



EXPLOITATION OF NORTH PACIFIC ALBACORE BY KOREAN
AND TAIWANESE LONGLINERS BASED IN AMERICAN SAMOA

Jerry A. Wetherall
and
Marian Y. Y. Yong
Southwest Fisheries Center Honolulu Laboratory
National Marine Fisheries Service, NOAA
Honolulu, Hawaii 96812

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Background

Tuna longliners based in Pago Pago, American Samoa, have traditionally exploited tuna stocks in the South Pacific and in equatorial waters between long. 150°E and 120°W. South Pacific albacore have been the principal target species, particularly for Japanese vessels (which operated out of Pago Pago until 1973) and for Taiwanese boats. As a rule these vessels focused on fishing grounds south of the equator, and did not venture north of about lat. 10°N. However, in the mid-1970's they extended their range of activity in the North Pacific. For example, a Korean longliner based in American Samoa reported extensive fishing north of lat. 35°N on a 4-month trip beginning and ending in Pago Pago.

The expansion of fishing by these vessels into the North Pacific is still insignificant in terms of its impact on North Pacific albacore stocks, and can safely be neglected in stock assessments and fishery appraisals. Nevertheless, it is worth mentioning for the sake of completeness and because it might be rather unexpected in light of recent hikes in the price of fuel. The purpose of this note is therefore to briefly summarize the available statistics on the catch and effort by American Samoa-based longliners in the North Pacific during the period 1965-1978.

Data Sources

The catch and effort statistics for American Samoa-based longliners are derived from two sources: (1) logbook records submitted by vessel captains to the Government of American Samoa, which give the location for each day of fishing along with nominal effort (hooks) and catch (number of fish, by species), and (2) cannery records furnished to us by the two tuna packing firms in Pago Pago, giving the date of unloading for each vessel trip and the quantity of fish landed. Catches in number of fish were converted to estimates of catch in weight using information on catch size composition extracted from the literature. No adjustment was made for possible incompleteness of the logbook records, so the total catch and effort estimates presented here may have a small negative bias.

Effort Distribution and Catch

Figure 1 gives the distribution of nominal effort during 1965-1972 by Japanese longliners based at Pago Pago. As the figure illustrates, Japanese vessels never fished above lat. 15°N. Further, Table 1 shows that their effort above lat. 10°N amounted to only 14 vessel days of fishing. Virtually all of the Japanese longlining north of the equator was between lat. 0°-10°N, taking mostly yellowfin and bigeye tunas in March and April.

As shown in Figures 2-5, Korean and Taiwanese longliners based at Pago Pago confined their North Pacific effort to grounds south of lat. 10°N prior to 1974 (except for 15 days of Korean fishing; Table 1). Yellowfin and bigeye predominated in the catch, this region being relatively unproductive for albacore, at least at the depths exploited by conventional longline gear (Figure 6). Korean vessels, despite their smaller fleet during this period, accounted for most of the fishing effort in the 0°-10°N area.

Beginning in 1974 the logbook records show both Korean and Taiwanese longliners extending northward, as far as lat. 37°N for one Korean boat. In the $10\text{--}20^{\circ}\text{N}$ region the Taiwanese vessels have been far more active than Korean boats, catching predominantly albacore. Above lat. 20°N Korean vessels, being somewhat larger, have exerted more effort than Taiwanese longliners. Albacore has also been the principal species caught here. Fishing in this northern region has been concentrated in November–February, whereas the equatorial fishing takes place principally in March–May.

Size Composition

Samples of albacore landed at Pago Pago are measured by the Office of Marine Resources of the Government of American Samoa. Because the catch from a particular trip may have come from a very wide area of the ocean (especially in recent years) it is sometimes difficult to use these measurements to study spatial variation in size composition. Location of capture is assumed to be the area where most of the catch was taken. With these limitations in mind, we pooled the 499 measurements within $0\text{--}10^{\circ}\text{N}$; no samples were available with assigned locations north of 10°N . The resulting frequency distribution (Figure 7) is similar to those for $0\text{--}5^{\circ}\text{S}$ and $5\text{--}10^{\circ}\text{S}$ (Figure 8, compiled from an earlier study) with respect to mode, but suggests a relatively higher abundance of large albacore (above 100 cm) in the $0\text{--}10^{\circ}\text{N}$ region than is seen in the corresponding area south of the equator.

