

MAR 14 1960

LIBRARY  
SCRIPPS INSTITUTION  
OF OCEANOGRAPHY  
UNIVERSITY OF CALIFORNIA  
Scripps Institution of Oceanography  
La Jolla, California  
University of California, La Jolla

PRELIMINARY REPORT ON EXPEDITION TO GUADALUPE ISLAND

January 25 -- February 1, 1960

San Diego to Guadalupe Island and return

SHIP: Hugh M. Smith (Capt. Frank Miller).  
ETD: 0800 Jan. 25; actual departure, 0930 (P.S.T.).  
ETA: before 1700 Feb. 1; arrived at Customs 1410.

PERSONNEL

Leader: Carl L. Hubbs, S.I.O.  
Marine Technician: Allan J. Stover, S.I.O.  
Curatorial Assistant: Donald M. Dockins (also listed in class).  
Botanist: Reid V. Moran, San Diego Museum of Natural History.

Physiologists: Per F. Scholander, S.I.O., assisted by Johan B. Steen  
and Harold Berkson (also listed in class).

Kelp Project (fish survey): Jay C. Quast, James R. Stewart.

Marine Vertebrates class:

Carl M. Boyd	Bert N. Kobayashi
Harold Berkson	Laurence G. Jones
Robert I. Clutter	George V. Pickwell
Eleanor R. Dorman	Jacqueline N. Miller
Richard F. Ford	Peter B. Taylor
Donald M. Dockins	

Other student: Michael E. Q. Pilson

ACCOMODATIONS

Chief Scientist's Cabin: Hubbs, Scholander.  
Technicians Cabin: Moran, Quast, Steen, Stewart.  
Portable Laboratory: Dorman, Miller  
Forward Baitwell: Boyd, Ford, Kobayashi, Pickwell, Taylor.  
Aft Baitwell: Berkson, Clutter, Jones, Pilson.  
Crew's Quarters: Dockins, Stover.

SUMMARY OF ACCOMPLISHMENT

The trip fulfilled well the original purpose, of demonstrating marine vertebrates to the class, particularly on Guadalupe Island. Contributions were also made to numerous scientific projects.

(1) Botanical survey of Guadalupe Island.--Dr. Reid V. Moran reported finding on the main island several plant species, including Lavatera  
3 occidentalis, thought to have been extirpated by goats.

(2) Algal survey of waters about Guadalupe Island.--A sample of the  
7 intertidal algae was collected during the fish poisoning, to be sent to Dr. E. Yale Dawson.

(3) Pleistocene fauna of Guadalupe Island.--A supplementary collection was secured of the fossils in the Pleistocene coquina near the middle of the east shore of the island.

(4) Mollusc collections.--Specimens were obtained of the endemic forms of the black, green, and pink abalones, frozen for anatomical studies; a set of the aberrant green abalones were brought back for experimental study by David L. Leighton; a few other littoral molluscs were collected, and a few land snails.

(5) Pleuroncodes collection.--Red crabs or langostinas were found in Melpomene Cove, being preyed upon by Herring Gulls; a collection made by Carl M. Boyd and others was brought back alive for radiocarbon feeding experiments by him.

(6) Miscellaneous pelagic invertebrates.--Small collections were made about the island and on open-sea station during the dip-netting operations at night--including coelenterates, crustaceans, squids, etc.

(7) Fish collections and observations.--Attempts to add to the sample of the new hagfish of Guadalupe Island failed, but one successful poisoning from intertidal to sublittoral habitats yielded a large collection of fishes. These were supplemented by specimens taken by hook-and-line fishing, especially with the electric reel, by dip-netting under the light at night about the island and at one open-sea station, by spearing, and by trapping.

Pelagic fishes, including the bathypelagic Vinciguerria were unusually common, and large series were obtained of that stomiatoid and of the strange Macrorhamphosus (a variational study of the Vinciguerria is prospected). An interesting catch during the open-sea night collecting was that of a very small Icichthys, showing that its commensalism with medusae starts early in life.

