyes use of glyphosate

1) To be included, test subjects need only have been exposed to any one of 6 different pesticides. Obviously, for comparison with Point Reyes situation, Glyphosate studies done on non exposed test subjects needed to be thrown out, but averages of all studies were used.
2) The surfactant used was of a different class and mechanism of action than that proposed by Point Reyes plan, so differences in glyphosate skin absorption are to be expected compared to Ref 69 findings.
3) All farmers in study knew they were using glyphosate mixtures, so may be assumed to have worn protective clothing, and subsequent to spraying washed skin to prevent skin exposure to glyphosate. Hikers, people picnicking, children, etc. using Point Reyes for recreation would not have such protection from rubbing against sprayed vegetation for the more than 3 months after spraying, that MMWD research showed glyphosate, when used with proposed surfactant, to persist in large concentrations.
With Respect To Ref 70
Curwin BD, Hein MJ, Sanderson WT, et al. 2007. Pesticide dose estimates for children of Iowa farmers and non-farmers. Environ Res105(3): 307-315.

Defects in considering Ref 70 as being applicable to proposed Point Reyes use of glyphosate
1) Ref 70 study involved a different surfactant, with a different mechanism of action, than that proposed by MMWD, so differences in glyphosate skin absorption are to be expected compared to Ref 70 findings.
2) All farmers in study knew they were using glyphosate mixtures, so also wore protective clothing, and subsequent to spraying washed skin to prevent skin exposure to glyphosate. Hikers, people picnicking, children, etc. using MMWD for recreation would not have such protection from rubbing against sprayed vegetation for the more than 3 months after spraying, that MMWD research showed glyphosate, when used with proposed surfactant, to persist in large concentrations.

With Respect to Ref 71
Finland:
In Finland, five forestry workers and five controls were monitored for urinary glyphosate levels before, during and after clearing trees using brush saws equipped with pressurized sprayers. All samples were below the limit of detection (LOD) of 0.1 ng/ L
Ref 71: Jauhiainen A, Rasanen K, Sarantila R, et al. 1991. Occupational exposure of forest workers toglyphosate during brush saw spraying work. Am Ind Hyg Assoc J52(2): 61-64.

Defects in considering reference 71 findings as being applicable to proposed Point Reyes use of glyphosate

1) All workers using glyphosate wore protective clothing, and subsequent to spraying washed skin to prevent skin exposure to glyphosate. Hikers, people picnicking, children, etc. using Point Reyes for recreation would not have such protection from rubbing against sprayed vegetation for the more than 3 months after spraying, that MMWD research showed glyphosate, when used with proposed surfactant, to persist in large concentrations.
2) This study was done in 1991, and involved a different surfactant, with a different mechanism of action, than that proposed by the Point Reyes plan, so differences in glyphosate skin absorption are to be expected compared to Ref 71 findings
With Respect to Ref 72
Arkansas:
Total urine excreted over a 12 week period was collected and tested for glyphosate in
workers employed as applicators, weeders, and scouts at two tree nurseries in Arkansas.
Lavy TL, Cowell JE, Steinmetz JR, et al. 1992. Conifer seedling nursery worker exposure to glyphosate. Arch Environ Contam Tox 22: 6-13

Defects in considering reference 72 findings as being applicable to proposed Point Reyes use of glyphosate

1) Applicators wore heavy protective clothing. Others who had contact were instructed to wash well. Hikers, people picnicking, children, etc. using MMWD for recreation would not have such protection from rubbing against sprayed vegetation for the more than 3 months after spraying, that MMWD research showed glyphosate, when used with proposed surfactant, to persist in large concentrations
2) This study was done in 1991, and involved a different surfactant, with a different mechanism of action than the surfactant proposed for use by Point Reyes plan, so differences in glyphosate skin absorption are to be expected compared to Ref 72 findings.
With respect to ref 73
Ref 73 Forestry: Urinary glyphosate levels were measured in 15 forestry workers, the day prior to, the day of and three days following application of the original Roundup.
Defects in considering reference 73 findings as being applicable to proposed Point Reyes use of glyphosate
1) The participants in Ref 73 wore protective clothing and equipment, hikers, people picnicking, childen, etc. using Point Reyes for recreation would not have such protection from rubbing against sprayed vegetation for the more than 3 months after spraying, that MMWD research showed glyphosate, when used with proposed surfactant, to persist in large concentrations.
2) This study involved a different surfactant, with a different mechanism of action, than that of the surfactant proposed by MMWD, so differences in glyphosate skin absorption are to be expected in Point Reyes contacts compared to Ref 73 findings.

With Respect to Refs 74 and 75
Farm Family Exposure Study (FFES):
The Farm Family Exposure Study is a biomonitoring study of 45 farm families in Minnesota and 50 families in South Carolina, conducted by the University of Minnesota and co-sponsored by CropLife America, a trade association for agricultural chemical companies (Bayer, Dow, DuPont, FMC, Monsanto, and Syngenta) and the American Chemistry Council.

Defects in considering results shown in References 74 and 75 as applicable to Point Reyes proposed use of Glyhosate:

1) Ref 74 and 75 pesticide industry studies, failed to distinguish between degrees of protection used by participants (closed or open tractor driving compartments, gloves, type of clothing, etc), but averaged results. None of the hikers, people picnicking, children, etc. using MMWD for recreation would be expected to have such protection when rubbing against sprayed vegetation during the more than 3 months after spraying, that MMWD research showed glyphosate, when used with proposed surfactant, to persist in large concentrations.
2) Refs 74 and 75 study involved a different surfactant, with a different mechanism of action, than that of the surfactant proposed by MMWD, so differences in glyphosate skin absorption are to be expected in Point Reyes contacts compared to findings found in Refs 74 and 75.
For all of these reasons, I believe that the use of glyphosate and/or the use of the glyphosate/surfactant mixture proposed should not be included in the Point Reyes National Seashore Coastal Dune Restoration plan because including it in the plan would pose great dangers to the public.
Please contact me if you have any questions about the content of this submission. I would also appreciate knowing whether there will be the opportunity for concerned members of the public to meet with the decision-makers in this matter.
Sincerely,
William Rothman, MD
Please Acknowledge Receipt of This Inpu

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**Correspondence ID:** 7 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,26,2015 21:03:58
**Correspondence Type:** Web Form
**Correspondence:** I am against the Point Reyes plans for restoration...

Native plant advocates believe their projects benefit the environment. We do not see the benefit they claim. This is what we see:
â€¢ Increasing use of toxic pesticides is required to kill non-native vegetation. These pesticides are inherently hazardous and their incompetent use makes them even more hazardous.
â€¢ The wildlife that lives in our open spaces is being poisoned by these pesticides and they are losing their homes and their sources of food.
â€¢ The results of these projects do not justify these dangerous practices. The projects often look more dead than alive.

We live here together on the Earth, and it is time that we understand that our actions affect everyone. When we use chemicals, pesticides and herbicides, etc., we change the nature of nature itself. We risk killing animals, interrupting their development cycles, contaminate air, soil and water, and leave our planet just a little bit more toxic for the next generation.

Let's think with our whole being, and make decisions based on sanity, sustainability, community and generosity towards all species.

Thank you,

Michelle Nagle

**Correspondence ID:** 8 **Project:** 44082 **Document:** 62179
**Address:** Belvedere,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,03,2015 09:30:29
**Correspondence Type:** Web Form
**Correspondence:** From William Rothman, MD.
Two further items of concern regarding EA
IDs for my previous comments have been:
946347-62179/6
946641-63389/9
946685-633/89/10

1)Input concerning Assessment's apparent failure to address the danger that the surfactant planned for use would increase skin barrier penetration, and therefore toxicity of glyphosate.
Page 53 of Environmental Assessment states:
""Because there are concerns that surfactants in glyphosate formulations such as
Round-UpÂ® may be even more toxic than glyphosate or enhance the toxicity of glyphosate (SERA 2011a), the park typically does not use formulations of glyphosate that incorporate a surfactant, but uses so-called technical grade glyphosate formulations such as AquaMasterÂ®(currently marketed as Roundup CustomÂ®). AquaMasterÂ® or Roundup CustomÂ® is an aquatic label formulation classified as a Caution-level or Toxicity Class III chemical, one level higher than chemicals considered non-toxic (Toxicity Class IV)."

This statement ignores the fact that the glyphosate will be mixed with a surfactant. Therefore, the mixture, contrary to the implications of the statement, will be that the glyphosate "formulation" used will contain glyhphosate and a surfactant, not glyphosate applied alone.
In this instance it is important to note that, although the statement acknowledges that particular surfactants, which are known to increase the toxicity of glyphosate are not being used, there has been no research done indicating whether or not the surfactant that is planned for use with glyphosate will have the same effect of increasing the toxicity of the glyphosate with which it would be mixed. The very nature of the role of surfactants mixed with glyhosate, which is to say, to increase, by several mechanisms, the penetration of glyphosate through natural barriers, indicates that, unless testing is done to establish that that is not the case with the surfactant being planned for use, the assumption must be, for human safety sake, that such increased skin barrier penetration by glyphosate would be the consequence of mixing it with the surfactant planned for use.

2)Input concerning assessment's apparent failure to quantify the amount of glyphosate to be used.
The assessment does contain figures for the maximum amount of glyhosate that could be used per acre and per year. However, there is no statement of exactly for how many years such amounts could be applied per acre. Therefore, the maximum amount of glyphosate, and consequently the maximum degree of toxicity to animal life, and to non target vegetation cannot be known from the EA, as it currently exists.

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**Correspondence ID:** 9 **Project:** 44082 **Document:** 62179
**Address:** inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,06,2015 14:19:13
**Correspondence Type:** Web Form
**Correspondence:** February 8, 2015

Lorraine Parsons

Comments on the Coastal Dune Restoration Environmental Assessment

I support the selection of Alternative C, as described in the Environmental Assessment.
The National Park Service makes a good case for the ecological benefits of removal of invasive species of plants in coastal dunes. These plants are displacing native plant and animal species at Point Reyes National Seashore.

While hand and mechanical removal of invasive species do have their place in a restoration plan, as recognized in the description of Alternative C, restoration would not be affordable unless the full spectrum of control methods are used.

The Park Service has fairly and fully analyzed all alternatives to dune restoration, and has selected an alternative which maximizes ecological benefits at an affordable cost. I urge the Park Service to proceed with Alternative C as quickly as funding can be obtained.

Thank you for considering these comments.

Gerald H. Meral, Ph.D.

PO 1103
Inverness, CA 94937

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**Correspondence ID:** 10 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** California Native Plant Society Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,06,2015 14:19:37
**Correspondence Type:** Web Form

**Correspondence:** This comment is submitted on behalf of the Marin Chapter of the California Native Plant Society. The California Native Plant Society is a non-profit organization dedicated to the conservation of California native plants and their natural habitats and to an increased understanding, appreciation, and horticultural use of native plants. CNPS has nearly 10,000 members, with about 350 belonging to the Marin Chapter. Since its founding in 1965, it has become respected statewide as a reliable voice for California's native flora, because of the knowledge, enthusiasm and dedication of its members, who are citizens from all walks of life, including many professional scientists.

Dunes within the Point Reyes National Seashore are of local, state and national botanical significance. A habitat of particular concern to the Society is that of California's beaches and dunes. A very large proportion of the original extent of this habitat has been eliminated by urbanization and other human activities as well as encroachment by invasive species. The American dunegrass plant community is rated as critically imperiled by The Nature Conservancy. Indeed, on the west coast, it currently exists only within the Seashore and near Humboldt Bay.

The fact that Point Reyes National Seashore contains some of the best remaining beach and dune habitat in California is considered extremely significant by the Marin Chapter and by the statewide CNPS. This habitat is home to many unique species of plants and hundreds of species of animals that directly or indirectly depend on them. Because of its reduced extent in California, any further reduction is not only of local but also regional and national concern.

Current threats to this habitat at Point Reyes from introduced invasive weeds such as European beachgrass, iceplant parallel threats in other parts of California. It is important not just for Marin, but also for the entire state that the most effective methods of weed control be employed. Bearing in mind that all species occupying small ranges are vulnerable to unpredictable and uncontrollable losses due to fluctuating factors such as weather, herbivory and disease, and given the losses this habitat has historically experienced, it is important that the largest area possible be protected and/or restored.

For these reasons, the Marin chapter of CNPS enthusiastically supports the proposed Coastal Dune Restoration Project, particularly Alternative C. It is our sincere hope that the astounding success of the Abbott's Lagoon restoration project of 2011 can be replicated in the new project areas resulting in a similar resurgence of both the important dunegrass plant community as well as the numerous listed species also associated with dunes at Point Reyes.

The dune mat community includes beach layia (Layia carnosa), Tidestrom's lupine (Lupinus tidestromii), curlyleaf monardella (Monardella sinuate ssp nigrescens), bluff wallflower (Erysimum concinnum), dune gilia (Gilia capitata ssp. Chamissonis) and pink sand-verbena (Abronia umbellata var. breviflora), all of which are listed as rare, threatened or endangered under federal or state law, hold a California Rare Plant Ranking of 1.B. 1 or 1.B.2 or have been proposed for such listing. Other dune plants that will benefit from the restoration include Blasdale's bentgrass (Agrostis bladealei), Point Reyes blennosperma (Blennosperma nanum var. robustum), wooly-headed spineflower (Chorizanthe cuspidata var. villosa), San Franciso Bay spineflower (Chorizanthe cuspidatea var.cuspidata), and Chorizanthe cuspidate ("pedunculate forma").

CNPS supports careful, targeted use of herbicide to combat invasive weeds. Integrated Pest Management (IPM) is internationally recognized as the best practice in controlling pests such as weeds, insects and pathogens. It utilizes a combination of control techniques to produce the greatest possible benefit of pest control at the lowest possible cost, taking into account the total impacts on the environment. CNPS in general supports the use of IPM. See http://www.cnps.org/cnps/conservation/pdf/IWM_policy.pdf.

Accordingly, the Marin Chapter of CNPS specifically supports Alternative C as the most beneficial to native plants of those presented. We note that it involves integration of chemical, manual and mechanical techniques according to an IPM program. Importantly, the significant savings to be realized by using herbicides will allow restoration of natural processes and native plants to more acreage and additional locations.

CNPS is confident that the precautions to be taken will prevent harm to native plants. The stands of European beachgrass and iceplant are to be pre-treated with either burning or mowing so as to reduce the volume of foliage to be treated as well as the quantity of herbicide needed. There will be no broadcast or aerial spraying; instead, small backpack sprayers equipped with calibrated nozzles will be used. No spraying will take place during windy or foggy conditions. The least toxic formulations of herbicide and surfactant have been selected.

Additionally, crews will be trained to avoid native plants, which will be flagged where feasible, and a biological monitor will be on site at all times. Follow-up spraying will consist of spot-spraying and, in sensitive areas such as wetlands or sites abutting organic pastures, only manual or mechanical techniques will be used. Ten-foot buffers will be established between areas to be sprayed and rare plants. Wherever appropriate, tarps and drift shields will be placed to protect native and rare vegetation from herbicide drift.

We expect that success in restoration of presently degraded areas will not only expand the overall habitat area but also allow the currently small populations of the rare and endangered species to increase their sizes and areas; this will likely buffer them against unpredictable threats in the future.

As a national park, the Point Reyes National Seashore is responsible for the stewardship of the rare and imperiled plants that remain on its coastal dunes. In accordance with our own mission to protect native plant communities and species, Marin CNPS strongly supports Alternative C as the most effective approach to the restoration of these dunes. Our collective experience with removal of invasive non-native plants from important plant habitats leads us to expect a highly beneficial outcome and one that is very much worth the effort and expense.

Thank you for your attention.

Paul G. DaSilva and Carolyn Longstreth, Directors
Marin County Chapter
California Native Plant Society

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**Correspondence ID:** 11 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Save Our Seashore Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,07,2015 22:54:34
**Correspondence Type:** Web Form
**Correspondence:** Save Our Seashore
A 501(c)(3) Charitable Organization (EIN 94-3221625)
Founded in 1993 to Protect Marin Countys Coastline, Estuaries and Watersheds
PO Box 342, Pt. Reyes Station, CA 94956 gbatmuirb@aol.com 415-663-1881

February 7, 2015

Re Point Reyes National Seashore (PRNS) Coastal Dune Restoration Environmental Assessment

Save Our Seashore has reviewed the Coastal Dune Restoration Environmental Assessment (EA) and supports the environmentally preferred Alternative C. We believe the EA analyzes all alternatives properly and convincingly demonstrates the ecological benefits of removing invasive plants. We appreciate that PRNS has learned from its prior Abbotts Lagoon Dune Restoration that prioritized mechanical removal and has now moved to more effective and economical methods with appropriate safeguards. We offer the following specific comments:

ADDRESSED CONCERNS:

Wilderness: Per our 12/22/12 scoping letter, much of the proposed project occurs within congressionally-designated Wilderness, so we appreciate Seashores evaluation of whether certain uses or activities can be conducted in wilderness areas (Pg. 152) to help the public better understand what Congress intended in its designation of Wilderness.

Scheduling: Per our 12/22/12 scoping letter, the proposed project could impact wildlife breeding, so we appreciate the EAs statement that To the maximum extent practicable, projects would be conducted in late summer and fall to ensure that implementation does not overlap or only slightly overlaps with the end of breeding seasons. (Pg. 40)

Sand Movement: The EA notes that following the Abbotts Lagoon Dune Restoration sand movement occurred on approximately 2 acres occurred in portions of the [Lunnys] G Ranch lease mapped as being&grazeable. &2 acres represents approximately 0.2% o the 952-acre leased pasture. (Pg. 169) This fact contrasts with the 1/14/13 scoping comment by the Point Reyes Seashore Ranchers Association that claimed the removal of vegetation result in erosion and the covering of pasture with sand, rendering it useless for production& the Lunnys lost the use of their pasture. This comment is un-necessary and divisive hyperbole: two tenths of a percent is a trivial cost compared to the environmental benefits. Further the EA notes that sand movement into the pastures has occurred even with adjacent dune areas being dominated by invasive plants, and this would be expected to continue in future years (Pg. xxv). We believe the EA addresses the legitimate concerns regarding sand movement from ranchers in the Seashore who do not belong to the self-styled Ranchers Association. We agree that impacts to ranching activities in the Seashore will be No Effect to Minor Adverse. (Pg. 85)

Organic Certification: We believe that the EA addresses the legitimate concerns regarding organic certification from ranchers in the Seashore. This contrasts with the 1/14/13 scoping comments by the self-styled Point Reyes Seashore Ranchers Association that claimed, none of the alternatives&are feasible. This comment is again un-necessary and divisive hyperbole. We appreciate that the EA spends considerable time detailing organic certification requirements for Seashore ranches and is explicit about the buffers and other safeguards for carefully-applied herbicide. We agree that impacts to ranching activities in the Seashore will be No Effect to Negligible Adverse (Pg. 85).

PARTIALLY ADDRESSED CONCERNS
Visitor Experience: Our 12/22/12 scoping letter urged mitigation by notices on the website, at the visitor center, at trailheads, and by contact with known birding organizations. The EA notes regarding mitigation that Information may be posted on the web-site: If work areas are to be closed, advance notice will be provided at the trailhead and possibly on the website, and a press release may be issued. (Pg. 172). We remain of the belief that the projects potential impacts to visitor experience, however minimum, are best addressed by clearly worded and widely posted/distributed announcements.

REMAINING CONCERNS

We raised the prioritization of mitigations in our 12/22/12 scoping letter. Yet the EA notes regarding the prior Abbotts Lagoon Dune Restoration: Sand also migrated into a natural creek&this drainage supports federally endangered Sonoma alopecurus and federally threatened California red-legged frog. (Pg. 169) Dune restoration was initiated in spring 2011, and later during that year, [Sonoma alopecurus] inflorescence numbers totaled 315...however, by summer 2013, there were only four (4) inflorescences found in the drainage swale, which was now largely buried. In 2014, no inflorescences were found. A pilot project to construct a new drainage swale nearby was implemented in fall 2013, and additional restoration efforts are planned for fall 2015.. (Pg. 112)

The current EA notes a similar situation: there are several sections of wetland buffer along this swale&which could result in substantial fallback of sands into the drainage swale if restoration is not properly implemented, or slopes, properly stabilized. Active re-vegetation would be conducted in backdune areas to promote stabilization of these areas&Under this alternative, there would be the potential for a possibly moderate adverse effect long-term on Sonoma alopecurus (Pg. 232) [and] potential long-term adverse impacts to [California red-legged frog] populations&could range from negligible to possibly moderate (Pg. 237). To reduce potential localized adverse impacts during and after implementation to Sonoma alopecurus and California red-legged frog at AT&T, the following [additional mitigation] measures may be taken& (Pg. 254)

While it may have been impossible to have foreseen the unfortunate outcome in the Abbotts Lagoon Project, we suggest that similar outcomes could be avoided in the current EA with proper monitoring. Unfortunately, this EA des not specify the monitoring criteria that would trigger such additional mitigation measures. Such clear criteria would be key to insure that additional mitigation (if needed) begins early enough to insure that the swale will not be buried.

MINOR ERRORS:

Pg. 296: Typo: This risk assessment indicated that no direct effects wee expected

Pg. 443: (Elected Officials) needs updating:
California State Assemblyperson Jared Huffman Marc Levine
U.S. Representative Lynn Woolsey Jared Huffman

Pg. 444: (Distribution List) does not include Save Our Seashore

Thank You for the Opportunity to Comment,

Gordon Bennett, President, Save Our Seashore

**Correspondence ID:** 12 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Moms Across America Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,08,2015 14:21:02
**Correspondence Type:** Web Form
**Correspondence:** Dear National Park Service,
Please stop the spraying of glyphosate on the beaches of Marin County. Glyphosate is a toxic chemical that does not readily biodegrade. It's manufacturer, Monsanto, has been sued by both the State of NY and the country of France for falsely advertising that is bio-degradable. Monsanto has lost both suits but because the suits named "RoundUp' specifically, the main ingredient in RoundUp, glyphosate has continued to be mis-labeled as bio-degradable. Glyphosate has been found to be toxic in parts per trillion. It is patented as both a chelator and an antibiotic. If you spray the beaches with this toxic chemical, you are threatening the life, health and safety of the population as well as the plant and animal environment.
I am attaching a bibliography of over 100 scientific papers on the toxicity of glyphosate and Roundup. If this is not enough evidence for you, please consult with Dr. Don Huber, Professor Emeritus of Plant Pathology, Purdue University about glyphosate. He has been studying this chemical and its effects for decades. You can see his presentations about glyphosate on YouTube. Dr. Stephanie Seneff of MIT has also done extensive research into glyphosate and I urge you to pay attention to her research.
The use of glyphosate is unjustified on our beaches, in our parks and in our environment. Please do not continue to make the mistake of using it and impairing our health and safety. The Integrated Pest Management committee of Marin County has moved glyphosate off of their approved list. Please do the same.
The group that I belong to, Moms Across America did its own testing and found glyphosate in breast milk. Testing in Europe has found it in urine. DDT was banned because it was found in breast milk. It is time for glyphosate to be banned.
I have a 30 minute presentation on glyphosate that I am happy to share with the National Park Service. Please contact me at 415 686-8072 to schedule a presentation.
Mary M. Fraser
Also, 30 days for comment on this serious matter is too short a time period. Please allow more time for comments.

EFFECTS OF GLYPHOSATE BIBLIOGRAPHY


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95. Dramatic Increase in Kidney Disease in the US and Abroad Linked to Roundup (Glyphosate) 'Weedkiller. Sayer Ji, Green Med Info. 3/14/2014.
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97. Research: Roundup Herbicide Toxicity Vastly Underestimated. Sayer Ji, Green Med Info. 11/15/2012.
98. BREAKING: Glyphosate (Roundup) Carcinogenic in the PARTS PER TRILLION range. Sayer Ji, Green Med Info. 6/13/2013.

lyphosate.

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**Correspondence ID:** 13 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,

**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 15:30:03
**Correspondence Type:** Web Form
**Correspondence:** Please do NOT spray herbicides on our precious coastlines. This is land that belongs to the entire country and you are the stewards of the land. I don't want to go there and bring guests and family members and feel like we must be careful so as to not be poisoned by the substances you spray. (And I can't believe it's been going on for so long! If it works so well, why do we still have any of the 'invasive' plants still around??!)

I personally will volunteer to do manual removal if you can set up a program for such work. I will also work to recruit friends and acquaintances to this end. Surely, we can find a better way to deal with this!

Also, I am asking that you extend the comment period. Thirty days is very short. And, it would be helpful if it was a bit easier to comment. I know that may be difficult to accomplish but it's a request to your web team.

Thanks very much and I appreciate your consideration of an alternative method to the issue at hand. No poisons on our beautiful beaches, please!

