BAITFISH SCOUTING IN THE TRUST TERRRITORY

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The NMFS 'Townsend Cromwell' departed Honolulu for the western Pacific April 9, 1971. She stopped at numerous islands in the Marian, Palau, Caroline, and Marshall Islands before returning to Honolulu on July 8, 1971. One primary mission was to scout for concentrations of baitfish that would be used for live-bait, pole-and-line skipjack-tuna fishing, and purse-seining purposes. Large concentrations of sardines were found on Jaluit and Majuro in the Marshall Islands. Most islands to the west and south of Truk had no substantial amount of baitfish other than the round herring, which was found in fair-to-good quantities. However, Hawaiian skipjack-tuna fishermen have found these to be very weak baitfish which, they claim, live only a few hours in the baitwells.

The primary purpose of cruise 53 of the 'Townsend Cromwell' was to determine the availability and abundance of bait species suitable for surface pole-and-line skipjack-tuna fishing and for purse-seining operations in the Trust Territory of the Pacific Islands. This was the first of three cruises planned for this region.

The Japanese investigated the skipjack resources of Micronesia soon after taking over the islands from Germany at the beginning of World War I (Wilson, in press). They began fishing skipjack tuna commerciallly in Palau from 1925 and, by 1937, had built up a fairly large fishery that reached a peak of 33,000 metric tons. Most of the tuna were landed in Truk and Palau, others in Ponape and Saipan. It was estimated that about 40 skipjack fishing boats operated in Truk before World War II.

Presently, about a dozen Okinawan skipjack-tuna fishing vessels operate out of Koror, Palau. The Palauan skipjack fishery has developed gradually over the past several years. Catches have increased accordingly. It seems that more skipjack tuna can be harvested from Micronesia, and fishery researchers are looking for means to accomplish this.

Cruise 53 included stops at many islands (Fig.). By necessity, the surveys were brief and the two succeeding cruises may alter the conclusions presented here.

PROCEDURE

The surveys were conducted by walking and diving along the shoreline of the islands, scuba diving in the deeper waters, observing while cruising along on small skiffs, and by working night light stations. Two Boston whalers and a Hawaiian-type bait skiff with outboard motors, each with two or more observers, made the surveys. A 300-watt light bulb utilizing ship's power, and a 50- or 150-watt light bulb operated off a gasoline-powered portable generator, were used for night lights. The bulbs were submerged from a few feet to about a fathom. Samples of baitfish were caught by dip net, cast net, day seine, night net, night trap, and spear.

Courtesy calls were made on the chief or spokesman of nearly all of the islands where scouting stops were made. Permission was obtained before any bait survey or sampling was conducted. Most chiefs or spokesmen consented without hesitation. Peace Corps workers were very helpful in interpreting and,

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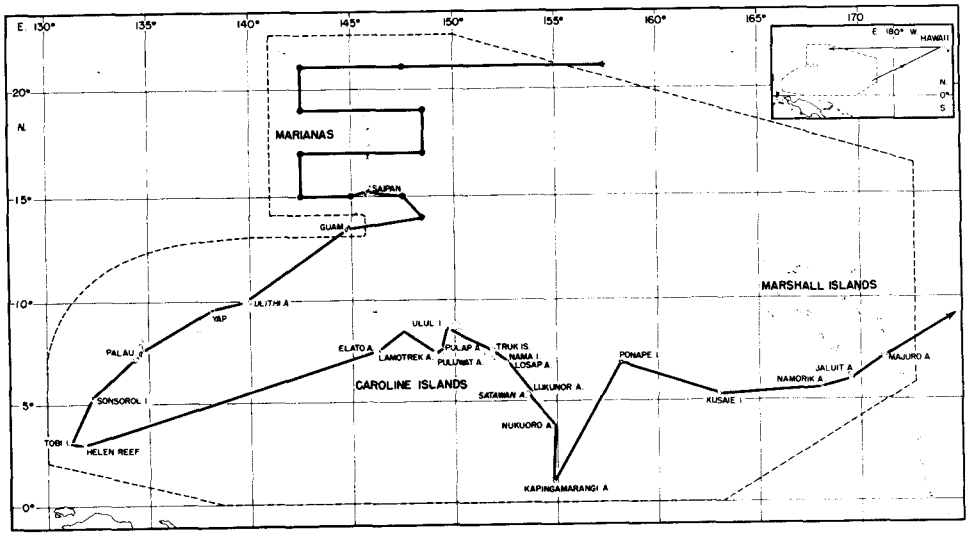

Track chart of 'Townsend Cromwell,' cruise 53, in the Trust Territory of the Pacific Islands.

at times, were instrumental in persuading chiefs to sanction our work. Most chiefs and elders were able to converse in Japanese, and many interviews were conducted in it.

