

LOG OF A PRELIMINARY SHARK FISHING
EXPEDITION FROM MIDWAY TO HONOLULU
ABOARD THE NOAA FRV *TOWNSEND CROMWELL*

22 FEBRUARY - 9 MARCH 1978

Prepared by Alan H. Kam

Hawaii Institute of Marine Biology

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Conducted as a part of the State of
Hawaii and Sea Grant sponsored Hawaiian
Green Turtle Management Study,
George H. Balazs, Principal Investigator

Hawaii Institute of Marine Biology

March 1978

Wednesday, February 22, 1978

Clear, visibility 20 miles, wind 11 knots from NW. Seas 2-3 feet, swells 4-5 feet. Temperature of air = 22°C. Leave Midway Islands enroute to Laysan Island. Sight 1 turtle in harbor as *Townsend Cromwell* leaves.

Scientific party: Chief Scientist - Tom Hida

Sea-going aides: Glenn Higashi, Bob Humphreys, Martina Queenth, Darryl Tagami.

Officers: Commander Gelb

Lt. Comdr. Keister, Lt. Cmdr. Nelson, Ensign Smith.

Bob Humphreys trolling with multi-colored feather lures catches 3 mahimahi (*C. hippurus*) all female, 63-66 cm. length. No stomach contents saved. (0745-1830) 10 hours 45 minutes.

Thursday, February 23, 1978

Partly cloudy, visibility 15-20 miles, wind 8-14 knots from the NW. Seas 2-3 feet, swells 4-5 feet. Temperature of air 21-24°C. Reading and resting. Enroute to Laysan Island.

Friday, February 24, 1978

Partly cloudy, visibility 15-20 miles, wind 14-20 knots from the NW, seas 2-5 feet, swells 5-8 feet. Temperature of air 23-25°C. 0700 wake up after arriving at Laysan Island. Water is too rough to land the Johnsons breakers on either side of the channel. Scientific party will engage in running their Environmental

Stations (1-1½ hours long) and bongo nets (½-1 hour long plankton
tows) on East, West, inshore and offshore stations. Between
stations Bob Humphreys has been trolling off the stern mess deck.
(0745-1600) 4 hr. 29 min. Three lines out with feathered lures.
Catch: 1 ulua (*Caranx ignobilis*), 1 kawakawa and 3 kawalea-
barracuda (*S. helleri*). Nothing in their stomachs. About 1700
anchored on eastern side of Laysan for the night. Began my first
shark station (25°46'N, 171°35'W) depth: 8 fa. T° seawater: 24°C
station 116 bait: barracuda fishing gear: B-gear setup (20'
of ½" nylon, 3" gap hook, chain leader).

(Time 1715-1750, 35 min.) I caught a 34 lbs. ulua, female with
nothing in its stomach. Another line was put out earlier; A-gear
setup (100' of 3/8" nylon, 2" gap hook, wire leader) baited with
a barracuda head caught a shark. (Time 1640-1830, 1 hr. 50 min.)
The shark was a female (*C. galapagensis*) total length 232.5,
length to caudal fork 179 cm, no stomach contents, no yolks or
pups. Open wound on left side of body before dorsal fin and upper
qtr. of dorsal fin bent from previous injury, healed. The shark
was identified by Tom Hida and Bob Humphreys. Darryl T. got the
jaws and the bo'sun took the shark meat and skin (for drum heads).

anchor E.
Laysan Island

A chunk of the shark was used as bait for the heavier, shorter
line that was left in the water overnight. The shark liver was
used as bait but later discarded. Last check on the line 2200.

Saturday, February 25, 1978

2nd day Laysan Cloudy, visibility 20 miles, wind 8-10 knots from NW. Seas 2-3
 -removal- feet, swells 5-6 feet, Temp. of air: 22-23°C. 0650 I removed the
 Total time shark sharkline from the water, nothing had attacked the bait.
 line in water (1640-0650) (2200-0650) 8 hours 50 minutes.
 14 hrs 10 min. The weather today seems a lot calmer therefore we will motor across
 station 116 to the western side of the island to look at possibilities of
 landing. 0825 reach the western beach by traveling along the
 southern shore, sight a derelict longliner, glass balls. The
 captain has taken the Zodiac for a closer look and has come back
 saying the channel is too narrow - waves breaking on either side,
 Johnsons therefore are unable to land. The ship now goes offshore
 for bongo nets and other scientific duties. After dinner, bottom
 fishing - scientific party and crew participate. NE Laysan,
 station 118 (25°28'N 171°35'W) bait: squid, mahimahi belly,
 kawakawa belly. Depth: 65-120 fa. drifting (Time 1720-1905,
 1 hr. 45 min.). Temp. of surface seawater 23°C, Temp. of air 24°C.
 Catch: 4 ehu (*E. marshalli*), 10 butaguchi (*C. chelilio*), 4 kahala
 (*S. dumerilii*), 2 opakapaka (*P. microlepis*), 2 hapuufuu (*E.*
guernus), and 2 kalikalii. As they were fishing sharks attacked
 4 of the fish, leaving only the heads on the hooks, or stripping
 gear. A shark was sighted near the bow and so I have set out 1
 2nd Shark line (A-gear setup) from the stern. Bait is a kahala head (*Seriola*
 Station 118 *dumerilii*), all that remains of a shark attack on the fish. When

-removal-
Total time
sharkline in
water 40 min.
Station 118

the sharks in the area did not strike this bait, I substituted some old ulua filet from yesterday's catch. Because the screws of the ship were in motion, it was necessary for me to be attentive of my sharkline so that it would not be pulled underneath the ship to tangle in the propellers. Each time the ship drifted over the edge of the drop-off (120+ fa.) all lines would be pulled up and the *Townsend Cromwell* positioned into an area upwind of the drift. (Time 1800-1820, 1830-1845, 1855-1900, 40 min.). The sharkline was not bothered by any sharks and all fishing terminated at 1900. During the night the scientific party continued their bongo net and environmental monitoring. The ship cruised throughout the night. 2300 I went to bed. Additional data. Trolling by Bob Humphreys during the day (Time 1045-1328, 2 hrs. 43 min.) at 11 knots around Laysan Island. $25^{\circ}46.4'N$ $171^{\circ}46.2'W$ to $25^{\circ}45.8'N$ $171^{\circ}18.9'W$. Catch: nothing.

