01/15/2015

Inventory of Shellfish and Aquaculture Equipment in Drakes Estero on January 1-7, 2015.

Purpose
Assess Drakes Estero for any abandoned shellfish and aquaculture equipment on racks and growing beds.

Methods
A small aluminum skiff with a 15 horsepower engine and crew of three (B. Becker, D. Schifsky, C. Muldoon) was launched at North end of Schooner Bay on 1/1/2015 at 1330 (low tide was -0.3 ft at 1508). We visited, in order, growing areas 34, 17, 5, 42, 20, 21, 22, 11, 13, 12, 9, 6, 41, 38, 39, 7, 8, 4 (See Fig 1). We viewed growing areas 40, 16, 31 and 33 from ~ 50 m away using binoculars and bed 20 was under about 8" of water so we could only observe a small portion of the bed. For the sandbar areas, we walked the broad areas of the sandbar where we observed remaining shellfish bags and equipment (but we did not visit the far eastern end of Bed 17). For racks within beds, we ran the boat along the length of the rack for an initial count of the aquaculture equipment. Nearly all observations provided in this report are of strings hanging from racks, or bags lying on sandbars within the documented growing areas. There is likely additional material on the estero floor below racks that are not represented by this assessment. Survey ended at 1545.

On January 6, 2015 (low tide -0.4 ft at 1817), the same crew of three revisited several racks from 1245 – 1630 where we observed remaining aquaculture strings and bags (4B, 4G, 4H, 12A, 38D, 13B and 8E) to recount items and record video via snorkel. On January 7 (low tide -0.2 ft at 1851), a crew of two (B. Becker and M. Gunn) revisited racks 8T, and 8S from 1130 - 1300 using snorkel gear. Video recorded additional aquaculture equipment on rack 8T and 12A not seen during the January 1 survey.

Results
See Table 1 on following Page 3.

Comment
We likely detected most material hanging from racks (we visited all racks with horizontal stringers). Beds 37, 29, 30, 24, and 23 have yet to be surveyed so there may be additional oysters, clams, or bags in these areas. However, during the 1/1/2015 survey we did not notice any obvious equipment when traveling nearby. Beds 26 and 27 in Creamery Bay have not been surveyed.