Respectfully submitted,
M. Kraemer Winslow

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**Correspondence ID:** 14 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 15:48:52
**Correspondence Type:** Web Form
**Correspondence:** I strongly oppose to the use of toxic herbicides. I am a mom and I want to make sure that we keep environment clean for future generation. As a researcher I know that these herbicides pose health risk especially for children as they drift into water. Please do NOT do it. There are other ways to remove herbicides.

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**Correspondence ID:** 15 **Project:** 44082 **Document:** 62179
**Address:** Arcata,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 16:04:24
**Correspondence Type:** Web Form
**Correspondence:** Please utilize environmentally friendly methods for weed/invasive species control. Spraying toxic chemical pesticides like glyphosate in our National Parks seem counterintuitive - pesticides do not help protect and preserve the land for the generations to come.

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**Correspondence ID:** 16 **Project:** 44082 **Document:** 62179
**Address:** Bolinas,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 16:36:49
**Correspondence Type:** Web Form
**Correspondence:** Considering the negative commentaries on its health effects on humans and its devastating effects on wildlife and our environment I am shocked that the Pt Reyes National seashore is considering the glyphosphate roundup as its preferred choice for controlling non-native species in the Park. That it is considered by the Park as environmentally preferable with the least damage is very troubling.

Below are some of the links to a few (among many) articles on the health risks of glyphosphate (Roundup):

http://www.ewg.org/agmag/2014/05/study-glyphosate-doubles-risk-lymphoma
http://responsibletechnology.org/gmo-dangers/health-risks/reference-health-effects-of-glyphosate
http://www.scientificamerican.com/article/weed-whacking-herbicide-p/

Our world is being inundated by harmful chemicals. Therefore, I urge the Park to use other means: to stop using lethal poisons / toxic chemicals like Roundup that are devastating to all life, including us, and instead, pursue the environmentally friendly way to go about any kind of control. The Park is a public place and should be kept safe for us as well as wildlife in all its forms.

I vote for alternative B.

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**Correspondence ID:** 17 **Project:** 44082 **Document:** 62179
**Address:** inverness,
**Outside Organization:** Tomales Bay Association Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,08,2015 19:17:06
**Correspondence Type:** Web Form
**Correspondence:** I find the decision to spray and apply "Roundup", a highly toxic and long lasting chemical combination designed to kill plants, in our National Seashore and Park, extremely ill-advised. It is in the best interest of all wild life, visitors, and frequenters to the Parklands in general to avoid poisoning the earth and waters of this place. Please, in the names of sanity and health, do not employ poisons for plant eradication. "Non-native" species

may best be managed by hand pulling and/or smothering with thick layers of chips or black plastic sheeting.
There are safe alternatives to using poisons
Applications of poisons will damage all life in affected areas.

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**Correspondence ID:** 18 **Project:** 44082 **Document:** 62179
**Address:** Novato,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 19:35:04
**Correspondence Type:** Web Form
**Correspondence:** I just found out that a hearing is being held to expand the use of toxic sprays on our beaches in Marin county. This is heartbreaking, extreme, and not forward thinking at all! I understand the impact of these grasses and plants on seacoast life but to use toxic chemicals is NOT the way to rid our beaches of them. We KNOW this!! Look at what the farmers are now dealing with with regards to mutated "pests" caused by "Round up ready" pesticides and others like that. Hand pull weeds is slow and manpower-heavy but it IS the right way to do it. Pesticides are not! We entrust our Natural Parks Service to be proactive with environmental issues. Please take on this duty with responsibility.

I also ask for an extension of the public comment period: 30 days following the release of the Proposal/Environmental Report is far too short a comment period for this serious matter.

Please, don;t do this!
Jane

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**Correspondence ID:** 19 **Project:** 44082 **Document:** 62179
**Address:** Mill valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 19:35:53
**Correspondence Type:** Web Form
**Correspondence:** Please discontinue use of harmful chemicals in our environment. Pesticides harm all creatures and degrade our planet.

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**Correspondence ID:** 20 **Project:** 44082 **Document:** 62179
**Address:** Greenbrae,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 19:36:23
**Correspondence Type:** Web Form
**Correspondence:** I am writing to express my opposition to the Proposal/Environmental Report which calls for a dramatic expansion of the spraying of Glyphosate and Imazapyr to include many more beach areas in Marin, including Limantour Beach. These herbicides can be lethal to bees, fish, birds, and mammals; and they pose a threat to our health. In light of these threats, I support hand pulling weeds rather than the use of pesticides.

I am also writing to ask for an extension of the public comment period beyond 30 days, given the importance of this matter.

Thank you in advance for your consideration of my comments.

Sincerely yours,

Mark Swoiskin, MD

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**Correspondence ID:** 21 **Project:** 44082 **Document:** 62179
**Address:** Sausalito,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:21:11
**Correspondence Type:** Web Form
**Correspondence:** We only need to look at the health effects of Agent Orange exposure in Viet Nam Veterans still alive since to war to understand how spraying glyphosate on beach plants can potentially impact the health of mammals coming in contact with these toxic chemicals. Agent Orange was sprayed as a defoliant and in other ways in Viet Nam during the war. My husband is a disabled Viet Nam Vet exposed to Agent Orange now dealing with a diagnosis on Parkinson's disease. These chemicals are neurotoxins. Please find non toxic ways to remove these plants if they must be removed. The long term consequences create suffering for generations.
Respectfully,
Mary Helm

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**Correspondence ID:** 22 **Project:** 44082 **Document:** 62179
**Address:** Sausalito,
**Outside Organization:** Hansen Hills Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,08,2015 20:37:31
**Correspondence Type:** Web Form
**Correspondence:** There are other alternatives to Round-up and the other dangerous herbicides that you are proposing to expand usage of. Please look more closely into alternatives.

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**Correspondence ID:** 23 **Project:** 44082 **Document:** 62179
**Address:** Bolinas,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:39:37
**Correspondence Type:** Web Form
**Correspondence:** I strongly oppose the use of Roundup in the Park! It is lethal to the birds, butterflies, bees and other creatures that make their home in the Park.

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**Correspondence ID:** 24 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Sustainable Tam-Almonte Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,08,2015 20:39:58
**Correspondence Type:** Web Form
**Correspondence:** Dear Park Service,

I am formally requesting that you immediately halt spraying of Herbicide anywhere in the Point Reyes National Seashore.

It is a proven fact that the herbicides Glyphosate and Imazapyr has serious health consequences in humans. Alturnative means such as using goats and landscaping crews should be employed instead

Furthermore, The herbicides Glyphosate and Imazapyr are be lethal to bees, fish, birds, and other mammals.

The decline in Bees, other pollinators and butterfly's have been linked directly to the complete overuse in agriculture, commercial and residential areas. The whole class of nicotine based herbicides (primarily Roundup) has been scientifically proven to be directly link to beneficially animal and insect declines, as well as cause cancer in humans.

Links to studies:

https://www.organicconsumers.org/scientific/honey-bee-disappearances-could-pesticides-play-role

Health problems directly linked to Glyphosate

https://www.organicconsumers.org/news/roundup-herbicide-causes-smorgasbord-fatal-diseases-new-study-concludes

Sincerely,

Mike Kavanagh

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**Correspondence ID:** 25 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:41:15
**Correspondence Type:** Web Form
**Correspondence:** You absolutely must stop using herbicides and pesticides on Marin's beaches!!

Science has shown that Glyphosate and other herbicides are greatly responsible for the death of bees and are also toxic to birds, marine mammals and PEOPLE! We moved to Marin to enjoy it's beauty and natural surroundings to live a healthy lifestyle. The is no place in a healthy lifestyle for herbicides and pesticides!

While restoration is a wonderful idea, I would much rather see non native species than no more bees and birds, and dead animals washing up on beaches because they ate poisoned birds and the poison that you are spraying, if I had to make a choice.

While I know that it is much more labor intensive to do the weeding by hand, poising my family is not a sound alternative.

It is inexcusable that you have been doing this without the knowledge of the people who live here. Marin county is about PRESERVING NATURE and HAVING A HEALTHY PLACE TO LIVE and you are making it less so through your pesticide-laden endeavors.

PLEASE STOP USING ANY PESTICIDES IMMEDIATELY!

Sincerely,
Michele Samuels
Mill Valley, CA 94941

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**Correspondence ID:** 26 **Project:** 44082 **Document:** 62179
**Address:** Sonoma,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:41:28
**Correspondence Type:** Web Form
**Correspondence:** NO Pesticides on any beaches!

I bring young children and do not want to expose them!

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**Correspondence ID:** 27 **Project:** 44082 **Document:** 62179
**Address:** Tiburon,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:44:22
**Correspondence Type:** Web Form
**Correspondence:** Please do not use pesticides on our beaches! Thank you.

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**Correspondence ID:** 28 **Project:** 44082 **Document:** 62179
**Address:** Sausalito,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:49:06
**Correspondence Type:** Web Form
**Correspondence:** I'm requesting an extension of the public comment period: 30 days following the release of the Proposal/Environmental Report is far too short a comment period for this serious matter.

PUlling weeds - YES
Pesticides - NO

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**Correspondence ID:** 29 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:49:53
**Correspondence Type:** Web Form
**Correspondence:** Keep the spray off the beaches in Marin!!

---

**Correspondence ID:** 30 **Project:** 44082 **Document:** 62179
**Address:** tiburon,
**Outside Organization:** EcoBirth- Women for Earth and Birth Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,08,2015 20:57:12
**Correspondence Type:** Web Form
**Correspondence:** pesticides should be not be used on our public commons.

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**Correspondence ID:** 31 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 20:59:42
**Correspondence Type:** Web Form
**Correspondence:** Please stop spraying herbicides on the Coastal Dunes. Please pull the weeds or introduce other native plants that keep the weeds in check. The health of our entire ecosystem including humans demands the extra effort!

---

**Correspondence ID:** 32 **Project:** 44082 **Document:** 62179
**Address:** Novato,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:08:19
**Correspondence Type:** Web Form
**Correspondence:** Please stop the use of glyphosate as an herbicide on our public beaches. And please extend the public comment period on this project.

---

**Correspondence ID:** 33 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:11:33
**Correspondence Type:** Web Form
**Correspondence:** I strongly object to the use of Glyphosate in Marin, and in particular, this proposal in Point Reyes. The use of Glyphosate has been well documented to have negative health and environmental ramifications. I urge you to consider manual/mechanical removal to meet your stated objectives while maintaining the health and safety of Marin residents and animal/marine life.

As this topic merits serious discussion and consideration from residents across the county, I urge you to extend the public comment period so that more constituents can be informed and part of this important discussion.

Please keep our homes, families, children and local wildlife safe- - PLEASE do not spray Glyphosate in Marin!

Best Regards,
Joy Wygant

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**Correspondence ID:** 34 **Project:** 44082 **Document:** 62179
**Address:** Novato,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:22:21
**Correspondence Type:** Web Form
**Correspondence:** Please find a less harmful alternative to spraying the problematic herbicide Glyphosate (Roundup) around Point Reyes to remove undesired vegetation. Roundup is a really bad herbicide, especially near bodies of water. Go with good science. Scientists have found the following health problems which they attribute to exposure to Roundup and/or glyphosate:

ADHD: In farming communities, there's a strong correlation between Roundup exposure and attention deficit disorder (ADHD), likely due to glyphosate's capacity to disrupt thyroid hormone functions.

Alzheimer's disease: In the lab, Roundup causes the same type of oxidative stress and neural cell death observed in Alzheimer's disease. And it affects CaMKII, an enzyme whose dysregulation has also been linked to the disease.

Anencephaly (birth defect): An investigation into neural tube defects among babies born to women living within 1,000 meters of pesticide applications showed an association for glyphosate with anencephaly, the absence of a major portion of the brain, skull and scalp that forms during embryonic development.

Autism: Glyphosate has a number of known biological effects that align with the known pathologies associated with autism. One of these parallels is the gut dysbiosis observed in autistic children and the toxicity of glyphosate to beneficial bacteria that suppress pathogenic bacteria, along with pathogenic bacteria's high resistance to glyphosate. In addition, glyphosate's capacity to promote aluminum accumulation in the brain may make it the principal cause of autism in the U.S.

Birth defects: Roundup and glyphosate can disrupt the Vitamin A (retinoic acid) signaling pathway, which is crucial for normal fetal development. The babies of women living within one kilometer of fields sprayed with glyphosate were more than twice as likely to have birth defects according to a study from Paraguay. Congenital defects quadrupled in the decade after Roundup Ready crops arrived in Chaco, a province in Argentina where glyphosate is used roughly eight to ten times more per acre than in the U.S. A study of one farming family in the U.S. documented elevated levels of glyphosate and birth defects in the children, including an imperforate anus, growth hormone deficiency, hypospadias (an abnormally placed urinary hole), a heart defect and a micro penis.

Brain cancer: In a study of children with brain cancer compared with healthy children, researchers found that if either parent had been exposed to Roundup during the two years before the child's birth, the chances of the child developing brain cancer doubled.

Breast cancer: Glyphosate induces human breast cancer cells growth via estrogen receptors. The only long-term animal study of glyphosate exposure produced rats with mammary tumors and shortened life-spans.

Cancer: House-to-house surveys of 65,000 people in farming communities in Argentina where Roundup is used, known there as the fumigated towns, found cancer rates two to four times higher than the national average, with increases in breast, prostate and lung cancers. In a comparison of two villages, in the one where Roundup was sprayed, 31 percent of residents had a family member with cancer, while only 3 percent of residents in a ranching village without spraying had one. The high cancer rates among people exposed to Roundup likely stem from glyphosate's known capacity to induce DNA damage, which has been demonstrated in numerous lab tests.

Celiac disease and gluten intolerance: Fish exposed to glyphosate develop digestive problems that are reminiscent of celiac disease. There are parallels between the characteristics of celiac disease and the known effects of glyphosate. These include imbalances in gut bacteria, impairment in enzymes involved with detoxifying environmental toxins, mineral deficiencies and amino acid depletion.

Chronic kidney disease: Increases in the use of glyphosate may explain the recent surge in kidney failure among agricultural workers in Central America, Sri Lanka and India. Scientists have concluded, "Although glyphosate alone does not cause an epidemic of chronic kidney disease, it seems to have acquired the ability to destroy the renal tissues of thousands of farmers when it forms complexes with [hard water] and nephrotoxic metals."

Colitis: The toxicity of glyphosate to beneficial bacteria that suppress clostridia, along with clostridia's high resistance to glyphosate, could be a significant predisposing factor in the overgrowth of clostridia. Overgrowth of clostridia, specifically C. difficile, is a well-established causal factor in colitis.

Depression: Glyphosate disrupts chemical processes that impact the production of serotonin, an important neurotransmitter that regulates mood, appetite and sleep. Serotonin impairment has been linked to depression.

Diabetes: Low levels of testosterone are a risk factor for Type 2 diabetes. Rats fed environmentally relevant doses of Roundup over a period of 30 days spanning the onset of puberty had reduced testosterone production sufficient to alter testicular cell morphology and to delay the onset of puberty.

Heart disease: Glyphosate can disrupt the body's enzymes, causing lysosomal dysfunction, a major factor in cardiovascular disease and heart failure.

Hypothyroidism: House-to-house surveys of 65,000 people in farming communities in Argentina where Roundup is used, known there as the fumigated towns, found higher rates of hypothyroidism.

Inflammatory Bowl Disease ("Leaky Gut Syndrome"): Glyphosate can induce severe tryptophan deficiency, which can lead to an extreme inflammatory bowel disease that severely impairs the ability to absorb nutrients through the gut, due to inflammation, bleeding and diarrhea.

Liver disease: Very low doses of Roundup can disrupt human liver cell function, according to a 2009 study published in Toxicology.

Lou Gehrig's Disease (ALS): Sulfate deficiency in the brain has been associated with Amyotrophic Lateral Sclerosis (ALS). Glyphosate disrupts sulfate transport from the gut to the liver, and may lead over time to severe sulfate deficiency throughout all the tissues, including the brain.

Multiple Sclerosis (MS): An increased incidence of inflammatory bowel disease (IBS) has been found in association with MS. Glyphosate may be a causal factor. The hypothesis is that glyphosate-induced IBS causes gut bacteria to leak into the vasculature, triggering an immune reaction and consequently an autoimmune disorder resulting in destruction of the myelin sheath.

Non-Hodgkin lymphoma: A systematic review and a series of meta-analyses of nearly three decades worth of epidemiologic research on the relationship between non-Hodgkin lymphoma (NHL) and occupational exposure to agricultural pesticides found that B cell lymphoma was positively associated with glyphosate.

Parkinson's disease: The brain-damaging effects of herbicides have been recognized as the main environmental factor associated with neurodegenerative disorders, including Parkinson's disease. The onset of Parkinson's following exposure to glyphosate has been well documented and lab studies show that glyphosate induces the cell death characteristic of the disease.

Pregnancy problems (infertility, miscarriages, stillbirths): Glyphosate is toxic to human placental cells, which, scientists say, explains the pregnancy problems of agricultural workers exposed to the herbicide.

Obesity: An experiment involving the transfer of a strain of endotoxin-producing bacteria from the gut of an obese human to the guts of mice caused the mice to become obese. Since glyphosate induces a shift in gut bacteria towards endotoxin-producers, glyphosate exposure may contribute to obesity in this way.

Reproductive problems: Studies of laboratory animals have found that male rats exposed to high levels of glyphosate, either during prenatal or pubertal development, suffer from reproductive problems, including delayed puberty, decreased sperm production, and decreased testosterone production.

Respiratory illnesses: House-to-house surveys of 65,000 people in farming communities in Argentina where Roundup is used, known there as the fumigated towns, found higher rates of chronic respiratory illnesses.

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**Correspondence ID:** 35 **Project:** 44082 **Document:** 62179
**Address:** Mill valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:23:38
**Correspondence Type:** Web Form
**Correspondence:** Please do not expand the spraying of these pesticides.
Please extend the comment period as this is the first I've heard about this plan and want to understand more.

Thank You

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**Correspondence ID:** 36 **Project:** 44082 **Document:** 62179
**Address:** Greenbrae,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:27:15
**Correspondence Type:** Web Form
**Correspondence:** Hand pull weeds! Do not use pesticides!!!!

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**Correspondence ID:** 37 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:30:12
**Correspondence Type:** Web Form
**Correspondence:** No chemical removal! The data is clear- spraying the herbicides Glyphosate and Imazapyr on beach grass and iceplant on certain beaches in Point Reyes National Seashore can be lethal to bees, fish, birds, and mammals; and they pose a threat to our health.

---

**Correspondence ID:** 38 **Project:** 44082 **Document:** 62179
**Address:** Mill valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:31:34
**Correspondence Type:** Web Form
**Correspondence:** No chemical removal! The data is clear- spraying the herbicides Glyphosate and Imazapyr on beach grass and iceplant on certain beaches in Point Reyes National Seashore can be lethal to bees, fish, birds, and mammals; and they pose a threat to our health.

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**Correspondence ID:** 39 **Project:** 44082 **Document:** 62179
**Address:** Larkspur,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 21:47:42

**Correspondence Type:** Web Form
**Correspondence:** It has come to my attention that the he National Park Service is spraying Glyphosate and Imazapyr on beach grass and ice plants on certain beaches in Point Reyes National Seashore. These herbicides can be lethal to bees, fish, birds, and mammals; and they pose a threat to our health.

I oppose the spraying of these poisons and ask that another method that supports the ecosystem be used to address removal of weeds.

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**Correspondence ID:** 40 **Project:** 44082 **Document:** 62179
**Address:** San Anselmo,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 23:52:44
**Correspondence Type:** Web Form
**Correspondence:** Glyphosate has a known international reputation, not readily available in the US, for harmful health effects. There is a powerpoint presentation on these effects documented in medical research journals throughout the world that I can offer to you. Please review this and consider the health effects before proceeding with your plan. Contact by phone is best: 415-453-7651. I am interested member of the public, and have well documented information to impart. Thank you for following up.

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**Correspondence ID:** 41 **Project:** 44082 **Document:** 62179
**Address:** Kentfield,
**Outside Organization:** Pesticide Free Zone Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,09,2015 00:00:01
**Correspondence Type:** Web Form
**Correspondence:** We object to the short time allowed for comments on this important issue. Please extend the comment period at least 60 (sixty) days to allow full reading of this extensive assessment document. We further find the citation index extremely difficult to use when investigating assertions. In a normal paper there would at least be numbers to which references would apply. It is hoped this was not done by design to confuse.

In case there is no extension we wish to make the following brief comments:

1. The very idea of removing the non-native vegetation through chemical means is counter productive to the need of allowing dunes to move as with nature. Dune stability is dependent upon particle aggregation due to microorganism secretions/growth. Chemicals, in particular glyphosate are known to kill microorganisms through chelation and interference in the shikimate chemical pathway. We also know now, which was not known in 2009 when the earlier removal projects were approved and begun that the retention strength of glyphosate is quite long. The work by Hyun-Min Hwang and Thomas M. Young for the Marin Municipal Water District demonstrated the extended full-strength retention of glyphosate applications. Anyone who enjoys reclining in the warm sands of the dunes would not wish to be exposed or have children exposed to this chemical.
2. If an alternative was to be chosen then we feel the Alternative "B," using manual removal is preferred if any activity other than no activity.

Sincerely,
Ginger Souders-Mason
Director, Pesticide Free Zone

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**Correspondence ID:** 42 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 00:05:01
**Correspondence Type:** Web Form
**Correspondence:** The spraying of pesticides on or near public beaches does not seem like a good idea. I'm all for habitat restoration, but there are alternatives to pesticides such as hand picking of weeds. Those alternatives should be given a full and fair shot before using health-threatening pesticides.

In addition, 30 days is not enough time for public comment on this topic. The comment period needs to be extended for at least another 30 days.

Respectfully,
Jason Fuchs
Husband and father of three

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**Correspondence ID:** 43 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 01:19:18
**Correspondence Type:** Web Form
**Correspondence:** ENVIRONMENTAL ASSESSMENT PDF:
https://parkplanning.nps.gov/document.cfm?parkID=333&projectID=44082&documentID=62179

Considering the negative commentaries on its health effects on humans and its devastating effects on wildlife and our environment I am shocked that the Pt. Reyes National seashore is considering the glyphosphate called "Roundup" as its preferred choice for controlling non-native species in the Park. That it is considered by the Park as environmentally preferable with the least damage is very troubling.

Below are some links to a few (among many) articles on the health risks of glyphosphate (Roundup):

http://www.ewg.org/agmag/2014/05/study-glyphosate-doubles-risk-lymphoma

http://responsibletechnology.org/gmo-dangers/health-risks/reference-health-effects-of-glyphosate
http://www.scientificamerican.com/article/weed-whacking-herbicide-p/

We are being inundated by harmful chemicals. I urge the Park to use other means: to stop using lethal poisons / toxic chemicals like Roundup that are devastating to all life, and instead, pursue the environmentally friendly way to go about any kind of control. The Park is a public place and should be kept safe for us as well as wildlife in all its forms.

I vote for alternative B.

---

**Correspondence ID:** 44 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 08:31:13
**Correspondence Type:** Web Form
**Correspondence:** I find it horrific that the National Park intends to use Roundup, an herbicide which poisons our environment, as a means to "improve" our environment.
We need to take care of our precious planet, not destroy it.

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**Correspondence ID:** 45 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 08:43:55
**Correspondence Type:** Web Form
**Correspondence:** Hand pull, YES!

CHEMICAL SPRAYING NO.

---

**Correspondence ID:** 46 **Project:** 44082 **Document:** 62179
**Address:** Novato,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 09:22:52
**Correspondence Type:** Web Form
**Correspondence:** This is completely disgusting and needs to stop immediately. Limantour and all of Marin's beaches are pristine havens from our toxic environment. Don't not spray toxic chemicals on our beaches. We'd rather have the plants you're trying to kill than the poisons.

---

**Correspondence ID:** 47 **Project:** 44082 **Document:** 62179
**Address:** San Francisco,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 10:06:41
**Correspondence Type:** Web Form
**Correspondence:** Hello - I am writing to advocate AGAINST spraying toxic herbicides such as Glyphosate and Imazapyr on plants that are found on our beaches in Marin County. Both of these products are highly dangerous to human and animal health, and Glyphosate in particular is considered to be a powerful endocrine disruptor. We do not want these products endangering our wildlife and persisting in our environment.

There are other less toxic means of ridding the beaches of invasive plant life that do not present long-term chemical interference with our wild life.

Please keep the comment period open for an additional 30 days while you further examine the implications of this spraying program on our environmental health. These pristine beaches are worth protecting. Thank you -Christine

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**Correspondence ID:** 48 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Cabaline, Chamber of Commerce, Sustainable West Marin, etc Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,09,2015 10:19:08
**Correspondence Type:** Web Form
**Correspondence:** No Roundup in our Parks! It's proven to be unhealthy for all two and four legged beings. Fish as well, the water system, the environment in general. As a 'green' park, it seems like this would be known in Pt. Reyes and the powers that be would not approve use of Roundup.