Sunday, February 26, 1978

3rd day Laysan Partly cloudy, visibility 15-20 miles, wind 6-10 knots from SW. Seas 2-4, swells 5-6 feet, Temp. of air = 20-24°C. 0600 begin the day by discovering the ship's clocks have advanced 1 hour because of a change in time zone ($150^{\circ}W$), so the hour is now 0700. Again the day is too rough to land the Johnsons onto Laysan, also weather forecasts reveal a swell in the area to hit by the end of the week or by tomorrow. The scientific party continue working on their own stations, traveling 10-20 miles between stations. At

1600 they begin to ready their lobster traps, baited with whole mackerel. Five strings of 8 traps in a set, totaling 40 traps were set NW Laysan, station 124, in 19 fathoms of water. Prior to setting the lobster traps the scientific party conducted some bottomfishing. Laysan (25°51.7'N 171°52'W) depth: 75-110 fa. 6 lines out with 5 hooks each, drifting, bait: squid. (Time 1408-1520) 1 hr. 12 min. Catch: 4 butaguchi (pig-lipped ulua), 2 kahala, and 2 opakapaka. Also caught was a large 4 foot long grouper whose stomach everted because of the drastic pressure change. I caught a fairly large opakapaka by handlining. Ship will be cruising under power tonight around Laysan.

Monday, February 27, 1978

4th day Laysan Partly cloudy, visibility 10 miles, wind 6-10 miles from the NW. Seas 2-4 feet, swells 4-6 feet. T° of air 19-20°C.

0930 started the day late because the boat is rocking and rolling so much. By 1000 Mr. Hida began pulling up their lobster traps, Station 124 NW Laysan. Most of the traps were empty, but 27 spiny lobsters were caught, 1 slipper lobster, and 1 4' kahala (30+ lbs) without its tail was in a trap. 3 spiny and 1 slipper was frozen for samples and the rest put into the live bait well. The traps were 4th day Laysan secured and after lunch the *Townsend Cromwell* anchored on the eastern side of Laysan. Because there were not as many breakers, though the shoreline was rocky it was decided by the captain to land the Johnsons on Laysan. At about (1430) Brian, Patricia and

3rd Shark
Station
Station 127

Craig Harrison were ferried to shore to conduct a survey of the shore for their research purposes. Because we were anchored, I began my shark station. (1455-1715) 2 hrs. 20 min. We were about 1000 yds from shore in 9 fathoms of water with a coral and sand bottom. Temperature of the surface water was 23.8°C. The hook was baited with $\frac{1}{2}$ mackerel and let out 80' from the boat's stern using 3/8" nylon rope. While waiting and while everyone else was engaging in recreational fishing, I put out a handline, baited with squid and caught a small kahala (>24"). Using the live kahala as shark bait, I discarded the mackerel and reset the hook through the kahala. 1650 the line was pulled taut by a striking shark, whose tail whipped the air in a frenzy. I cleared the stern mess deck while someone else pulled in the shark. As the shark was pulled to the side of the boat the hook and the bait was pulled from the shark's mouth, releasing the shark to swim away. The kahala's body was cut by the shark's teeth and just barely alive. I threw the hooked kahala in the water and went inside to eat dinner. At 1715 a shark again struck the baited hook, I set the hook firmly and pulled it to the side of the boat. The horizontal dark blotches and dark bands identified the shark as a tiger shark (*Galeocerdo cuvieri*). Rather than pull the shark in at that moment, the line was shortened and cleated to the side of the ship. The shark was left in the water to fight the rope and tire itself in the process. I finished dinner while observing the swimming shark from the stern mess deck. With the help of the crew and scientific

party, we were able to haul the animal headfirst onto the deck. The shark's tail was tied to a nearby stanchion to prevent it from injuring any of the personnel. The head was severed from the body, killing the shark. This particular shark seemed less active and easier to subdue than the galapagos shark. The bo'sun cut open the stomach cavity and I took all the internal organs in a bucket. Discarding all the organs and leaving the stomach by itself allowed immediate examination. The stomach was empty. A single mackerel head lay on the deck by the side of the twitching detached shark head. The mackerel was discarded bait eaten by the shark. *Galeocerdo cuvieri*, female. Total length 242.3 cm. length to caudal fork 183.4 cm. Mouth width 25.5 cm. Photographs were taken of the tiger shark in the water and on deck. Two parasites removed from the lower palate and preserved in formalin were saved. The bo'sun saved the skin and I removed and froze the jaw for later preparation. The heavier hook and gear, B-gear setup was baited with tiger shark meat and thrown into the water. The A-gear setup was baited with whole mackerel and returned to the water (1800). The Johnsons and Craig Harrison returned to the *Townsend Cromwell* at about 1830. Their short exploration revealed a small number of monk seal pups and adults on the beaches. Craig was able to approach fairly close to the Laysan finches, a position necessary for their capture. This preliminary survey was quick and revealed to the Johnsons the need to return to Laysan Island and begin their research work. Later that night, sholehole (*Kuhlia* sp.) were attracted to our mess deck

anchor E.
Laysan Island

lights, resulting in the crew fishing for them. Because of our nearness to the island and the bright lights two terns flew into the stern mess deck, blinded. I returned them back to the air. We anchored overnight on eastern Laysan. (25°45.7'N 171°43.2'W)

Tuesday, February 28, 1978

5th day Laysan
-removal-
Total time
shark line in
water
(1455-0700)
16 hrs. 5 min.
Station 127

(about 1000)

