



Jamaica Bay BioBlitz

Jamaica Bay Institute

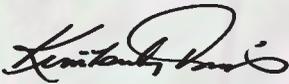
September 7-8, 2007



Message from the Director of the Jamaica Bay Institute:

I was confident that the first Jamaica Bay Bio Blitz would be a success; but, never did I think it would be such an astounding success. On September 7, 2007, over 300 people participated in this 24 hour scientific race against time. In our collective effort, we identified 654 species! What a great outcome for our first effort in scouring Jamaica Bay looking for all it's inhabitants: plant and animal. I'm sure there are even more species out there, in this haven of diversity, for us to find. Our visitors themselves were also a great example of the diversity in our beloved city: from the young to the old, the learned and the layman, and people from all races, religions, and cultures. It was definitely a memorable day.

On behalf of the Jamaica Bay Institute, Gateway National Recreation Area, Queens College, and the City University of New York, thank you for sharing this day with us.



*Kim Tripp
Jamaica Bay Institute Director/Research Coordinator*



Photo: Douglas Diamond

The BioBlitz was an opportunity to educate and involve the public in the stewardship of the natural resources of Jamaica Bay. Throughout the event, interpretive tours and activities provided visitors with a well rounded experience.

What was it?

Equipped with nets, notebooks, and insect repellent, researchers and volunteers descended upon the wildest reaches of New York City on the afternoon of Friday, September 7, and did not emerge for 24 hours. They staged the first-ever BioBlitz—a round-the-clock tally of flora and fauna—of the Jamaica Bay area. Queens College, City University of New York (CUNY), the Jamaica Bay Institute of Gateway National Recreation Area, and the CUNY Institute for Sustainable Cities sponsored this event, which attracted more than 300 visitors to the Gateway National Recreation Area, a part of the National Park System (NPS) in the heart of New York City.



Red Admiral Butterfly
Vanessa atalata

Despite its urban location, Jamaica Bay is rich in wildlife, from red foxes and horseshoe crabs to invasive species like western jackrabbits. It also serves as a major flyover for hundreds of migrating visitors, such as hawks, ospreys, and monarch butterflies. The BioBlitz was intended as a snapshot of the park's biodiversity today, and will provide a baseline of change in the future. In addition to generating data, the BioBlitz was conducted to allow the public to learn about and celebrate nature within New York City.



Eastern Chipmunk
Tamias striatus

Where was it?

The Gateway National Recreation Area comprises over 26,000 acres in New York and New Jersey, including much of the tidal estuary called Jamaica Bay. It is the oldest urban National Park and contains the only wildlife refuge managed by the NPS. While most visitors associate the Jamaica Bay Wildlife Refuge with the home of natural biodiversity in Gateway, we used this BioBlitz to canvas acreage better known for recreation than wildlife, such as the Fort Tilden area and Floyd Bennett Field, an historical site demarking New York City's first municipal airport.



Jamaica Bay Wildlife Refuge District



North Shore District



Breezy Point District



What did we find?

After 24 hours of locating and identifying species, the scientists, naturalists, and volunteers found 653 species, ranging from aquatic plants to salamanders to migrating waterfowl and mammals. By far, the most diversity was found in the invertebrate taxa (marine and terrestrial),

but more than 100 species of bird and over 100 kinds of terrestrial plants were also uncovered during the day-long exploration. While the true total species count in Gateway National Recreation Area is much larger than 653, this number represents a significantly biodiverse system. We expect that future species surveys will expand this number by the inclusion of more taxa, more experts, and more volunteers, and by counting migrating species that travel through Jamaica Bay at different times of the year.



Northern Gray Treefrog
(gray phase)
Hyla versicolor



Northern Gray Treefrog
(green phase)
Hyla versicolor



Photo: David Marshall



General Categories	Total Species
Birds	116
Fish	16
Bryophytes	26
Herptofauna	8
Mammals	7
Plants (terrestrial)	123
Plants (aquatic)	31
Invertebrates (terrestrial)	70
Invertebrates (aquatic)	256
TOTAL	653





Lesser Grapevine Looper moth
Eulithis diversilineata

Some highlights:

1 East and West Ponds, the two brackish water bodies in the refuge, are dominated by small silvery fish that long were thought to be Atlantic silversides. But careful inspection revealed them to be tidewater silversides, a close relative of the Atlantic silversides that abounds in the marine waters of the bay. This is an example of “cryptic biodiversity” and points to the importance of old-fashioned taxonomy in truly understanding any biota, even in our own backyard.