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**Correspondence ID:** 49 **Project:** 44082 **Document:** 62179
**Address:** POINT REYES STATIO,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 10:56:31
**Correspondence Type:** Web Form
**Correspondence:** As a former sub-contractor in weed management for the East Bay Regional Park when they were banned from using Round-Up and other herbicides toxic to many of the lifeforms that live in the parks, I know that it is quite possible to control most any weed problems using seasonal management, manual labor and various stratagies . The labor costs may be greater than the labor costs of spraying toxic chemicals, but the environmental

costs are much greater and the risks to the health of the laborers is much greater. There is much evidence of ill effects to organisms in any environment where Round-Up is used. Please reconsider using these toxic chemicals in any part of the Park, especially those places where amphibians, reptiles, invertebrates or humans might be and away from any location where these toxic chemicals might enter the hydrologic system.

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**Correspondence ID:** 50 **Project:** 44082 **Document:** 62179
**Address:** mill valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 11:01:24
**Correspondence Type:** Web Form
**Correspondence:** PLEASE stop spraying herbicides on the beaches of Point Reyes and the surrounding areas. These herbicides are toxic, carcinogenic, and neurotoxic and can be lethal to bees, fish, birds, and mammals; and they pose a threat to human health and the health of the entire ecosystem. Weeds can be controlled other ways - this is not the way to do it.

Also, please extend the period for public comment.

Thank you.

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**Correspondence ID:** 51 **Project:** 44082 **Document:** 62179
**Address:** Kensington,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 11:01:30
**Correspondence Type:** Web Form
**Correspondence:** Please extend the period for public comment by a minimum of 30 more days. Glyphosate is a serious known toxin to animals which greatly inhibits the biosynthesis of amino acids and there are now studies revealing it's incredibly harmful impact to humans.

Data collected over 20 years by MIT scientist Dr. Stephanie Seneff links increased use of Glyphosate on commercial wheat, corn and soy production to levels of autism in children.
http://www.trueactivist.com/half-of-all-children-will-be-autistic-by-2050-according-to-mit-scientist/

There are many other ways to manage weeds. Why use harmful chemicals? Please allow the public to comment.

Sincerely,
Jennifer Jacobs

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**Correspondence ID:** 52 **Project:** 44082 **Document:** 62179
**Address:** Sausalito,
**Outside Organization:** Pine Street Natural Interiors Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,09,2015 11:27:26
**Correspondence Type:** Web Form
**Correspondence:** Marin is such an advanced community in so many ways, it's hard to imagine how this can be happening. Let's find a better way!

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**Correspondence ID:** 53 **Project:** 44082 **Document:** 62179
**Address:** Napa,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 12:29:05
**Correspondence Type:** Web Form
**Correspondence:** The decisionmaker(s) responsible for the spraying of glyphosate and/or imazapyr on Marin county beaches should be fired or removed from office, and permanently banned from serving in any future capacity involving supervision of our environmental resources.

Please do NOT spray glyphosate or imazapyr on our beaches! Are you insane?? Dr. Don Huber, Professor Emeritus at Purdue University, calls glyphosate "the most abused chemical in the history of mankind". Asked which he would prefer to have, if he had to choose one to live with in the environment, Huber said he would prefer DDT because it is far less destructive to the health of humans, animals, pollinators, ecosystems and the environment, than glyphosate.

http://articles.mercola.com/sites/articles/archive/2011/12/10/dr-don-huber-interview-part-1.aspx
http://articles.mercola.com/sites/articles/archive/2012/01/15/dr-don-huber-interview-part-2.aspx
http://articles.mercola.com/sites/articles/archive/2011/06/11/jury-awards-136-million-in-genetically-modified-rice-lawsuit.aspx

Glyphosate has been shown repeatedly to cause massive tumors and grotesque birth defects even at extremely dilute concentrations.

http://www.gmoevidence.com
http://www.healthfreedoms.org/u-s-hospitals-expose-critically-ill-children-to-harmful-glyphosate-herbicides
http://www.healthfreedoms.org/the-monsanto-monster-genetically-modified-food
http://www.healthfreedoms.org/gmo-free-food-sales-explode-amid-public-awareness/

For heaven's sake, come to your senses, PLEASE, and permanently ban the use of glyphosate and imazapyr.

---

**Correspondence ID:** 54 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 13:10:10
**Correspondence Type:** Web Form
**Correspondence:** February 9, 2015

I am writing to express strong support for native dunes restoration, especially Alternatives C and D. I think the planned use of herbicides is thoughtful and protective of resources.

I can see that Alternative C is most cost effective and therefore likely to be preferred. However, I think the mechanical solution is the best from a straight environmental impact standpoint.

It is important to designate some zones for free flowing native dunes. No one can prove that partially stabilized dunes following herbicide use will serve the same ecosystem role as restored native dune habitat, which by its nature has impermanent boundaries, including wetland swales. The Davis property and Limantour could be restored without or minimal effect on ranch land. In areas where ranch land is affected, look into alternative offsetting solutions for the ranchers. With all the restoration opportunities, it is imperative to pick some for mechanical, complete restoration to fulfill NPS mandate.

I think your concept of visitor experience needs an upgrade. Areas of National Parks that are inaccessible to most or all visitors are an important part of their visitor experience, too. When you visit a National Park and learn about remote areas being preserved or rehabilitated for habitat and wildlife, that learning is inspiring. Not every square inch must be tramped on to qualify as a visitor experience.

Are there any pre-Ammophila. pre-ice plant photo images of Limantour and any other PRNS beaches. They might be helpful to visualize what was once there.

Thank you for considering my comments and thank you for undertaking dunes restoration.

Sincerely

Rick W. Johnson
Inverness, CA

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**Correspondence ID:** 55 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 14:13:50
**Correspondence Type:** Web Form
**Correspondence:** Please find other methods of invasive weed control. The use of the toxic herbicides are dangerous to all forms of life . Our oceans are being posioned. Thank you. Joyce M. Klimek

---

**Correspondence ID:** 56 **Project:** 44082 **Document:** 62179
**Address:** Bolinas,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 14:22:26
**Correspondence Type:** Web Form
**Correspondence:** I work in the profession of native plant restoration and landscape installation. I realize that eradication of invasives manually is work intensive. However the use of commercial herbicides on sentitive coastal habitats is not excuseable. Please seek volunteers and a course of action that takes you away from dependany on toxic substances and this counter-productive effort to 'save' the coastal areas.

---

**Correspondence ID:** 57 **Project:** 44082 **Document:** 62179
**Address:** St. Louis,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 14:25:47
**Correspondence Type:** Web Form
**Correspondence:** I think this is a highly valuable restoration project. The restoration of mobile dunes will contribute to creating a coastline that is resilient to erosion and storm surge.

---

**Correspondence ID:** 58 **Project:** 44082 **Document:** 62179
**Address:** Tiburon,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 16:36:08
**Correspondence Type:** Web Form
**Correspondence:** We oppose spreading chemicals on fields. As breast cancer. Survivor and mother of 2 kids, I'm concerned about this madness. I vote to stop!!!

---

**Correspondence ID:** 59 **Project:** 44082 **Document:** 62179
**Address:** Kentfield,

**Outside Organization:** College of Marin Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,09,2015 16:39:59
**Correspondence Type:** Web Form
**Correspondence:** Comments on Coastal Dune Restoration Environmental Assessment

Dr. Paul G. da Silva
February, 2015

In 2000, faculty and students from the College of Marin began the Point Reyes Entomofaunal Survey. This survey included areas adjacent to the proposed project area. To date, over 400 species of insects have been identified as part of this survey, with the number continuing to increase.

Over 90% o these insect species are native, and of these, almost all are found in areas dominated by native plants. A very small number has been collected from the introduced European Beach Grass, Ammophila areanaria ( L.) Link, and most of these probably are accidental encounters, trapped by the grass as they fly or are blown on the wind.

Many of the insects included in the inventory are restricted to the California dune environment, which puts them at risk because of the greatly reduced area of their habitat. Many are even more restricted, only occurring in the foredune habitat. The Globose Dune Beetle, Coelus globosus Eschscholtz, for example, is considered by the California Department of Fish and Wildlife to be a species of concern, with a global rating of G1G2 and a California rating of S1S2, precisely because of habitat reduction.

The proposed removal of invasive plant species as part of the Coastal Dune Restoration Project has the potential to increase the area of habitat available to native insects. General species-area relationships predict that the enlarged area of habitat could increase the total number of insect species present in the general region, if native plants re-colonize the site treated. Additionally, the populations of native insect species already present could increase; this would provide valuable insurance against losses of both rare and more common species due to unpredictable variation in habitat variables.

Personally, I recommend Alternative C, which is the NPS preferred option, because it would restore the largest area of native plant and insect habitat.

---

**Correspondence ID:** 60 **Project:** 44082 **Document:** 62179
**Address:** Novato ,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 17:03:48
**Correspondence Type:** Web Form
**Correspondence:** Hand pick the weeds. No spraying. I have a three year old who I don't want poisoned !

---

**Correspondence ID:** 61 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 18:26:28
**Correspondence Type:** Web Form
**Correspondence:** February 9, 2015
Re: Coastal Dune Restoration EA

Dear Point Reyes National Seashore:

I am writing this memo to formally request two actions: 1) Please do not use the environmentally harmful chemicals 'Imazapyr or Glyphosate' in the Point Reyes National Seashore Parks, and 2) Please hold a public meeting on this issue so that we can discuss alternative ways to remove invasive plants and provide you with the scientific evidence on how harmful both these chemicals are.

1. Please postpone your decision on the use of 'Imazapyr and Glyphosate' for at least one month and hold a public hearing on this most important issue.
2. I work in environmental medicine and there is solid and strong scientific evidence that both these chemicals are harmful to human health, aquatic health and the overall environment.
3. Have you done a meta-analysis on all the possible ways to rid of the invasive plants - including a global search?
4. Please do not use these chemicals. Are you aware that the World Health Organization has stated that by 2020, throughout the world, 1 in 2 persons will have cancer and this tremendous increase is due to the environmental toxins. Please - do not contribute to this health care crisis and the suffering that these chemicals cause.
5. In doing a very brief search of PUBMED and MEDLINE I found that there are innumerable studies on the harmful affects by both the chemicals the Point Reyes National Parks is proposing to use and clearly these chemicals will affect people, aquatic life and the general environment (see below for 5 links).

I do so hope that you hear our community and our tremendous concern for the welfare of our environment, children, the public, the aquatic life, etc. before you make such a major and significant decision. The PRNS is part of a larger community; it is not separate from it. What the park does impacts the West Marin community and its health, and what the West Marin Community does impacts our spectacular national park.

Thank you for considering these requests.

Yours sincerely, Elizabeth A. Goldblatt, PhD, MPA/HA

Subject: Major pesticides are more toxic to human cells than their declared ... - PubMed - NCBI

http://www.ncbi.nlm.nih.gov/pubmed/24719846

Subject: Effects of the herbicide imazapyr on juvenile Oregon spotted frogs. - PubMed - NCBI
http://www.ncbi.nlm.nih.gov/pubmed/23147474

Subject: Acute poisoning with a herbicide containing imazapyr (Arsenal): a r... - PubMed - NCBI
http://www.ncbi.nlm.nih.gov/pubmed/10078164

Subject: The effect of metabolites and impurities of glyphosate on human ery... - PubMed - NCBI
http://www.ncbi.nlm.nih.gov/pubmed/24581382

Subject: Non-Hodgkin lymphoma and occupational exposure to agricultural pest... - PubMed - NCBI
http://www.ncbi.nlm.nih.gov/pubmed/24762670

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**Correspondence ID:** 62 **Project:** 44082 **Document:** 62179
**Address:** inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 18:38:20
**Correspondence Type:** Web Form
**Correspondence:** NO RoundUp in our parks. Be a leader in safe methods!

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**Correspondence ID:** 63 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:08:42
**Correspondence Type:** Web Form
**Correspondence:** Dear Point Reyes National Seashore:

I am writing this memo to formally request two actions: 1) Please do not use the environmentally harmful chemicals 'Imazapyr or Glyphosate' in the Point Reyes National Seashore Parks, and 2) Please hold a public meeting on this issue so that we can discuss alternative ways to remove invasive plants and provide you with the scientific evidence on how harmful both these chemicals are.

1. Please postpone your decision on the use of 'Imazapyr and Glyphosate' for at least one month and hold a public hearing on this most important issue.

2. Have you done a meta-analysis on all the possible ways to rid of the invasive plants - including a global search?

3. Please do not use these chemicals. Are you aware that the World Health Organization has stated that by 2020, throughout the world, 1 in 2 persons will have cancer and this tremendous increase is due to the environmental toxins. Please - do not contribute to this health care crisis and the suffering that these chemicals cause.

4. In doing a very brief search of PUBMED and MEDLINE I found that there are innumerable studies on the harmful affects by both the chemicals the Point Reyes National Parks is proposing to use and clearly these chemicals will affect people, aquatic life and the general environment (see below for 5 links).

I do so hope that you hear our community and our tremendous concern for the welfare of our environment, children, the public, the aquatic life, etc. before you make such a major and significant decision. The PRNS is part of a larger community; it is not separate from it. What the park does impacts the West Marin community and its health, and what the West Marin Community does impacts our spectacular national park.

Thank you for considering these requests.

Yours truly, Rick Gordon

Subject: Major pesticides are more toxic to human cells than their declared ... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/24719846

Subject: Effects of the herbicide imazapyr on juvenile Oregon spotted frogs. - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/23147474

Subject: Acute poisoning with a herbicide containing imazapyr (Arsenal): a r... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/10078164

Subject: The effect of metabolites and impurities of glyphosate on human ery... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/24581382

Subject: Non-Hodgkin lymphoma and occupational exposure to agricultural pest... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/24762670

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**Correspondence ID:** 64 **Project:** 44082 **Document:** 62179
**Address:** Bolinas,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:10:36
**Correspondence Type:** Web Form
**Correspondence:** Dear Point Reyes National Seashore:

I am writing this memo to formally request two actions: 1) Please do not use the environmentally harmful chemicals 'Imazapyr or Glyphosate' in the Point Reyes National Seashore Parks, and 2) Please hold a public meeting on this issue so that we can discuss alternative ways to remove invasive plants and provide you with the scientific evidence on how harmful both these chemicals are.

1. Please postpone your decision on the use of 'Imazapyr and Glyphosate' for at least one month and hold a public hearing on this most important issue.

2. Have you done a meta-analysis on all the possible ways to rid of the invasive plants - including a global search?

3. Please do not use these chemicals. Are you aware that the World Health Organization has stated that by 2020, throughout the world, 1 in 2 persons will have cancer and this tremendous increase is due to the environmental toxins. Please - do not contribute to this health care crisis and the suffering that these chemicals cause.

4. In doing a very brief search of PUBMED and MEDLINE I found that there are innumerable studies on the harmful affects by both the chemicals the Point Reyes National Parks is proposing to use and clearly these chemicals will affect people, aquatic life and the general environment (see below for 5 links).

I do so hope that you hear our community and our tremendous concern for the welfare of our environment, children, the public, the aquatic life, etc. before you make such a major and significant decision. The PRNS is part of a larger community; it is not separate from it. What the park does impacts the West Marin community and its health, and what the West Marin Community does impacts our spectacular national park.

Thank you for considering these requests.

Yours truly, Eleanor Lyman

Subject: Major pesticides are more toxic to human cells than their declared ... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/24719846

Subject: Effects of the herbicide imazapyr on juvenile Oregon spotted frogs. - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/23147474

Subject: Acute poisoning with a herbicide containing imazapyr (Arsenal): a r... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/10078164

Subject: The effect of metabolites and impurities of glyphosate on human ery... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/24581382

Subject: Non-Hodgkin lymphoma and occupational exposure to agricultural pest... - PubMed - NCBI http://www.ncbi.nlm.nih.gov/pubmed/24762670

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**Correspondence ID:** 65 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:10:38
**Correspondence Type:** Web Form
**Correspondence:** I strongly urge you to reject the use of Roundup in Point Reyes National Seashore. As evidence accrues suggesting that Roundup is not nearly as harmless as Monsanto claims, it makes no sense to use it in the very sensitive environments of the Point Reyes dunes. While I support the goal of reducing/eliminating invasive exotic species such as European dune grasss and iceplant from Point Reyes, this can only be done in a way that protects the other species for which this work is done, such as the snowy plover and the native dune plants.

Thank you, Pamela M. Ross

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**Correspondence ID:** 66 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Mainstreet Moms Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,09,2015 19:24:39
**Correspondence Type:** Web Form
**Correspondence:** There are too many recent reports being released that are showing the possibilities of toxic build up from the use of Glyphosates and other ingredients found in Round-Up. Specifically when they combine with other ingredients out there in the world and in our water systems.

The coastal areas are too close to our ocean systems and esteros. Our oceans are already at a fragile point. We do not need our National Parks contributing to this fragility.

We depend on our National Parks to be protecting nature and the environment. Not to be contributing to potential toxins.

I am very much against the use of toxins in the Coastal Dunes Restoration Plan.

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**Correspondence ID:** 67 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:32:16
**Correspondence Type:** Web Form
**Correspondence:** I am writing to strongly protest your use of Roundup and other glyphosate herbicides as well as pesticides, within the boundaries of the Pt Reyes National Seashore. These chemicals have been shown to be toxic to wildlife and to humans.

After all the intense efforts you went to over the past several years to remove Drakes Bay Oyster Company because of your claims their business harmed the environment, I find it incredibly hypocritical on your part to blithely spray such toxic chemicals on land surrounding the Estero, land where these chemicals will probably runoff into the waters of the Estero causing unknown damage to the wildlife that lives in these pristine waters.

The spraying of lands surrounding Limantour Beach and Millerton Head present similar problems what with all the wildlife you tout in the Limantour area that tourists should come view, and the damage to the picnic areas and nearby oyster beds surrounding Millerton that your spraying will contribute to.

I realize that one or two people spraying a chemical is so much easier than hiring several people over an extended time to remove by hand the same infesting plants. But just because it is easier does not make it better or safer. If we only did the easy thing you people would not have a job, as we would have allowed the entire Penninsula to be paved over with housing, shopping centers and the like.

We did not work for so many years to protect this area from development, and to support your efforts with things like acquiring the Giacomini Wetlands to have it tarnished with the application of toxic chemicals that will remain in the environment for a long time damaging the incredible beauty of this place.

Please stop your spraying of Roundup and other glyphosates within the park boundaries.

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**Correspondence ID:** 68 **Project:** 44082 **Document:** 62179
**Address:** Fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:34:07
**Correspondence Type:** Web Form
**Correspondence:** I think that you absolutely have no right to use herbicides in our wild areas. I was horrified to find you had considered this at some of our favorite weekend outdoor areas especially in that my children have spent a great deal of time playing in those areas. Please do not allow this. I have read some of the research on gyphosate and am outraged that you would consider its use in our sensitive coastal areas with no respect for the wildlife and especially the birds.

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**Correspondence ID:** 69 **Project:** 44082 **Document:** 62179
**Address:** Point Reyes Station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:34:25
**Correspondence Type:** Web Form
**Correspondence:** Pesticides no matter what the reason are NOT acceptable.

ODD that the Park would even consider an unhealthy practice.

susanna Henderson

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**Correspondence ID:** 70 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 19:38:06
**Correspondence Type:** Web Form
**Correspondence:** Amy Trainer
PO Box 723
Inverness, CA 94937

February 9, 2015

Cicely Muldoon, Superintendent
Point Reyes National Seashore
1 Bear Valley Road
Point Reyes, CA 94956

Re: Comments on Coastal Dune Restoration Environmental Assessment

Dear Superintendent Muldoon,

Thank you for the opportunity to comment on the Point Reyes National Seashore (Seashore) Environmental Assessment for Coastal Dunes Restoration (EA). I believe that the Seashore makes a good case for the ecological benefits of removal of invasive species of plants in coastal dunes. I believe that the Seashore, as a unit of the National Park Service, should be a leader in native habitat restoration using the most non-toxic methods possible. I am concerned that the Seashore proposes to use the known endocrine disruptor glyphosate, the half-life of which is currently unknown when combined with the surfactant Competitor, in the Seashore, and particularly in wilderness areas. I strongly urge against the Seashore implementing Alternative C.

I believe that the EA is deficient in its analysis of the scientific research on the harmful effects of glyphosate. The EA fails to analyze some extremely important information about glyphosate, as noted below, and should be revised accordingly. Until this revised analysis is completed, I strongly urge the Seashore to proceed only with manual and mechanical removal of invasive plants, including burning the invasive plants where appropriate to diminish the overall mass of necessary removal area.

First, the U.S. Environmental Protection agency is concerned enough about the possible endocrine disruption effects of glyphosate to be studying them at the present time. It seem logical that the EA should recommend, at the very least, withholding any further application of glyphosate in the Seashore, as well as the EA process relying on its application, until the EPA's review is completed.

Second, I have reviewed the analysis and comments on this EA of William Rothman, MD of Belevedere, CA dated January 26, 2015. Dr. Rothman notes that the only peer reviewed research on the use of glyphosate and Competitor, the surfactant that the Seashore proposes to use, shows that the combination "remains at full strength concentration on that vegetation for at least three months." Dr. Rothman notes that the EA "makes no mention of this fact, nor does it give recognition to the fact that during this prolonged period" women, children, birds, other mammals, and marine wildlife will inevitably come into direct or indirect contact with this toxin. I find this very troubling.

Third, also in Dr. Rothman's comment letter, he notes that the EA does not acknowledge the demonstrated negative effects of glyphosate that have been demonstrated in scientific research. If the Seashore's "environmentally preferred" alternative relies on a known endocrine disruptor, it seems reasonable that the EA should provide the public with a rigorous analysis of the scientific literature regarding the toxin's known health effects. It is not enough for the Seashore to rely on the assumption that plastic fences, signage, or buffer areas will keep humans or our non-human wildlife friends out of contact with this long-lasting toxic chemical. The EA lacks credibility in this regard and the final EA must thoroughly address this issue of serious omission.

Fourth, in his supplemental comments dated January 30, 2015, Dr. Rothmann addresses the U.C. Davis Research by Hyun-Min Hwang and Thomas M. Young Environmental Quality Laboratory Department of Civil and Environmental Engineering on the differences between the mixing glyphosate with ionic and non-ionic surfactants. Dr. Rothmann notes that the U.C. Davis research shows, "different categories of surfactants enhance the absorption of different pesticides, including glyphosate, to different extents, and therefore vary in the degree to which they would enhance the absorption of glyphosate through the surfaces of vegetation and, in the instance of humans and animals, through the skin of such humans and animals, thereby causing varying degrees of toxic effects in such humans and animals." Thus, he argues, "consideration of the toxicologic effects of the mixture proposed should not be considered adequate without actually testing the effects on skin absorption of glyphosate of the mixture of glyphosate and the non-ionic surfactant proposed for use with it, Competitor." I agree - it is unreasonable for the Seashore's EA to make assumptions about the use of a known endocrine disruptor combined with a surfactant without knowing in full and clear detail the risks as presented based on scientific studies.

In conclusion, there are simply too many unknown health risks - as well as many very serious known health risks - to utilize this toxic herbicide in the large quantities proposed until these questions are answered. The EA's proposed precautions - like fencing, signage, and ten-foot buffers from other native plants - would be helpful but given the significant extent of the proposed area to be sprayed and the 2.6 million visitors to the Seashore every year, these precautions are not enough. It would, in all likelihood, be too easy for a child or pregnant woman or some at-risk bird or mammal to get sickened from coming into contact with plants sprayed with glyphosate, particularly given the long time period over which it will remain at full strength on sprayed vegetation.

As a result, I strongly urge the Seashore to reject the use of glyphosate for this restoration project until the EPA has completed its review of this toxic substance. In the meantime, I strongly urge the Seashore to proceed with the coastal dunes restoration utilizing manual and mechanical methods.

In proceeding in this manner, the Seashore would send a clear message to the public that its concerns about the proposed reliance on glyphosate have been heard. In using only manual and mechanical means to achieve the restoration goals, the Seashore would be making a clear commitment to the natural values of the magnificent Point Reyes and to the millions of visitors who love it, and it would be a significant affirmation of the public's trust in the Seashore's leadership.

Thank you very much for your consideration of my concerns.

