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STATUS OF ALBACORE TUNA IN THE EASTERN PACIFIC OCEAN IN 2004

Most scientists who have studied albacore in the Pacific Ocean have concluded that there are two stocks, one occurring in the northern hemisphere and the other in the southern hemisphere. Albacore are caught by longliners in most of the North and South Pacific, but not often between about 10°N and 5°S, by trollers in the eastern and central North Pacific and the central South Pacific, and by pole-and-line vessels in the western North Pacific. In the North Pacific about 62% of the fish are taken in surface fisheries that catch smaller, younger albacore, whereas only about 10% of the albacore caught in the South Pacific are taken by surface gears. Total annual catches of albacore from the North Pacific peaked in 1976 at about 125,000 t, and then declined. Catches recovered during the 1990s, and reached 121,500 t in 1999 (Figure F-1a). In the South Pacific, annual catches have ranged between about 25,000 and 55,000 t during the period since 1980 (Figure F-1b).

The juveniles and adults are caught mostly in the Kuroshio Current, the North Pacific Transition Zone, and the California Current in the North Pacific and the Subtropical Convergence Zone in the South Pacific, but spawning occurs in tropical and subtropical waters, centering around 20ºN and 20ºS latitide. North Pacific albacore are believed to spawn between March and July in the western and central Pacific.

The movements of North Pacific albacore are strongly influenced by oceanic conditions, and migrating albacore tend to concentrate along oceanic fronts in the North Pacific Transition Zone. The great majority are caught in waters between 15º and 19.5º C. Details of the migration remain unclear, but juvenile fish (2- to 5-year-olds) are believed to move into the eastern Pacific in the spring and early summer, returning to the western and central Pacific, perhaps annually, in the late fall and winter, and tending to remain there as they mature. It has been hypothesized that there are two subgroups of North Pacific albacore, separated at 40ºN in the EPO, with the northern subgroup more likely to migrate to the western and central Pacific Ocean.

Less is known about the movements of albacore in the South Pacific Ocean. The juveniles move southward from the tropics when they are about 35 cm long, and then eastward along the Subtropical Convergence Zone to about 130°W. When the fish approach maturity they return to the tropics, where they spawn. Recoveries of tagged fish released in areas east of 155°W were usually made at locations to the east and north of the release site, whereas those of fish released west of 155°W were usually made at locations to the west and north of the release site.

New age-structured stock assessments were presented for the South and North Pacific stocks of albacore in 2003 and 2004, respectively.

The South Pacific assessment, carried out with MULTIFAN-CL by the Secretariat for the Pacific Community, incorporated catch and effort, length-frequency, and tagging data. The stock was estimated to be well above the level that would produce the average maximum sustainable yield (AMSY), and that yield would continue to increase with futher increases in effort, though the extent to which yield could increase sustainably is not well determined. Although the recent recruitments are estimated to be slightly

below average, there currently appears to be no need to restrict the fisheries for albacore in the South Pacific Ocean.

Virtual population analyses of the North Pacific stock of albacore were carried out during the 19th North Pacific Albacore Workshop in 2004. The estimated 2004 biomass, 438,000 t, was about 25% greater than that estimated for 1975, the first year of the period modeled. The estimated recruitments since 1990 have generally been greater than those of the 1980s, and the catches per unit effort for most of the surface fisheries have increased in recent years. However, longline catch rates have declined since the mid-1990s. The Workshop estimated low (0.43) and high (0.68) levels for fishing mortality (*F*) at full recruitment, and noted that if rates of *F* continue at assumed levels, it is unlikely that the spawning stock biomass (SSB) will rebuild to SSB_{MSY} levels within a 5-year time period.

The 2005 meeting of the International Scientific Committee gave the following advice:

> "Future SSB can be maintained at or above the minimum 'observed' SSB (43,000 t in 1977) with F's slightly higher than the current F range. However, the lowest 'observed' SSB estimates all occurred in late 1970's and may be the least reliable estimates of SSB. A more robust SSB threshold could be based on the lower 10th or 25th percentile of 'observed' SSB. If so done, current F should maintain SSB at or above the 10th percentile threshold but a modest reduction from current F may be needed to maintain SSB at or above the 25th percentile threshold."

