

## Three Nomenclatorial Changes in Indo-Pacific Surgeonfishes (Acanthurinae)<sup>1</sup>

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**ABSTRACT:** *Acanthurus nigricans* (Linnaeus) is the senior synonym of *A. glaucopareius* Cuvier. The wide-ranging, Indo-Pacific surgeonfish with a dark stripe on the shoulder region that many authors have identified as *A. nigricans* is correctly named *A. nigricauda* Duncker and Mohr. The large surgeonfish endemic to the Red Sea and Gulf of Aden with a similar black shoulder band is *A. gahhm* Forsskål.

The surgeonfish long misidentified as *Acanthurus bleekeri* Günther should be called *A. mata* (Cuvier). The next available name for the species that has been identified as *mata* (Cuvier) by most recent authors is *A. blochii* Valenciennes.

*Ctenochaetus marginatus* (Valenciennes), a new name for *A. guttatus* Kittlitz from the Caroline Islands, replaces *Ctenochaetus cyanoguttatus* Randall.

SYSTEMATIC BIOLOGISTS REVISING MAJOR GROUPS of organisms or compiling reviews of regional biotas must of necessity accept the findings of predecessors whose research is known to be essentially sound. When an early error is made with respect to a specific taxon, it may be perpetuated over the years through the writing of a number of systematists and gain in general acceptance with time. When such an error is ultimately discovered, it may lead to an unpopular nomenclatorial change.

Early naturalists wrote far more broadly on groups than we do today. Looking back on the large compilations of the eighteenth and early nineteenth centuries, writers are often very critical of a small segment of these investigations without comprehending the enormity of the task that faced these early biologists. In systematic research on fishes today, some ichthyologists confine themselves to a single order or family of fishes. How different they are from Peter Artedi, who was writing a treatise on all the fishes of the world until his untimely death at age 30 (his classic *Ichthyologia* was published posthumously in 1738); or his close friend Linnaeus, whose monumental *Systema Naturae* encompassed

all the plants and animals known to science at that time.

The three nomenclatorial changes to be discussed have resulted from reference to the original descriptions of fishes rather than reliance on the decisions of those systematists who followed.

### THE STATUS OF *ACANTHURUS NIGRICANS* (LINNAEUS)

Linnaeus named three surgeonfishes in the tenth edition of his *Systema Naturae* (1758: 274) in the genus *Chaetodon*. The first of these is *C. nigricans* for which he gave two references, Artedi and Hasselquist. The diagnosis of *nigricans*, which is presented first, was taken from Artedi (1738): "*Chaetodon nigrescens, cauda albescente aequali utrinque aculeata*. D 9/38. P. 16. V. I/6. A. 3/29. C 16." No country of origin was given by Artedi for this fish. The *Chaetodon* of Hasselquist (1757: 332), a specimen from the Red Sea obtained in Cairo, is clearly the species named *Chaetodon unicornis* by Forsskål (1775: 63), now placed in the genus *Naso* Lacepède.

In his revision of *Acanthurus*, Randall (1956: 209) chose to regard *nigricans* as a *Naso*, thus believing he had eliminated this taxon from consideration in *Acanthurus*. However, previous authors preferred to place *nigricans* in