Respectfully submitted,

Amy Trainer, Executive Director

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**Correspondence ID:** 71 **Project:** 44082 **Document:** 62179
**Address:** Pt reyes station,
**Outside Organization:** Mainstreet Moms Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,09,2015 20:00:39
**Correspondence Type:** Web Form
**Correspondence:** Please do not spray Round Up, etc. in the pt Reyes National Seashore but do eliminating by hand of unwanted species. Thank you, Susan Stingle

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**Correspondence ID:** 72 **Project:** 44082 **Document:** 62179
**Address:** Lagunitas,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**

**Received:** Feb,09,2015 20:38:59
**Correspondence Type:** Web Form
**Correspondence:** Please do not use glyphosate pesticides on the beach grasses. There are other ways to deal with this than endangering bees and butterflies, mammals and humans with exposure to this toxic substance. Please consider less harmful ways to deal with this.

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**Correspondence ID:** 73 **Project:** 44082 **Document:** 62179
**Address:** Fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 20:43:18
**Correspondence Type:** Web Form
**Correspondence:** To say I am appalled to learn that you have been spraying with glyphosate in Pt. Reyes is an understatement. That you might think that the residents of Marin would approve of such a thing is willful blindness. But to expand it further? Please, drop this notion. You can get volunteers to help weed any day of the week, and not just from Marin. Add in goats perhaps, some people in jail who would love a day or week outdoors, students in high school needing credits. But good lord, no glyphosate in our precious ecosystem here.

And though I live within half an hour, I'd say 99% o Marin residents have been unaware of what you are doing. Maybe 99.5%. ou sure know how to keep an unpopular project secret.

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**Correspondence ID:** 74 **Project:** 44082 **Document:** 62179
**Address:** point reyes station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 20:46:22
**Correspondence Type:** Web Form
**Correspondence:** Totally against spraying Round-up. Julia Bartlett

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**Correspondence ID:** 75 **Project:** 44082 **Document:** 62179
**Address:** fairfax,
**Outside Organization:** Sustainable Fairfax Unaffiliated Individual
**Affiliation:** Member
**Received:** Feb,09,2015 20:47:55
**Correspondence Type:** Web Form
**Correspondence:**
Please, an extension of the public comment period on this serious issue.
thankyou.

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**Correspondence ID:** 76 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Health & Habitat, Inc Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,09,2015 20:58:13
**Correspondence Type:** Web Form
**Correspondence:** To: Point Reyes National Seashore
From:Sandra Ross, Ph.D., President Health & Habitat, Inc.
February 9th, 2015
Re: Coastal Dune Restoration EA

We are really surprised that Point Reyes National Seashore (Seashore) is considering using 'Imazapyr or Glyphosate' on our public park(s). The people of Marin - particularly west Marin - are known for their dedication to protecting their lands and the people and creatures which use them.

Surely you have read of the continuing stream of irrefutable proof that Glyphosate (and its various mixtures) is not just toxic but carcinogenic; more recently studies show it to interfere with the shikimate pathway, killing micro-organisms our systems need. I have been in holistic health for 40 years, and I'm constantly learning how our interdependent systems are being challenged by more and more environmental toxins. Already the cancer rates in Marin are unacceptably high - please do not add to it.

Your neighbors over the hill @ MMWD found to their surprise (Hwang/Young study) that the mixture they were using remained on/in the plants where sprayed for months longer than expected. How many other places are making their own 'Imazapyr or Glyphosate' mixtures, thinking they could reduce its toxicity, and making it worse!

People will rally to your aide if you hold public meetings to explain your dilema - that ice plant and European bunch grass have gotten an unfortunate foothold. A friend has been pulling ice plant in the Presidio and says his pile of dead plants is big enough to be seen from space! Lets do it in Marin.

1-Postpone your decision for a few months so the people who use the Seashore can be fully informed by well advertised public meeting(s) - especially as getting comments to you by email has been convoluted - and participate in the decisions which effect their health, that of land and marine creatures, and viability of using the area.

2-Make a full, honest search of recent literature on emerging reports of harm from 'Imazapyr or Glyphosate' in their various forms and components.

3-Move Alternative B to the A position, and positively seek ways to implement it.

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**Correspondence ID:** 77 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 20:58:53
**Correspondence Type:** Web Form
**Correspondence:** The use of herbicides on environmentally sensitive areas is unconscionable. The potential health and environmental risks from these products outweigh any justification of their use.
Please pursue non-toxic means in your efforts to improve and support our parks.
Thank you.

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**Correspondence ID:** 78 **Project:** 44082 **Document:** 62179
**Address:** Woodacre,
**Outside Organization:** Mainstreet Moms Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,09,2015 21:14:03
**Correspondence Type:** Web Form
**Correspondence:** I sincerely hope you will consider your choices in treating our coastline with toxic sprays. There are other options. Maybe they require more work.....but how much do you value the health of our waters and the health of our citizens.
These are serious decisions with serious consequences. Don't do something with long term disastrous results.
Sincerely,
Kathryn Callaway
Woodacre, CA

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**Correspondence ID:** 79 **Project:** 44082 **Document:** 62179
**Address:** Kentfield,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 21:39:07
**Correspondence Type:** Web Form
**Correspondence:** I am very upset indeed to hear that beaches in Point Reyes have been sprayed with Glycosphate and Imazapyr since 2008. I have counted on these places to be safe havens for my developing child, and not to have knowledge of this is shocking. I know I speak for many when I ask that you please stop, and do not expand your efforts to eradicate weeds in this way. There are other options, like hand-pulling them (something my family would happily assist with!) and it's very important to me, my friends and family and our fellow bees and fish and mammals etc. These herbicides can be lethal to them and they don't have a voice.

I also need you to extend the 30 day comment period; it's not long enough for such an important matter to be properly discussed.

On behalf of my husband and no doubt many friends who have not heard about this in time, please heed my words.

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**Correspondence ID:** 80 **Project:** 44082 **Document:** 62179
**Address:** Fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 21:39:08
**Correspondence Type:** Web Form
**Correspondence:** Please do the right thing and do not allow spraying in this fragile environment. Our planet, our environment, our wild life, our children will thank you for making the right decision.

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**Correspondence ID:** 81 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 21:42:52
**Correspondence Type:** Web Form
**Correspondence:**
To NPS -

Please stop all your herbicide spraying at Pt. Reyes beaches.
I am so disappointed in the NPS over this.
You are making a tragic mistake.

Please extend the comment period. You gave us in the public way too little time.

Thank you.

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**Correspondence ID:** 82 **Project:** 44082 **Document:** 62179
**Address:** Novato,

**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 22:07:57
**Correspondence Type:** Web Form
**Correspondence:** Please reconsider this proposal
Respected scientific studies show that there is a correlation between glyphosate and serious environmental and health hazards, including increased rates of endocrine disruption, breast cancer, prostate cancer, birth defects, kidney disease and neurological disorders
The spraying can also harm the rich wildlife and damage public health and safety
I'm sure volunteers and americorps would be willing to eradicate the invasive species
This is our watershed, lets reassess the plan
Thank you
Susan

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**Correspondence ID:** 83 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 22:24:57
**Correspondence Type:** Web Form
**Correspondence:** The Point Reyes National Seashore plans to control invasive weeds in the park through the use of broad spectrum herbicides, specifically Roundup Custom and imazapyr. They claim that this is the most environmentally appropriate and cost-effective option to restore endangered plants and wildlife.
Roundup, developed by Monsanto, is classified as a pesticide. Heavily used by consumers and industrial agriculture, it is the number one selling weed killer worldwide. For decades Monsanto has insisted that their product is safe, but Roundup has recently been linked to a number of health problems, including kidney disease, obesity, depression, ADHD, autism, Alzheimers disease, Parkinsons disease, cancer, infertility, celiacs disease, gastrointestinal disorders, diabetes, and developmental malformations.
The key ingredient in Roundup is glyphosate. Glyphosate is an antibiotic, destroying gut bacteria and weakening the bodys immune system. It is a chelator, drawing out the bodys vital nutrients and minerals. It is an endocrine disruptor. It interrupts the bodys ability to create neurotransmitters. And it is a cell disintegrator, breaking down the blood barrier in the brain.
Glyphosate is found in all our staple crops: sugar, corn, soy and wheat, and shows up in over 80% o the food found in the grocery store. It is also found in our drinking water. And it is found inside our urine, breast milk and newborn children.
Until now Monsanto and the regulatory authorities, have insisted that glyphosate does not bio-accumulate in the body. But in 2014, a pilot study by Moms Across America, found levels of glyphosate in womens breast milk over 1000 times higher than that allowed by European standards.
A study published in 2013 by the medical journal Entropy, found that constant exposure to even small amounts of glyphosate is highly toxic to humans, and that the negative impact on the body is insidious and manifests slowly over time as inflammation damages cellular systems throughout the body.
Glyphosate is not the only problem with Roundup. All herbicides are formulations that contain many other chemicals, including solvents, surfactants and emulsifiers. These chemicals are kept confidential by the manufacturer, and declared inert when the truth is that many of them are more hazardous than the active ingredient itself.
A 2013 study published in the journal Biomedical Research International, found that the formulation of Roundup was up to 1000 times more toxic than its active principle of glyphosate. These results question the EPA standard of acceptable daily intake which is a norm calculated from the toxicity of the active principle alone.
Along with the impacts on human health (which also apply to wildlife health), a growing number of studies call into question the environmental effects of glyphosate. In aerobic soil, it has a half-life up to 174 days. In anaerobic soil, it has been known to persist for months or even years.
In 2014 Nature magazine published a study that demonstrated the harmful effects of glyphosate on earthworms and mycorrhizal fungi. A study published in 2005 in the journal Ecological Applications found that even low doses of Roundup were extremely lethal to amphibians, and that the presence of soil did not lessen these effects. Researcher Rick Relyea writes: "The most striking result from the experiments was that a chemical designed to kill plants, killed 98 percent of all tadpoles within three weeks and 79 percent of all frogs within one day."
Imazapyr is another dangerous pesticide. The Journal of Pesticide Reform states that adverse effects found in laboratory animals after chronic exposure to imazapyr include the following: fluid accumulation in the lungs of female mice, kidney cysts in male mice, abnormal blood formation in the spleen of female rats, an increase in the number of brain and thyroid cancers in male rats, and an increase in the number of tumors and cancers of the adrenal gland in female rats.
The evidence is mounting, and is too large to ignore. Glyphosate and imazapyr have wide-ranging adverse effects on all of life. Several countries have banned, or are in the process of banning, glyphosate; imazapyr has been banned in the European Union since 2003. But while the rest of the world appears to be waking up to the dangers of these pesticides, its business as usual in the US.
What is the true cost of polluting our park with toxic chemicals? What if Roundup is the next DDT, and responsible for the new Silent Spring? Are 10 to 500 feet buffers really going to protect the plants, birds and animals that live in the Point Reyes National Seashore? The red-legged frog. Snowy plover. Tidestroms lupine. What about the organic farmers? What about our children?
We are responsible for taking care of the land and all its inhabitants. The health of the land is the health of the people. Instead of spraying poisonous chemicals, why dont the people of West Marin, along with those who love and support the park, take it upon ourselves to manually remove the invasive plants over the coming years? That would be a safer, more cost-effective solution that serves the good of all.

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**Correspondence ID:** 84 **Project:** 44082 **Document:** 62179
**Address:** San Rafael,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 22:34:10
**Correspondence Type:** Web Form
**Correspondence:** Please do not use pesticides as part of the restoration effort. Pesticides harm animals and threaten ecosystems, plain and simple. I would be happy to participate in invasive plant pulls.

Thank you,
Sharon Barnett

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**Correspondence ID:** 85 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 23:28:06
**Correspondence Type:** Web Form
**Correspondence:** "Why approach the challenge of habitat restoration with the complexity of a highly advanced, knowledgable, and civilized perspective when you can just squirt poison on it? Just cut the Gordian knot?"

There is nothing more absurd than using habitat restoration as a pretext for introducing poison into that very same habitat, no matter how carefully worded the report. You're putting lipstick on the pig. Just call it what it is: the cheapest, most expedient way to kill plants. You might also want to add that you're increasing the toxicity of the ecosystem and poisoning the many creatures that live in harmony there, all for the sake of "restoration". Can you truly restore anything with poison? Calling herbicide a tool of restoration is like calling soldiers peacemakers.

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**Correspondence ID:** 86 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 23:32:55
**Correspondence Type:** Web Form
**Correspondence:** Dear National Park Service,

I very strongly oppose the use of herbicide spraying to "restore" coastal dunes in Marin. Glyphosate and Imazapyr are toxic not only to the plants they are meant to kill, but also to the sensitive net of animal life in the surrounding watersheds. We need to pull weeds, not destroy them with pesticides that also subtly and irrevocably poison the birds, bees and mammals who live in their midst. For years I've appreciated the care given to the nesting plovers on Abbott's Lagoon; it is impossible that these birds, to give one example, would not take these herbicides into their bodies by default. I am truly upset that the Park Service, meant to protect these incredibly rich wild lands, would turn straight to increased herbicide use to restore habitat, rather than doing anything possible to find another option, to mobilize volunteers to pull weeds. We don't fully understand yet the true and wide ranging implications and repercussions of herbicide use, and at this point, in this increasingly ecologically fragile world, the last thing we need to be doing, anywhere, is dumping chemicals on a plant we deem a problem. Seriously. We do not need any more Glyphosate in our water, in the bodies of plants and animals. This is a disgrace.

At the very least, PLEASE extend your public comment period. This is a matter that deserves much more space and time for public thought than you have given it. 30 days following the release of the Environmental Report/Proposal is far too short for such a serious matter.

Sincerely

Sylvia

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**Correspondence ID:** 87 **Project:** 44082 **Document:** 62179
**Address:** Marshall,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 23:36:08
**Correspondence Type:** Web Form
**Correspondence:** It is unconscionable for the NPS to use Roundup or any other toxic chemical in the Park. We should all feel that our bat interests as healthy human beings are considered, and the health of all wildlife and our streams remain a top priority. You know there are other solutions to remove some of the most invasive non-natives. These other solutions would give healthy physical jobs to people in need of work and will keep our park a safe place to be.
Thank you for your attention to this very serious matter.
Teresa Ferrari

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**Correspondence ID:** 88 **Project:** 44082 **Document:** 62179
**Address:** Lagunitas,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 23:47:17
**Correspondence Type:** Web Form
**Correspondence:** Dear Madam/ Sir,
I'm very concerned about the proposal to spray pesticides on certain beaches in the Point Reyes National Seashore. I found out about this proposal today. I ask for an extension of the public comment period: 30 days following the release of the Proposal/Environmental Report is far too short a comment period for this serious matter.
Hand pulling to prevent further spreading and push back against invasive plants can be a safe method, spraying pesticides is not a safe method.
Sincerely, Anne Albin

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**Correspondence ID:** 89 **Project:** 44082 **Document:** 62179
**Address:** Corte Madera,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 23:54:25
**Correspondence Type:** Web Form
**Correspondence:** Dear National Park Service,

Please find below my comments pertaining to the Coastal Dune Restoration Environmental Assessment (EA) released to the public by the National Park Service (NPS) on January 9, 2015. These comments underscore the fact that the present EA is inadequate, and as such, not in compliance with the National Environmental Policy Act (NEPA).

Considering the serious health and environmental consequences of the actions proposed in the EA, I am formally requesting that the NPS extend the present, limited 30 day comment period to allow for greater public input, a goal consistent with mandated NPS Management Policies to increase public input. (See, NPS Management Policies, 2006).

It is worth noting that the NPS web page that informed the public of its ability to provide public comment on this particular EA, (found at http://parkplanning.nps.gov/projectHome.cfm?projectID=44082) improperly confused members of the public, and caused many members of the public to send their public comments to the wrong online location.

In particular, the NPS page stated in its final paragraph on this introductory page: Comments may be submitted on-line then immediately below this statement, provided the following email address as the person to contact: Lorraine_Parsons@nps.gov. However, sending comments to this address was wrong. In fact, as members of the public sent their comments to this page, as the 30 day deadline approached, public confusion resulted and public comments were lost.

Curiously, no explanation or link other than this email address was provided on this introductory page as to how to leave online public comments. Instead, in order to get to the ability to comment online, a member of the public had to sua sponte realize that on this page, one had to click on a small non-descript link on the left side of this page that said Open for Comment. Then, the member of the public had to sua sponte realize that looking at the items on this page Open for Review (but not public comment?), one had to click on the bottom link for Coastal Zone Restoration Environmental Assessment. Then, and only then, an actual link that properly, and prominently said Comment Now appeared. The NPS has to date thus made it very difficult for members of the public to leave comments online, and as such, should rectify its online approach, and extend the present, limited 30 day comment period.

Turning now to the substance of the EA, I start with comments pertaining to the EAs inadequacies with respect to Alternative C, the presently preferred Chemical Treatment Proposal.

The EA discusses how under Alternative C, chemical treatments with the herbicides imazapyr and glyphosate would first be applied to beach grass, in some cases following pre-treatment of the grass with burning or mowing, then followed with 2 to 3 additional chemical treatments of the beach grass. Manual re-treatment of the beach grass would be expected to require at least 5-8 return visits during the first year. Ice plant would be treated with glyphosate. The EA estimates the total cost per acre of the Chemical Treatment Proposal to be $28,000 to $33,00 per acre. (EA, xii, 48-62, 187-195, 226-258, 284-300, 314-322, 331-338, 346-349, 357-360, 359-377, 386-389, 400-408, 417-425, 432-433). By contrast, Alternative B, utilizing manual pulling and no chemical treatments, is estimated to cost $52,879 per acre. (EA p.xii).

The EA indicates that the beach grass will be sprayed with imazapyr and glyphosate thoroughly from several different angles; in particular, the EA anticipates that dead matter, or beach grass detritus, will already be present on the beach grass being sprayed, such that thorough spraying from multiple angles will be required. (EA 55)

Undoubtedly, some of the imazapyr and glyphosate will inadvertently be sprayed on the sand surrounding the individual beach grass plants, though the EA improperly fails to discuss this fact that is logically, and common sensically, inevitable. Throughout the EA, the NPS explicitly acknowledges that the dune areas under consideration for these proposals are often regular, high wind areas that typically blow sand (and detritus) from the dune areas inland, in some cases for miles.

Under the requirements of NEPA, the EA is inadequate because it fails to discuss or analyze the environmental and health effects of sand, laden with recently sprayed imazapyr and glyphosate, being blown inland. This is an inevitability.

Additionally, the EA fails to discuss the environmental and health effects of beach grass detritus, laden with recently sprayed imazapyr and glyphosate, being blown inland. It is well established that imazapyr in particular, is taken into the entire structure of a plant. As a sprayed beach grass plant dies, and disintegrates (which would include its root system eventually) that detritus, laden with imazapyr, will be blown into the air and inland.

Significantly, the EA fails to discuss the effects of this blowing pesticide-laden sand and detritus on human visitors to the park. What happens when a human breathes in such sand and detritus?

Signficantly, additionally, the EA fails to discuss the environmental effects of this pesticide-laden sand and detritus on every single endangered species of concern in the EA.

Focusing for the moment, on only on one such species, the EA acknowledges that there is scant to no information on the effects of imazapyr on amphibians, including the presently threatened California Red Legged Frog (CRLF). The EA, however, takes some comfort in its hope that the habitat for this amphibian is likely to be a bit inland from the spray areas. However, the EA is inadequate because it wholly lacks a discussion of how blown pesticide-laden sand or beach grass detritus might affect the habitat and populations of the CRLF in PRNS.

The EA describes several decisions by the NPS to provide for buffers when spraying pesticides. While this goal of providing buffers is laudable, the EA fails to explain why these buffers are necessary, and more significantly why these specific buffer distance numbers are being used by the NPS. In accordance with its Management Policies, the NPS is required to arrive at science-based decisions in choosing its actions. (NPS Management Policies, 2006) Arbitrary decisions, arbitrary numbers, are not allowed.

Specifically, as such, the EA is inadequate because it fails to discuss or explain the science behind, or provide any reason for that matter, for the following NPS numbers:

1) Not allowing pesticide spraying if the wind speeds at plant level are higher than 10 mph. (Why not 5 mph?) (EA, 54)

2) Providing for a 500 foot buffer between spraying and snowy plover nesting.
(Why not 1000 feet?) (EA, 56)

3) Providing for a 100 foot buffer between spraying and other nesting birds.
(Why not 500 feet as was used for the Plovers?) (EA, 56)

4) Providing for a 60 foot buffer between spraying and occupied California red-legged frog habitat. (Why not 100 feet as was used for nesting birds other than snowy plovers?) (EA, 56)

5) Providing for a 25 foot buffer between spraying and wetlands. (Why not 50 feet?) (EA, 56)

6) Providing for a 25 foot buffer between spraying and organic pastures. (Why not 27 feet?) (EA, 56)

7) Providing for a 10 foot buffer between spraying and rare plants and native dune vegetation if spraying is done without shield (Why not 5 feet?) (EA, 56)

8) Not allowing pesticide spraying if the wind speed gusts frequently exceed 10 mph. (Why not 5 mph, and how frequent must the gusts be to qualify for frequently?) (EA, 60)

9) Not allowing pesticide spraying if the weather forecasts call for more than a 20% cnce of rain. (Why did the NPS choose 20%?)(EA, 60)

Continuing now to discuss the inadequacies of the EA with respect to the Chemical Treatment option, the EA recognizes that the choice of surfactants added to the pesticide spraying has significant health and environmental consequences. (EA 53). Yet, the EA then fails to specify the exact surfactant that will be used. As such, it fails to analyze the health and safety effects of the exact surfactant that will be used when the program is carried out Instead, the EA coyly states that the park typically does not use formulations of glyphosate that use surfactants. That is fine and good, but what is the NPS actually going to use in this case, as part of this program, as part of this EA? The EA inadequately and improperly fails to specify.

The EA concludes on pages 69 and 70 that Alternate C, the Chemical Treatment, is the preferred option in large part because it is 10 times cheaper than Alternate B, (hand pulling), and Alternate D (mechanical pulling). Yet, under its own terms, the EA finds the cost difference between these three Alternates to be much closer than this: Alternate B (hand pulling) would cost $52,879/acre; Alternate C (chemical treatment) would cost $28,000 to $33,000 per acre; and Alternate D (mechanical pulling) would cost $28,000 to 33,000 per acre (EA xi-xvii)

Turning now to more general inadequacies in the EA, the EA fails to adequately address the effects of the proposed actions on other threatened or endangered species that could be adversely affected, including the Sonoma Spineflower (Chorizanthe valida). The Sonoma Spineflower is presently listed as an endangered species, one that lives nowhere else in the world outside of PRNS. In a certain sense, then, this particular endangered species which exists nowhere else in the world should receive the highest concern in the EA.

The EA contains no analysis of the how the proposed actions could help or hurt the Sonoma Spineflowers chances of being upgraded from its endangered species status and recovering and/or expanding its habitat to increase its numbers. Instead, the EA simply, and improperly, states that the present populations of the Sonoma Spineflower are more than .5 miles away from the dunes and thus, deserve no consideration. Under this logic, why did the EA spend so much time analyzing and discussing the effects of the proposals on the California red-legged frog, which is not expected to be proximate in the dune areas?

The EA makes clear throughout its analysis, that sand blowing inland as a result of the various actions will have an environmental effect on the inland environments. And that environment IS the habitat of the endangered Sonoma Spineflower, which the EA improperly fails to analyze.

While the EA properly recognizes that the NPS must perform a different EA analysis for its wilderness, the EA fails to discuss and perform that analysis properly pursuant to Section 6.3.5 of NPS Management Policies. It fails to determine which one of the possible actions will have the minimum impact on the wilderness environment. It fails to minimize cost concerns. Additionally, the EA fails to acknowledge and discuss the requirements of Section 6.3.6.2 of NPS Management Policies, which do not allow the proposed actions in the wilderness areas unless the NPS possesses the knowledge and tools to accomplish clearly articulated goals. Many of the actions contemplated by the EA are based upon inadequate knowledge of the actual effects that will result, and the use of methods to remove non-natives that are presently in the experimental stages.

The EA in several places recognizes that it is highly likely that more sand will blow inland than is presently blowing inland. The EA additionally concedes that this additional blowing sand may fill existing wetlands. One very significant wetland in PRNS exists behind Limantour Beach. The EA fails to adequately examine the environmental effects of this critical wetland possibly being filled in as a result of the contemplated actions.

Finally, while the EA concedes that some wetlands could be lost as a result of the proposed actions, it completely fails to discuss how the NPS must and will respond to these losses. Under Section 4.6.5 of the NPS Management Policies, the NPS is required to create 1 acre of wetlands for every 1 acre of wetlands destroyed by an NPS action. (NPS Management Policies, 2006) How and where will the NPS create the compensating wetlands? The EA is silent. On this point alone, the EA fails to meet the requirements of NEPA.