We consider the higher level for current fishing mortality (0.68) to be more likely, based on the methods used to calculate the estimates. Furthermore, even the high estimate may be too low, given the retrospective bias shown by the model. Current fishing mortality of 0.68 implies an equilibrium spawning stock biomass at 17% of unfished levels. Projections assuming fishing mortality of 0.68, under low and high scenarios of future recruitment, suggest that the biomass may decline if current levels of fishing mortality persist.

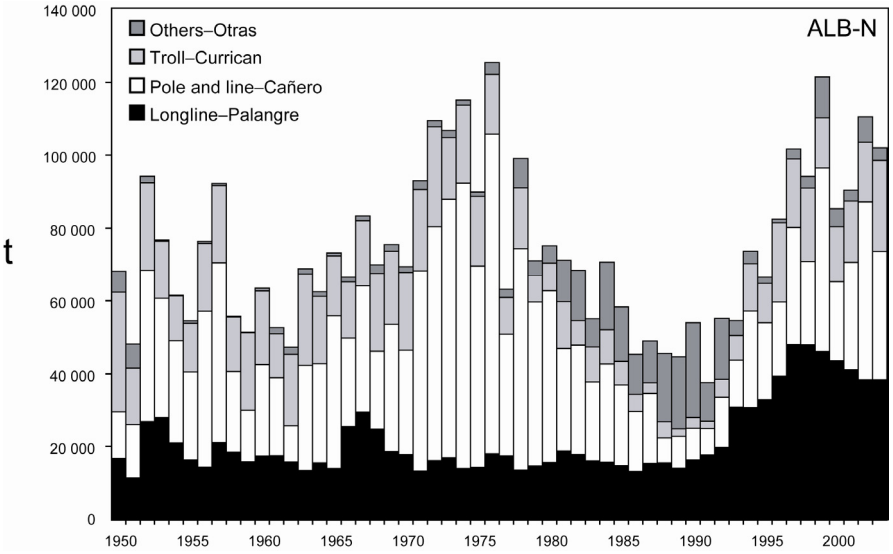

FIGURE F-1a. Retained catches of North Pacific albacore, 1950-2003.
FIGURA F-1a. Capturas retenidas de albacora del Pacífico norte, 1950-2003.

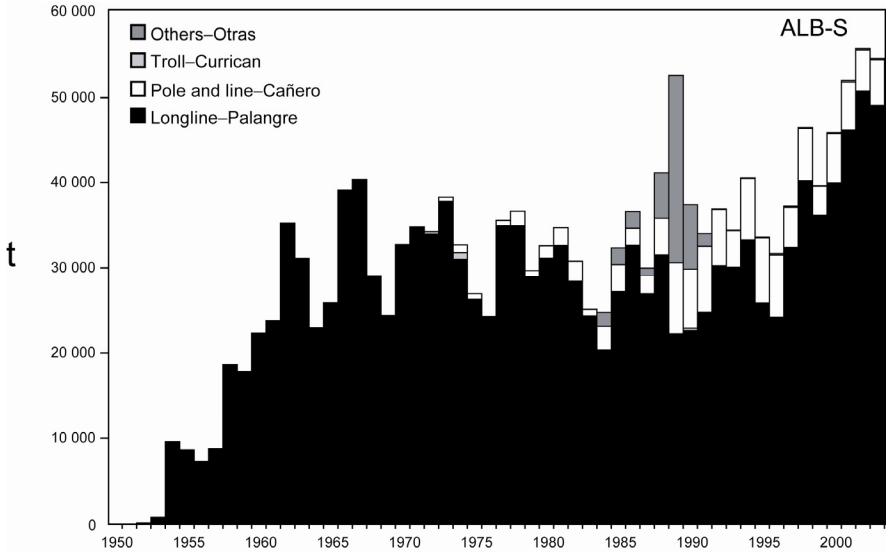

FIGURE F-1b. Retained catches of South Pacific albacore, 1950-2003.
FIGURA F-1b. Capturas retenidas de albacora del Pacífico sur, 1950-2003.