Validation

Since the relatively long-range wanderings of some American Samoa-based longliners has been a surprise to many observers, in summarizing these statistics we were particularly careful to check the validity of reported fishing locations. As revealed in Figure 3, compiled from unscreened data, a small number of logbook records report longlining effort in the middle of the Australian outback, an area which has seen no marine life since the Silurian Period. Although such obvious errors are rare, how can one be sure of reported fishing locations in areas where fishing is feasible? We were especially concerned about the reported fishing activity above lat. 20°N. A total of 17 vessel trips reported fishing this far north. In some of these cases it was clear that the vessel in question was en route to Pago Pago from a home port in the western Pacific when the fishing was done. This was verified by an examination of the American Samoa cannery records together with the daily logbook statistics. In at least 12 cases, though, the vessel's trip originated and ended in Pago Pago, and there was nothing on the source data sheets to suggest erroneous reporting of fishing location. Personal communications between the Honolulu Laboratory data manager and cannery officials in Pago Pago substantiated the occurrence of some fishing activity above lat. 20°N, so we believe the North Pacific statistics summarized here are reliable.

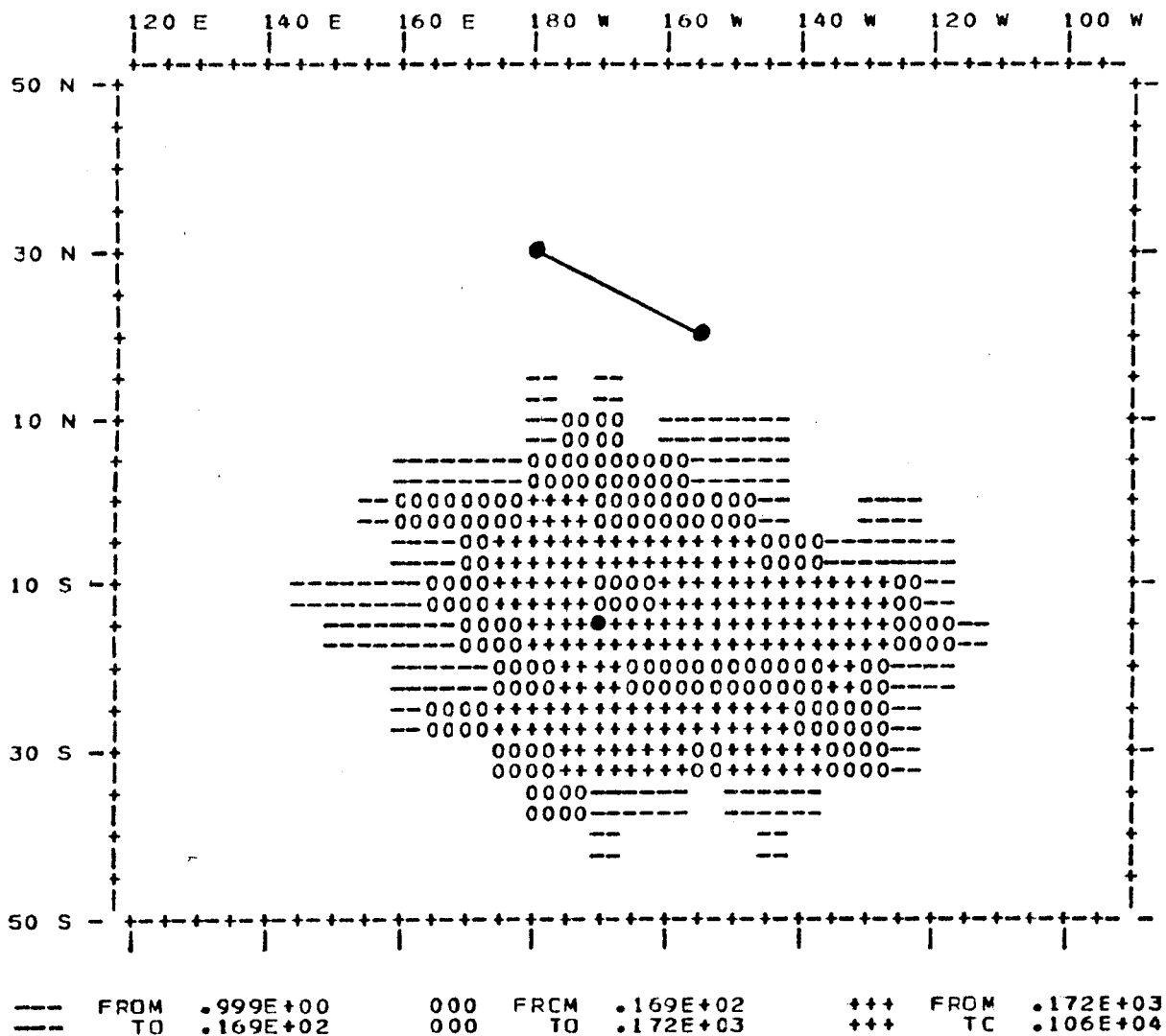


Figure 1.--Distribution of nominal effort (vessel days) by Japanese longliners based in American Samoa during 1965-72, by 5° squares. American Samoa is indicated by a single dot (•), and the Hawaiian Islands by connected dots (•—•). Based on data from Government of American Samoa.