Partly cloudy, visibility 10 miles, wind 2-10 miles from the NW. Seas 2-4 feet, swells 4-6 feet, Temperature of air 18-20°C. 0600 Woke up early to check on shark line, nothing has been hooked, bait is still whole. This short line removed at 0700. (1800-0700) 13 hrs. Nothing caught. The *Townsend Cromwell* lifted its anchor and moved closer to shore to anchor. Today was moving day for the Johnsons and I was in the second boat ashore onto Laysan Island. The beach where we landed was covered with small glass balls >5" diameter in varying stages of sand and wind weathering. There were many liquor bottles. The dominant albatross on the beach was the Laysan albatross. The black-footed albatross was in numbers higher in density than Midway Islands. The Johnson's gear was loaded into the ship's Boston whaler, shuttled and then transferred to the Zodiac and then put on the beach. From this point all the boxes were carried, higher up the beach and stacked in an area unused by the albatrosses. The trail cut directly across the sand, through the nesting gooney birds and about 50 feet from a pair of resting monk seals. Nine monk seals rested within my sight along this stretch of beach on eastern Laysan and were not aroused by our

activity. There was no mad rush by these animals to go back into the water. They seemed contented to sleep on their sides. Type of materials needed to establish the Johnson camp were boxes of foodstuffs, canned juices, clothes, writing material, portable tables, chairs, lumber, tents, 26 aluminum kegs (about 160 lbs each), bedding, a mattress, plywood, 2 boat engines, aluminum Sears skiff, a weather station, radio and antenna, a half-filled 55-gallon drum of gasoline, 10+ cases of Blazo fuel, lanterns, screen mesh, 5 gal. water jugs, and other assorted field gear. Brian Johnson, Lt. Commander Nelson and I offloaded the gear from the Zodiac on the beach and then moved it further up the beach away from the water, above the high water line. The scientific party and Patricia Johnson were on the western side of the island at the field camp, digging up the tents and putting up the frames. By 1930 all of the Johnson's food and water was on Laysan and they were prepared to stay for their research. Only a very small fraction of their gear was taken to the western shore while the bulk stood piled on the beach. During the day I had little opportunity to wander away from the beach work party, abiding to previous instructions. At 1930 all of the ship's personnel and scientific party on Laysan were ferried back to the *Townsend Cromwell*, while Brian and Patricia stayed on the island. I had dinner and then went to sleep at 2130. Seawater temperature was 23.4°C, air temp. 20.0°C. Setting a shark line while I was on shore. Why was it not done? (While writing this I realized that this was a good time to set a shark line, but I didn't do it!)

anchor E.
Laysan

Because the ship is at anchor fresh water intake has been reduced, water restrictions.

Wednesday, March 1, 1978

6th day Laysan Partly cloudy, visibility 10 miles, wind 18-25 knots from the NW. Seas 2-3 feet, swells 3-6 feet. Temperature of air 18-19°C, except at noon (24°C). Weather remarks "0800-1600 strong winds produced sandstorm north end of Laysan Island, sustained winds 25 knts, gusts over 30 kts." The weather was so bad that there was no chance to land a party to give a hand to the Johnsons, though the Zodiac did make one trip to the beach to land a generator and forgotten clothes. A story later heard indicates the two passengers in the Zodiac were thrown from it while landing in the rough surf.

4th Shark Station Station 128 I set a shark line out in the water (0800) E. Laysan, depth >5 fathoms, (the light fishing gear) 1 hook/1 line 20' out, anchored, bait: whole mackerel. I caught 1 large ulua, but while pulling it to the side of the boat it got away. Rebaiting the hook with mackerel, I put the line into the water and later seem to have caught a coral head because the hook is now bent. Changed hooks and put out an ulua head. The day was a lazy day for scientific crew, the ship's crew and I passed the time away watching the line and playing cards. Closed observations at 2130 with one line in the water overnight baited with an ulua head. The heavy line (20' line, ½ nylon rope, medium hook 3" gape). The crew and the scientific party fishing on stern for wholehole. Seawater anchored E. Laysan
 T° = 22.6°C Air Temp. = 20.1°C.

Thursday, March 2, 1978

7th day Laysan
-removal-
Total time
shark line in
water
(0800-2130)
(0700-0830)
15 hrs
Station 128

Partly cloudy, visibility 5-12 miles, wind 2-14 knots from the NW-W.
Seas 1-2 feet, swells 3-4 feet. Temperature of the air 18-21°C.
0700 Woke up to find that someone had pulled up my sharkline between
2130-0700 the previous night. Reset the baited hook in the water
(0700-0830) 1 hr. 30 min. Nothing caught. At 1000 I, along with
available crew and scientific personnel were landed on Laysan to
give a hand to the Johnsons by carrying priority gear to their
western field camp. The trail cut directly across the center of
the island down through the vegetation, along the dried lagoon
fringes, back through the low vegetation and up to the western camp.
I made two circuits and then stayed to help with their radio, mess
tent and the radio antenna. There was about 16 people trampling
across the island, occasionally falling into seabird burrows,
sinking to their knees. Small flies rose in hordes as one walked
along the lagoon. Albatross bones littered the lagoon's shoreline,
a masked booby nested 1 foot from water's edge. A tattler ran
along the shoreline stopping to join a group of ruddy turnstones.
Tropic birds screeched above the Johnson's camp while frigate birds
soared through the air. When it came time to eat, flies appeared
from nowhere to land upon exposed food. The antenna was raised and
work was terminated at 1600 to take everyone off the island. Walking
back to the beach I sighted a Laysan duck which promptly flew off.
On the eastern beach rested 13-15 monk seals (silver backs and deep
rich browns). The seas were getting rougher and the captain hurried

the party off the island. At 1800 the *Townsend Cromwell* left Laysan to go to Gardner Pinnacles.