The divers collected three tropical fishes new for the island: a moray (Gymnothorax panamensis), an angelfish (Holacanthus passer) and a bigeye (Priacanthus cruentatus)--all northward extensions. They took the first adults from Guadalupe of a tropical wrasse (Pseudojulis sp.) that may represent an undescribed species. The recent warm years seem to have favored the incursion of tropical species into Guadalupe Island. Stewart saw a specimen of the butterflyfish Chaetodon falcifer, recently described from Guadalupe by Hubbs and Rehnitz, and previously known only from the type and two taken subsequently by Stewart at the San Benitos. The poisoning yielded what appears to be first Guadalupe specimen of the clingfish Gobiesox rhesodon; also an example of the rare blenny Starksia, and several very large specimens of the blenny Ophioblennius. The moray was also larger than customary--possibly the cool waters prevented maturity and allowed early rapid growth to continue.

Specimens were obtained of two species of Sebastodes previously known from the island from single specimens.

Observations were made on the violent reaction of the pelagic Vinciguerria to shore water slightly polluted by silt and by elephant-seal wastes.

Much needed additional material was secured of the two littoral sharks of Guadalupe, both possibly endemic.

(8) Determination of gas content of gas-bladder of fishes.--Johan B. Steen demonstrated the high oxygen content in the gases of the gas-bladder of several teleosts and discovered an especially fine rete in Sebastodes.

(9) Fish transects.--Quast and Stewart, with some help, made numerous fish transects, particularly to check the abundance in waters without Macro-cystis beds of fishes that particularly frequent kelp beds along the mainland coast.

(10) Bird collections and observations.--The winter race of the Leach petrel that is endemic to Guadalupe Island was again found breeding commonly on Islote Negro off the west shore of Guadalupe Island; 12 specimens were collected on the nests and 2 on the ship at night. Observations were recorded of downy young and eggs. The Cassin Auklet, which has previously been found breeding on Islote Negro (though not recorded in print as breeding about Guadalupe) was found breeding (4 adults, each with an egg). A fairly complete recording was made of the rare and common sea birds seen en route and about the island. No new bird records were obtained on this trip. Two ruddy turnstones on Guadalupe gave a second or third record of this species from the Island. Kittiwakes seen off Todos Santos Bay were probably the most significant birds seen en route. A Bonaparte Gull was seen unusually far to sea, 8 miles off Todos Santos Islands.

(11) Pinniped observations.--Counts of 61 and 52 were obtained of the fur seal on two successive days. The population remains on a short stretch of the east coast of the island, and the numbers vary with the season. A third count, on a bright sunny morning, indicated none on the rocks and few in the adjacent water. The numbers in this, the non-breeding season, are probably down because many animals are at sea. A count of 25 pups in the "Seal Nursery"--3 adjacent tide pools--is encouraging.

Some northern fur seals were probably seen near the Baja California coast, but since sealions are there, and the observations were made on passing only, we can not be sure.

The sealions of the Punta Banda rookeries were found feeding singly far to sea. Six sealions were in the largest elephant-seal rookery on the island; a few were around the main island, and the usual concentration existed on the ledges of Outer Islet=Islote Afuera=Islote Toro, where 134 were counted from the ship.

The elephant-seal population on Guadalupe was found to be still on the increase--about thrice as many as on approximately the same date in 1950.

Somewhat over 7,000 were tallied on the east shore (the west shore was too rough for a count there). Probably close to 2,000 were on the west coast. Since the January population comprised adult females, subadult and adult males, and pups (not all yet born), with yearlings and probably two-year-olds largely or wholly missing, the total Guadalupe population almost surely now exceeds 13,000; and the total extant population of the species probably approximates 15,000.

