

NOTES

A PRELIMINARY LIST OF FISHES COLLECTED FROM RICHARDSON BAY, CALIFORNIA 1972-1973

From June 1972 to July 1973 sampling of fish eggs and larval, juvenile and adult fishes was conducted by Tiburon Fisheries Laboratory (National Marine Fisheries Service, NOAA) in Richardson Bay, a part of the San Francisco Bay system (Fig. 1). The sampling was part of a pilot program to lead toward a more extensive baseline study of fishery resources and their ecological relationships within and dependence upon San Francisco Bay.

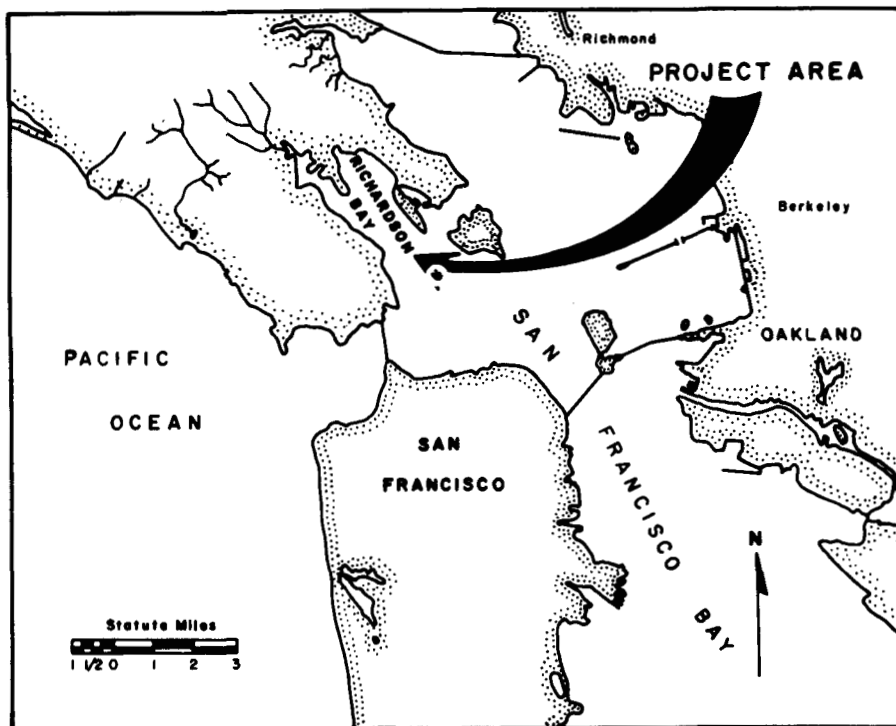


FIGURE 1. Location Map.

Sampling for adult and juvenile fishes was conducted with gill nets and trawls at 9 randomly selected stations each month with the exception of October 1972. The gill nets used were 6 ft in depth by 100 ft long and made of monofilament nylon. Each net was constructed from different panels laced together. The mesh sizes of these panels were randomly selected from 1, 1½, 2, 2½, 3, 4 and 6 inch stretched mesh, each size being used twice in the four nets that we used. At each station selected, one net was fished for 2 hours at the surface. Often, in waters less than 6 ft deep, the nets covered the entire water column.