Friday, March 3, 1978

Partly cloudy, visibility 10-20 miles, wind 15-26 knots from SW. Seas 3-5 feet, swells 6-10 feet, temperature of air 22-24°C. Temperature of surface water 21.5°C. 0900 wake up while TC still enroute to Gardner Pinnacles. Bob Humphreys is trolling (0841-1041) 2 hrs. Lat. 25°13.8'N/Long. 169°08.0'W to Lat. 25°05.8'N/Long. 168°48.0'W nothing caught. The scientific party is conducting their stations - bongos, CTD-bathythermographs, XBT, environmental stations. Additional data: Bob Humphreys trolling (1539-1900) 3 hr. 27 min. Lat. 25°00.4'N/Long. 168°17.7'W to Lat. 25°00.7'N/Long. 168°02.5'W. 1 strike of kawakawa but got away. Nothing caught. 1800 we arrive near Gardner Pinnacles, and circle it. Photographs taken. Wind 20 knots, depth 17 fathoms with one spot rising to 9 fathoms. Station 129: Bongo, XBT, CTD w. offshore, station 130: Bongo, XBT w. inshore, Station 131: at 2145 Bongo w.inshore. T° of air 24.3°C (at 1800). Temperature of water: 22.3°C. Water is rough with waves and spray washing onto the scientific party when they set the bongos. Seas are considered too rough to anchor or shark fish (Captain Gelb recommendation) so ship will, cruise around island tonight.

Gardner
Pinnacles

cruise around
Gardner
Pinnacles
tonight

Saturday, March 4, 1978

Cloudy, rain showers, visibility 5-10 miles, wind 21-24 knots from

Enroute to
Necker Island

the W-SW, seas 4-8 feet, swells 8-12 feet. Temperature of the air 22-24°C. Enroute to Necker Island along a course north of French Frigate Shoals. Water is gray and white capped. The fantail is wet and everyone is staying inside today. Card playing and reading.

Sunday, March 5, 1978

1st day Necker
Island

Partly cloudy, visibility 5-20 miles, wind 11-16 knots from the NW. Seas 2-6 feet, swells 5-10 feet. Air temperature 22-24°C. 0830 Air Temp. 20.6°C, seawater T = 23.4°C. Trolling by Bob Humphreys (1320-1429) 1 hr. 9 min. Lat. 23°31.8'N/Long. 164°28.2'W to Lat. 23°21'N/Long. 164°21.0'W. Nothing caught. (1806-1859) 53 min. Lat. 23°36.4'N/Long. 164°46.9'W to Lat. 23°33.8'N/164°42.6'W. Catch 3 kawelea - barracuda (*Sphraena helleri*). Total length 69.1, 73.1, 66.0. No stomach contents.

Handlining: SW Necker Bite Station 134 Time (1225-1530) 3 hr. 5 min. Lines: 2 + 2 + 3, Hook displacement: (5 + 6) (3 + 3) (3 + 3 + 3) size of hooks #26, 24, 22. Depth 50-120 fathoms drifting, bait: squid and kawakawa belly. Catch: 3 Hapuufuu (*Epinephelus guerrus*), 1 wrasse-table boss (*Bodianus bilunulatus*), 18 opakapaka (*Pristopomoides microlepis*), 3 ehu (*Etelis marshi*).

I wanted to bottomfish so with borrowed NMFS gear I was able to catch 2 opakapaka. No fish was lost to shark attack. No shark line set. 1600 the scientific staff began to set up lobster pots and fish traps. Bait: smelt wrapped in cheesecloth with extra traps baited with mackerel. 40 lobster pots, 20 fish traps.

Station 135 at N. Necker. After the scientific party closed down their environmental stations for the night 2400 I was able to direct the ship to shark fishing.

Monday, March 6, 1978

5th Shark
Station
Station 138

Station 138 (0145-0315) 1 hr. 30 min. SE Necker, drifting.
Depth: 10 fathoms begin. Lat. N 23°34.0'/Long. 164°41.8'W and
end Lat. N 23°38.6'/Long. 164°41.9'W. Bait: whole mackerel.

-removal-
Total time
shark line in
water
(0145-0315)
1 hr. 30 min.
Station 138

Temperature of surface water 23.3°C, T° of air 21.5°C. The ships
fore deck lights were turned on and I set two lines on the fore
deck, one (2" hook gape) 80' out and one (3" hook gape) 20' over
the side of the ship. No bites, I chummed the water with slashed,
chopped mackerel. Seems the mackerel is too soft a bait for a
shark line, more substance is needed in the bait. No fish were
attracted to lights or chum.

2nd day Necker
Island

Still March 6, 1978. 0830 woke up again after shark fishing earlier,
to help with the lobster pots. Station 135. N. Necker.

Spiny lobsters - 34

tagged and released - 27

Slipper lobsters - 5

tagged and released - 2

Lobsters, some eels, and 1 opakapaka were all that were in either
the fish traps or lobster pots. Weather: partly cloudy, visibility
10-15 miles, wind 8-15 knots from the NW, seas 2-3 feet, swells 3-6
feet. Air temperature 21-24°C. Trolling by Bob Humphreys (1320-
1429) 1 hr. 9 min. with 3 lines, multicolored feathered gigs. Lat.
N 23°31.8'/Long. 164°28.2'W to Lat. 23°21.0'N/Long. 164°21.0'W.
Nothing caught. 1600 set new lobster traps and fish traps SE Necker.
Station 140. 5 sets of 8 lobster pots = 40 and 5 sets of 4 fish

traps = 20 baited with whole mackerel. After that we handlined SE Necker. Station 141. Catch: 30 opakapaka (*P. microlepis*), 12 ehu (*E. marshii*), 2 gindai (*Rooseveltia brighami*), 3 butaguchi (*C. chelio*), 7 hapuufuu (*E. guermus*), 1 kalikali (*P. sieboldii*), 6 kahala (*S. dumerilii*), 1 (*Bodianus bilunulatus*), 1 (*Mulloidichthys pflugeri*). Stomach contents include small fish, 1 small shrimp, small kona crab, small red snapper 2".

Tuesday, March 7, 1978

3rd day Necker Island Partly cloudy, visibility 15-20 miles, wind 5-11 knots from the East-Southeast, seas 1-2, swells 3-5 feet, air temperature 21-25°C.