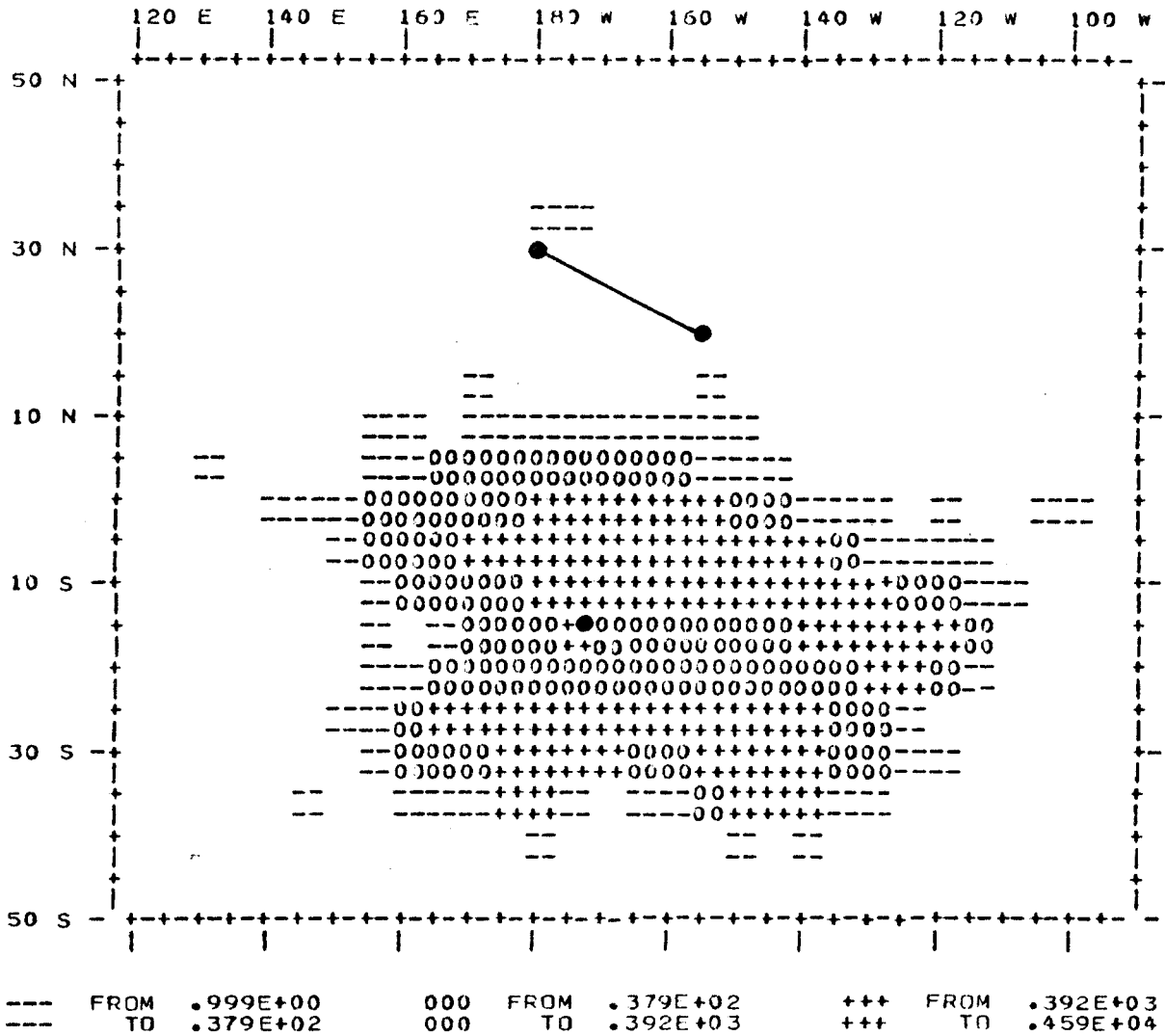


Figure 2.--Distribution of nominal effort (vessel days) by Korean longliners based in American Samoa during 1965-73, by 5° squares. American Samoa is indicated by a single dot (●), and the Hawaiian Islands by connected dots (●-●). Based on data from Government of American Samoa.