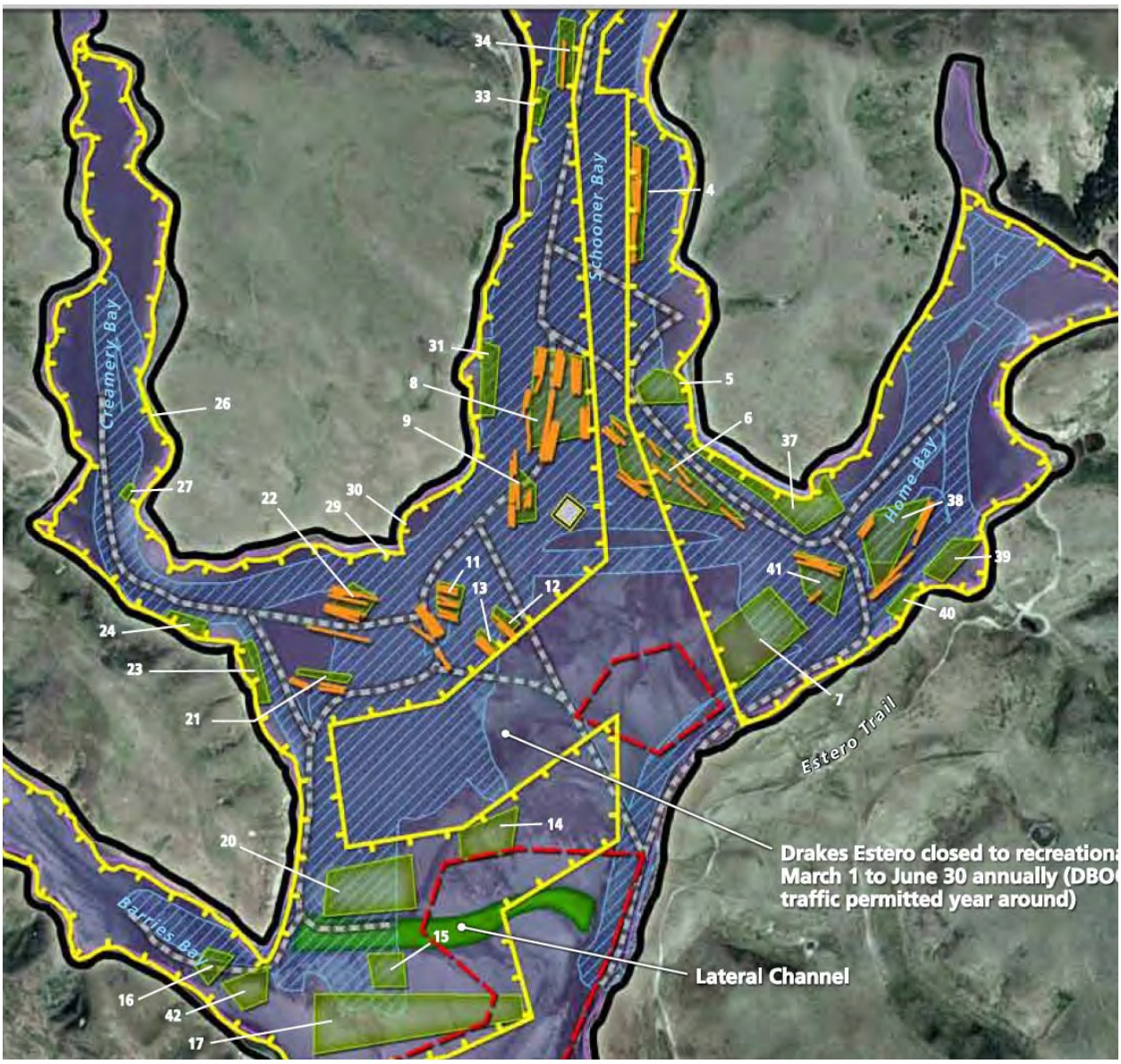

Figure 1. Drakes Estero Mariculture Growing Areas. White numbering labeling green polygons indicates bed areas.

Table 1. Oyster related equipment found on surveys of Drakes Estero racks and beds during January 1, 6, and 7, 2015. Racks and beds where no equipment was found are not listed.

Rack or Sandbar	Bed	Rack	Description	Quantity	Notes
Rack	4	A	Hanging French Tubes	10	Oysters distributed intermittently on Tubes
Rack	4	B	Hanging Oyster Bags	402	201 double bags of oysters, wholesale type bags. More bags uncounted on collapsed parts of rack
Rack	4	D	Hanging French Tubes	2	Oysters distributed intermittently on Tubes
Rack	4	G	Hanging French Tubes	31	all with large oysters. Much shell and debris on bottom
Rack	4	H	Hanging French Tubes	31	50% with large oysters, 50% with small oysters, some spacers
Rack	6	A	Oyster Strings	2	Oysters distributed intermittently on strings
Rack	6	B	Oyster Strings	5	Oysters distributed intermittently on strings
Rack	6	D	Oyster Strings	3	Oysters distributed intermittently on strings
Rack	8	T	Hanging French Tubes	200	Approx. ~50% with oysters and Dvex. Tubes at mid rack are clean/no oysters
Rack	8	S	Hanging French Tubes	100	Approx. Live oysters with big shells and Dvex. Some collapsed stingers
Rack	8	R	Hanging French Tubes	8	Oysters distributed intermittently on Tubes
Rack	8	H	Hanging French Tubes	10	Approx. No data on whether oysters on Tubes
Rack	8	G	Hanging French Tubes	130	Oysters distributed intermittently on Tubes
Rack	8	M & N	Hanging French Tubes	3	2 racks combined for count
Rack	9	A	Oyster Strings	16	Oysters distributed intermitently on strings
Rack	9	C or D	Hanging French Tubes	40	Approx. Not hanging. Resting on bottom in large vertical clumps.
Rack	9	H	Oyster Strings	7	Oysters distributed intermittently on strings
Rack	11	unknown	Oyster Strings	5	Oysters distributed intermittently on strings
Rack	11	unknown	Oyster Strings	2	Oysters distributed intermittently on strings
Rack	11	unknown	Oyster Strings	4	Oysters distributed intermittently on strings
Rack	11	unknown	Hanging Oyster Bags	1	Oysters in bag
Rack	12	A	CDPH Mussel Bags	3	CDPH Mussels in bag