The trawl was a standard shrimp "try net" with head rope length

TABLE 1—Fishes Collected From Richardson Bay, 1972–1973

Scientific name	Common name	Eggs or larvae collected	Number of juveniles or adults captured
<i>Mustelus henlei</i>	Brown smoothhound		38
<i>Triakis semifasciata</i>	Leopard shark		42
<i>Squalus acanthias</i>	Spiny dogfish		1
<i>Raja trachura</i>	Roughtail skate		1
<i>Myliobatis californica</i>	Bat ray		4
<i>Acipenser medirostris</i>	Green sturgeon		3
<i>Alosa sapidissima</i>	American shad		1
<i>Clupea harengus pallasii</i>	Pacific herring	x	22
<i>Dorosoma petenense</i>	Threadfin shad		7
<i>Engraulis mordax</i>	Northern anchovy	x	9
<i>Hypomesus pretiosus</i>	Surf smelt		5
<i>Porichthys notatus</i>	Plainfin midshipman		16
<i>Merluccius productus</i>	Pacific hake	x	
<i>Microgadus proximus</i>	Pacific tomcod		34
<i>Brosmophycis marginata</i>	Red brotula	x	
<i>Atherinops affinis</i>	Topsmelt		265
<i>Atherinopsis californiensis</i>	Jacksmelt		351
<i>Syngnathus griseolineatus</i>	Bay pipefish	x	14
<i>Morone saxatilis</i>	Striped bass		72
<i>Trachurus symmetricus</i>	Jack mackerel	x	
<i>Cynoscion nobilis</i>	White seabass	x	
<i>Genyonemus lineatus</i>	White croaker		1
<i>Cymatogaster aggregata</i>	Shiner perch		1,716
<i>Embiotoca jacksoni</i>	Black perch		49
<i>Hyperprosopon argenteum</i>	Walleye surfperch		23
<i>Hypsaurus caryi</i>	Rainbow seaperch		9
<i>Micrometrus minimus</i>	Dwarf perch		133
<i>Phanerodon furcatus</i>	White seaperch		1,353
<i>Rhacochilus toxotes</i>	Rubberlip seaperch		8
<i>Rhacochilus vacca</i>	Pile perch		93
<i>Neoclinus uninotatus</i>	Onespot fringehead		1
<i>Clevelandia ios</i>	Arrow goby		1
<i>Lepidogobius lepidus</i>	Bay goby		3
<i>Peprilus simillimus</i>	Pacific pompano		1
<i>Sebastes auriculatus</i>	Brown rockfish		9
<i>Hexagrammos decagrammus</i>	Kelp greenling		1
<i>Ophiodon elongatus</i>	Lingcod		16
<i>Enophrys bison</i>	Buffalo sculpin		2
<i>Leptocottus armatus</i>	Pacific staghorn sculpin	x	176
<i>Oligocottus maculosus</i>	Tidepool sculpin	x	
<i>Scorpaenichthys marmoratus</i>	Cabezon		1
<i>Citharichthys sordidus</i>	Pacific sanddab	x	7
<i>Citharichthys stigmaeus</i>	Speckled sanddab		165
<i>Paralichthys californicus</i>	California halibut	x	
<i>Hypsopsetta guttulata</i>	Diamond turbot	x	3
<i>Parophrys vetulus</i>	English sole		674
<i>Platichthys stellatus</i>	Starry flounder	x	70
<i>Symphurus atricauda</i>	California tonguefish	x	

of 20 ft and foot rope of 23½ ft. Otter boards measured 1 ft by 2 ft and were hung from 10 ft bridles. Mesh size in the main body of the net was 1½ inch stretched mesh with 1 inch stretched mesh in the cod end. The trawl was always fished on the bottom. At each station, one 3-minute tow was made at a speed of 3.5 knots.

Ichthyoplankton was sampled with surface plankton tows using a half-meter net and on 24-hr monitoring stations using an anchored channel net (Lewis, *et al.* 1970). Three-minute tows were made in replicates of two at 15 randomly selected stations each 6 weeks. Each 12 weeks, 24-hr monitoring was conducted at 2 fixed stations, one in the main ship channel off the Corps of Engineers dock in Sausalito, the other inside Cone Rock, near the mouth of Richardson Bay. The

direction of the channel net was reversed at each tidal change.

All of the juvenile and adult fish sampling and surface plankton tows were conducted during daylight hours.

This preliminary list (Table 1.) of fishes collected and their relative abundance in the catch is published here for the possible interest of other workers in the shallow areas of San Francisco Bay. Two species in this list have not to my knowledge been reported previously from San Francisco Bay: rougtail skate (*Raja trachura*) and white seabass (*Cynoscion nobilis*). Unaware of its rarity, I identified the male rougtail skate in the field, using Miller and Lea's (1972) guide and returned it to the water. It was caught in the trawl on May 31, 1973. The white seabass larva was collected and identified by Maxwell Eldridge (Tiburon Fisheries Laboratory) in June 1972. Identification was verified by Elbert H. Ahlstrom. The specimen is preserved in the reference collection at Tiburon Fisheries Laboratory.

I do not presume that the list is completely representative of fishes found in Richardson Bay. Shortcomings of gear and sampling methods normally preclude this possibility. Much of the plankton material is still being worked up. We expect additional species will show up in these collections. More detailed publications will follow a more intensive examination of our data and collected materials.

REFERENCES

- Lewis, R. M., W. F. Hettler, Jr., E. P. H. Wilkens, and G. N. Johnson. 1970. A channel net for catching larval fishes. *Chesapeake Science*. 11(3):196-197.
- Miller, D. J. and R. N. Lea. 1972. Guide to the coastal marine fishes of California. Calif. Dep. Fish and Game, Fish Bull. (157):1-235.
- Roger E. Green, Tiburon Fisheries Laboratory, National Marine Fisheries Service, NOAA, P.O. Box 98, Tiburon, California 94920. Accepted June 1974.