Thank your for your time and consideration,

- -Paul Apffel

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**Correspondence ID:** 90 **Project:** 44082 **Document:** 62179
**Address:** San Anselmo,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 23:59:17
**Correspondence Type:** Web Form
**Correspondence:** I'm writing to express my opposition to the NPS using toxic, synthetic herbicides to control non-native plants. The risk is too great. Persistent toxins already have a presence in our environment that is unacceptably high, in our waterways, our yards, parks, farms, and perhaps even our tissues and the tissues of wildlife. We can't afford to keep using these methods. Please do not use glyphosate and the like to deal with the coastal invasive plants. Please plan for other methods.

Thanks for listening. I hope you make this wiser choice.

John Brossard

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**Correspondence ID:** 91 **Project:** 44082 **Document:** 62179
**Address:** N/A,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 00:00:00
**Correspondence Type:** E-mail
**Correspondence:** Dear ms Parsons,
Please do not go forward with the plan to use glyphosate and imazapyr in point reyes national park. These dangerous chemicals threaten the health of people and animals. There has to be a better way!

Sincerely,

Deborah Jones

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**Correspondence ID:** 92 **Project:** 44082 **Document:** 62179
**Address:** N/A,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 00:00:00
**Correspondence Type:** E-mail
**Correspondence:** Dear Ms. Parsons,
I am writing to you today to urge the National Park Service not to expand the herbicide spraying of the Pt. Reyes National Seashore. Hand pulling of non-native plants may be more expensive, but well worth it. I am also asking that the public comment period be extended as 30 days following the release of the Proposal and EIR is much too short.

Thank you,

Deborah DueÃ±as

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**Correspondence ID:** 93 **Project:** 44082 **Document:** 62179
**Address:** Ross,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,18,2015 00:00:00
**Correspondence Type:** E-mail
**Correspondence:** I write regarding today's IJ article about various means to restore the dunes at Limantour Beach - to return it to a previous time of lupine, plovers, and beach layia. While I realize that there are many considerations - beyond my information - a return to "natural" needs "natural" means - pulling and digging and burying. Introducing an herbicide raises a red flag - especially with adjacent ranch-lands and the ocean!
Who would monitor the care of the spraying of chemicals???? What side affects might they cause?
This spraying issue may be a reason that Crosse did not win in the last election. She proposed spraying herbicides on Mt. Tam!
Perhaps focus on restoring a smaller section at a time - but wisely - and "naturally".
Thank you for your time and thoughtfulness in protecting our environment!
Blanche Belli Virk
Ross, CA

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**Correspondence ID:** 94 **Project:** 44082 **Document:** 62179
**Address:** Inverness Park,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,03,2015 00:00:00
**Correspondence Type:** E-mail
**Correspondence:** Hello I have some comments.
Can you email me back so I know these are going into the official record?
http://parkplanning.nps.gov/projectHome.cfm?projectid=44082

I object the use of Glyphosphate to eradicate non native species from the dunes.
The areas the NPS is proposing to 'restore' are highly sensitive breeding grounds for endangered wildlife and nesting areas, as well as areas that border organic pastures.
Chemical treatment should not be an option simply because it is cheaper in the short run.
The true costs are too difficult to assess when glyphosphate has been linked to many illnesses, cancers and reproductive problems in humans as well as animals. *
The Park should not be allowed to use harmful chemicals in the guise of 'protecting' our area from invasive species.
Alternative B, manual removal should be the method the Park strives to accomplish, for the safety of the wildlife the aquaculture as well as the organic food producers in the Park.
I urge the park to protect us from harmful chemicals, not to mention the numerous humans and fauna who frequent the area, park employees alike.

Please apply for more funds to implement Alternative B, weed by hand, and not with harmful chemicals.

Thank you

Kegan Stedwell
Inverness Park

*http://www.reuters.com/article/2013/04/25/roundup-health-study-idUSL2N0DC22F20130425

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**Correspondence ID:** 95 **Project:** 44082 **Document:** 62179
**Address:** N/A,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,07,2015 00:00:00
**Correspondence Type:** E-mail
**Correspondence:** Dear MS Parsons,

I just learned of the pesticide spraying at my beloved Point Reyes Beaches and that you are now planning to include my favorite beach - Limantour.

I understand the comment period for this is about to end on 2/9.

PLEASE reconsider this terrible idea of spraying toxins on our beaches and at the very least extend the public comment for 30 days.

I will volunteer to help hand pull weeds and know there are others who will do so as well as plenty who would do this work for pay.

Let me know how I can help with the problem of these weeds that does not involve poison.

Thank you,

Michelle Simonson

Michelle E. Simonson

www.sparksandleaps.com

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**Correspondence ID:** 96 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from Baty

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**Correspondence ID:** 97 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,29,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** I am opposed to any herbicides being used to remove non native grasses at Pt Reyes Seashore.

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**Correspondence ID:** 98 **Project:** 44082 **Document:** 62179
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from Nute

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**Correspondence ID:** 99 **Project:** 44082 **Document:** 62179
**Address:** San Francisco,
**Outside Organization:** California Coastal Commission Unaffiliated Individual
**Affiliation:**
**Received:** Feb,06,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from California Coastal Commission

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**Correspondence ID:** 100 **Project:** 44082 **Document:** 62179
**Address:** N/A,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,13,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from Hoffman

**Correspondence ID:** 101 **Project:** 44082 **Document:** 62179
**Address:** Sacramento,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,02,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from Begley

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**Correspondence ID:** 102 **Project:** 44082 **Document:** 62179
**Address:** Mill Valley,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,15,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from Sinkkonen

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**Correspondence ID:** 103 **Project:** 44082 **Document:** 62179
**Address:** San Francisco,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,15,2015 00:00:00
**Correspondence Type:** Letter
**Correspondence:** See PDF of letter from Murdock

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**Correspondence ID:** 1 **Project:** 44082 **Document:** 63294
**Address:** Fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,19,2015 10:27:13
**Correspondence Type:** Web Form
**Correspondence:** I am concerned about the use of herbicide in the dune project. Yes, it may cost more for manual removal, but that doesn't mean we should use herbicide. Just like the initial planting of these invasive plants, the best intentions can have unforeseen consequences. Over the years we have started to learn how dangerous herbicides are and how the can be endocrine disrupters. Why take the risk of spraying when we have a safe alternative that will provide employment.

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**Correspondence ID:** 2 **Project:** 44082 **Document:** 63294
**Address:** Oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,22,2015 18:47:34
**Correspondence Type:** Web Form
**Correspondence:** The EA release letter should have disclosed that Imazapyr and Glyphosate are the herbicides to be used (and any others, if there are any), along with the MSDS sheets on the herbicides. This is important basic information, and people should not be required to contact someone or read the entire EA to find out.

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**Correspondence ID:** 3 **Project:** 44082 **Document:** 63294
**Address:** Oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,24,2015 16:21:51
**Correspondence Type:** Web Form
**Correspondence:** I would vote for A, except that I see that it still allows "previously permitted projects." My real vote is: leave the animals, plants, and land alone.

Hasn't enough damage has been done to Pt. Reyes already? The bulldozing in the endangered Snowy Plover habitat was horrific. And then the spraying, and now plans to do more devastation, with herbicide spraying being most likely since it's the cheapest. And why? What is worth terrorizing and poisoning the poor animals who live in and migrate to the Abbott's Lagoon area? Sometimes there are countless species of birds, with over a hundred white and brown pelican species at one time. Now river otters live there, as well as so many other species, such as bobcats, coyotes, weasels, badgers, red-legged frogs, voles, gophers, etc. Of course the poison will move into the food chain of animals.

It has been upsetting to know that all of this has been going on for years, but it's even worse to see the sign at the trailhead to Abbott's Lagoon, showing the enormous extent of the spraying, from the west side of the Lagoon right to the ocean, contaminating both land and water.

I'm curious if the project on the ranch side of the fence, just south of the boardwalk had anything to do with testing for herbicide spread? No one working on it would ever answer what they were testing, as if we were to believe they actually had no idea what they were doing - - or more likely were told to not tell anyone.

Why is there not an option for no more wasting of money to damage the environment and the animals who so desperately need this space to be left alone?

I will never believe that any herbicide is safe, after seeing a California newt dying a horrible death after crawling through an area sprayed with Glyphosate.

How could anyone believe any poisons are safe with the history of the pesticide industry's lies and manipulations? We know that Monsanto is an enormous corporation which has a history of poisoning the environment, humans, animals, and plants. They use their substantial economic power to prevent people from having the legal right to know if the food we are sold is contaminated with Monsanto's GMO products. They even bully farmers who refuse to buy their mutated seed and then sue them if their GMO seed lands on the farmers' fields. Why would anyone trust such a company or participate in adding to their fortune?

A close doctor friend worked for a business whose sole agenda was to prove that toxic and carcinogenic substances were actually safe. Their clients were companies which made money by putting toxic waste incinerators in heavily populated poor neighborhoods. Of course they had to comply with regulations, so they hired the business, with their degrees and "studies," to prove safety when the opposite was true. The polluter usually won the contract.

How can there ever be justification for using poisons when the result is chronic illness and cancer, for those exposed and for those subjected to the toxins from the factories where the poison is made? (The promoters of the toxins have no idea how long the the contamination remains. I can still smell the pesticide used at a friend's house for termites 40 years ago, which was likely the now-banned chlordane, and which was completely unnecessary since it's quite easy to eliminate termites safely. Could that be why my friend has had two separate rare, extremely invasive cancers?)

What is also ignored in "safety studies" is the cumulative effect of multiple poisons on animals, plants, and the environment. People are using toxic products that go down the drains to the bay and then ocean. Other toxic substances are being vented into the air, in spite of regulations. People have no idea how poisonous these many substances are when combined. Recently, there have been hundreds of water birds in the Bay Area found dead or dying, from an unknown substance. Aren't the animals and plants suffering enough to stop the adding of more toxins and more deaths and mutations? What could possibly justify this other than money or obsession?

It's bad enough that our local parks are heavily sprayed, including alongside and in the bay, for no reason, leaving ugly swaths of dead grass, when elsewhere, the grass is finally green after rain. Pt. Reyes seemed like a rare refuge in this polluted area.

Considering that most of Pt. Reyes is privately owned by ranchers whose cattle continue to destroy the environment, and who will continue to spread non-native seeds, this plan is impossible to accomplish. Those who work for the Seashore can't even keep the cattle from breaking through the fences where they damage the land and water, yet money is spent on this travesty?

Native animals have adapted and often choose non-native plants for food and shelter. The much-maligned Eucalyptus are chosen by raptors as a preferred tree to nest since they are high and protected, with open canopy so that the young eagles and hawks are less likely to die from injury when learning to fly. Monarch butterflies prefer roosting in them. Hummingbirds drink their nectar, etc. Yet, the myth that eucalyptus is not used by native animals continues. Do those involved in this project even know what the Snowy Plover and other native animals prefer in their habitat? (By the way, it is a rare relief to see the re-planting of Monterey Cypress and Eucalyptus at the Pierce Pt. Ranch, so thank you for this. It's a wonderful bird habitat.)

Every project I have seen that supposedly was to help specific species or the environment has done the opposite. I was a docent with Audubon to try to improve the Burrowing Owl habitat at Cesar Chavez Park in Berkeley. The first thing they did, under advice from "experts" at UC Berkeley, was to destroy the plant cover that the owls prefer and need. (Those of us who know the owls were horrified, and Audubon later apologized for this.) When I asked why they'd done this, the Audubon person in charge said something about removing "invasive" plants. When I asked why then had they cut all the Baccharis down, it became clear that she had no idea what was native and what wasn't, or that the park was full of millions of dollars in non-native landscaping that were never going to be removed.

Then, in the small habitat that Audubon cordoned off, a $100,000 "art project" included fence that still allowed in small dogs who attacked the owls and also a concrete platform with benches that was placed on one of the last two owls' burrows. (They return to the same burrow each year.) Then the remaining burrow was paved over for no apparent reason. As at Abbott's Lagoon, heavy machinery was involved in damaging this already fragile habitat. The final death blow seems to have come from an attempt to poison all the remaining native California Ground Squirrels, without any awareness that if there are no squirrels, there are no burrows, and therefore no owls.Some of us protested and stopped that plan, but something else has been done that greatly reduced the squirrel population. It was heart-breaking to no longer see these wonderful little owls close up each year in their same preferred burrows. Some of us used to lead tours to show people. I believe the owls would be there still if not for Audobon's interference and the reducing of the Ground Squirrel population.

Those of us who have seen this kind of devastation do not trust any agencies who are damaging the environment, whatever their reason. Another example is the plan to kill thousands of healthy trees in the East Bay hills on the pretext of fire prevention, ignoring that the result would be far more fires, ruined and poisoned parks along the entire East Bay hills, and uncountable native animal deaths do to the loss of habitat, damage from heavy machinery, and herbciding. People have not been notified to vote about changing our beautiful forest parks into barren grassland, and most have no idea that the majority of these parks are non-native trees. The project ignores that the "exotic" trees slated for killing include nearby Monterey area species who have greatly increased East Bay animal and plant diversity, compared to the native oak/bay woodlands, which are dying from disease. Better to have parched hillsides of non-native grass and poison hemlock than beautiful California and other magnificent exotic trees well-adapted to increasing drought. The project of course will get millions of dollars from FEMA, yet will cause landslides, fires, and environmental devastation. Re-planting trees is not part of the plan.

The fight to kill "invasive" species is a classic example of double standard because many park headquarters and all city, county, state, etc. plantings usually are with non-native plants

Isn't it bad enough that nativist fanatics already caused the destruction of one of the most magical and beautiful places at Pt. Reyes, which was the little lake near Limantour, a rare fresh water refuge along the coast. Great Egrets would nest and roost there, Kingfishers hunted, as well as many other birds. It was an important source of fresh water for so many animals, with so much bio-diversity. Even a mountain lion lived and ate near there. But the entire eco-system was simply destroyed. The trees and animals are gone, and the theoretical stream in its place was about an inch deep when I last looked. It was a wasteland. And why? Because it wasn't "natural"? The buildings and road are still there. The non-native humans and dogs are allowed. The war seems to be only against the native animals. Even if they replace some of this habitat, animals suffered and died.

Why don't the nativists stop being hypocritical with their double standards for themselves versus the native animals? If they so hate introduced plant species, why do they usually have a garden full of exotics, from roses to fruit trees to vegetable and herb gardens? Why do they allow non-native animals to terrorize and kill native animals? Why are they themselves still here?

Bev Jo

Another view of who is native: http://www.planetarianperspectives.net/?p=1042

This excellent blog explains more of what is wrong with the Pt. Reyes and similar plans:

http://milliontrees.me/

Native plant advocates believe their projects benefit the environment. We do not see the benefit they claim. This is what we see:
â€¢ Increasing use of toxic pesticides is required to kill non-native vegetation. These pesticides are inherently hazardous and their incompetent use makes them even more hazardous.
â€¢ The wildlife that lives in our open spaces is being poisoned by these pesticides and they are losing their homes and their sources of food.
â€¢ The results of these projects do not justify these dangerous practices. The projects often look more dead than alive.

Imazapyr disasters: http://milliontrees.me/2013/03/12/when-the-cure-is-worse-than-the-disease-incompetent-pesticide-use/

http://milliontrees.me/2014/02/25/american-corporations-prevent-the-regulation-of-pesticides/

Glyphosate: http://www.washingtonpost.com/national/health-science/roundup-is-tied-to-infertility-and-cancer-herbicides-maker-calls-it-safe/2013/04/29/ac86ced6-ae71-11e2-98ef-d1072ed3cc27_story.html

http://articles.mercola.com/sites/articles/archive/2013/06/09/monsanto-roundup-herbicide.aspx

http://www.scientificamerican.com/article/weed-whacking-herbicide-p/

http://www.greenmedinfo.com/blog/roundup-herbicide-125-times-more-toxic-regulators-say

http://milliontrees.me/2013/10/01/glyphosate-aka-roundup-is-damaging-the-soil/

http://milliontrees.me/2012/02/28/escalating-pesticide-use-by-the-unnatural-natural-areas-program/

http://www.naturescountrystore.com/roundup/

http://naturalsociety.com/still-eating-agent-orange/

Monsanto has been in the poison game for a long time. All the propaganda in the world can't erase the fact that they first poisoned thousand of Vietnamese, Thai, and Koreans as well as countless American soldiers with Agent Orange, who only now receive compensation for the effects of Monsanto's bio-warfare decades later. The proof is finally so pervasive that the company can no longer just sweep away evidence of their evil-doing.

The company has switched to using it's best-selling herbicide RoundUp predominately now, yet another innocent product constructed of poisons even the most stalwart farmer would wince at should they really understand its fallout. RoundUp is made of glyphosate, the primary active ingredient and Agent Orange of our time. Even the RoundUp label warns not to get the stuff in your eyes or on your skin, and to wear gloves when handling it - so what makes it o.k. to eat?

RoundUp " kills weeds because glyphosate (a salt compound) inhibits enzyme pathways, preventing plants from synthesizing amino acids necessary for growth. It basically stops plants from eating, so they die." It is probable that Monsanto and other companies who use this substance under other names besides RoundUp are now dumping more than 300 million pounds of this toxic poison into our soil annually. It's use has at least tripled since 1990.
http://naturalsociety.com/human-blood-round-ready/
Just try to escape from glyphosate (N-(phosphonomethyl)glycine) - the main ingredient in Round Up, Monsanto's best selling poison. It is utterly toxic, in the parts per trillion range. Even infinitesimally small amounts of this stuff can cause cancer, inhibit proper endocrine function, cause birth defects, and inflict infertility upon unsuspecting women.

The weed-killer has been found in people's blood in 18 different countries, but glyphosate isn't the only problem. The 'inactive' ingredients are just as harmful, making 'RoundUp Ready' chemicals a toxic blood-venom none of us can ignore.

For example, rats fed Monsanto's maize developed massive breast tumors in the first-ever lifetime feeding study published last year. Other recently published studies demonstrate glyphosate's toxicity to cell lines, aquatic life, food animals, and humans - such as damaging human embryo cells.
http://naturalsociety.com/human-blood-round-ready/#ixzz3PWcsBONk

The researchers analyzed the "light-induced cell damaging toxicity" of glyphosate, atrazine, aminomethylphosphoric acid (AMPA), desethyl-atrazine (DEA) and various mixtures of the Roundup ingredients and metabolites.

They (and other researchers before them) came to the determination that the mixtures of herbicide ingredients and metabolites are anywhere from 20 to 1,000 times more toxic than regulators believe, as the toxic potentials of these ingredients depended largely on their physiochemical environment.

http://naturalsociety.com/roundup-banned/#ixzz3PWdRi45F

http://wtfrly.com/2014/09/22/roundup-agent-orange-dr-oz-calls-out-epa-over-glyphosate-2-4-d-combo-herbicide-enlist-duo/#.VMCJJ5t16Xg

**Correspondence ID:** 4 **Project:** 44082 **Document:** 63294
**Address:** Mill Valley,
**Outside Organization:** Health & Habitat, Inc. Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,09,2015 21:08:48
**Correspondence Type:** Web Form
**Correspondence:** Re: Coastal Dune Restoration EA

We are really surprised that Point Reyes National Seashore (Seashore) is considering using 'Imazapyr or Glyphosate' on our public park(s). The people of Marin - particularly west Marin - are known for their dedication to protecting their lands and the people and creatures which use them.

Surely you have read of the continuing stream of irrefutable proof that Glyphosate (and its various mixtures) is not just toxic but carcinogenic; more recently studies show it to interfere with the shikimate pathway, killing micro-organisms our systems need. I have been in holistic health for 40 years, and I'm constantly learning how our interdependent systems are being challenged by more and more environmental toxins. Already the cancer rates in Marin are unacceptably high - please do not add to it.

Your neighbors over the hill @ MMWD found to their surprise (Hwang/Young study) that the mixture they were using remained on/in the plants where sprayed for months longer than expected. How many other places are making their own 'Imazapyr or Glyphosate' mixtures, thinking they could reduce its toxicity, and making it worse!

People will rally to your aide if you hold public meetings to explain your dilema - that ice plant and European bunch grass have gotten an unfortunate foothold. A friend has been pulling ice plant in the Presidio and says his pile of dead plants is big enough to be seen from space! Lets do it in Marin.

1-Postpone your decision for a few months so the people who use the Seashore can be fully informed by well advertised public meeting(s) - especially as getting comments to you by email has been convoluted - and participate in the decisions which effect their health, that of land and marine creatures, and viability of using the area.

2-Make a full, honest search of recent literature on emerging reports of harm from 'Imazapyr or Glyphosate' in their various forms and components.

3-Move Alternative B to the A position, and positively seek ways to implement it.

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**Correspondence ID:** 1 **Project:** 44082 **Document:** 63389
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,14,2015 20:25:05
**Correspondence Type:** Web Form
**Correspondence:** I support all coastal dune restoration projects undertaken by the Point Reyes National Seashore. And would encourage PRNS to continue these projects along all the coastline in the Park Boundaries.

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**Correspondence ID:** 2 **Project:** 44082 **Document:** 63389
**Address:** Wheeler,
**Outside Organization:** WHY Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Jan,18,2015 10:16:05
**Correspondence Type:** Web Form
**Correspondence:** The hand of man can never improve on the hand a nature. It the grass grows there let it alone. Its proof that survival of the fittest is alive and well. Animals and other grasses can grow. If you kill every thing then what have you gained. More sand?

P.S. Although the oyster business is gone, there are more than 8 or 9 oyster middens from Indians dating back many 100's of years; long before white man. To say the oyster harvesting had no historical presedent causes me to question the reasons for putting out of business someone who provided us food for 9 billion people on the planet. We are eating ourselves off the planet already and limiting our food source shows a lack of understanding of not only our history but our future.

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**Correspondence ID:** 3 **Project:** 44082 **Document:** 63389
**Address:** fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,18,2015 13:47:35
**Correspondence Type:** Web Form
**Correspondence:** i am opposed to the use of pesticides on public lands.. climate change makes the case for native plants
somewhat shaky- -we do not know what will survive and what will not..meanwhile we are a society crumbling
under weight of so many illnesses that are directly linked to the use of these chemicals. every single cancer treatment facility in the bay area is booked solid 24/7. and while there are many illnesses that would exist even if we didn't spray this
stuff all over everything, there are a few things that we can do right now, with very little money to slow down the progress of some of these illnesses. not spraying pesticides on the beaches is one of them..and the bigger plus is...
its free! just DONT do it...

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**Correspondence ID:** 4 **Project:** 44082 **Document:** 63389

**Address:** San Anselmo,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,18,2015 18:45:51
**Correspondence Type:** Web Form
**Correspondence:** I read in my local paper,

http://www.marinij.com/News/ci_27342189/Dune-restoration-plan-for-Point-Reyes-National-Seashore-calls-for-herbicide-use

, that you plan on putting herbicides into our environment to remove European beach grass. I ask that you try vinegar as it is inexpensive and works well.

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**Correspondence ID:** 5 **Project:** 44082 **Document:** 63389
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,19,2015 11:50:10
**Correspondence Type:** Web Form
**Correspondence:** Spraying a herbicide is simply adding more toxins to the enviroment, Monsato, Dow and the rest of the producers of these toxins are already doing enough to posin the environment they do not need more help in spreading their poisons. Find another way!

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**Correspondence ID:** 6 **Project:** 44082 **Document:** 63389
**Address:** Fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,21,2015 22:32:54
**Correspondence Type:** Web Form
**Correspondence:** To The National Park Service:

I have just read the article in the Marin IJ, 1/18/15, regarding planned spraying to restore dunes from European Beach grass with use of herbicides. The issue is profound with over 60% o the parks coastal dunes invaded. My understanding is that 600 of the 1400 acres of dune are involved. The article states that the the plan is for use of an herbicide as well as mechanical removal. The article also goes on to state via a quote by Stacy Carlsen, "The message here is that using herbicides is a cost effective and the environmental appropriate way to get rid of invasive weeds." The reasoning, as reported, states that chemical control is cheaper that other methods.

The article also discusses a 2009 pilot program at Abbotts' Lagoon that mechanically removed the beach grass. Dell'Osso states, "That still is an option..."

As a denizen of Marin, Integrative Physician/Pediatrician, Advisory Member of MOMAS and involved community member on integrated pest management, I am voicing several concerns regarding your proposal. I will list my concerns below:

1. The herbicide to be used was not identified. If one assumes that glyphosate is employed, there are several issues with its usage. It has been well-documented that this herbicide/chelator/antibiotic gets into ground water. Therefore, containment even via 'spot-spraying' is not successful. Due to the proximity of organic farms in the region, one could argue that contamination of their animals and animal products could be in jeopardy.

2. The use of herbicides has not been successful in other projects in Marin County. I am referring the National Park Service to the talk given by Don Huber with Larry Bragman at the Marin County Civic Center that addressed that very issue. Mr. Huber presented to the county other modalities of dealing with invasives. While I do appreciate that not all species are equivalent, there are broad concepts that could apply here.