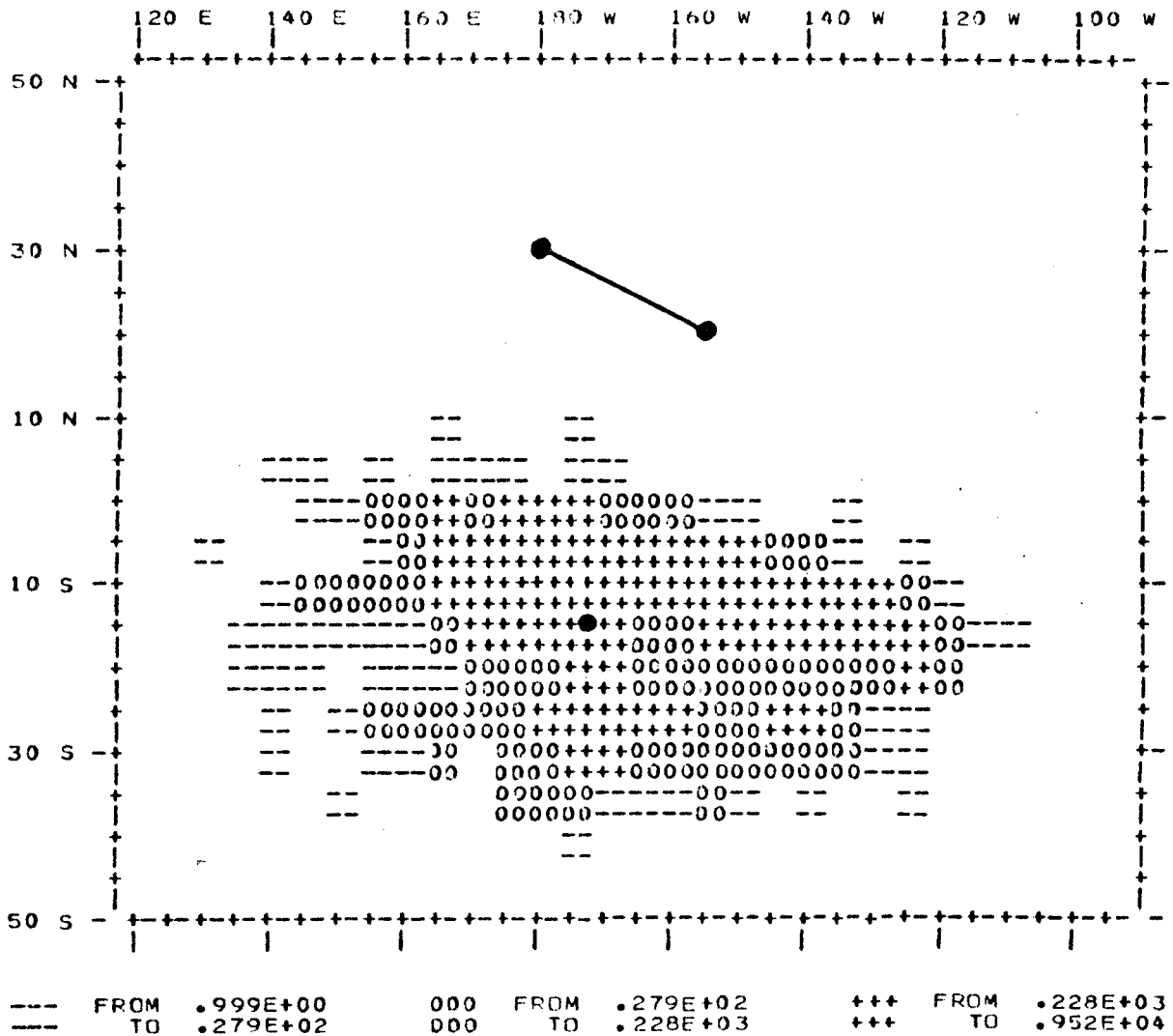


Figure 3.--Distribution of nominal effort (vessel days) by Taiwanese longliners based in American Samoa during 1965-73, by 5° squares. American Samoa is indicated by a single dot (•), and the Hawaiian Islands by connected dots (•-•). Based on data from Government of American Samoa.