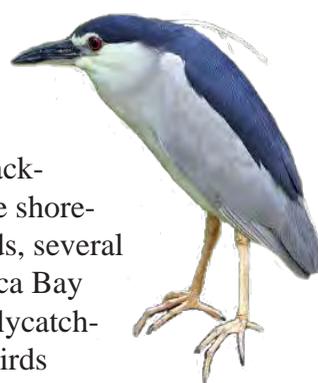


2 The total number of bryophytes or moss-like species (14 species) was surprisingly high and in most cases the samples examined were representative of large and abundant populations. Environments that receive the influence of salt water of any kind (tidal, spray, etc.) tend to be devoid of both mosses and liverworts. In comparison to the diversity in Jamaica Bay, Gull Island in eastern Long Island Sound has only two documented species while having a vascular flora of over 200 species. While the majority of bryophyte species documented during the BioBlitz were common to other New York City parks, the prairie sphagnum, a species found over much of North America, represents a new record for Queens County.

3

More than 25 volunteers assisted in locating 130 bird species within the BioBlitz area. High winds from the south seemed to stall any major migratory movement.

Few birds were detected overnight, but night observers did see two owls (Barn and Eastern Screech) and watched Black-crowned Night-Herons and Black Skimmers feeding along the shoreline of the Jamaica Bay Wildlife Refuge. In spite of high winds, several migratory species were observed at Fort Tilden and the Jamaica Bay Wildlife Refuge, including Yellow-bellied Sapsucker, Least Flycatcher, Graycheeked Thrush, and Chestnut-sided Warbler. Shorebirds were plentiful in Jamaica Bay's East Pond, and included



Black-crowned night-heron
Nycticorax nycticorax



A group of birders, lead by Ronald Bourque, search for avian species at the Jamaica Bay Wildlife Refuge.

several sandpiper species (Semipalmated, Western,

Least, White-rumped, and Baird's) and both Hudsonian and Marbled godwits. Wilson's and Red-necked phalaropes were also observed feeding in East Pond. The most unusual sighting was an Eared Grebe in the southern section of East Pond, first noted by Steve Walter. This grebe breeds in western North America, and is considered a rare but regular visitor to the Atlantic Coast.

4

Of the 34 mollusk species found, only a few living terrestrial snails were observed due to the dry conditions before the BioBlitz. One of the most interesting aquatic species, however, was the fingernail clam seen in Big John's Pond. These clams, from the family Sphaeriidae, were once common in Southern New England, but are becoming quite rare in the northeast United States due to the invasion of non-native freshwater species such as zebra mussels. Like many freshwater species, these clams spread from lakes and ponds with the help of birds. To explain the introduction of any new freshwater species in Jamaica Bay, the best theory is to assume that the tiny bivalves live in the shallow mud of small ponds, where they stick onto the feet and legs of wading shorebirds. Eventually, they fall off the birds' feet in the next pond. Thus, Jamaica Bay welcomes not only human immigrants at John F. Kennedy Airport but also new species like the fingernail clams in the ponds.



Fingernail clam
Sphaerium fabale

5 For the marine benthic invertebrates, we estimate that the total number of species identified only represents half of known local species in Jamaica Bay. This was due to sampling limitations and the poor tides and high winds during the 24-hour event. However, the naturalists noted the absence of larger worms and mollusks during their survey. What may have caused this phenomenon is unclear, but it is an area of research that should be pursued. To evaluate the current ecological conditions of Jamaica Bay, a systematic bay-wide survey of invertebrate distribution and diversity should be conducted; this has not been done in over 20 years.

6 Steve Walter, who has essentially been conducting his own moth BioBlitz in Gateway for the past seven years, reports that he has been adding species annually. During the night of the BioBlitz, he added a couple of new species (including the Pale Lichen Moth, which has a spotty distribution across the eastern half of the United States); he noted that multiple moth species had not been previously sighted so late into the year—they are more commonly found in the summer. He also found two species that have strayed south from their usual habitat (the Southern Emerald and the Somber Carpet Moth). His Lepidoptera results raise questions about the effects of climate change on the Jamaica Bay ecosystem. Further, Walter has concerns about the threatened maritime grasslands around Floyd Bennett Field that have been converted over time to mowed lawns. As a result of this land-use change, one colony of rare butterfly, the Checkered Skippers, has already been lost to this area.

Pale Lichen Moth
Crambida pallida

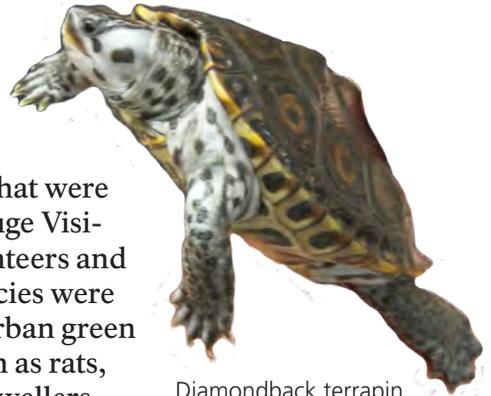


Photo: Douglas Diamond

Don Riepe, a moth expert, explains the method used to attract these light loving creatures in front of the Jamaica Bay Wildlife Refuge Visitor Center.