3. Health effects of herbicide spraying have shown causation of ADHD, infant birth issues and increases in respiratory issues in children. These health effects have been demonstrated in other species. If glyphosate is the herbicide under consideration, it is known to work as a chelator and antibiotic. The threatened species in the area (i.e., snowy plover) may also suffer from its toxicity. What chelators do is bind minerals. The minerals (magnesium, zinc, calcium, etc.) are important for hundreds of functions in the body ranging from immunological, thyroid and heart function for example). In addition, the glyphosate can alter the beneficial bacteria of the wildlife which can lead to secondary immunologic dysfunction. Has there been any studies of the wildlife in the area that would be subject to the spray? The bee community is also at risk. Our understanding of bee demise also relates to immunologic dysfunction.

As a health care provider with clinical expertise in toxicology, I am voicing that I have grave concerns regarding this plan of action in our fragile ecosystem and that other modalities, such as mechanical pulling and the consideration of planting alternatives that could compete with the European beach grass be considered.

In the following article, Control of European Beachgrass (Ammophila arenaria) on
the West Coast of the United States, Andrea J. Pickart, The Nature Conservancy Lanphere-Christensen Dunes Preserve
Arcata, CA 95521, I cite their experience and success with manual removal:

Manual removal has been used with great success, but at great expense, at the The Nature Conservancy's
(TNC) Lanphere-Christensen Dunes Preserve in Humboldt Bay dunes. The method was first tested and found to
be successful over a two-year period in small isolated stands (Pickart et al. 1990). Between 1992 and 1997, a
ten-acre area of Ammophila was subjected to repeated manual digging using California Conservation Corps
labor (Miller 1994). The area was divided into three sub-areas, each of which was initiated in a different year.
A patchwork of small stands comprised each sub-area to reduce erosion, but it was found that this was
unnecessary since dead Ammophila stubble provided sufficient stabilization. In fact, the use of small stands
increased edge and therefore cost.
The first removal was carried out in March, as plants emerged from dormancy. A shovel was used to sever
rhizomes at a depth of about eight inches, since the majority of active rhizomes were found to be in this region.
Grass was piled and later burned. Resprouting occurred throughout the season, more vigorously at first. Crews

returned to pull and/or dig resprouts an average of eight times over the first season, and seven times the second season. By the end of the second season plants were largely eradicated. Some of the stands were scattered in remote areas and did not receive systematic treatment; these areas will require additional follow-up. Ammophila often hides small, relict native plants. After the Ammophila was removed, these plants flourished, eliminating the need for revegetation. This is a significant benefit realized by the manual method, as it is possible to selectively retain native plants. The elimination of revegetation work saves on costs and should be considered in the choice of eradication method. By 1997, at the TNC site, native plant cover had reached 45% o the cover found in sites not invaded by Ammophila (Fig. 2).

The article goes continues in their examination of the use of herbicides (glyphosate):

Chemical treatment of Animophila is likely to be the most cost-effective method of those used to date. There are, however, problems with this method. Herbicides have biological impacts and may be politically unacceptable in a given area or for a particular agency (for example, the Bureau of Land Management is under an injunction prohibiting the use of herbicides on non-noxious weeds). When native plants are present, selective spraying may be difficult or impossible. After spraying, dead biomass must be removed if revegetation is to occur. If only a small amount of Ammophila regeneration occurs, it is infeasible to treat it with herbicide since surface area will be insufficient. If complete eradication is desired, manual follow-up may still be required at an additional cost, and the cost of revegetation must be added.

It appears from that they agree with the cost containment of chemical usage however, when natives are present, selective spraying is not feasible. Manual removal is still recommended.

From my brief review of the literature, it is evident that chemical spraying is effective in terms of cost, but does not offer the solution to the problem. In medicine, I have learned that there are natural, effective therapies, and the chemical (pharmaceutical) solutions are not always the most efficacious for my patients.

There are other solutions rather than chemical to this grave problem. I have full confidence in the National Park Service to address this issue from the perspective of the fragile health of wildlife, the organic farms and ultimately, our children.

Respectfully submitted,

Michelle Perro, MD

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**Correspondence ID:** 7 **Project:** 44082 **Document:** 63389
**Address:** Oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,22,2015 18:35:34
**Correspondence Type:** Web Form
**Correspondence:** Plan A, No Action, is the only plan that would not cause serious damage to the Point Reyes National Seashore ecosystem. "Restoration" is a misnomer. There is no way to restore the habitat to what it was before non-indigenous humans invaded it, even if you removed all human habitations and constructions, including roads-which, of course, is not part of the plan. Invasive humans have changed and damaged the environment far too much for restoration to be possible.

Any further attack on plants now only perpetuates the destructive practice of trying to manipulate nature to achieve self-interested goals set up by humans. Killing non-native plants also destroys habitat for many animals, including indigenous ones, killing them too. Every place that I've seen subjected to this kind of "restoration" project has been devastated. Even years later native species of birds and other animals who had adapted to the non-native plants are no longer there, there are less trees and other plants, and much less variety of any living thing.

Using herbicides/pesticides makes the destruction far worse, and this proposed plan names "chemical control" as the preferred method. That's a euphemism for using Imazapyr and Glyphosate, which are toxic chemicals, as all herbicides/pesticides are. There is abundant information available about the harm these manufactured chemicals do to all forms of life, including humans. They're biocides. They kill, they spread, they accumulate. Our environment is already so full of toxic chemicals that it makes no sense to add more.

Mechanical removal of plants would also be a toxic and destructive invasion of Point Reyes National Seashore area, because of the machinery used. Manual removal would still be habitat-destroying and unnecessary. Taxpayer money should not be spent on this project. Point Reyes National Seashore is designated as a protected area, a place where the natural environment can be respected and enjoyed, not a place to be further harmed by humans' projects.

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**Correspondence ID:** 8 **Project:** 44082 **Document:** 63389
**Address:** Oakland,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,24,2015 16:20:23
**Correspondence Type:** Web Form
**Correspondence:** I would vote for A, except that I see that it still allows "previously permitted projects." My real vote is: leave the animals, plants, and land alone.

Hasn't enough damage has been done to Pt. Reyes already? The bulldozing in the endangered Snowy Plover habitat was horrific. And then the spraying, and now plans to do more devastation, with herbicide spraying being most likely since it's the cheapest. And why? What is worth terrorizing and poisoning the poor animals who live in and migrate to the Abbott's Lagoon area? Sometimes there are countless species of birds, with over a hundred white and brown pelican species at one time. Now river otters live there, as well as so many other species, such as bobcats, coyotes, weasels, badgers, red-legged frogs, voles, gophers, etc. Of course the poison will move into the food chain of animals.

It has been upsetting to know that all of this has been going on for years, but it's even worse to see the sign at the trailhead to Abbott's Lagoon, showing the enormous extent of the spraying, from the west side of the Lagoon right to the ocean, contaminating both land and water.

I'm curious if the project on the ranch side of the fence, just south of the boardwalk had anything to do with testing for herbicide spread? No one working on it would ever answer what they were testing, as if we were to believe they actually had no idea what they were doing - - or more likely were told to not tell anyone.

Why is there not an option for no more wasting of money to damage the environment and the animals who so desperately need this space to be left alone?

I will never believe that any herbicide is safe, after seeing a California newt dying a horrible death after crawling through an area sprayed with Glyphosate.

How could anyone believe any poisons are safe with the history of the pesticide industry's lies and manipulations? We know that Monsanto is an enormous corporation which has a history of poisoning the environment, humans, animals, and plants. They use their substantial economic power to prevent people from having the legal right to know if the food we are sold is contaminated with Monsanto's GMO products. They even bully farmers who refuse to buy their mutated seed and then sue them if their GMO seed lands on the farmers' fields. Why would anyone trust such a company or participate in adding to their fortune?

A close doctor friend worked for a business whose sole agenda was to prove that toxic and carcinogenic substances were actually safe. Their clients were companies which made money by putting toxic waste incinerators in heavily populated poor neighborhoods. Of course they had to comply with regulations, so they hired the business, with their degrees and "studies," to prove safety when the opposite was true. The polluter usually won the contract.

How can there ever be justification for using poisons when the result is chronic illness and cancer, for those exposed and for those subjected to the toxins from the factories where the poison is made? (The promoters of the toxins have no idea how long the the contamination remains. I can still smell the pesticide used at a friend's house for termites 40 years ago, which was likely the now-banned chlordane, and which was completely unnecessary since it's quite easy to eliminate termites safely. Could that be why my friend has had two separate rare, extremely invasive cancers?)

What is also ignored in "safety studies" is the cumulative effect of multiple poisons on animals, plants, and the environment. People are using toxic products that go down the drains to the bay and then ocean. Other toxic substances are being vented into the air, in spite of regulations. People have no idea how poisonous these many substances are when combined. Recently, there have been hundreds of water birds in the Bay Area found dead or dying, from an unknown substance. Aren't the animals and plants suffering enough to stop the adding of more toxins and more deaths and mutations? What could possibly justify this other than money or obsession?

It's bad enough that our local parks are heavily sprayed, including alongside and in the bay, for no reason, leaving ugly swaths of dead grass, when elsewhere, the grass is finally green after rain. Pt. Reyes seemed like a rare refuge in this polluted area.

Considering that most of Pt. Reyes is privately owned by ranchers whose cattle continue to destroy the environment, and who will continue to spread non-native seeds, this plan is impossible to accomplish. Those who work for the Seashore can't even keep the cattle from breaking through the fences where they damage the land and water, yet money is spent on this travesty?

Native animals have adapted and often choose non-native plants for food and shelter. The much-maligned Eucalyptus are chosen by raptors as a preferred tree to nest since they are high and protected, with open canopy so that the young eagles and hawks are less likely to die from injury when learning to fly. Monarch butterflies prefer roosting in them. Hummingbirds drink their nectar, etc. Yet, the myth that eucalyptus is not used by native animals continues. Do those involved in this project even know what the Snowy Plover and other native animals prefer in their habitat? (By the way, it is a rare relief to see the re-planting of Monterey Cypress and Eucalyptus at the Pierce Pt. Ranch, so thank you for this. It's a wonderful bird habitat.)

Every project I have seen that supposedly was to help specific species or the environment has done the opposite. I was a docent with Audubon to try to improve the Burrowing Owl habitat at Cesar Chavez Park in Berkeley. The first thing they did, under advice from "experts" at UC Berkeley, was to destroy the plant cover that the owls prefer and need. (Those of us who know the owls were horrified, and Audubon later apologized for this.) When I asked why they'd done this, the Audubon person in charge said something about removing "invasive" plants. When I asked why then had they cut all the Baccharis down, it became clear that she had no idea what was native and what wasn't, or that the park was full of millions of dollars in non-native landscaping that were never going to be removed.

Then, in the small habitat that Audubon cordoned off, a $100,000 "art project" included fence that still allowed in small dogs who attacked the owls and also a concrete platform with benches that was placed on one of the last two owls' burrows. (They return to the same burrow each year.) Then the remaining burrow was paved over for no apparent reason. As at Abbott's Lagoon, heavy machinery was involved in damaging this already fragile habitat. The final death blow seems to have come from an attempt to poison all the remaining native California Ground Squirrels, without any awareness that if there are no squirrels, there are no burrows, and therefore no owls.Some of us protested and stopped that plan, but something else has been done that greatly reduced the squirrel population. It was heart-breaking to no longer see these wonderful little owls close up each year in their same preferred burrows. Some of us used to lead tours to show people. I believe the owls would be there still if not for Audobon's interference and the reducing of the Ground Squirrel population.

Those of us who have seen this kind of devastation do not trust any agencies who are damaging the environment, whatever their reason. Another example is the plan to kill thousands of healthy trees in the East Bay hills on the pretext of fire prevention, ignoring that the result would be far more fires, ruined and poisoned parks along the entire East Bay hills, and uncountable native animal deaths do to the loss of habitat, damage from heavy machinery, and herbciding. People have not been notified to vote about changing our beautiful forest parks into barren grassland, and most have no idea that the majority of these parks are non-native trees. The project ignores that the "exotic" trees slated for killing include nearby Monterey area species who have greatly increased East Bay animal and plant diversity, compared to the native oak/bay woodlands, which are dying from disease. Better to have parched hillsides of non-native grass and poison hemlock than beautiful California and other magnificent exotic trees well-adapted to increasing drought. The project of course

will get millions of dollars from FEMA, yet will cause landslides, fires, and environmental devastation. Re-planting trees is not part of the plan.

The fight to kill "invasive" species is a classic example of double standard because many park headquarters and all city, county, state, etc. plantings usually are with non-native plants

Isn't it bad enough that nativist fanatics already caused the destruction of one of the most magical and beautiful places at Pt. Reyes, which was the little lake near Limantour, a rare fresh water refuge along the coast. Great Egrets would nest and roost there, Kingfishers hunted, as well as many other birds. It was an important source of fresh water for so many animals, with so much bio-diversity. Even a mountain lion lived and ate near there. But the entire eco-system was simply destroyed. The trees and animals are gone, and the theoretical stream in its place was about an inch deep when I last looked. It was a wasteland. And why? Because it wasn't "natural"? The buildings and road are still there. The non-native humans and dogs are allowed. The war seems to be only against the native animals. Even if they replace some of this habitat, animals suffered and died.

Why don't the nativists stop being hypocritical with their double standards for themselves versus the native animals? If they so hate introduced plant species, why do they usually have a garden full of exotics, from roses to fruit trees to vegetable and herb gardens? Why do they allow non-native animals to terrorize and kill native animals? Why are they themselves still here?

Bev Jo

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http://milliontrees.me/

Native plant advocates believe their projects benefit the environment. We do not see the benefit they claim. This is what we see:
â€¢ Increasing use of toxic pesticides is required to kill non-native vegetation. These pesticides are inherently hazardous and their incompetent use makes them even more hazardous.
â€¢ The wildlife that lives in our open spaces is being poisoned by these pesticides and they are losing their homes and their sources of food.
â€¢ The results of these projects do not justify these dangerous practices. The projects often look more dead than alive.

Imazapyr disasters: http://milliontrees.me/2013/03/12/when-the-cure-is-worse-than-the-disease-incompetent-pesticide-use/

http://milliontrees.me/2014/02/25/american-corporations-prevent-the-regulation-of-pesticides/

Glyphosate: http://www.washingtonpost.com/national/health-science/roundup-is-tied-to-infertility-and-cancer-herbicides-maker-calls-it-safe/2013/04/29/ac86ced6-ae71-11e2-98ef-d1072ed3cc27_story.html

http://articles.mercola.com/sites/articles/archive/2013/06/09/monsanto-roundup-herbicide.aspx

http://www.scientificamerican.com/article/weed-whacking-herbicide-p/

http://www.greenmedinfo.com/blog/roundup-herbicide-125-times-more-toxic-regulators-say

http://milliontrees.me/2013/10/01/glyphosate-aka-roundup-is-damaging-the-soil/

http://milliontrees.me/2012/02/28/escalating-pesticide-use-by-the-unnatural-natural-areas-program/

http://www.naturescountrystore.com/roundup/

http://naturalsociety.com/still-eating-agent-orange/

Monsanto has been in the poison game for a long time. All the propaganda in the world can't erase the fact that they first poisoned thousand of Vietnamese, Thai, and Koreans as well as countless American soldiers with Agent Orange, who only now receive compensation for the effects of Monsanto's bio-warfare decades later. The proof is finally so pervasive that the company can no longer just sweep away evidence of their evil-doing.

The company has switched to using it's best-selling herbicide RoundUp predominately now, yet another innocent product constructed of poisons even the most stalwart farmer would wince at should they really understand its fallout. RoundUp is made of glyphosate, the primary active ingredient and Agent Orange of our time. Even the RoundUp label warns not to get the stuff in your eyes or on your skin, and to wear gloves when handling it - so what makes it o.k. to eat?

RoundUp " kills weeds because glyphosate (a salt compound) inhibits enzyme pathways, preventing plants from synthesizing amino acids necessary for growth. It basically stops plants from eating, so they die." It is probable that Monsanto and other companies who use this substance under other names besides RoundUp are now dumping more than 300 million pounds of this toxic poison into our soil annually. It's use has at least tripled since 1990.
http://naturalsociety.com/human-blood-round-ready/
Just try to escape from glyphosate (N-(phosphonomethyl)glycine) - the main ingredient in Round Up, Monsanto's best selling poison. It is utterly toxic, in the parts per trillion range. Even infinitesimally small amounts of this stuff can cause cancer, inhibit proper endocrine function, cause birth defects, and inflict infertility upon unsuspecting women.

The weed-killer has been found in people's blood in 18 different countries, but glyphosate isn't the only problem. The 'inactive' ingredients are just as harmful, making 'RoundUp Ready' chemicals a toxic blood-venom none of us can ignore.

For example, rats fed Monsanto's maize developed massive breast tumors in the first-ever lifetime feeding study published last year. Other recently published studies demonstrate glyphosate's toxicity to cell lines, aquatic life, food animals, and humans - such as damaging human embryo cells.

http://naturalsociety.com/human-blood-round-ready/#ixzz3PWcsBONk

The researchers analyzed the "light-induced cell damaging toxicity" of glyphosate, atrazine, aminomethylphosphoric acid (AMPA), desethyl-atrazine (DEA) and various mixtures of the Roundup ingredients and metabolites.

They (and other researchers before them) came to the determination that the mixtures of herbicide ingredients and metabolites are anywhere from 20 to 1,000 times more toxic than regulators believe, as the toxic potentials of these ingredients depended largely on their physiochemical environment.

http://naturalsociety.com/roundup-banned/#ixzz3PWdRi45F

http://wtfrly.com/2014/09/22/roundup-agent-orange-dr-oz-calls-out-epa-over-glyphosate-2-4-d-combo-herbicide-enlist-duo/#.VMCJJ5t16Xg

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**Correspondence ID:** 9 **Project:** 44082 **Document:** 63389
**Address:** Belvedere,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,30,2015 10:01:59
**Correspondence Type:** Web Form
**Correspondence:** From William Rothman, MD

Please consider this input comment in addition to the input comments I previously submitted.
I am writing to address the following two defects in the plan:
1) Subject: Unsubstantiated assumptions that the combination of glyhposate and Competitor, a non-ionic surfactant, will have the same human and environmental toxicologic effects as the toxicologic effects of the mixtures of glyphosate and ionic surfactants that are the only referenced studies included in the report.
Discussion: Surfactants act in one or more ways to enhance the effects of pesticides and other chemicals. The general categories of these effects include increasing pesticide spreading on surfaces, increasing pesticide adherence to surfaces and physically/chemically breaking down the structure of surfaces to make them more permeable to pesticides. The enhancement abilities of surfactants, in general, apply to the surfaces of vegetation, animals and humans. Surfactants are of several varieties, particularly including ionic and non ionic types. Each of these different types of surfactants have various mechanisms of action, as referred to above, and those mechanisms of action may differ depending upon with which pesticide (or other chemical) they are mixed. Of course, depending on the mechanisms of action involved in each particular pesticide mixture, the degree of absorption of the pesticide active ingredient will vary.
Deficiency in Environmental Assessment report: None of the referenced studies presented (and none that I was able to find in the literature, dealing with the human, animal and environmental toxicologic effects expected from the mixture of glyhphosate and a surfactant involved the use of Competitor, or, so far as I could tell, even any other non-ionic surfactants. In fact, some of the studies referred to didn't even involve the use of a surfactant of any kind. Because, as referred to above, different categories of surfactants, and different subcategories within each category (ionic vs non-ionic, etc.) enhance the absorption of different pesticides, including glyphosate, to different extents, and therefore vary in the degree to which they would enhance the absorption of glyphosate through the surfaces of vegetation and, in the instance of humans and animals, through the skin of such humans and animals, thereby causing varying degrees of toxic effects in such humans and animals,consideration of the toxicologic effects of the mixture proposed should not be considered adequate without actually testing the effects on skin absorption of glyhposate when mixed with the surfactant, Competitor, proposed for use.
2)Subject: Apparent deficiency in Environmental Assessment, due to absence of information about the amount of glyhposate to be used.
Discussion: Clearly the environmental, and animal and human toxicologic effects to be anticipated, based upon the referenced input in my previous submission, and in the information provided in (1), above, will be dependent upon the amount of glyphosate to be used. Whereas the report does include the concentrations of glyphosate to be used, the sites of its proposed usage, and a range of possibilities as to the number of times it will be used, there is not information, so far as I can see, that discusses how much glyhposate will be used. Because an understanding of the amount is clearly related to toxicological concerns, I do not believe the Assessment can be considered adequate without that information.
Thank you for your attention.
Sincerely,
William Rothman, MD

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**Correspondence ID:** 10 **Project:** 44082 **Document:** 63389
**Address:** Belvedere,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Jan,30,2015 19:52:16
**Correspondence Type:** Web Form
**Correspondence:** I am submitting an additional input regarding the plan.
The receipts for my two previous comment inputs indicated ID946347-62179/6 and 946641-63389/9

The basis for this comment is shown in U.C. Davis, Marin Municipal Water District report, (Hyun-Min Hwang and Thomas M. Young), available for review at
Link: http://www.marinwater.org/DocumentCenter/View/244 (See, especially, fig. 4 on page 12).

Statement of apparent inadequacy of scope of Environmental Assessment. As you see from figure 4 of the report, the concentration of glyphosate on sprayed vegetation, when the glyphosate had been mixed with Competitor surfactant, remained on such vegetation, at full strength, for fully 3 months after application, at the end of which time testing ended. Since no decline in concentration had occurred at that time, it is, of course, impossible to tell for how long beyond that time, probably due to the sticking effect of the Competitor, the glyphosate remained at full concentration, or when its concentration began to decline towards safe-for-the-public levels on vegetation with which the public would come in contact.

The report's indicated amount of spraying planned, in an area open to the general public, should be restricted with warning signs and taped off at each spraying site. The glyphosate post-spraying warnings should remain in place for at least one year due to the findings of the MMWD study, referred to, above, by Dr. Hwang of U.C. Davis. Therefore the post-spraying warning signs must also include complete information for members of the general population who are at particularly high risk for adverse health reactions to the mixture of glyphosate and competitor,eg: fertile women, embryos, fetuses, neonates, hepatic diseased, immune system compromised, and patients under treatment for a variety of diseases.

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**Correspondence ID:** 11 **Project:** 44082 **Document:** 63389
**Address:** Fairfax,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,08,2015 12:02:08
**Correspondence Type:** Web Form
**Correspondence:** I am grateful to all who work on maintaining the health and beauty of our beaches and surrounding coastal area.

I am sure the intentions to find the best possible solutions are good.

However, I just learned of the pesticide spraying at my beloved Point Reyes Beaches and that you are now planning to include my favorite beach - Limantour.

PLEASE reconsider this harmful idea of spraying toxins on our beaches.

And please extend the public comment for 30 days, so people who love their beaches have an opportunity to hear about this controversy and weigh in.

I will volunteer to help hand pull weeds and know there are others who will do so as well as plenty who would do this work for pay.

Let me know how I can help with the problem of these weeds that does not involve poison.

Thank you,

Michelle Simonson

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**Correspondence ID:** 12 **Project:** 44082 **Document:** 63389
**Address:** Point Reyes Station,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 09:42:01
**Correspondence Type:** Web Form
**Correspondence:** I am a year round resident of Inverness Park and regular visitor to Limantour Beach.

I was dumbstruck to learn that the National Park Service is seriously considering spraying herbicides, Glyphoshate and Imazapyr, at Limantour Beach and several other locations within the Point Reyes National Seashore. And I was shocked to learn the NPS has already been using these herbicides in several locations in the Park since 2008.

As a taxpayer, I can think of hundreds of better uses of my tax dollars in Point Reyes National Seashore than on herbicides and on defending the inevitable lawsuit that will follow.

If non-native, invasive plant species are truly a problem, why not organize volunteers to remove them? I would be happy to volunteer to remove non-native plants as I have done in parks in San Francisco and San Mateo. I'm sure many others who love the Park would volunteer to do so, too.

The continued use of these herbicides, which are known neurotoxins, in a National Park and the proposed additional new usage of such harmful chemicals in new areas of the Park is insane, ill-advised and dangerous to human, animal and aquatic life. It is particularly irresponsible to use these herbicides at Limantour Beach given the National Park Service's intention to restore Drake's Estero to a pristine condition by terminating the lease of an environmentally responsible and sustainable oyster farm in its waters. The proposed use of these chemicals on land in the immediate Drake's watershed poses a far greater environmental and human threat than the oyster farm. In addition, the National Park Service's proposed usage of these herbicides at Limantour Beach, which is immediately adjacent to Drakes's Estero, is inconsistent with the environmental positions taken by the Service with respect to refusing to renew the lease for Drake's Bay Oyster Company on Drake's Estero. The National Park Service can't have it both ways. It is hypocritical for the NPS to reject an environmentally responsible and sustainable business on Drake's Estero while seeking approval for itself to apply herbicides in the same watershed.