RESULTS

The baitfish species found at nearly all atolls and islands were:

Goatfish	- mostly Mulloidichthys samoensis
Jack	- mostly Caranx spp.
Round herring	- Spratelloides delicatulus
Cardinalfish	- species of Apogonidae
Bananafish	- species of Caesionidae
Silverside	- species of Atherinidae
Damselfish	- species of Pomacentridae

The round herring were most abundant in the lagoons of large atolls. They were seen while diving along coral outcroppings, or from skiffs when frightened by the approach of the skiffs, or when pursued by predators. Normally, they accumulated under night lights on dark nights. The juvenile goatfish and jacks were common but rarely found in large-enough concentrations to be used as baitfish. They could be seen by walking or diving along the shore, in the shallows or, at times, along the lagoon drop-off.

The cardinalfish could be found at times concentrated in large coral heads. They were also seen scattered along shallow reefs around coral rubble, but so sparsely that it would be impractical to catch them in quantities sufficient for use as baitfish. The bananafish were usually found over coral outcroppings close to the lagoon drop-off. Some schools were estimated to consist of about 10 buckets (a bucket equals 8 pounds). The silverside were usually found close to the shoreline in shallow water. In mangrove areas, they were spread lightly throughout most of the root area, which made them very difficult to catch. The damselfish were usually spread out over coral heads, over coral rubble, in the shallows, and along the lagoon drop-off.

In addition to the baitfish found in the atolls to the west and south of Truk, a few others were found to the eastward:

Anchovy	- Stolephorus heterolobus and S. Indicus
Damselfish	- species of Pomacentridae
Round herring	- Spratelloides delicatulus
Sardine	- Herklotsichthys sp. and possibly Sardinella sp.
Silverside	- species of Atherinidae

The sardines were found in the largest concentrations on Jaluit and Majuro atolls, in shallow areas of less than 3 fathoms. The silverside were also quite abundant in the shallows. Anchovies were found in the deeper parts of the harbor and entrance to Ponape, and also in Kusaie Harbor. Quite a few schools of anchovy were seen in Ponape. But, due to harbor depth (about 40 ft), our 21-ft seine was unable to catch them for estimates of abundance. The damselfish were scattered throughout the lagoon drop-off over coral heads. The round herring were abundant over coral outcroppings and widespread in lagoon areas.

OBSERVATIONS ON TUNA SCHOOLS

There were 122 schools sighted during the cruise. Of these, 92 were unidentified, 21 were skipjack tuna, 5 were yellowfin tuna, 2 were porpoise (Delphinus (?)), 1 was common dolphin (Coryphaena hippurus), and 1 was a mixed school of skipjack and yellowfin tunas. For the area covered during this cruise, the number of schools seen was considered poor. An increase in sightings occurred just to the north and east of Wake, at about lat 21° N. Flocks of migrating shearwaters (Procellariidae) were also seen for a few days while crossing this area. Another increase was noted in the vicinity of Helen Reef and to the northeast at about lat 4° N. Even in these two areas, where a relatively good number of schools was sighted, the prospect for pole and line or purse seining was not favorable. This lack of good fish signs was evident throughout the cruise. The time of the survey was not the season for tuna school abundance in this area (Tohoku Regional Fisheries Research Laboratory, undated).

CONCLUSIONS

The best concentration of baitfish was in the Marshall Islands. A school of sardine estimated to exceed 25 tons was seen at Jaluit; thousands of buckets more of sardine, silverside, and a few other baitfish were seen along the shoreline of the fringing islands. Thousands of buckets of sardine, silverside, and a few other baitfish were also seen along the shoreline on Majuro atoll. Interviews with several people on Majuro also revealed that other atolls in the Marshall Islands carry heavy concentrations of sardine.

Ponape was the only island where a good number of anchovy (Stolephorus heterolobus) schools was seen. They were mostly in the harbor and along the channel but could not be caught with the shallow day seine. The anchovy were in the deeper part of the harbor, where a deep lampara net is needed to catch them. Night lights attracted only a few buckets of them, but this method should be more productive under the right conditions. This same species is caught exclusively by night net in the Palau Islands. Kusaie had a few anchovy, but a good assessment was not obtained because of turbid conditions and time limitations.

I thank the crew, scientific staff, and observers who helped make this cruise possible.

LITERATURE CITED

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