7

Terrestrial vertebrates, including mammals, reptiles, and amphibians, always provide some of the most colorful and entertaining individuals, despite their relatively low diversity. The gray tree frogs that were observed at night just outside of the Wildlife Refuge Visitor Center were especially popular with the volunteers and naturalists who stayed overnight. Most other species were considered “expected” in a severely altered suburban green space. Species that do well in disturbed sites, such as rats, cats, raccoons, Canada Geese, and other urban dwellers, are apparently thriving in Jamaica Bay; species that are more typical of pristine settings, such as snakes and salamanders, are just barely surviving and are predicted to be absent in 25 to 50 years. Diamondback terrapins are considered particularly threatened. Despite efforts to protect the terrapins in and around Jamaica Bay, they will be lost more quickly if the marshlands continue to disappear.



Diamondback terrapin
Malaclemys terrapin

What Affects Our Findings?



Praying Mantis
Mantis religiosa

The results of any BioBlitz are dependent on a number of factors, including the quality and quantity of experts and volunteers, the weather, and the season. The particular specialties of the experts invited strongly dictate what is found and identified, as does the number and expertise of volunteers. Where they survey also matters; Jamaica Bay and most other locales have patchy habitats that vary in important ways, influencing what lives in them and when. For this BioBlitz, we focused on the areas around Fort Tilden, Floyd Bennett Field, and the wildlife refuge, but we did not survey huge areas of the bay system, including the marsh islands themselves. Seasonality also matters. Although Jamaica Bay has a resident fauna, it also is on the migratory pathway of many birds, insects, and fishes that travel seasonally north and south. The climate and weather on the day of the event plays a role, too, as dry and windy weather most likely prevented sightings of amphibians, mollusks, birds, and certain insects.

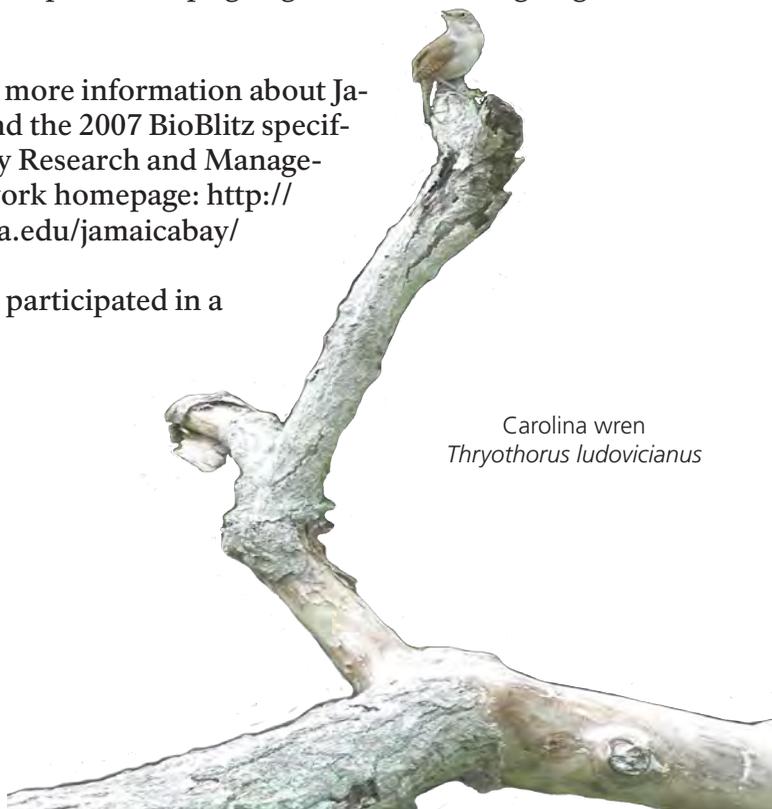
Next Steps?

Because a BioBlitz represents a baseline survey of diversity in a given area, it serves as a reference point for comparison for future surveys. It also provides an anchor for expansion of regional knowledge through the addition of experts in different plant and animal groups, and for exploration of new locales within the overall area. We hope to see many more BioBlitzes in Gateway National Recreation Area in the future, including new taxon groups (e.g., microbes and protozoa, benthic infauna, wetland species), new seasons (a winter Blitz? a spring Blitz? a summer Blitz?), and new experts and volunteers.

Visit the Jamaica Bay Institute homepage: http://www.nps.gov/gate/Jamaica_bay_institute.htm to see the complete list of species found at the BioBlitz and to keep up to date with events in Jamaica Bay. You can also visit the Gateway National Recreation Area homepage: <http://www.nps.gov/gate> to see what's going on in the rest of the park units.

Finally, you can also see more information about Jamaica Bay in general (and the 2007 BioBlitz specifically) at the Jamaica Bay Research and Management Information Network homepage: <http://nbii-nin.ciesin.columbia.edu/jamaicabay/>

Thanks to all those who participated in a hugely successful event!



Carolina wren
Thryothorus ludovicianus



