

THE SCHOOLING BEHAVIOR OF PACIFIC YELLOWFIN
 AND SKIPJACK TUNA HELD IN A BAIT WELL

During May and June 1962, the Inter-American Tropical Tuna Commission chartered the tuna clipper *South Seas* to study certain aspects of yellowfin tuna (*Thunnus albacares*) and skipjack tuna (*Katsuwonus pelamis*) physiology and to conduct other research off Baja California. Groups of 15 to 30 pole-and-line-caught tunas were kept alive in a bait well aboard the vessel for up to 12 hours, affording us an opportunity to observe their behavior. The bait well was approximately 2.6 meters wide by 4.0 meters long (port to starboard) by 1.6 meters deep, and held about 17,000 liters of sea water, which was exchanged at the rate of 2,100 liters per minute. Temperatures during the experiments ranged from 20° to 23° C.

When yellowfin were placed in the wells they immediately adapted themselves to their new environment and assumed a "leisurely," circular swimming pattern around the bottom; almost all swam in the same direction. When only skipjack were placed in the wells their movements were relatively faster than yellowfin. Tester (1952) noted these same behavior differences for yellowfin and skipjack held in captivity in the Hawaiian Islands area. In our experiments, skipjack did not form as uniform nor as compact a group as yellowfin. Skipjack, when alone, also appeared constantly "excited" and "nervous." They moved much more erratically than yellowfin held alone; a few skipjack were always swimming independently in various directions rather than with the group.

On several occasions when yellowfin and skipjack were together, yellowfin assumed their customary "leisurely" and uniform swimming rate while skipjack, under these circumstances, seemed to adapt to yellowfin behavior. Their movements were less erratic, and their speed apparently was adjusted to that of yellowfin. Skipjack predominated in the upper layer of what seemed a two-layer system. This pronounced change in skipjack behavior was evident whenever the two species were held together. Yuen (1962) observed a similar layering effect with skipjack and yellowfin off Roca Partida, Revillagigedo Islands.

The apparent slowing effect yellowfin have on skipjack in captivity may also occur in nature. This suggests the need to investigate the possibility that skipjack are more vulnerable to purse-seine gear when schooled with yellowfin.

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- James Joseph and Izadore Barrett, *Inter-American Tropical Tuna Commission, Scripps Institution of Oceanography, La Jolla, California, July 1962.*

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