6th Shark Station Station 143 (0515-0715) 2 hrs. Shark fishing. Station 143. SE Necker Lat. 23°14'N Long. 164°14'W. Bait: whole mackerel, depth 21 fathoms Temperature of seawater 23.2°C, T of air = 21°C. Fishing gear: 1 line 'palu' or bait bag near surface 30' out, 1 long line 3/8 nylon line (2" hook gape) 80' out, 1 short heavy 1/2 nylon line (3" hook gape) 20' out. Nothing caught at this station. 0830-1200 pick up lobster traps.

-removal-
Total time
shark line in
water
(0515-0715)
2 hours
Station 143

Station 140 SE Necker

Spiny lobsters - 67

tagged and released - 23

Slipper lobsters - 37

tagged and released - 12

Trolling by Bob Humphreys (1115-1800) 6 hr. 45 min. Necker to Honolulu: from 23°13.7'N/164°13.4'W to lat. 22°48'N/long. 163°03'W. Nothing caught.

Wednesday, March 8, 1978

enroute to
Oahu

Partly cloudy, visibility 10-20 miles, wind 10-14 knots from the SE, seas 2-3, swells 5-8 feet, later 2-3 feet, air temperature 23-25°C.

Niihau

Bob Humphreys trolling enroute to Niihau (0630-1120) 4 hr. 50 min., nothing caught. 1120 anchor NW Niihau latitude 21°57.8' N

Longitude 160°08.08'W, depth 12 fathoms, off Kaununui Pt. about 1½ miles from shore. The crew is cleaning up the ship to make it presentable when they reach home port. Shark fishing (1130-1415)

7th Shark
Station
-removal-
Total time
shark line in
water
(1130-1415)
2 hr. 45 min.

2 hr. 45 min. off the side of the boat with 2 - 50' lines, hooks 2" gap, depth - 12 fathoms, anchored. Bait: whole mackerel and fresh caught wrasse. Crew and scientific party are engaged in recreational fishing, they are catching trigger fish, hinalea, wrasses, goatfish and some other small fish. All fishing terminated at 1415 because anchor is being raised and we are now heading to Honolulu. Traveling along the southern coast of Niihau, Kawaiho Pt. is the jumping off spot to Honolulu. Bob Humphreys trolling 3 lines from stern (1430-1900) 4 hr. 30 min. Nothing caught. *Townsend Cromwell* enroute to Kewalo Basin.

Thursday, March 9, 1978

Dock at Kewalo Basin 0900. End of trip.

Table 1. Summary of Effort Devoted to Shark Fishing

1. Shark Station, 2/24/78, station 116, E. Laysan; anchored, latitude 25°46'N longitude 171°35'W. Depth: 8 fathoms. Temperature of surface seawater: 24°C. Temp. of air: 25°C.
(1640-1830) 1 hour 30 minutes, bait: whole barracuda, A-gear setup.
Catch: 1 *Carcharhinus galapagensis*
Total length: 232.5 cm
No stomach contents
(1845-2200) 3 hours 15 minutes, bait: shark meat.
Catch: nothing.
(1715-1750) 35 minutes, bait: whole barracuda, B gear setup
Catch: 1 ulua (*Caranx ignobilis*)
Total length: 90.5 No stomach contents
(1750-2200) 4 hours 10 minutes, bait: shark liver.
Catch: nothing.
(2200-0650) 8 hours 50 minutes, bait: shark meat.
Catch: nothing.
2. Shark Station, 2/25/78, station 118, NE Laysan; drifting, latitude 25°28'N longitude 171°35'W. Depth: 65-120 fathoms.
Temperature of surface seawater: 23°C. Temp. of air: 22.4°C.
(1800-1820) (1830-1845) (1855-1900) 40 minutes, bait: kahala and ulua head, A-gear setup. Catch: nothing.

