

ANNUAL MEETING - JUNE 1967FORECASTING AVAILABILITY OF ALBACORE TUNA IN THE
EASTERN PACIFIC OCEANGlenn A. Flittner
Bureau of Commercial Fisheries
Tuna Resources Laboratory
La Jolla, California

ABSTRACT

The north Pacific Ocean appears to have a single population of albacore (Thunnus alalunga Bonnaterre). Two major fisheries are dependent upon this population. The largest fishery is operated by the Japanese in the central and western Pacific, primarily on large fish. The second major fishery is carried out off the west coast of North America by United States and Canadian fishermen. This fishery depends primarily upon small fish.

Onset of the migration of albacore into the North American fishery from the central north Pacific appears connected with the annual climatological shift from winter cooling to spring heating of the upper mixed layer. Historically, the earlier the shift occurs, the earlier the fishery commences.

Annual variations of the region of best fishing appear associated with environmental conditions, and particularly the temperature structure of the upper mixed layer. Large-scale variations in temperature of the upper mixed layer occur from year to year and month to month. An "optimum temperature" zone of 15.6-20.0° C. (60-68° F.) appears to delimit the region where about 95 percent of the albacore are most likely to be caught.

Within broad limits, it has been possible to predict when and where the southern California albacore fishery will commence about 2 to 3 months in advance of the event. However, accurate estimation of total U.S. west coast landings for each season must await the assembly of fishery information giving detailed catch and effort data, estimates of year-class abundance, and the amount of fishing effort which will be expended by the fleet.

Further advances in temperate tuna fisheries forecasts depend partly upon better knowledge of environmental processes and their prediction. Until this knowledge is accumulated, greatest practical utility will be gained from forecasts based on short-term extensions of current fisheries conditions aided by computer analyses of short-term environmental trends, and conveyed by means of daily information broadcasts to the industry.