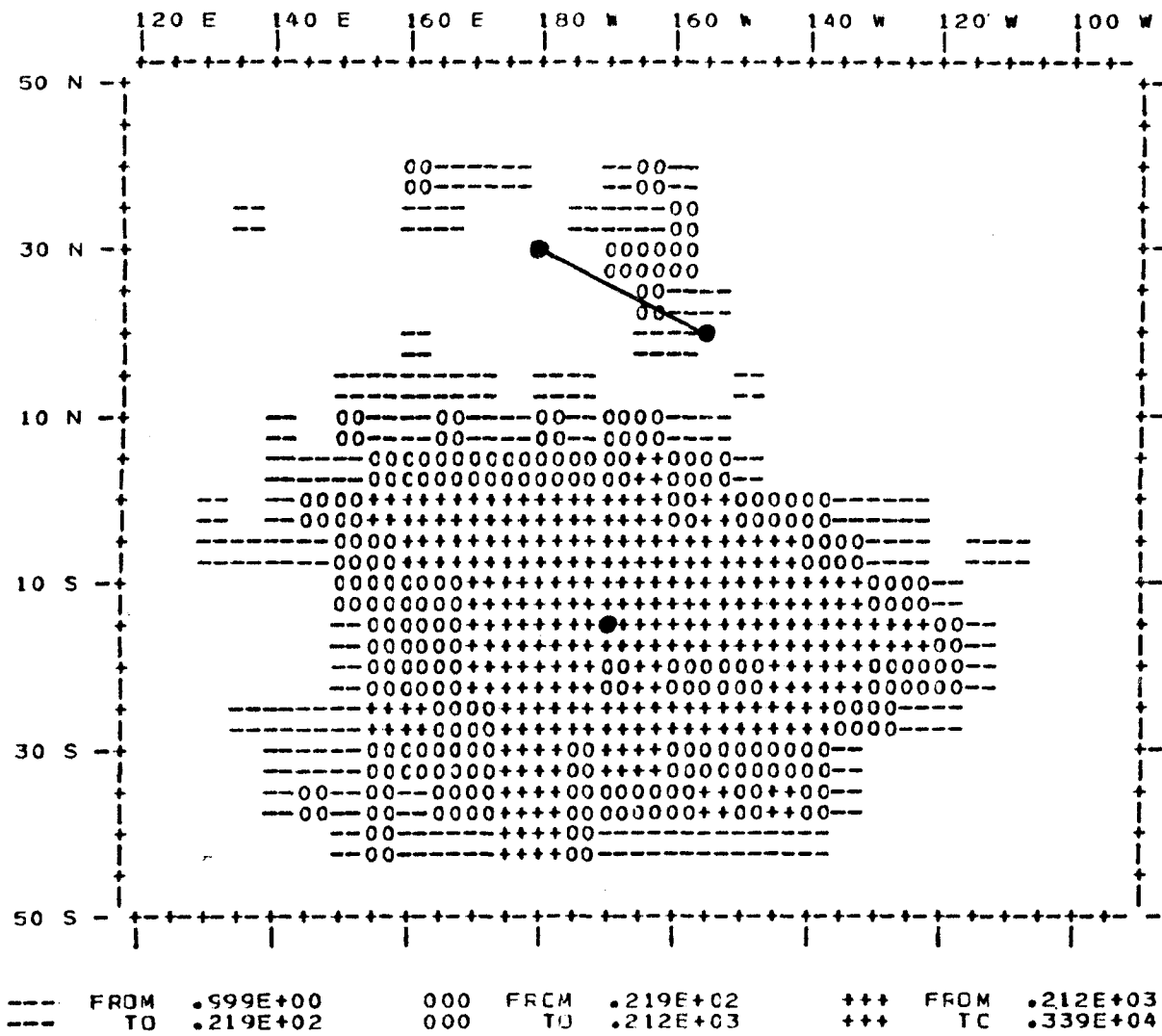


Figure 4.--Distribution of nominal effort (vessel days) by Korean longliners based in American Samoa during 1974-78, by 5° squares. American Samoa is indicated by a single dot (•), and the Hawaiian Islands by connected dots (•-•). Based on data from Government of American Samoa.

