

by James H. Uchiyama

Valid name	<i>Coryphaena hippurus</i> Linnaeus 1758 (Fig. 59)
Synonymy	<i>Scomber pelagicus</i> Linnaeus 1758 <i>Coryphaena fasciolata</i> Pallas 1770 <i>Coryphaena imperialis</i> Rafinesque 1810 <i>Lepimphis hippuroides</i> Rafinesque 1810 <i>Coryphaena immaculata</i> Agassiz in Spix and Agassiz 1829 <i>Coryphaena marcrogravi</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena suerii</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena dorado</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena virgata</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena argyrurus</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena vlamingii</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Lampugus siculus</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena scomberoides</i> Valenciennes in Cuvier and Valenciennes 1833 <i>Coryphaena nortoniana</i> Lowe 1839 <i>Ecteria brunneus</i> Jordan and Thompson 1914 (from Palko et al. 1982)
Common and vernacular names	Dolphin; mahimahi

Distribution

Circumtropical but also in warm waters between lat. 45°N and 45°S. Captured by surface trolling from Nihoa to Kure Atoll in the NWHI. Larvae and juveniles nektonic, generally pelagic but have been found inshore. Adults inhabit open ocean but also approach coastal waters. They often follow ships and tend to aggregate under floating objects. Small fish (<2.3 kg) are plentiful in summer; large fish (13.6-18.1 kg) are caught mostly from February to April (Squire and Smith 1977).

Distinguishing characteristics

D. 55-65; A. I-III, 25-30; P1. I, 17-21; P2. I, 5; LLs. 245-280. Gill raker counts decrease with age; juveniles have 10-15; whereas adults have 8-10 (Gibbs and Collette 1959). Body elongate, laterally compressed with single dorsal fin originating at nape, extending to caudal; anal fin slightly longer than half of body length; pelvic fins fit into groove in body; caudal fin deeply forked. Species sexually dimorphic. In males, pronounced bony crest on front of head; in females, forehead slightly convex. Terminal mouth extends to vertical axis through middle of eye in both sexes. Males larger than females. Lateral line curved upward above the pectoral.

Color in life variable but usually brilliant green on back, yellow to golden hues on sides, and yellow to white on bottom. Many small brilliant phosphorescent blue and black spots on head and body. Dorsal and anal fins dark.

Life history

The species is heterosexual. In the NWHI, well-developed and ripe ovaries were collected in March-September. Around the main islands, dolphin spawns throughout the year as evidenced by occurrence of juveniles in all months.¹⁵

¹⁵Burch, R. K., Biologist, Waikiki Aquarium, Honolulu, HI 96815, pers. commun. May 1982.

Females begin to mature at 35 cm FL; all are mature at 55 cm (Beardsley 1967). Fecundity estimates were from 240,000 to 3,000,000 eggs per fish annually, depending on size.

The buoyant, colorless, spherical eggs measure about 1.2-1.6 mm in diameter and have a single, light-yellow oil globule 0.3-0.4 mm in diameter. The yolk appears to be coarsely segmented. The NMFS culture experiments demonstrated that eggs measure 1.58 mm in diameter and fertilized eggs hatch in 40-53 h at 24-26°C. At hatching, the larvae are 3.95 to 5.10 mm long.¹⁶ The larvae absorb the yolk sac in 2-4 days (Mito 1960; see footnote 16). Male dolphins grow rapidly attaining 20 kg in the first year in Hawaiian waters (Uchiyama et al. 1986).

Dolphins are active and voracious feeders and prefer fast-moving large prey (Welsh 1950). Juveniles feed primarily on copepods; larger juveniles feed on fish and cephalopods (Shcherbachev 1973). Adults feed mainly on fish with flyingfish predominating (Welsh 1950; Ronquillo 1953; Tester and Nakamura 1957; Kojima 1961; Shcherbachev 1973; Rose and Hassler 1974).

Little is known about migration. The dolphin has long been known to be associated with drifting objects (Gooding and Magnuson 1967).

The species tend to school by sex as well as by size (Gibbs and Collette 1959; Kojima 1966; Beardsley 1967).

Dolphins caught during the NWHI investigations ranged from 52.2 to 130.5 cm among females and 48.3 to 110.0 cm for males. The length-weight relationship of dolphin in Hawaii is:

$$W = 6.359 \times 10^{-5} L^{2.7111},$$

where W = weight (lb) and L = fork length (cm) (Tester and Nakamura 1957). Due to sexual dimorphism, this relationship holds only for fish <68 cm. For fish >68 cm, males are heavier than females of the same length.

¹⁶Kazama, T. K., Fishery Biologist, Southwest Fish. Cent. Honolulu Lab., Natl. Mar. Fish. Serv., NOAA, Honolulu, HI 96822-2396, pers. commun. 6 April 1984.

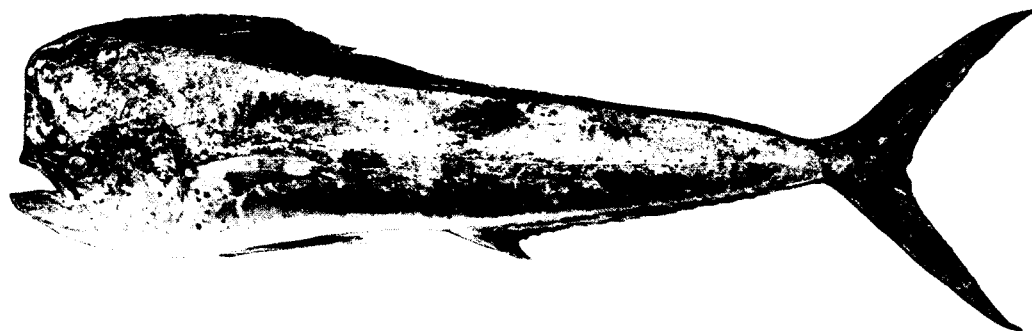


Figure 59.—Male *Coryphaena hippurus*.

Gear and catch

Dolphin is caught mainly by trolling but also taken incidentally by longline and pole and line. For 1961-79, the annual landings varied from 26,526 to 79,492 kg and averaged 50,556 kg.