From an environmental standpoint, what will be the effect of such herbicides on the breeding population of harbor seals that live at the end of Limantour Spit at the mouth of Drake's Estero? How will these chemicals effect the shorebirds, ospreys, vultures and other birds that frequent the proposed useage area? What will be the environmental impact of these chemicals be on the deer, raccoons, fox, and other mammals that frequent the Limantour dunes, and the clams and other marine life that life in the waters of Drake's Estero? What will the effects be on human visitors to the beach?

Finally, I respectfully demand an extension of the public comment period for the EIR for this proposed program. Thirty days following the release of the Proposal and EIR is far too short a comment period for such a serious matter.

Sincerely,

John Montgomery
P.O. Box 1270
Point Reyes Station, CA 94956

**Correspondence ID:** 13 **Project:** 44082 **Document:** 63389
**Address:** San Francisco,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 15:34:25
**Correspondence Type:** Web Form
**Correspondence:** Using herbicides to eliminate plants called "invasive" and to establish plants called "native" is totally unacceptable.
And that's what the Preferred Alternative calls for.
You well know that imazapyr had been banned in Eurpian Union since 2007 (in Norway since 2001). Glyphosate gives really spectacular birth defects to the agricultural workers exposed to it like microcephaly (tiny head), microphthalmia (tiny undeveloped eyes), impairment of hindbrain development, cyclopia (a single eye in the middle of the forehead),neural tube defects.
The herbicides hurt not just the "invasives" but also the species they supposedly designed to help. But they do help chemical companies to increase the profits.
You are poisoning the land. You are anti environment, pro chemical companies criminals.
The Preferred Alternative/use of herbicides should not be allowed.

https://www.youtube.com/watch?v=AT4Zczx_bik

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**Correspondence ID:** 14 **Project:** 44082 **Document:** 63389
**Address:** San Francisco,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 15:50:56
**Correspondence Type:** Web Form
**Correspondence:** The Preferred Alternative - chemical alternative - should not be allowed.
Using extremely toxic chemicals should be prohibited. They hurt the environment, they hurt the "native" species they are supposedly used to help even more than they hurt "invasives".
You should know that more and more non-industry-funded scientists are finding links between the glyphosate and cell death, birth defects, miscarriage, low sperm counts, DNA damage, and destruction of gut bacteria.
Imazapyr has been banned in European Union for at least 7 years - it should be banned in US as well.
Stop using these awful chemicals under "environmental"/"restoration" pretext.

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**Correspondence ID:** 15 **Project:** 44082 **Document:** 63389
**Address:** San Francisco,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 15:57:23
**Correspondence Type:** Web Form
**Correspondence:** Glyphosate and imazapyr should be banned not used to poison the land for "native restorations".
The Preferred Alternative should not be allowed. The people promoting/using these chemicals are not environmentalists. They are anti environment/pro chemical companies.

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**Correspondence ID:** 16 **Project:** 44082 **Document:** 63389
**Address:** Inverness,
**Outside Organization:** Unaffiliated Individual
**Affiliation:**
**Received:** Feb,09,2015 17:17:35
**Correspondence Type:** Web Form
**Correspondence:** It is very timely that I am reading Rachel Carson's Silent Spring about the revealing facts about pesticide use. Even though it was published in 1962, very little has changed about its philosophy and scientific evidence. Spraying chemicals is never the answer. While it may work wonders on one invasive plant, it is likely no matter how conscientious the Park's choice in choosing which chemical pesticide to use, it is going to adversely affect another species whether it be animal or plant. Please do not use the chemical alternative. Please stick with no action.

Thank you,
Jennifer Livingston

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**Correspondence ID:** 17 **Project:** 44082 **Document:** 63389
**Address:** Mill Valley,
**Outside Organization:** Health &Habitat, Inc. Unaffiliated Individual
**Affiliation:** OffcialRep
**Received:** Feb,09,2015 20:48:24
**Correspondence Type:** Web Form
**Correspondence:** To: Point Reyes National Seashore
From:Sandra Ross, Ph.D., President Health & Habitat, Inc.
February 9th, 2015
Re: Coastal Dune Restoration EA

We are really surprised that Point Reyes National Seashore (Seashore) is considering using 'Imazapyr or Glyphosate' on our public park(s). The people of Marin - particularly west Marin - are known for their dedication to protecting their lands and the people and creatures which use them.

Surely you have read of the continuing stream of irrefutable proof that Glyphosate (and its various mixtures) is not just toxic but carcinogenic; more

recently studies show it to interfere with the shikimate pathway, killing micro-organisms our systems need. already the cancer rates in Marin are unacceptably high - please do not add to it.

Your neighbors over the hill @ MMWD found to their surprise (Hwang/Young study) that the mixture they were using remained on/in the plants where sprayed for months longer than expected. How many other places are making their own 'Imazapyr or Glyphosate' mixtures, thinking they could reduce its toxicity, and making it worse!

People will rally to your aide if you hold public meetings to explain your dilema - that ice plant and European bunch grass have gotten an unfortunate foothold. A friend has been pulling ice plant in the Presidio and says his pile of dead plants is big enough to be seen from space! Lets do it in Marin.

1-Postpone your decision for a few months so the people who use the Seashore can be fully informed by well advertised public meeting(s) - especially as getting comments to you by email has been awkward - and participate in the decisions which effect their health, that of land and marine creatures, and viability of using the area.

2-Make a full, honest search of recent literature on emerging reports of harm from 'Imazapyr or Glyphosate' in their various forms and components.

3-Move Alternative B to the A position, and positively seek ways to implement it.

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Thomas G Baty
[redacted]

February 7, 2015

Cicely Muldoon
Point Reyes National Seashore
Pt. Reyes CA 94937

Dear Superintendent Muldoon,

Please accept the following comments on your current Coastal Dunes Restoration Environmental Assessment.

I think the Park's CDR is an ambitious and thoughtful program that will hugely benefit our disappearing coastal dune habitat and the species that depend on it. The initial phases of the Abbotts Lagoon dune restoration have shown very promising results as well as feedback for the relative efficacies and economies of various management approaches to the removal of invasive European beachgrass, iceplant, and other non-native plant species.

I support the EA's preferred alternative as it provides for potentially the largest restoration footprint.

I need to say that I have a fundamental philosophical issue with the use of herbicides. In my lay perspective, herbicides should only be used when issues of mechanics, efficacy, and/or economy essentially preclude mechanical (either manual or equipment) removal. The EA appears to approach the effected lands with an absolutely critical focus on fragile habitats, protected species, and in some areas the protection of adjacent organic pasture certification. I would hope that as specific management details are worked up for particular sites that there could be an added emphasis on non-chemical pre-treatments of controlled burning and/or mowing to minimize the need for broad applications of herbicides. Similarly, the retreatment process would hopefully involve more manual and less herbicide.

The Park seems to have given significant effort into considering the potential effects of this restoration of adjacent agricultural leases. I commend the park for its apparent outreach to the organic dairy operators to assure that organic certifications will not be jeopardized by these projects. The Park also seems to have worked with adjacent cattle and dairy lease-holders to consider and minimize the impacts on pasturelands, fence-lines, and infrastructure.

I would like to emphasize that by their very nature that these dune systems are dynamic. The siting of "restored" dune habitat should not be limited to "historic" acreage or footprint as delineated in the EA. Given the unknown effects of sea level rise and climate change as well as the ever-present prospects for diminishing coastal dune habitats, any natural expansion of this particular habitat type should be

welcomed within the National Seashore. The adjacent pastures seem for the most part of marginal grazing value and could be addressed through simple modifications in leases.

I would like to share three points based on personal observations First, the current exclusionary fencing between dune habitat and the pastures is way too porous. Not only is it quite common to see numerous bovines (seemingly mostly heifers) on these beaches (or evidence thereof), but also ATV riders/tracks from the ranches as ranch staff attempts to track down the errant animals. It seems crazy to put so much effort/resources into dune restoration while this informal rodeo is going on. I hope that the dune restoration efforts can include devising and implementing a better system of fencing between pastures and dunes and that the improvements of dune habitat could be enhanced by more definitive and enforced policy regarding ATVs on the dunes and beach.

My second observation has to do with how the increased use of herbicides is affecting the park's volunteer corps. A friend that has volunteered in an HRT for years claims that the growing reliance on herbicides to control non-natives has had an increasingly caustic effect on the morale and participation in his group. I can imagine that this perception could be widespread among the non-native plant volunteers---I know that I would be loath to spend volunteer time around herbicide spraying or in areas that have been recently treated. The volunteer corps for our parks help leverage limited resources, but are even more important as a means of outreach to connect and develop senses of pride and ownership by an all-too-distracted citizenry. To the extent possible, I hope that the dune restoration project makes every effort to educate and engage park volunteers wherever it can. At some point buy-in by the public is perhaps as important as our reliance on Monsanto.

My final point has to do with the old Davis property. I had difficulty finding specifics in the EA regarding plans for this parcel (forgive me if I overlooked it), though it seems like most of the property is close to potential dune habitat. I don't know what the park's plans are for the larger parcel and for deconstructing the main residence. Are there plans to preserve any of the other structures and the access road? How wide a cleanup plan is envisioned for all the debris (originally mostly Navy and/or Coast Guard?) adjacent to the main residence and along the bluffs? The rubble/fill, pipes, cables, septic tanks, old foundations, ancient steel traction plates, and other debris could and should be removed and much of it is interlaced with European beachgrass, bush lupine and iceplant. Is there any way that the cleanup could be dovetailed with the dune restoration efforts that might provide economies involving equipment, soil removal, etc.? Is there a Navy and/or Coast Guard fund for cleaning up former installations that could be added to or leveraged for the dune restoration program? Just thinkin'.

Sincerely,

Coastal Dune Restoration EA
% Superintendent Muldoon
Pt. Reyes National Seashore
1 Bear Valley Road
Pt. Reyes Station, CA 94956



February 7, 2015

Dear Superintendent Muldoon,

We urge the Point Reyes National Seashore to find the funds necessary to eradicate the non-native plants naturally and chemical free. The herbicide Roundup is not the harmless, non-toxic chemical we have all been lead to believe in the past. We have attached a report on Roundup published January 19, 2015 by the Institute of Science in Society that outlines the worldwide harmful effects of Roundup to people and the environment, and presents scientific evidence to support the ban of using Roundup to eradicate non-natives in the park.

The producers of Roundup or glyphosate try to assure the public of the safety of the herbicide by claiming that "its propensity to bind with soil and sediment means it will not leach into our fresh water supplies," and that "due to glyphosate's high water solubility , it is rapidly excreted from the body and therefore risks of harm are negligible." Both claims have proven false. A 2014 study in 38 states consistently found Roundup in ground water, lakes and streams. Numerous studies on human and animal tissue have found high concentrations of Roundup in body tissues, and as the attached report outlines, Roundup can be directly linked to cancers, kidney disease, diabetes, birth defects and many other health problems in humans, farm animals and wildlife. The report further states that "glyphosate is almost ubiquitous in our environment and in people and in livestock; it has even been discovered in hospital feeding tubes of child cancer patients in the U.S."

According to the Institute of Science in Society report, "The evidence of glyphosate toxicity to both humans and animal health and the ecosystem has built up to such an extent that some governments are taking action" to ban the herbicide. By taking action to use natural, chemical free eradication procedures against non-native plants, you will be protecting the spectacular environment of the Pt. Reyes National Seashore and the millions of visitors each year as well the surrounding communities and ecosystems.

Thank you for the opportunity to comment on the use of Roundup to control invasive plants in Point Reyes National Seashore.

Marcia and Ed Nute

[redacted]

Attachment: Institute of Science in Society report. 1/19/2015 "A Roundup of Roundup Reveals Converging Pattern of Toxicity from Farm to Clinic to Laboratory Studies"

ISIS Report 19/01/15

# A Roundup of Roundup® Reveals Converging Pattern of Toxicity from Farm to Clinic to Laboratory Studies

*We need to ban glyphosate from our own communities as most governments fail to protect citizens* Dr Eva Sirinathsinghji

**Forward this article to your MEPs and ask them to vote against the re-approval of glyphosate herbicide**

**Also, please support research of Seralini's team on analysing glyphosate residues in rats exposed to Roundup here: http://www.i-sis.org.uk/Support_Seralini_Team_for_New_GMO_Risk_Research.php**

Also available as a PDF document here

## What is glyphosate?

Glyphosate, perhaps surprisingly for a chemical so ubiquitously associated with our food, was not first used as an agricultural chemical but instead first patented as a metal chelator in 1964 by Stauffer Chemical company (US 3160632 A) [1] and used as an industrial pipe cleaner. It was later patented by Monsanto as an herbicidal agent in 1974 (US3799758 A) [2] based on its ability to block the shikimate pathway involved in the production of aromatic amino acids in both plants and bacteria. It has become the most popular herbicide in the world especially since glyphosate tolerant genetically modified (GM) crops were commercialized in the mid-1990s, together with the assumption (perpetrated by Monsanto) that the herbicide is safe for health and the environment. In 2010, it was also patented by Monsanto as an antibiotic agent. Moreover, it is being increasingly used as a pre-harvest desiccant for drying seeds, a process that results in contamination of non-GM grains, one of the main exposure routes in the EU where GM crops are not commonly grown. Thus, an estimated 70 % of UK oil seed rape (canola) and 50-60 % of EU sunflowers are sprayed with glyphosate [3], resulting in products of major food brands in the UK testing positive for glyphosate residues in a 2014 analysis by GM Freeze, with glyphosate the most commonly detected of all chemicals [4].

All of glyphosate's chemical properties already mentioned have implications for the health of both people and planet. Scientific research has additionally implicated glyphosate as an endocrine disruptor and a DNA mutagen; and it affects over 291 different enzymes in the body [5]. It is increasingly linked with a wide variety of illnesses, the sharp rises in illnesses occurring in parallel with glyphosate application across various GM cultivating regions of the world.

The most convincing evidence of glyphosate toxicity is the consistent pattern of diseases associated with glyphosate that has emerged from the farm to the clinic and from scientific studies to citizen testimonials.

## Glyphosate widespread in the environment and in our bodies

Glyphosate's popularity is due in large measure to its concomitant use with the most widely planted type of GM crops, those tolerant to glyphosate-herbicides. Monsanto commercialised the first Roundup-ready crop in 1996 (Roundup being the commercial formulation containing 'adjuvants' that make it much more toxic than the active ingredient glyphosate alone, see later). In countries such as Argentina where large swaths of the country have been dubbed soy deserts, GM soybean cultivation has resulted in an 858 % rise in glyphosate use (see [6] Devastating Impacts of Glyphosate Use with GMO Seeds in Argentina, to appear). Similarly, the US has seen even greater rises of 2 500 % from 1987 to 2007 [7].

This widespread and massive application of glyphosate herbicides has resulted in almost ubiquitous contamination of the environment. A 2014 study on US water systems across 38 states found glyphosate and its principle metabolite AMPA (aminomethylphosphonic acid) not only in rivers, lakes and streams, but also rain, soil and sediment, ditches and drains and groundwater (see [7]). Some 70 % of rain samples tested positive for glyphosate. Similarly in Europe, (in Catalonia, a large region of Spain) it was found that all 11 groundwater sites were positive for glyphosate despite it being a region free from glyphosate-tolerant crop cultivation; 41 % of samples were above detection limits [8]. ***The detection in groundwater goes against one of the claims on glyphosate safety that its propensity to bind to soil and sediment means it will not leach into our fresh water supplies.*** In Argentina, new data of rain sample measurements averaged an extreme 6.5 µg/L and reaching as high as 67 µg/L (67 ppt) across four regions from October 2012 to April 2014 [9]. These levels are far higher than those seen in US rain samples where the average and maximum concentrations were 0.11 µg/L and 2.5 µg/L respectively [7].

Tap water and rivers also test positive for glyphosate with UK samples coming up (30 parts per trillion (ppt) and 190 ppt respectively) at concentrations within range of those found to be toxic in lab studies (see [10] How Roundup Poisoned my Nature Reserve, *SiS* 64). Urban areas also get sprayed, prompting London citizens to organise banning campaigns of glyphosate spraying in public areas including child-friendly zones [11]. Even oceans are not spared from glyphosate poisoning, with run-offs into the sea persisting for up to 267 days in sea water obtained from the Great Barrier Reef and tested in the lab [12].

Due to the official 'safe' status of glyphosate, data on how much we are being exposed have been scarce, forcing citizen activists and civil society organizations to find out for themselves. Friends of the Earth Europe commissioned an analysis of 182 volunteers across 18 EU countries and found detectable levels in 44 % of urine samples [13] with concentrations ranging from 0.16 ug/L average in Switzerland, to 1.82ug/L in Latvia. Of the UK citizens tested, 7 out of 10 were positive. In the US, urine samples show concentrations 8 times those in Europe [13]. The analysis, commissioned by Moms Across America, also tested 10 mother's breast milk, which came up positive for glyphosate with levels ranging from 76 µg/L to 166 µg/L (76-166 ppb) (see [14]). These levels are 760 to 1600 times higher than the European Drinking Water Directive allows for individual pesticides, and raise obvious concerns as they fall within the range of concentrations at which developmental toxicity has been observed in animal studies (see below). This analysis is the only study on breast milk to date, as no government or public health body has found it necessary to carry out any study on bioaccumulation in internal organs and tissues or in breast milk fed to infants.

Recent independent scientific studies have backed up the work of activists and civil society organisations. Awad Shehata and colleagues in Germany looked at glyphosate levels in the urine of both chronically ill and healthy people, and found significantly higher levels in ill people in samples taken from 102 and 199 healthy and chronically ill people respectively [15]. Those who ate predominantly organic food had lower levels, along with livestock that were fed conventional versus genetically modified feed. The study also looked at levels in cow tissues as well as urine. ***Detection of glyphosate in the tissues contradicts one of the assumption-based arguments used by industry and regulators that due to glyphosate's high water solubility, it is rapidly excreted from the body and therefore risks of harm are negligible.*** In such a case, the levels of glyphosate in urine would be expected to be much greater than levels found in the tissues. However, urine levels in cows averaged 27-42 µg/ml (27-42 parts per million (ppm)), while the level in tissues (intestine, liver, spleen, kidney and muscle) averaged between 14-20 µg/ml, which is within range of urine levels. Though they did not compare glyphosate levels in urine and internal organs of the same cow, the average levels across all cow samples dispute the assumptions taken by regulators that glyphosate does not remain in the body at levels that can cause harm.

In summary, glyphosate is almost ubiquitous in our environment and in people and livestock; it has even been discovered in hospital feeding tubes for child cancer patients in the US [16]. The impacts are described below.

## A birth defect epidemic in people and animals

Argentina is one of the biggest cultivators of GM soybeans and the country has witnessed a sharp increase in serious illnesses since cultivation began. Concerned doctors and health practitioners founded the Network of Physicians of Crop Sprayed Towns and met in 2010. They presented data showing increased incidence of birth defects, spontaneous abortions, infertility, still births, cancers, Down's syndrome, mental disability, immune and endocrine disorders, as well as acute effects such as increased convulsions in epileptic patients at time of fumigation, respiratory and dermatological problems (see [6] ) and [17] Pesticide Illnesses and GM Soybeans, SiS53 ) [18].

The Network, together with a large citizen movement, is pushing for a complete ban on aerial spraying of agrochemicals plus a ban of its use within a kilometre of residential areas. They documented a 2-5 times increase in birth defects in sprayed towns compared to before spraying began. Common defects include neural tube defects, which are replicated in laboratory studies on glyphosate (see later).

A 2013 report from the Centre of Congenital defects claims that nationally, the number of cases has not gone up, but a closer scrutiny gives a different picture. Data gathered during a 6 month period from the hospital Matemidad Provincial in Córdoba showed that despite recording a low level of birth defects of 36 out of a total of 2140 births (1.68 %), 22 of those came from mothers living in crop-sprayed towns, which accounts for 61% of all the birth defects (see [6]).

The US has seen a surge in neural tube birth defects (anencephaly) in the Yakima River, Washington State. The source remains a mystery to officials who have ruled out common causes such as low folic acid and lifestyle choices. Rates have reached 8 cases per 10 000 births from 2010-2013 compared to a national average of 3 cases per 10 000 births. Glyphosate has emerged as a prime suspect as the state of Washington use herbicides, most often glyphosates, to kill noxious weeds in both land and water. An estimated 146 pesticides were applied in the area in the year 2000, and studies are now needed to confirm whether or not glyphosate, either alone or in combination with other chemicals is responsible for neural tube defects in the area [19].

Reproductive problems such as miscarriages and infertility have also risen in Argentina (see [20] Glyphosate/Roundup & Human Male Infertility, SiS 62). Physicians of sprayed towns have recorded as many as 23 % of women suffering from miscarriage in the last 5 years [18].

The latest victims of Argentina's chemical agricultural system, of which GM cultivation is an extreme example, could very well have been spared if the evidence of the teratogenic properties of glyphosate produced by industry since the 1980s had not been dismissed [21]. Monsanto's own toxicology tests submitted to the EU commission showed evidence of teratogenicity (see [22]EU Regulators and Monsanto Exposed for Hiding Glyphosate Toxicity, SiS51). The submitted test reports describe rats and rabbits with skeletal abnormalities including the development of a 13$^{th}$ rib in offspring, as well as cardiac abnormalities. Scientific studies such as that of the late Professor Andrés Carrasco reporting neural tube birth defects in frog and chick embryos exposed to agricultural concentrations of glyphosate [23] have validated both Monsanto's findings and clinical observations (see also [24] Lab Study Establishes Glyphosate Link to Birth Defects, SiS48). Probing into the mechanisms underlying the defects, Carrasco discovered that glyphosate disrupted retinoic acid activity, a well-known regulator of developmental processes.

Epidemiological studies have linked increased incidence of birth defects (spina bifida, circulatory/respiratory anomalies, tracheo-esophogeal defects gastrointestinal defects, urogenital defects, cleft lip, adactyly, clubfoot, musculoskeletal anomalies, Down's syndrome and other birth defects) and reproductive toxicity in those who live near agrochemical-sprayed fields [25-27] while other lab studies are accumulating evidence of birth defects and reproductive toxicity in a range of animals from rats to catfish [28-31].

Evidence from the farm follows the same pattern. Ib Borup Pedersen recently documented personal experiences on his pig farm, where removing GM soybean feed from the diet resulted in pronounced improvement in the health of his pigs, reducing medicine use by a third and increasing his profits (see [32] "Changing from GMO to Non-GMO Natural Soy. Experiences from Denmark, SiS 64). Profits were also increased due to his sows living longer and giving birth to more piglets. After researching glyphosate and GMOs Ib investigated further and collaborated with scientists in Germany who analysed 38 of his 1-day old deformed piglets, finding glyphosate in various organs of the pigs. Pigs suffered defects ranging from severe to mild, including spinal, cranial defects and others affecting limbs, gender, internal organs, tongue and more. Many appear to be neural tube defects as seen in the clinic and laboratory.

## Cancer rates skyrocket in South American regions of GM cultivation

Neighbourhood resident organisations such as the association of Mothers of Ituzaingo, in collaboration with the Network of Sprayed Towns have been mapping cancer incidence in their towns for many years to draw attention to the epidemic they are facing. It is has reached the point where now, 30 % of all deaths in these regions are from cancers, affecting both adults and children. Cities such as Hernando have seen a 258 % rise in cases between 2001-2002 and 2010-2012 [6].

Rises in cancer rates can be explained by glyphosate's role in cancer-causing mechanisms including DNA damage and endocrine disruption. Endocrine disruption may well also underlie some of the reproductive and teratogenic effects of glyphosate described above. Lab studies show glyphosate damages DNA in lab animals as well as in people who were exposed to the chemical in Argentina [33-35]. It also disrupts cell cycle regulation that can lead to increased cell division and cancer development [36,37]. The glyphosate metabolite AMPA was also shown in a 2014 study to induce DNA damage in fish at concentration ranges previously documented in streams and surface water in N. America [38]. Glyphosate's carcinogenic potential has been documented since the 1980s (see [39] Glyphosate & Cancer, SiS 62)

Distinct from DNA damaging properties, glyphosate also mimics oestrogen at very low levels and promotes the growth of hormone-dependent breast cancer cell lines [40]. Actually glyphosate is an endocrine disruptor and alters the expression of multiple hormones including testosterone, leutinising hormone, follicle-stimulating hormone, and the aromatase enzyme complexes that convert testosterone to oestrogen [31, 42, 42].