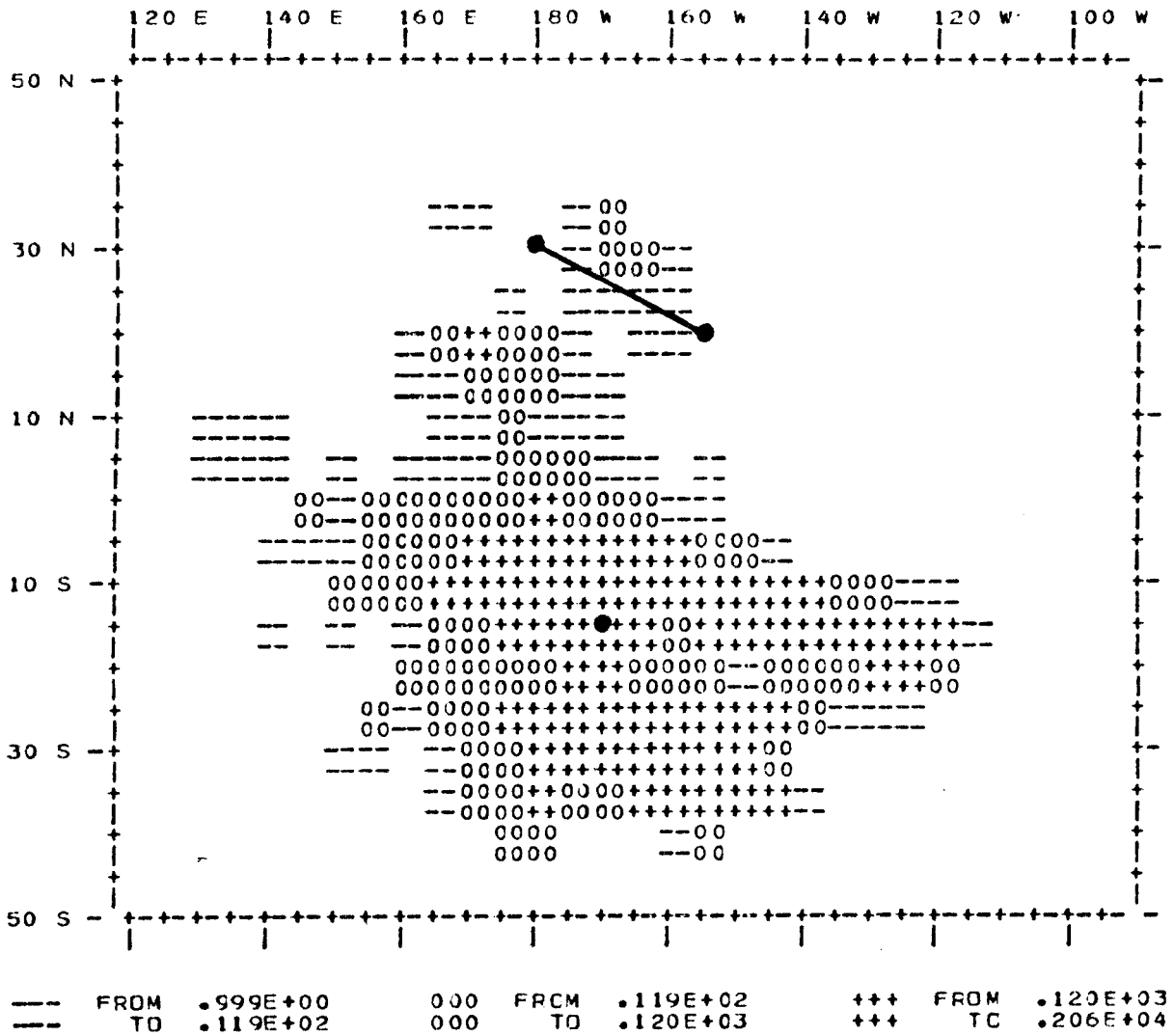
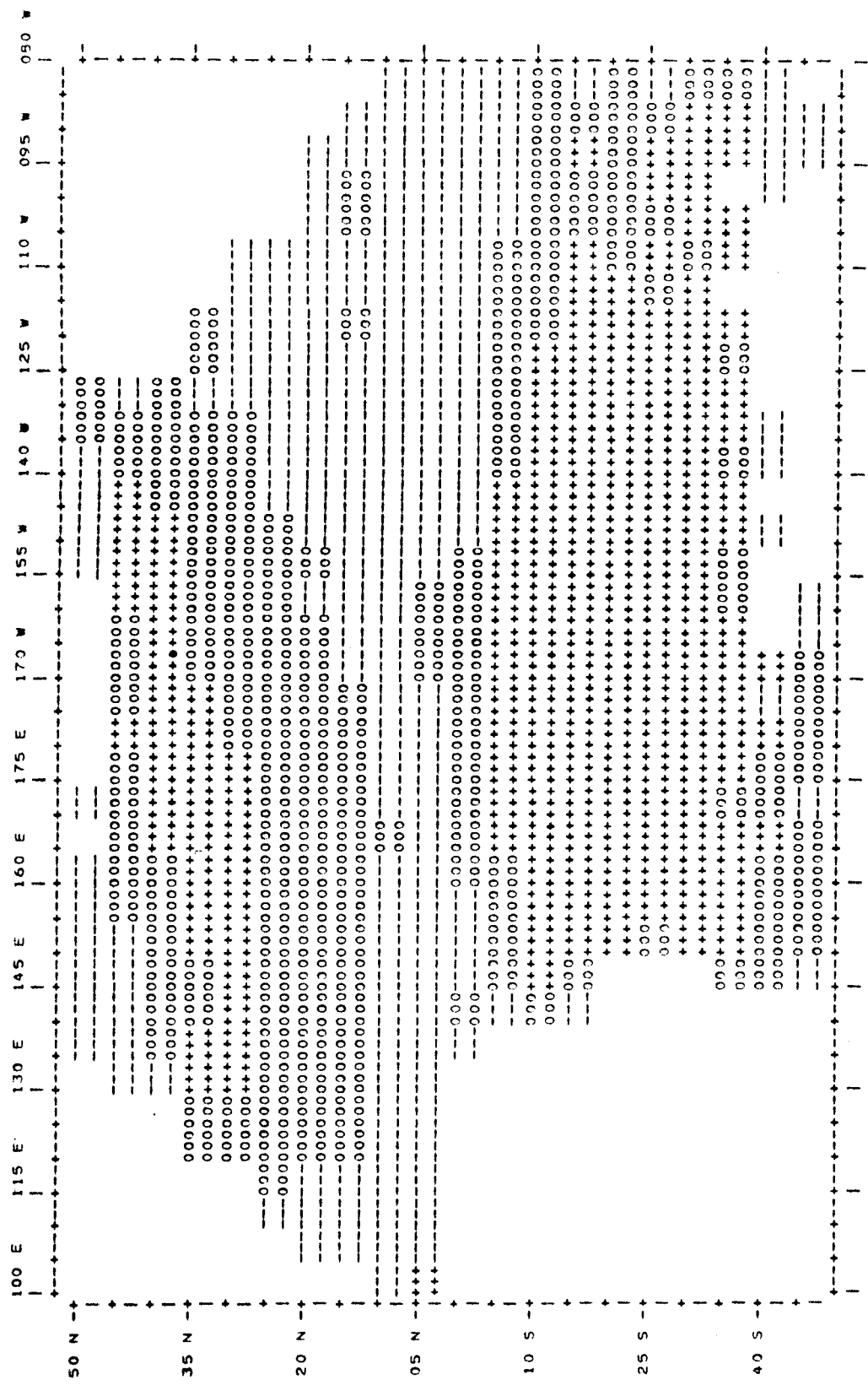