Various observations were made on the natural history of the elephant-seal, and, as usual, numerous photographs were snapped. Jacquelin N. Miller witnessed the rare event of one cow nursing two young. Reid V. Moran saw an elephant-seal chewing tobacco! (It was eating the leaves of a tobacco tree in the morning and was doing the same in the evening). Dr. Scholander and Mr. Clutter made some nocturnal observations on the Barracks Beach rookery. One night we made the unusual observation of a new-born young elephant seal, with placenta attached, swimming well offshore, with its dam on the opposite side of the ship (was it born at sea?). James R. Stewart found a graveyard of elephant-seal carcasses on the bottom off the Barracks Beach.

Since the necessary permit did not arrive until after we sailed, we were not able to make a collection of 2 or 3 elephant-seals for the San Diego Zoo. An effort to collect lice from a female that was caught for a blood sample also failed, as none were found.

(10) Physiological studies on elephant seals.--By good luck and hard work we were able to obtain blood samples from a big harem bull, from two breeding females, from three fat pups, and from one newly born. Dr. Scholander determined the oxygen capacity of the blood--about like that of man in the pups, but superior to man in the adults. An attempt was made to secure a milk sample for Michael E. Q. Pilson, but very little was secured.

(11) Observations on cetaceans.--Observations were made of the migration of the gray whale, showing a frequent passage by the Coronado Islands and an occasional stray only down the shallow tongue extending southward from off Punta Descanso. Three observations about Guadalupe seem to have been based on a single lost individual.

A few observations were made in passage, near the mainland, on Lagenorhynchus, Globicephala, and Megaptera, and near Guadalupe we had the good fortune of seeing the rare Risso dolphin (Grampidelphis griseus), in company with sperm whales.

Particularly exciting was the close observation of a gam of at least 23 sperm whales, encountered as we were leaving Guadalupe Island. Excellent opportunities were provided for photographing and observing this interesting species.

(12) Effect of submerged peninsula on ocean life.--Due to submarine maneuvers, we sailed southward close off the coast to off Todos Santos Island, before striking to Guadalupe, and returned the same way. This took us over the submerged peninsula that extends south from off Punta Descanso. Along this tongue and just south of it, we found an unusual concentration of blue sharks, and some concentration of birds and other animals. This observation recalls concentrations observed over banks and seamounts, and suggests a problem for study.

(13) Naturifacts.--On Guadalupe Island we found some surf-fractured rocks somewhat stimulating artifacts--especially significant, because there are no indications that aboriginal man lived on this island.

(14) A few insects were collected for the insect survey by Mr. Harbison-- beetles by Pickwell, a cockroach by Moran.

Tally of Elephant Seals on E shore of Guadalupe Id., Jan. 26-31, 1960.

North of Pilot Rock Rookery, Jan. 29 .....	32
Pilot Rock Rookery, to main talus on narrow boulder beach to N., less those in central area photographed (Jan. 29).....	2,858
Count on (March 7) of photograph (1490) plus 20%, for pups out of sight..	1,788
Between Pilot Rock and Barracks beaches, Jan 29.....	307
North Barracks Beach .....	952
South Barracks Beach .....	907
Between Barracks and Twin Canyon beaches, Jan. 29 .....	142
North Twin Canyon Beach, Jan. 29 .....	1,301
South Twin Canyon Beach, Jan. 29 .....	371
Between Twin Canyons and Discovery Pt., Jan. 29 .....	113
Discovery Pt. to Lobster Shack Cove (29° 06.0'--29° 00.2' N) Jan. 26 (only 8 on Jan. 27) .....	19
Lobster Shack Cove to Morro Sur (29° 00.2'--28° 53' N.), Jan. 31 .....	--
Melpomene Cove .....	1
At sea, off the east coast, about .....	300
	<hr/>
	9,091

Allowing 2,000 on W. side .... 2,000

Adding 20% for missing animals (largely half-grown). 13,309  
[Adding 1,600+ for other islands, about..... 15,000]

A detailed log was kept of the biological observations.

Carl L. Hubbs

CLH/pr