

Caranx caballus, a New Immigrant Carangid Fish to the Hawaiian Islands from the Tropical Eastern Pacific¹

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ABSTRACT: *Caranx caballus* Günther, a wide-ranging tropical eastern Pacific carangid fish, was reported from the Hawaiian Islands as *C. kuhlii* (later as *C. kalla*) from only two specimens collected in 1922. Because no further specimens had been collected, these two fish were regarded as strays from the eastern Pacific; however, beginning in the summer of 1998, this small jack was found in such numbers in the Hawaiian Islands that it seems to have established a breeding population. It is distinguished by having 22–24 dorsal soft rays, 19–20 anal soft rays, 43–52 scutes, chest fully scaled, 42–46 gill rakers, no large teeth in jaws, a relatively slender body (depth 3.5–3.75 in fork length), a black spot on edge of opercle, and no dark bars on the body. Because it is a valuable food fish, it is expected to be commercially exploited in Hawai'i.

FOWLER (1923:375) WROTE, "While working over the fishes in the Bishop Museum, I have found a number of interesting new species and several species of signal rarity not previously reported from Hawaii." Among the new records was a listing by name only of the carangid fish *Caranx kuhlii* (Bleeker). Fowler (1925) repeated the record by name only. In his *Fishes of Oceania* (1928) he provided a description and figure of the species from his examination of two specimens in the Bishop Museum, one from the Honolulu market and the other caught on a line off Koko Head, O'ahu, on 25 December 1922. He was mistaken in writing that both fish are 341 mm in length; one remaining at the Bishop Museum is 252 mm fork length and about 290 mm in total length.

Under a heading of *Caranx kalla* Cuvier, Fowler (1934:404) wrote, "*Selar kuhlii* Bleeker is placed as a synonym of this species by Weber and Beaufort. The account of *Caranx kuhlii* in 'Fishes of Oceania' should

therefore be replaced by *Caranx kalla* Cuvier."

Yamaguchi in Gosline and Brock (1960) included *Caranx kalla* in the key to Carangidae and provided a brief species account. No specimens were examined.

During a visit to the Bishop Museum in 1981, William F. Smith-Vaniz examined the two specimens of *Caranx kalla* that Fowler had reported from O'ahu and reidentified them as *Caranx caballus* Günther, 1868 (type locality, Pacific coast of Panama). He recommended that one specimen be sent on exchange to the National Museum of Natural History; it is now USNM 109411. The other specimen remains at the Bishop Museum as BPBM 3395.

This small jack is broadly distributed in the eastern Pacific. Jordan and Evermann (1896:922) gave the range as "Pacific Coast of tropical America, Cerros Island to Panama, straying northward to San Diego; very common from Guaymas southwards." Eschmeyer et al. (1983) extended the range from Santa Cruz Island off California to Peru, including the Galápagos Islands. Allen and Robertson (1994) provided a color painting (plate VIII, fig. 7, not fig. 4 as indicated on p. 126).

In view of the heavy fishing for carangid fishes in Hawaiian waters, it was clear that

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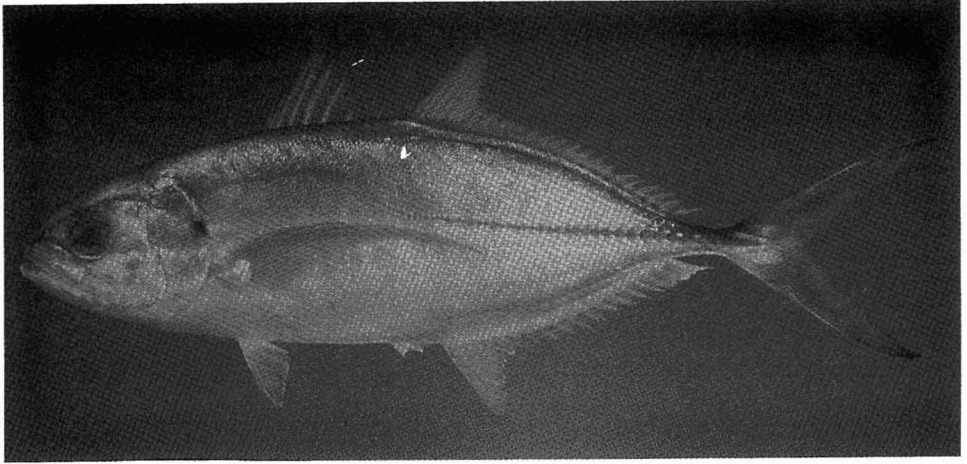


FIGURE 1. *Caranx caballus*, BPBM 38439, 245 mm FL, Kaua'i.

this species, known from only the two specimens taken in 1922, was only a stray from the eastern Pacific. On 29 July 1998, Todd Masaru Inouye caught a small jack while fishing from shore at Kapa'a, Kaua'i, that he could not identify. The fish was sent frozen to the Waikīkī Aquarium, where we determined that it is *Caranx caballus* and took a photograph (Figure 1). We still regarded the fish as a stray.

On 18 August, however, Bill Puleloa of the Division of Aquatic Resources of the Department of Land and Natural Resources on Moloka'i telephoned to report that a small jack that he identified as *Caranx kalla* in Gosline and Brock (1960) was being taken in numbers by fishermen off the Kaunakakai pier. It was also being caught by trolling inshore in the direction of Lā'au Point for a half mile [0.8 km] or more. At our request he sent us a specimen, and it proved to be *C. caballus*.