Figure 5.--Distribution of nominal effort (vessel days) by Taiwanese longliners based in American Samoa during 1974-78, by 5° squares. American Samoa is indicated by a single dot (●), and the Hawaiian Islands by connected dots (●—●). Based on data from Government of American Samoa.



--- FROM .000E+00 000 FROM .458E-03 +++ FROM .687E-02
 --- TO .458E-03 000 TO .687E-02 +++ TO .122E+00

Figure 6.--Distribution of average catch per hook (number of fish) for albacore taken by Japanese longliners in the Pacific, 1952-76. Based on data from Fisheries Agency of Japan.

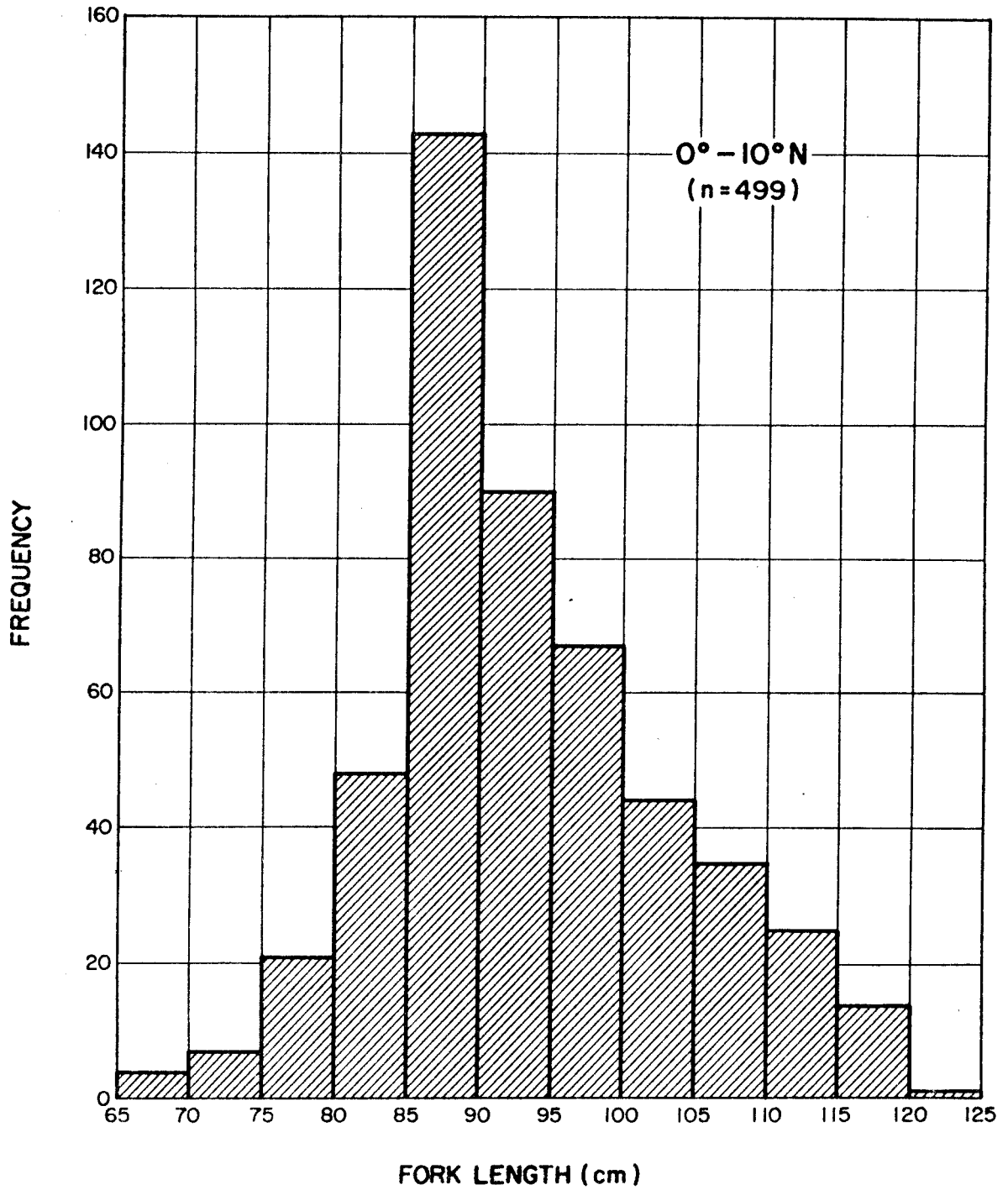


Figure 7.--Distribution of fork length measurements on albacore caught by American Samoa-based longliners, presumably between the equator and lat. 10°N.

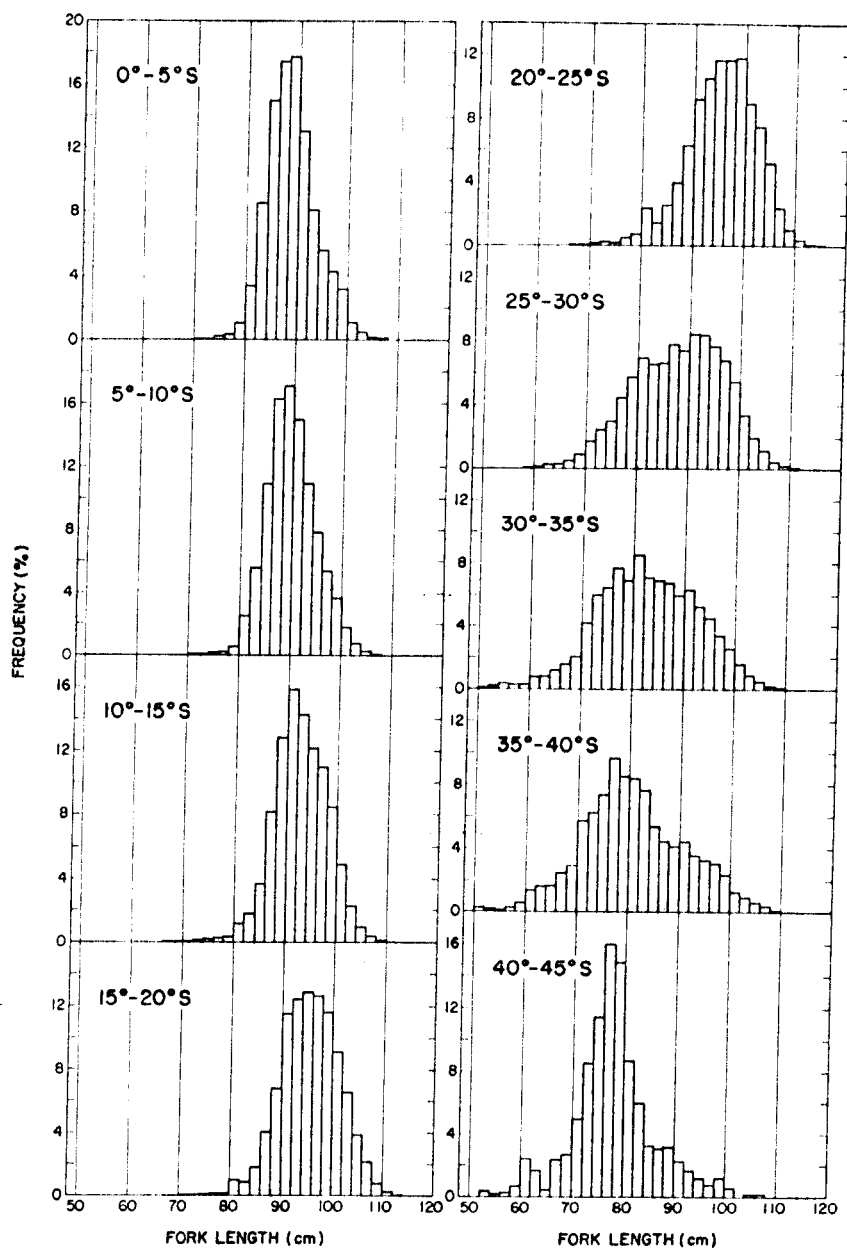


Figure 8.--Fork length composition of South Pacific albacore catches by longline vessels based at Pago Pago, by latitude, 1962-76.