Rack	12	A	Oyster Strings	40	Approx. Old spacer style, much is just shell and Dvex. Some live oysters. Candidate for shell cleanup. Southern 25% of rack collapsed.
Rack	13	B	Oyster Strings	60	30 at north end, 30 at south end. Old style spacers
Rack	13	C	Oyster Strings	12	Oysters distributed intermittently on strings
Rack	13	C	Hanging Oyster Bags	1	Oysters in bag
Rack	21	A	Oyster Stings	24	Few dozen west end
Rack	21	B	Oyster Strings	200	Estimate, piled at ends of bents, large oysters + Dvex, Old and abandoned
Rack	34	A	Hanging Oyster Bags	6	Rope to post 50 m to north
Rack	34	A	Hanging French Tubes	30	With oysters
Rack	38	C	Oyster Strings	8	Oysters distributed intermittently on strings
Rack	38	A	Oyster Strings	2	Oysters distributed intermittently on strings
Rack	38	F	Oyster Strings	20	Oysters distributed intermittently on strings
Rack	38	B	Oyster Strings	12	Oysters distributed intermittently on strings
Rack	41	D or E	Oyster Strings	2	Oysters distributed intermittently on strings
			TOTAL ON RACKS	***1432***	
Sandbar	5	Bed	Oyster Bags	16	Small live oysters, lots of loose large live oysters
Sandbar	7	Bed	Oyster Bags	80	Approx. Bags full of oysters. North side. Multiple Buoys, anchors, ropes
Sandbar	7	Bed	Oyster Bags	26	West side of sandbar
Sandbar	17	Bed	Oyster Bags	7	Contain oysters
Sandbar	17	Bed	Clam Bags	10	Some broken with spilled clams
Sandbar	17	Bed	Live Oyster Patch on mud	1	~6 ft diameter
Sandbar	17	Bed	Loose clam mounds	30	~2 ft diameter. Appear to be from broken bags, most dead, some appear live
Sandbar	31	Bed	Oyster Bags	11	Live and dead oysters, floats and cinderblock
Sandbar	33	Bed	Oyster Bags	1	Appears to be a bag from 50m away
Sandbar	39	Bed	Oyster Bags	21	With live oysters and tunicates, Long Line, PVC Posts
			TOTAL ON SANDBARS	***203***	
			TOTAL ON RACKS AND SANDBARS	***1635***	

Scattered loose, live oysters, Bed 5. 1/1/2015.

Oyster Bags with live oysters on Bed 7. 1/1/2015.

Live scattered oysters. Bed 17. 1/1/2015.

Live oyster pile on Bed 17. Approx. 6 ft diameter. 1/1/2015.

Remnants of broken clam bags on Bed 17. Most clams dead. Some live. 1/1/2015.

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Bags of live oysters Rack 4B. 1/1/2015.

Bags of live oysters Rack 4B. 1/1/2015.

Oyster bags on Rack 4B. 1/6/2015.

French tubes and spacer strings on Rack 4H. 1/6/2015.

French Tubes, Rack 8S. 1/7/2015.

French Tubes, Rack 8S. 1/7/2015.

French Tubes, Rack 8S. 1/7/2015.

Clumps of French tubes, few oysters, Rack 8. 1/1/2015.

Bag of oysters on Rack 34A.
1/1/2015.