Epidemiological studies corroborate lab studies and reports from local citizens in Argentina and the US [43-45]. The Ministry of Health of Córdoba in Argentina reported in June 2014 the doubling of cancer cases in high agrochemical use areas compared to the national average [46]. Consistently, a

new meta-analysis found association between glyphosate and cancers following occupational exposure [47]. The study looked at all epidemiological papers on non-Hodgkin lymphoma (NHL) incidence that had been published in English since 1980 that reported agricultural, occupational exposure to specific pesticides. A total of 44 papers were analysed, covering 80 active ingredients and 21 pesticide chemicals, finding the strongest associations between pesticides and specific subtypes of NHL, including an association between glyphosate and B lymphoma. They also found that phenoxy herbicides, carbamate insecticides, organophosphorus insecticides and the active ingredient lindane, an organochlorine insecticide, were positively associated with NHL.

The most comprehensive GMO feeding study to date carried out by Gilles-Eric Séralini and his team, looked at the effects glyphosate and glyphosate tolerant maize NK603 on rats during their life-time (2 years). It showed increased incidence of tumours (including cancers), other illnesses, as well as reduced life-span and altered hormone status [48]. The 2012 publication was aggressively attacked by industry and its supporters and unilaterally and illicitly retracted a year after publication following the appointment of an ex-Monsanto employee as an editor for the journal (see [49] Retracting Séralini Study Violates Science and Ethics, SiS 61). It has subsequently been republished elsewhere [50] after massive public protest (see [51] Open Letter on Retraction and Pledge to Boycott, SiS 61).

## Fatal kidney disease epidemic across continents foreseen by lab studies

Kidney disease has reached epidemic levels in regions that heavily use glyphosate such as farmers in Sri Lanka and sugar cane workers in Central America. Kidney problems have been highlighted by scientific studies, including Séralini's rat feeding study where kidney tumours were observed [50]. A meta-analysis of feeding studies conducted by Séralini's lab revealed kidney pathology in animals fed Roundup Ready soybeans, while *in vitro* studies have shown that glyphosate had cytotoxic effects on human embryonic kidney cell lines [52,53] (see [54] GM Feed Toxic, Meta-Analysis Confirms, SiS52, [55] Death by multiple poisoning , glyphosate and Roundup, SiS 42).

In Sri Lanka, chronic kidney disease of unknown aetiology (CKDu) has afflicted the agricultural population in recent years. A study published in 2014 linked glyphosate-based herbicides to the epidemic. It appears that hard water in the agricultural regions leads to heavy metal toxicity in the kidneys via glyphosate's metal chelating activity, and is responsible for the 400 000 cases of the disease and 20 000 fatalities [56] (see [57] Sri Lanka Partially Bans Glyphosate for Deadly Kidney Disease Epidemic, SiS 62). The government temporarily banned glyphosate from hard water areas, but this decision was reversed due to a lack of agricultural workers to take over the manual weeding required without the application of glyphosate. Similar health problems are widely affecting communities in Central America with one in four sugar cane workers reporting kidney disease in some areas [58, 59]. This epidemic forced the El Salvador government to call for international help after the epidemic began overwhelming the health systems. The El Salvadorian government has since approved legislation to ban glyphosate herbicides, though this is yet to be enforced.

## Digestive illnesses widespread

Digestive illnesses plagued the pig farm in Denmark (mentioned earlier) while they were being fed GM soy. When GM produce and glyphosate were removed from their diet, the pigs no longer suffered chronic diarrhoea, which was so severe that 30 % of new born piglets were dying as a result (see [32]). Chronic botulism, caused by the *Clostridium botulinum* bacteria, has also been on the rise in livestock in Germany, the US, and UK since the 1990s [60]. The latest study shows that glyphosate results in dysbiosis of the cow gut, with a reduction of beneficial bacteria in the rumen of cows accompanied by a rise in *C. botulinum* microbes [61].

The digestive illnesses in livestock mirrors a growing health problem in the West, particularly in the US where food intolerances, allergies, celiac disease, bowel diseases, infections and other problems continue to become more common. Nancy Swanson and colleagues showed a clear correlation between spikes in both inflammatory bowel disease and intestinal infection with glyphosate in the US [62]. Deaths from intestinal infections have risen from less than 0.25 deaths per 100 000 in 1979 to over 80 deaths per 100 000 in 2010. Inflammatory bowel disease has risen from around 3 diagnosed cases per 100 000 in 1990 to almost 90 per 100 000 in 2010. Moms across America's testimonials reflect the evidence from the farm and science studies, with children who come off GM and glyphosate covered foods reducing the severity of allergy symptoms as well as other problems such as regular vomiting [63]. With glyphosate's antibiotic properties, it had already been previously shown to cause disruption of the gut bacteria in poultry, swine and cows [64-66]. *Salmonella* and *Clostridium* are highly resistant to glyphosate, whereas *Enterococcus*, *Bifidobacteria*, and *Lactobacillus* are especially susceptible. Perturbation in the balance of these microbial species is associated with digestive disorders such as celiac disease. Similarly, chronic botulism in cows is rectified in livestock by feeding fermented and pro-biotic foods along with charcoal and humic acids. These both bind to the toxins produced by the bacterial pathogen. This treatment also reduces the urinary content of glyphosate, suggesting its binding as an underlying mechanism in the recovery of the infection (see [66]).

Autistic people are well known to have disturbed intestinal function and dysbiosis of the gut. Autism rates are also spiking in parallel with glyphosate use in the US and glyphosate's antibiotic activity may well be an underlying mechanism behind this. Indeed, mothers have also documented much improved autism symptoms in their children upon giving them a glyphosate and GM-free diet.

## Health of American citizens deteriorating

One argument for the safety of GM food and their associated pesticides is that the US has been consuming them for years without ill effect. However, in the absence of labelling GM foods, it is illegitimate to make such a claim. On the contrary, there has been a drastic deterioration of public health in the US since GM crops were introduced. A new publication by Swanson and colleagues plots the rise of 20 chronic diseases using available US government data, all correlating closely with increasing glyphosate application to corn and soy crops, especially over the past several years. The diseases included cancers, Parkinson's, autism, obesity, diabetes, heart disease, digestive disease and kidney failure [62]. Correlation does not prove causation, but such strong association certainly cannot be dismissed, especially in combination with the plethora of other evidence from laboratory studies, and the experiences of doctors in their clinics and farmers in the fields. For a detailed analysis of the study please see [67] Marked Deterioration of Public Health Parallels Increase in GM Crops and Glyphosate Use, US Government Data Show ( SiS 65).

Though heart disease had not been studied as extensively as cancers and birth defects in relation to glyphosate, the above study implicates its role in cardiac dysfunction. This is corroborated by the new finding that glyphosate formulations cause abnormal heart rhythms (arrhythmia) by interfering with the electrical activity of heart cells in rabbits [68].

A new study published in 2015 finds a correlation between glyphosate use and pineal gland pathology. The pineal gland is located in the brain and is known to regulate circadian rhythm through melatonin secretion. Glyphosate is hypothesised to disrupt melatonin metabolism, as well as induce pineal gland neuropathology through aluminium-induced hypoxia that results from the metal chelating properties of glyphosate. In this way, glyphosate use tightly correlates with the rises in sleep disorders as well as other disorders with symptoms of sleep dysfunction such as autism and dementia [69].

It is becoming clear that glyphosate has multiple toxicities that link it to many diseases through its metal chelating, antibiotic, endocrine disrupting, and genotoxic properties. Glyphosate also has the ability to block cytochrome P450 (CYP) enzyme activity, a class of enzymes involved in detoxifying xenobiotics amongst other things. Glyphosate therefore not only is a toxin in its own right, but enhances the toxicity of other chemicals by preventing the CYP enzymes from detoxifying the body [70].

Americans are definitely getting sicker in numerous ways highly correlated with adopting GM crops and rise in glyphosate use [67] and, as shown by all the testimonials from Moms across America, peoples' health improves after removing GMOs and glyphosate residues from their foods by buying organic [63].

## Environmental toxicity a concern for biodiversity, agriculture and sustainability

The spread of glyphosate-resistant weeds is increasingly compromising the effectiveness of the herbicide. There are now a reported 31 species of resistant weeds, up from 23 a year ago as recorded by the Weed Science organisation in the US [71]. In Brazil, an aggressive spread of weeds prompted a former DuPont agronomist to acknowledge the difficulties faced by farmers cultivating glyphosate-tolerant GM crops both in Brazil and Argentina [72]. Monsanto now recommends an 'integrated weed management' strategy that includes tilling the soil (of previously no-till land) and using multiple herbicides. The main selling points of Monsanto's Roundup Ready (RR) GM crop system was to reduce environmental damage through no-tillage agriculture and glyphosate use – a supposedly 'safe' herbicide compared to older chemicals. Not only is glyphosate toxic to health and the environment, but a cocktail of even more lethal herbicides have to be deployed to deal with glyphosate-resistant weeds, and an end to no till agriculture, resulting in further soil erosion. In short, we have an ecological and agronomic disaster.

Glyphosate toxicity to wildlife is well-documented. Many species, including aquatic organisms, reptiles, beneficial soil organisms including certain microbes and worms have been shown in scientific studies to be affected by glyphosate exposure (see [73] Ban GMOS Now, ISIS special report). This includes chronic and acute toxicity to the model aquatic organism *Daphnia magna* at below accepted thresholds for glyphosate presence in US freshwater [74]. Amphibians, the most endangered animals in the world, are so sensitive to glyphosate that 78 % of frogs died in one study on being exposed to Roundup herbicide [75]. Glyphosate has also been shown to stimulate the growth of soil fungi, increase the pathogenicity of soil pathogens such as *Xylella fastidosa* while numerous beneficial soil organisms have been decimated [76] (see [77] Scientists Reveal Glyphosate Poisons Crops and Soil, SiS 47). The latest study on soil organisms concluded that non-target organisms are at risk of local extinction after finding sub-lethal doses of glyphosate reduced fertility as well as survival of juvenile and adult *E.fetida* worms [78]. Monarch butterfly decline has been linked to glyphosate destruction of the milkweed in the US, the only food source for its larvae. Their migration from the US is at an all-time low and has been declining for the last 17 years (1994-5 to 2010-2011) (see [79] Glyphosate and Monarch Butterfly Decline, SiS 52) [80]. This decline has prompted a move to protect the butterflies under the Endangered Species Act by over 200 organisations and 40 scientists in November 2014 [81]. A new report on a Welsh nature reserve documents the decline in insects including beneficial pollinators such as bees as glyphosate levels increase (see [9] How Roundup Poisoned my Nature Reserve, SiS 64).

Not only are non-target organisms negatively affected, but also the target crops. Glyphosate's metal chelating properties reduce the micronutrients available to the plant, which it needs to maintain a fully-functioning immune system, thereby increasing its susceptibility to disease. This mechanism is thought to underlie the spread of over 40 crop diseases in glyphosate-tolerant GM crops (see [82] USDA scientist reveals All, SiS53). Indeed, USDA senior scientist Don Huber states that glyphosate's ability to kill plants is through the destruction of their immune system. This was clearly demonstrated by his experiments showing that non-GM plants grown in a sterile soil do not die when sprayed with glyphosate as the pathogens are not there to take advantage of the compromised immune system.

A reduction in mineral nutrients has health impacts on those eating the crops such as abnormalities in calves that are caused by manganese deficiency, which are on the rise and may well result from glyphosate chelation [83]. Farm animals are further suffering from other illnesses (and birth defects) as described by the Danish pig farmer earlier. Similar problems have been reported in Germany, where cows are suffering from chronic infections such as botulism [60] and in the US, with for example, the veterinarian Art Dunham reporting botulism in dairy cows, as well as reproductive problems, bloody bowels, rickets and viral diseases in hogs [84].

As a result of the problems faced by farmers, many are now moving away from GM and glyphosate-based systems. The US is seeing a growth in the non-GM seed market (see [85] Global Status of GMO and non-GMO crops, SiS 62). Agriculture experts such as Howard Vlieger are helping 300-400 farmers in the US switch from GM to non-GM crops without glyphosate use due to its ill effects to soil, plants and animals [86]. Glyphosate-tolerant crops have also been shown to need more water and do worse in drought situations (see [87] GM Crops and Water – A recipe for Disaster SiS 56, and [88] GM Crops Destroyed by US Drought but non-GM Varieties Flourish, SiS56). This is consistent with their health being compromised by glyphosate.

While GM crops are causing problems for farmers, non-GM crops are leading the way in providing drought- and salt-tolerant varieties, which makes sense when one considers that the majority of traits are highly complex, involving multiple genes and pathways and therefore too complicated to mimic with crude genetic engineering techniques (see [89] Genetic Modification Trails Conventional Breeding By Far, SiS 64).

## Regulatory science corrupt, ban glyphosate locally

Glyphosate re-assessment by the EU commission was performed in 2014, not only re-approving glyphosate, but approving increased residue levels for food and feed, with the final decision expected in 2015. The reassessment was performed by industry, though Germany acted as the rapporteur state, submitting the renewal assessment report to the European Food Safety Authority (EFSA) (see [90]Scandal of Glyphosate Re-assessment in Europe(SiS63). This report relied on summary assessments provided by the Glyphosate Task Force which consists of Monsanto and other chemical companies such as Syngenta UK and Dow Italy. Assessments were made on glyphosate excluding commercial formulations most frequently used such as Roundup, and focused on studies showing less toxic results.

It has been well-documented and previously explained in Ban GMOS Now [73], that adjuvants present in glyphosate formulation products such as POEA, as well as glyphosate metabolites like AMPA have their own toxicity and moreover, that glyphosate and the adjuvants together are far more toxic than glyphosate alone. A new 2014 study by Professor Séralini's group further confirms this, showing for the first time that glyphosate formulation products (as well as insecticide and fungicides) are far more toxic than glyphosate alone at concentrations well below agricultural dilutions [91]. Using human cell lines (HEK293, JEG3 and HepG2), they showed formulations to cause significant reductions in cell viability at concentrations 125 times less than glyphosate alone, challenging the relevance of the current acceptable daily intake (ADI). It is important to note that studies on the effects of pesticide cocktail mixtures, a far more likely scenario in real life, have yet to be properly investigated.

## To conclude

The evidence of glyphosate toxicity to both human and animal health and the ecosystem has built up to such an extent that some governments are taking action. As mentioned earlier, both El Salvador and Sri Lanka have made steps towards banning the herbicide. The Netherlands successfully banned its sale to private individuals [92]. Russia has recently decided to ban the import and cultivation of all GM crops due to health and environmental concerns [93], while a section of the Chinese army has reportedly banned its consumption [94]. In Brazil a public prosecutor is also looking to suspend its use [95].

For those of us who are not being protected by our governments, it is time to start initiating our own campaigns, banning it first from our home, our community, our schools, local counties, regions.

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There are 2 comments on this article so far. Add your comment

Amyan Macfadyen Comment left 19th January 2015 18:06:50
/these facts seem undeniable and should be MUCH more widely disseminated. The big questino is how to do this without legal action by Monsanto and so as to lead to real acion, They woud have all the funds needed to resist such action, What is the legal position?

Naomi Zürcher Comment left 23rd January 2015 13:01:13
I agree with the first comment that such information needs to be widely distributed, Since Monsanto is the present devil incarnate, it behooves all of us to not allow the threat of legal action to disseminate this information by whatever means is available to each of us. I will send this article to as many us elected officials that I can access in the hope that there is enough common sense and public caring left in one of them that they will take this and run with it. I also shared Sparc's contact information with the Cornucopia Institute - a fantastic US organization representing organic farming and farmers. Such organizations have established networks for dissemination of invaluable information such as this article. Thank you, Sparc.

## Comment on this article

All comments are moderated. Name and email details are required.

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Email address

Your comments

**Anti-spam question - just to prove you are human**

How many legs does a duck have?

leave comments

STATE OF CALIFORNIA – NATURAL RESOURCES AGENCY
EDMUND G. BROWN, JR., GOVERNOR

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February 4, 2015

"Coastal Dune Restoration EA"
Cicely A. Muldoon, Superintendent
Point Reyes National Seashore
1 Bear Valley Road
Point Reyes Station, CA 94956

Subject: Comments on Coastal Dune Restoration Environmental Assessment (EA)

Dear Superintendent Muldoon:

The Coastal Commission staff has reviewed the above-referenced document and submits the following comments. The National Park Service (NPS) proposes to improve and restore up to 600 acres of native coastal dune ecosystems in Point Reyes National Seashore through the removal of non-native or invasive plant species in order to "benefit native coastal dune ecosystems, natural dune processes, and federally and non-federally listed species that live in or use these ecosystems." The EA examines the need for the proposed restoration actions, the objectives of the restoration work, the project alternatives, the affected environment, and the environmental consequences of the alternatives.

The Coastal Commission and/or its Executive Director have reviewed and concurred with numerous federal consistency submittals submitted by the NPS for pilot dune restoration projects in the Seashore over the last decade, finding that these projects were consistent with the resource protection policies of the California Coastal Act. The preferred alternative identified in the EA (Alternative C) builds on the results of these earlier projects. However, the proposed restoration activities included in Alternative C hold the potential to affect coastal zone resources and as such, the NPS will need to prepare and submit a consistency determination to the Commission (15 CFR Part 930) for the proposed coastal dune restoration program. A requirement for Coastal Commission review of the program is also noted on page 3 of your letter of January 9, 2015, announcing the release of the EA for public review.

Your consistency determination will need to include an analysis of how the proposed coastal dune restoration program is consistent to the maximum extent practicable with the applicable Chapter 3 policies of the Coastal Act. As was undertaken in previous consistency and negative determinations for pilot dune restoration projects, the consistency determination for the proposed restoration program should include an analysis of potential impacts on the following coastal zone resources: (1) environmentally sensitive habitat and wildlife species supported by that habitat; (2) water quality; (3) public access and recreation; and (4) agricultural operations.

Please contact me at larry.simon@coastal.ca.gov or (415) 904-5288 should you have any questions regarding the preparation and submittal of a consistency determination for the coastal dune restoration program.

Sincerely,

LARRY Simon

Larry Simon
Federal Consistency Coordinator

cc: Lorraine Parsons, Pt. Reyes National Seashore
Nancy Cave, CCC – North Central Coast District

2/9/15

Please Do Not Spray the West Marin Beaches with Glyphosate OR Imazapyr!

There are natural ways to remove non-native plants via hand pulling or mechanically. Why poison our coastline? The Plants are less harmful than these chemicals! Who is benefitting here? The chem companies only! I am a Fairfax resident & own a brick & mortar in San Rafael Central - I'm so upset that I'm considering leaving Marin County permanently. I will never take my pets or children to these beaches if they are sprayed. Please protect YOUR citizens!

Kim Hoffman

Thank you Kindly

[redacted]

January 27, 2015

c/o Superintendent
Point Reyes National Seashore
1 Bear Valley Road
Point Reyes Station, California 94956

Subject: Coastal Dune Restoration Environmental Assessment (EA)

Dear Sir or Madam:

As a professional botanist, I commend the National Park Service for its efforts to control invasive non-native plants such as iceplant and European beachgrass. I encourage you to select one of the three Action Alternatives (i.e., B, C, or D). Alternative D, in my opinion, requires excessive ground disturbance; and per page 25 of the EA, "capping" and "flipping" techniques seem more likely to need intensive follow-up treatments than well executed manual removal or chemical treatment. Therefore, I favor Alternative C since it allows for treatment of a larger area than Alternative B and in my opinion has the most favorable environmental benefit to risk ratio.

Regardless of which alternative is chosen, I would like to stress the importance of regular follow-up. Several years ago, for example, California State Parks chemically treated an iceplant-infested area in the Bodega dunes. I was pleased to see that, a year later, some native plants (especially *Achillea millefolia*) were starting to push their way through the masses of dead ice plant. However, there does not seem to have been any follow-up treatment, and by now many of those patches of iceplant are starting to regrow, especially from surviving shoots hidden under nearby native shrubs. Other patches were missed entirely at the time of treatment, perhaps because they were small and harder to see, but by now they have grown considerably in diameter. Therefore, I encourage you to make all necessary efforts to ensure that both funding and knowledgeable staff are available for regular future follow-up actions. In my two decades of environmental compliance experience, I have seen too many projects fail to meet their long-term goals because of lack of follow-up actions, monitoring, and appropriate adaptive management, in most cases probably due to a combination of staff turnover, lack of staff, lack of funds, and/or changing priorities.

Furthermore, rather than setting an initial goal of treating 99% of the visible, above-ground biomass of iceplant and European beachgrass, I recommend making the initial goal the removal of all the above-ground biomass of these species visible to a knowledgeable observer. Otherwise, you run the risk of rapid recolonization by the remnant 1%, as in the Bodega dunes. 100% eradication is, of course, an unrealistic goal, but setting the bar at 99% introduces a false sense of complacency into the project that that last 1% doesn't matter very much.

Based on my personal observations of iceplant infestation in the Bodega dunes and elsewhere on the California coast, two years of post-treatment may not be enough. Also, as noted on page 97 of the EA, iceplant seeds remain viable in the soil for at least two years. Therefore, I encourage you to plan annual monitoring visits on a long-term basis, followed by prompt action to remove any reinvading non-native plants observed during those visits; i.e., I encourage you to adopt a long-term adaptive management program. Some years ago, for example, innumerable iceplant seedlings suddenly appeared one summer around the perimeter of a previously iceplant-free lagoon area farther north on the California coast; presumably the seeds had been washed in by an unusually high tide. The last time I visited the area, those seedlings had grown into patches many feet in diameter, choking out virtually all native vegetation in their path.

If straw is used in upland revegetation or to control movement of sand onto adjacent ranch lands, please consider using rice straw. It is much less likely to contain seeds of any weeds likely to thrive in upland habitats, and it is my understanding that, despite higher transportation costs, it is likely to be cheaper than certified weed-free straw. Of course, it should be well crimped or dug in to minimize the risk of its being carried into any nearby wetlands.

Please make sure that all soil or sand disturbed by project activities are regraded after completion of construction so that they blend smoothly in the surrounding grade. This step is sometimes neglected in habitat restoration projects, resulting in an unsightly "worked over" landscape that diminishes the visitor experience.

Actively revegetating treated areas with native species, rather than waiting for natural recruitment, would reduce the likelihood of recolonization by iceplant or European beach grass. I realize, however, that that is expensive.

I would encourage you to include some public outreach, such as informational posters in public parking lots near the treated area, to explain *in layman's language* why iceplant and other non-native plants are undesirable. Visiting California's coastal areas, I often feel saddened and discouraged by the proliferation of iceplant and the resulting diminishment of my sense of being in a more-or-less natural environment, but I have heard more than one person comment favorably on what pretty flowers it has and how much color it adds to the landscape.

I hope that sometime in the not-too-distant future, funding will be available to treat *all* the acreage at Point Reyes infested by ice-plant and European beach grass and to actively restore native vegetation in these areas.

Thank you for the opportunity to review and comment on Point Reyes's Coastal Dune Restoration Environmental Assessment.

Sincerely,

E. Begley

E. Begley, Ph.D.

January 12, 2015

To: Superintendent, Point Reyes National Seashore
From: Mary Ann Sinkkonen Mary Ann Sinkkonen
[redacted]

RE: Coastal Dune Restoration EA

After what I consider a fiasco with regard to the Oyster Company, I have not faith or trust in the work of the Department of the Interior and in particular the supervision of our coastal jewel, Point Reyes National Seashore.

What may seem like a "good" work to restore the seashore dune area, could very well turn into an eviction of long-time cooperative endeavors and joint steward-ship of the Seashore with local farmers and ranchers. It would seem that the locally Point Reyes Superintendents have an agenda to rid the coastline of any cooperation with local businesses. There is mistrust with regard to Superintendents and the people.

It is well and good to inform the public of hearing opportunities but from my perspective that is an exercise in futility because there is an agenda and no matter what people or scientists (as was the case with the Oyster Co.) the Seashore Superintendents march to their own drummer.

I support cooperation and collaboration with local farmers/ranchers so that we an enjoy partnerships between the federal government and private enterprise.

If Dune Restoration can move forward and not negatively impact any current partnerships with local businesses/farmers/ranchers/ fisherman, then I support the work. If any way, these local and in many cases long-time owners and operators would be negatively impacted, then get another project and leave the Dunes alone.

Dear Ms. Mandell,

Thankyou for keeping me on your list of interested parties. My opinion about ice plant and grasses threatening lupine and plovers is that it is not much of a 'cause'. Ice plant and beach grasses have been on our beaches for such a long time that like us tourists and ranchers, they are practically natives. I think we ought to concentrate our energies on getting rid of a more miserable yet possible to eliminate threat like the elk.

I say let the plovers and lupines thrive on your successful work in Abbotts Lagoon, and not try to do the whole coast.

Thankyou again for including me in your survey.

Sincerely,

Dorothy Murdock,

[redacted]