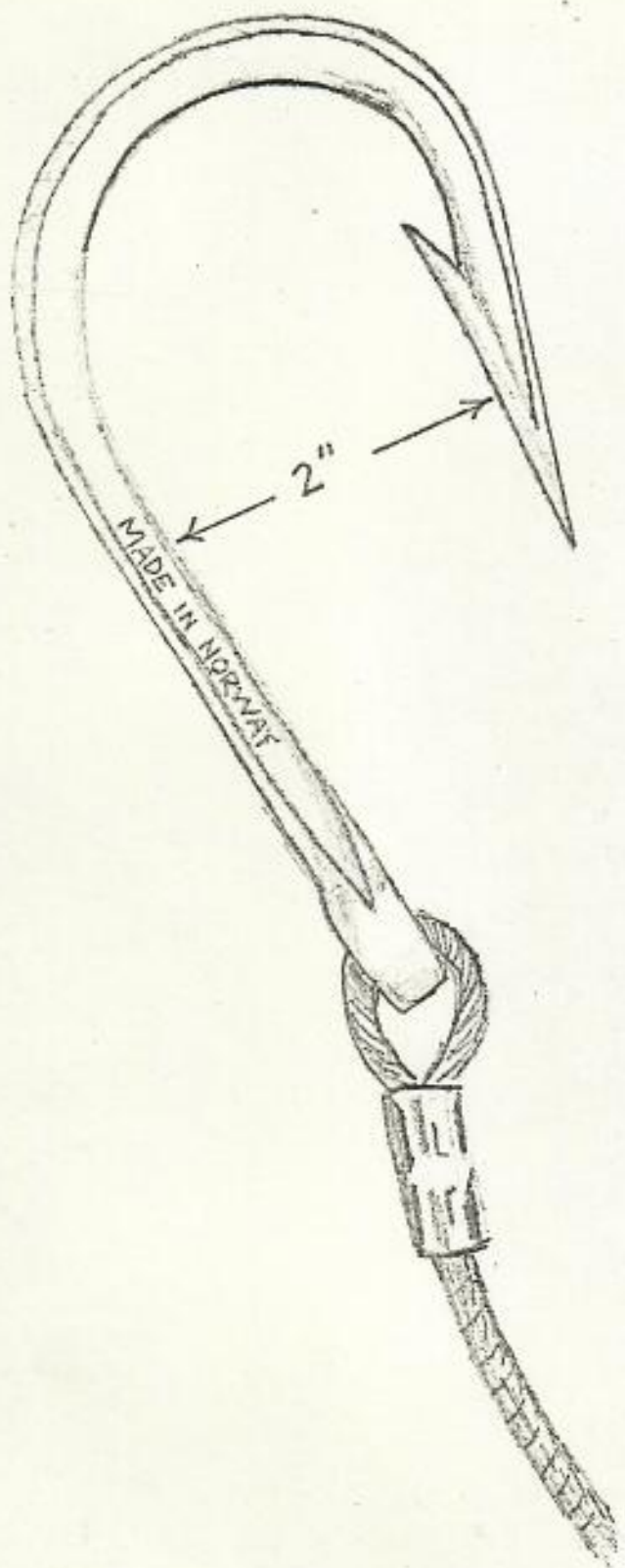
3. Shark Station, 2/27/78 station 127, E. Laysan; anchored, latitude $25^{\circ}45.7'N$ longitude $171^{\circ}43.2'W$. Depth: 9 fathoms. Temperature of surface seawater: $23.8^{\circ}C$. Temp. of air = $21^{\circ}C$.
(1455-1715) 2 hours 20 minutes, bait: live kahala, A-gear setup.
Catch: 1 *Galeocerdo cuvieri* Total length: 242.3 cm
No stomach contents, but mackerel head found in mouth.
(1800-2245) 4 hours 45 minutes, bait: mackerel.
Catch: nothing.
(1800-0700) 13 hours, bait: shark meat. Catch: nothing.
4. Shark Station, 3/1/78 station 128, E. Laysan; anchored, latitude $25^{\circ}45.7'N$ longitude $171^{\circ}43.6'W$. Depth: 5 fathoms. Temperature of surface seawater: $23^{\circ}C$. Temp. of air: $19^{\circ}C$.
(0800-2130) 13 hours 30 minutes, bait: whole mackerel,
A-gear setup. Catch: nothing.
(2130-2200) (0700-0830) 2 hours, bait: ulua head, B-gear setup.
Catch: nothing.
5. Shark Station, 3/6/78 station 138, SE Necker; drifting, latitude $23^{\circ}34'N$ longitude $164^{\circ}41.8'W$. Depth: 10 fathoms. Temperature of surface seawater: $23.3^{\circ}C$. Temp. of air: $21^{\circ}C$.
(0145-0315) 1 hour 30 minutes, bait: whole mackerel, A-gear setup. Catch: nothing.
(0145-0315) 1 hour 30 minutes, bait: whole mackerel, B-gear setup. Catch: nothing.

6. Shark Station, 3/7/78 station 143, SE Necker; drifting, latitude 23°18'N longitude 164°16'W. Depth: 21 fathoms. Temperature of surface seawater: 23.2°C. Temp. of air: 21°C.
(0515-0715) 2 hours, bait: whole mackerel, A-gear setup.
Catch: nothing.
(0515-0715) 2 hours, bait: whole mackerel, B-gear setup.
Catch: nothing.
(0515-0715) palu bag.

7. Shark Station, 3/8/78 station , NW Niihau; anchored, latitude 21°55.08'N longitude 160°07.59'W. Depth: 12 fathoms.
Temperature of surface seawater: Temp. of air: 25°C.
(1130-1415) 2 hours 45 minutes, bait: ½ mackerel, wrasse,
A-gear setup (2 lines). Catch: nothing.

A-gear setup: 100 feet of 3/8 inch diameter nylon rope tied to a 2-inch gap Norwegian hook with wire leader.

B-gear setup: 20 feet of ½ inch diameter nylon rope tied to a 3-inch gap hook with a chain and wire leader.