In September William Aila, the harbor-master of Wai'anae Boat Harbor, telephoned to report that an unknown jack was interfering with the fishing for 'ōpelu (*Decapterus macarellus*) and akule (*Selar crumenophthalmus*) off the Wai'anae coast. Nighttime fishermen were reporting that schools of 'ōpelu and akule would sound and immediately some fish would attack the flies on their rigs, breaking the leaders off. Specimens of

the offending fish were eventually caught, and two were sent by Aila to us and identified as *C. caballus*.

In November we received a specimen of *C. caballus* from Skippy Hau of the Division of Aquatic Resources in Maui that was collected by Isaac and Tammy Harp in early July 1998 off Lahaina.

It now seems apparent that this species is established in Hawaiian waters. Because it is a valuable food fish, we expect that it will be commercially exploited and not be as disruptive to the native Hawaiian marine biota as the taape (*Lutjanus kasmira*).

It is curious that a second eastern Pacific fish, the finescale triggerfish, *Balistes polyplepis* Steindachner, has also recently established a breeding population in the Hawaiian Islands (Randall and Mundy 1998).

We present below a species account of *Caranx caballus* based on our Hawaiian material.

Caranx caballus Günther

Caranx caballus Günther, 1868:431 (type locality, Pacific coast of Panama).

Caranx girardi Steindachner, 1870:314 (type locality, San Diego, California).

DESCRIPTION: Dorsal rays VIII-I,22-24; anal rays II-I,19-20; no detached finlet behind the dorsal and anal fins; pectoral rays

22–24; lateral-line scales (not as scutes) 43–47; scutes 43–52; straight portion of lateral line consisting entirely of scutes or with at most 5 normal pored scales anteriorly; curved portion of lateral line short, 1.65–1.95 in straight portion; chest fully scaled; gill rakers 14–15 + 28–31; body moderately elongate for the genus, the depth 3.5–3.75 in FL, and not greatly compressed, the width 1.7–1.9 in depth; head length 3.75–3.85 in FL; snout length 3.6–3.75 in head length; eye 3.6–3.9 in head length; adipose eyelid present, its anterior edge across middle of anterior part of iris, its posterior edge across posterior edge of pupil; caudal peduncle very narrow, its depth 7.5–8.0 in head length; mouth oblique, forming an angle of about 25° to horizontal axis of head and body, the lower jaw slightly projecting; maxilla nearly reaching to below center of eye, the upper-jaw length 2.6–2.7 in head length; upper jaw with an outer row of well-separated, incurved, stout, conical teeth and an inner band of nearly sessile, partly depressible, slender teeth, the largest at most half the length of teeth of outer row; lower jaw with a single row of stout conical teeth, about half the length of upper canines, and more close-set; third dorsal spine longest, 2.4–2.65 in head length; longest dorsal soft ray 2.0–2.1 in head length; last dorsal and anal soft rays longer than penultimate rays; caudal fin deeply forked; pectoral fins long and falcate, reaching well beyond origin of soft portion of anal fin, their length 3.05–3.25 in FL; pelvic fins short, 2.3–2.35 in head length.

Color blue green dorsally, silvery on sides and ventrally; no dark bars on body; scutes yellowish brown, becoming blackish posteriorly; dorsal part of caudal peduncle blackish; a black spot smaller than pupil posteriorly on opercle at level of eye; fins translucent whitish except caudal, which is yellowish gray, the lobe tips blackish; inside of mouth largely white.

Smith-Vaniz (1995) gave the maximum fork length as about 55 cm (hence about 60 cm total length).

REMARKS: The specific name of this jack, *caballus*, is from the Latin for horse. As noted by Jordan and Evermann (1896), the

common names caballo and horse mackerel are often applied to the species. The FAO common name in Spanish is jurel bonito. The accepted U.S. and FAO English common name is green jack.

Jordan and Evermann (1896) noted the similarity of *Caranx caballus* to *C. chrysos* (Mitchill, 1815) of the western Atlantic. They stated that the pectoral fins are usually longer and the number of scutes fewer than in *chrysos*; however, they added that some specimens of *chrysos* from Key West agree so closely with the type specimen of *C. caballus* that they questioned whether the two will remain as separate species. Smith-Vaniz (1995) also indicated the possibility that *Caranx caballus* will be regarded as a synonym of *C. chrysos*.

There is also a problem with the placement of *caballus* in the genus *Caranx*. We follow the current usage but suspect that *caballus* and *chrysos* will not remain in this genus when a comprehensive study of the genera of the Carangidae is undertaken. *Caranx caballus* differs notably from typical species of *Caranx* in the much smaller teeth of the outer row of the upper jaw and single row of the lower jaw, the more elongate body, and the more numerous gill rakers.

MATERIAL EXAMINED: BPBM 3395, 252 mm FL, O'ahu; BPBM 38439, 245 mm FL, Kaua'i; BPBM 38466, 255 mm FL, Moloka'i; BPBM 38467, 2: 260–270 mm FL, O'ahu; BPBM 38480, 246 mm FL, Maui.

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