by James H. Uchiyama

Valid name *Thunnus albacares* (Bonnaterre 1788) (Fig. 74)

Synonymy
Scomber albacares Bonnaterre 1788
Scomber albacorus Lacepède 1800
Thynnus argentivittatus Cuvier and Valenciennes 1831
Scomber Sloanei Cuvier and Valenciennes 1831
Thynnus albacora Lowe 1839
Thynnus macropterus Temminck and Schlegel 1844
Thunnus argentivittatus South 1845
Orcynus subulatus Poey 1875
Orcynus albacora Poey 1875
Orcynus macropterus Kitahara 1897
Germo macropterus Jordan and Snyder 1901
Thunnus macropterus Jordan, Tanaka, and Snyder 1913
Thunnus allisoni Mowbray 1920
Germo argentivittatus Nichols and Murphy 1922
Germo allisoni Nichols 1923
Neothunnus macropterus Kishinouye 1923
Thunnus subulatus Jordan and Evermann 1926
Neothunnus catalinae Jordan and Evermann 1926
Neothunnus albacora Jordan and Evermann 1926
Neothunnus itosibi Jordan and Evermann 1926
Neothunnus albacores Jordan and Evermann 1926
Neothunnus allisoni Jordan and Evermann 1926
Kishinoella zacalles Jordan and Evermann 1926
Semathunnus guildi Fowler 1933
Semathunnus itosibi Fowler 1933
Neothunnus argentivittatus Beebe and Tee-Van 1936
Germo albacora Fowler 1936
Thunnus albacora Tortonese 1939
Germo itosibi Smith 1949
Neothunnus albacora brevipinna Bellón and Bardán de Bellón 1949
Neothunnus albacora longipinna Bellón and Bardán de Bellón 1949
Neothunnus macropterus macropterus Bellón and Bardán de Bellón 1949
Neothunnus macropterus itosibi Bellón and Bardán de Bellón 1949
Neothunnus brevipinna Postel 1950
Thunnus zacalles Fraser-Brunner 1950
Thunnus albacares Ginsburg 1953
Thunnus catalinae Ginsburg 1953
Neothunnus albacores Mather 1954
Thunnus albacares Le Danois 1954
Neothunnus albacora macropterus Schultz 1960
Thunnus albacares macropterus Jones and Silas 1963
Thunnus itosibi Jones and Silas 1963
(from Gibbs and Collette 1967)

Common and vernacular names Yellowfin tuna; ahi

Distribution

Occurs throughout the Hawaiian Archipelago.

Distinguishing characteristics

D. XIV-II, 12; A. II, 12 (Jordan and Evermann 1905). Body fusiform, slightly compressed laterally. Two dorsal fins separated by a narrow interspace; caudal fin lunate; moderately long pectoral fins reach beyond origin of second dorsal but not beyond end of its base; a pair of interpelvic processes between pelvic fins. On some large specimens the second dorsal and anal fins long (20% of FL). Head conical, terminal mouth reaching vertical axis through anterior of eye. Body wholly covered with small scales; corselet present. Well-developed keel on each side of the caudal peduncle between two small keels at the caudal end; 8-10 dorsal and 7-10 anal finlets

Figure 74.—*Thunnus albacares*.

on caudal peduncle. Individuals with undeveloped second dorsal and anal fins resemble bigeye tuna from which it can be distinguished by the lack of striations on the ventral surface of the liver (Fischer and Whitehead 1974).

In life, dark blue to black dorsally, silver ventrally; yellow or golden band occasionally visible from snout to tail on sides. Faint vertical lines alternating with vertical rows of spots present on the ventral half of the body. Dorsal and anal fins, all finlets, and caudal fin bright yellow. Finlets have narrow black border (Gibbs and Collette 1967).

Life history

The species is heterosexual and exhibits no externally visible sexual dimorphism (Cole 1980). Observations during NWHI survey cruises showed that sexually mature males can be as small as 88 cm; whereas the smallest female with ripe ovaries was 116 cm. These sizes at maturity agree with past estimates of sexual maturity for central and western Pacific yellowfin tuna (June 1953; Yuen and June 1957; Kikawa 1962). Spawning occurs from May through October in Hawaiian waters (June 1953). Fecundity estimates range from 2.37 to 8.59 million eggs per spawning for fish 47 to 88 kg (June 1953). The species is a multiple spawner; however, the frequency of spawning per season is undetermined.

Artificially fertilized eggs were observed to hatch in 25-36 h at a water temperature of 23.7° to 27.0°C. The larvae are 2.2 mm at hatching and grow to 3.1 mm in 4 days (Inoue et al. 1974). Growth is rapid; the species attains 53 cm at 1 year and 90 cm at 2 years (Uchiyama and Struhsaker 1981).

Yellowfin tuna around Hawaii feeds on fishes, crustaceans, and molluscs, primarily cephalopods (Welsh 1950; Tester and Nakamura 1957). Small yellowfin tuna (<100 cm) feeds primarily on crustacean larvae; medium-sized fish (100-129 cm) feeds mostly on crustacean larvae and squids; whereas large fish (>130 cm) feeds primarily on fish and squid (Reintjes and King 1953).

Not much is known about the migration of yellowfin tuna in the NWHI. Of 203 fish tagged, there was only a single recovery. The fish moved 31 nmi in 37 days.

The length-weight relationship derived from a sample of 4,822 fish is:

$$W = 3.256 \times 10^{-5} L^{3.05834},$$

where W = weight (lb) and L = fork length (mm) (Nakamura and Uchiyama 1966).

Gear and catch

Yellowfin tuna is caught mainly by longline, pole and line, trolling, and handline (ika-shibi and palu-ahi). Annual landings of this species, second only to skipjack tuna in importance in the Hawaiian fishery, fluctuated widely in 1961-79 from 17,457 to 962,641 kg and averaged 434,624 kg. Most of the fish are taken around the main islands and substantial numbers are now taken off the Island of Hawaii in the ika-shibi fishery (Yuen 1979).

In 1977 in the NWHI, 337 and 403 MT of yellowfin tuna were taken by Japanese baitboats and longliners, respectively (Yong and Wetherall 1980).