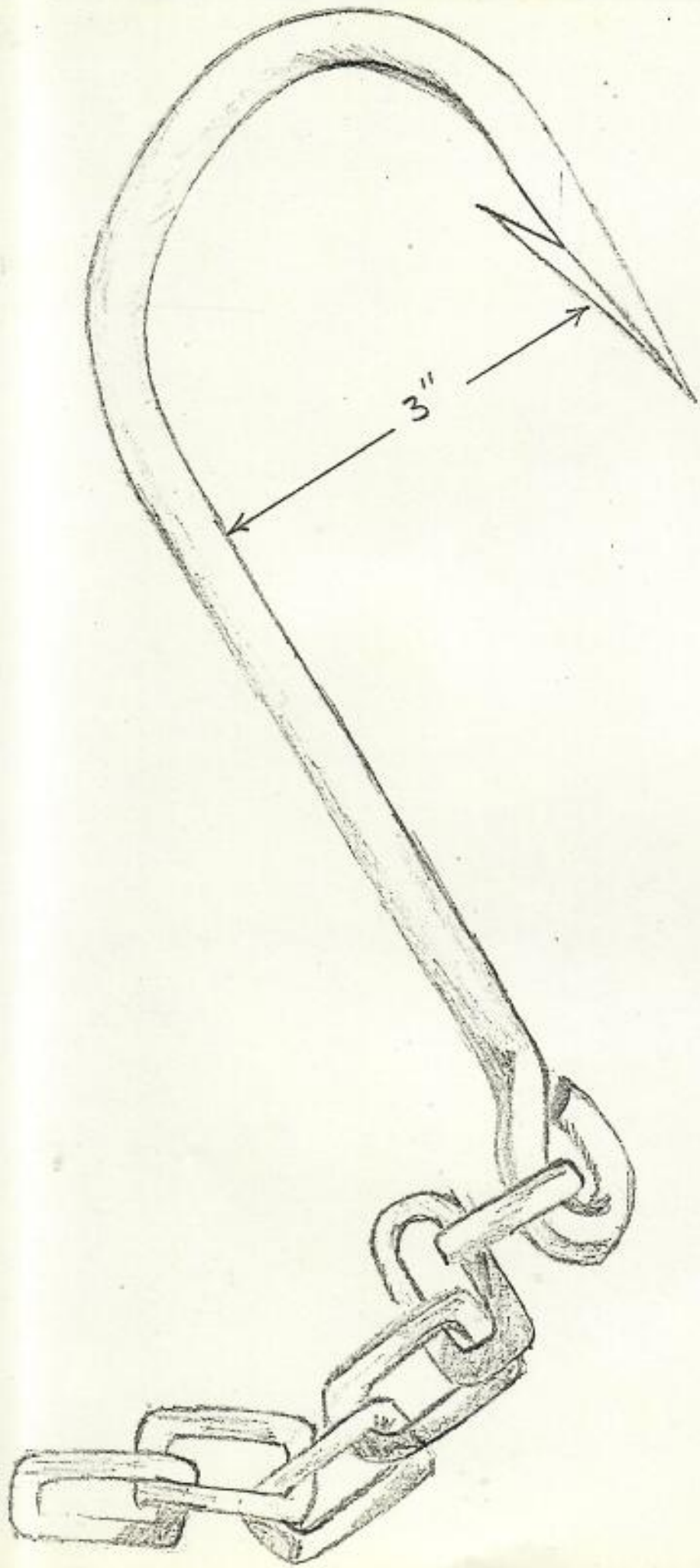
A-gear setup

2" hook gap

30" wire leader

100 feet $\frac{3}{8}$ "

nylon rope



B-gear setup

3" hook gap

30" chain and wire
leader

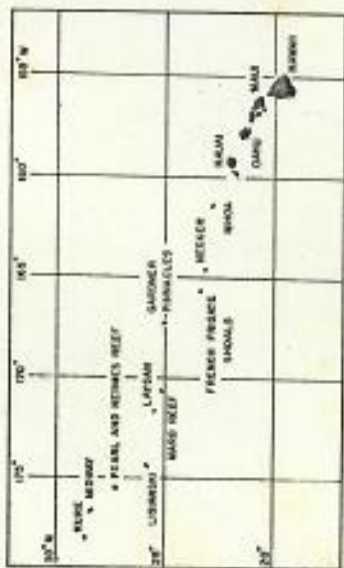
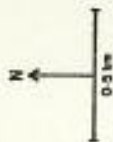
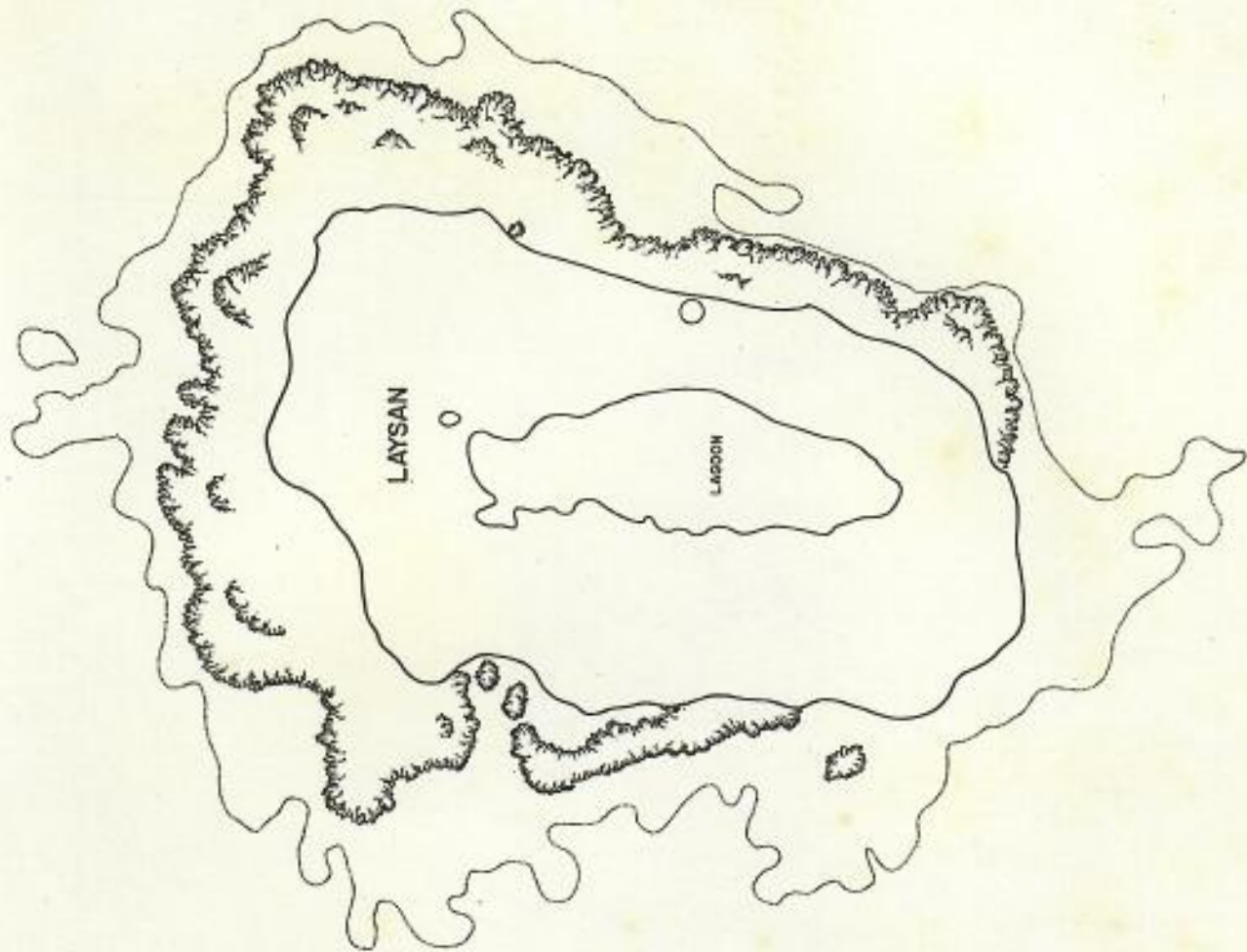
20 feet $\frac{1}{2}$ " nylon
rope

Table 2. Environmental Monitoring Station List

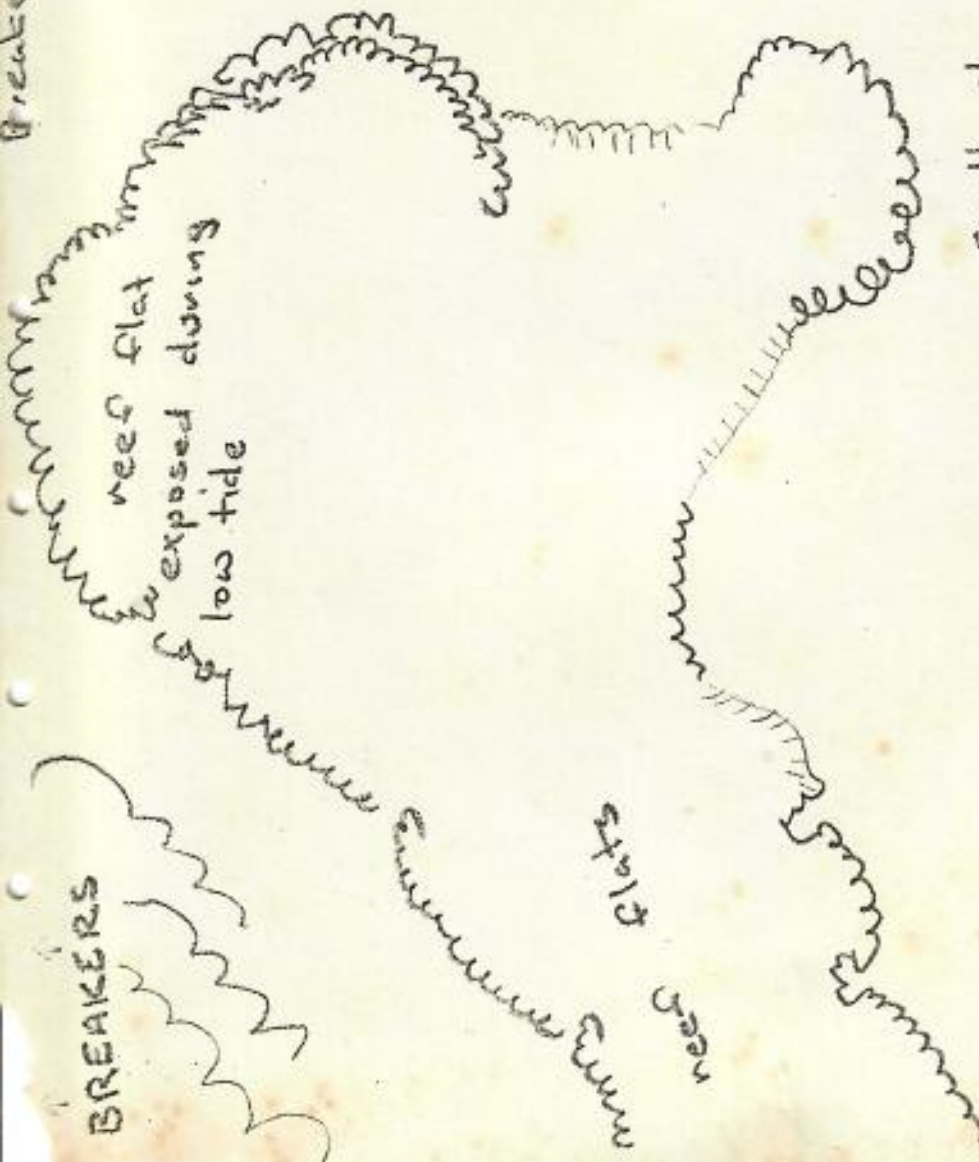
Cruise: (TC 78-01)

Island	Location	Inshore		Offshore	
		Position		Position	
		Lat. (N)	Long. (W)		
Nihoa	East	23°03'	161°44'	23°03'	161°30'
	West	23°03'	162°03'	23°08'	162°20'
Necker	East	23°35'	164°30'	23°35'	164°13'
	West	23°35'	164°53'	23°35'	165°07'
French Frigate	East	23°46'	166°01'	23°46'	165°51'
	West	23°46'	166°24'	23°46'	166°41'
Gardner Pinnacles	East	25°00'	167°54'	25°00'	167°35'
	West	25°00'	168°17'	25°00'	168°27'
Laysan	East	25°46'	171°35'	25°46'	171°18'
	West	25°46'	171°51'	25°46'	172°09'
Lisianski	East	26°04'	173°49'	26°11'	173°34'
	West	26°04'	174°11'	26°04'	174°22'
Pearl & Hermes	East	27°50'	175°42'	27°50'	175°20'
	West	27°50'	176°02'	27°50'	176°24'
Midway	East	28°12'	177°15'	28°12'	176°57'
	West	28°12'	177°28'	28°12'	177°48'
Kure	East	28°25'	178°13'	28°25'	177°53'
	West	28°25'	178°26'	28°25'	178°43'
Hancock Seamount	Top	29°47.5'	179°03'	(E)29°47.5'	179°23'
				(W)29°47.5'	178°44'

To Chief Scientist: Because of the difficulty encountered in navigating in waters of the Northwestern Hawaiian Islands, a discrepancy of up to 5 nautical miles from the station position given above is permissible.



breakers ↑



deep water
 channel width $> 100'$
 breaking waves back-off
 in this area

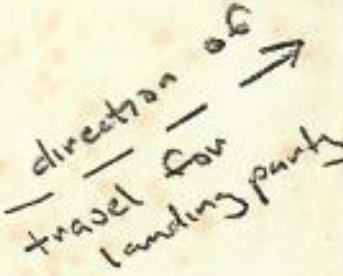
coral flats
 extensive in S.
 direction
 very shallow
 water

Small channel
 depth $> 5'$



Current ↑

Sand point
 Shallow landing area



sand beach
 (but rocks in water)

(5+) monk seals

sand beach

2-4+ monk seals

LAYSAN ISLAND
 Eastern Landing