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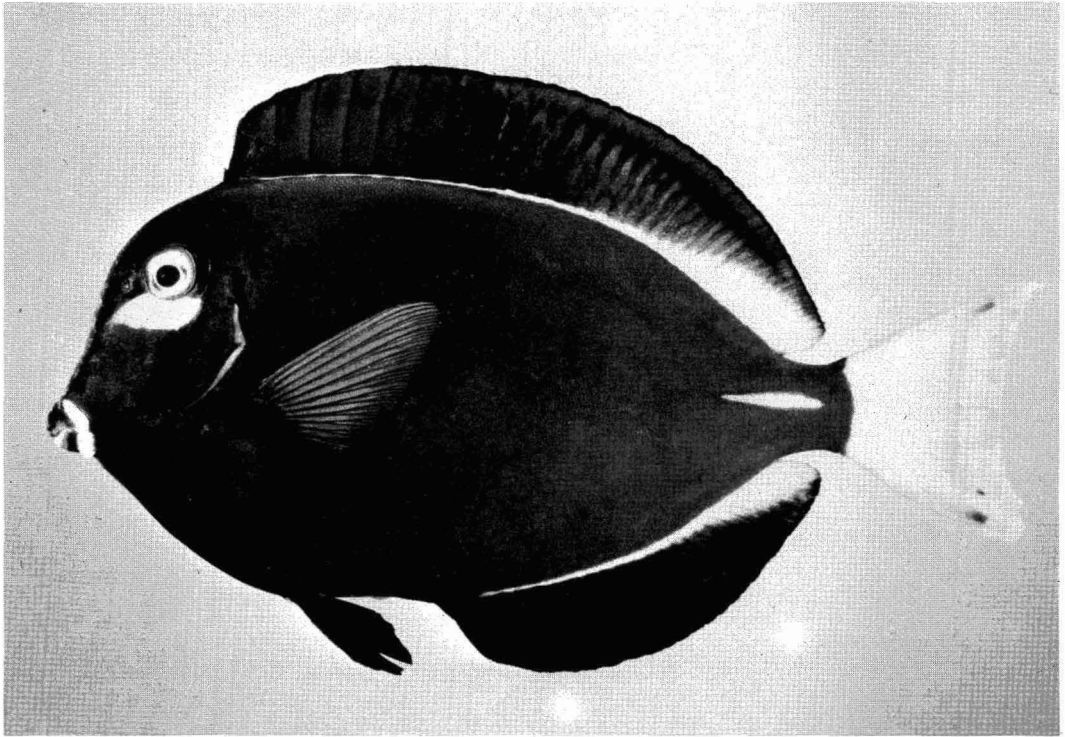


FIGURE 1. *Acanthurus nigricans*, BPBM 8573, 167 mm SL, Marcus Island.

*Acanthurus*. Forsskål made mention of *Chaetodon nigricans* when he described *Acanthurus sohal*, *A. nigrofuscus*, and *A. gahhm* from the Red Sea. Bloch (1787: 82) was a major source of confusion in citing 16 earlier authors of acanthurids under the one name *Chaetodon nigricans*; included are Atlantic species of *Acanthurus* and Hasselquist's "*Chaetodon*"; however, it is obvious from his diagnosis that *Acanthurus* was intended. His plate 203 is clearly an *Acanthurus* though not identifiable to species. Bonnaterre (1788 : 83, pl. 45, fig. 171) illustrated a juvenile *Acanthurus* as *Chaetodon nigricans*. Schneider in Bloch and Schneider (1801: 211) recognized 12 species in *Acanthurus*. Under the heading *nigricans* he listed Bloch's plate 203, Linnaeus, Gmelin, Forsskål's *nigrofuscus* and *gahhm*, and a surgeonfish known as "Maito" in Tahiti which was described in detail from J. R. Forster's manuscript. This fish is the species currently known as *Acanthurus glaucopareius* Cuvier (Figure 1 herein, a junior synonym of *Acan-*

*thurus nigricans*). Schneider named *A. olivaceus* (after Forster) as a variety of *nigricans*.

Rüppell (1829: 57–59) used the name *Acanthurus nigricans* for a Red Sea surgeonfish of which he regarded *Acanthurus nigrofuscus* Forsskål a synonym. He applied the Forsskål name *gahhm* to a second blackish Red Sea species of *Acanthurus*.

Cuvier (1829: 224) named *Acanthurus glaucopareius* in a footnote without a description, citing Seba (1758: vol. 3, pl. 25, fig. 3), adding that it seems to be the true *Chaetodon nigricans* of Linnaeus. He stated further that *Chaetodon nigricans* Bloch, plate 203, is not the Linnaean species. In a footnote on the next page he attributed Hasselquist's *Chaetodon* to *Naseus fronticornis* Lacepède [= *Naso unicornis* (Forsskål)].

Cuvier was correct that the fish illustrated by Seba in pl. 23, fig. 3 is Linnaeus's *nigricans*. Seba's figure is a good illustration of "*glaucopareius*." Artedi was studying Seba's collection of fishes at the time of his death (Wheeler

1962). Seba illustrated three species of *Acanthurus* on plate 25: *lineatus*, *trioctegus*, and "*glaucopareius*." These are the same three acanthurids described by Linnaeus (1758). Linnaeus's diagnosis of *nigricans* (after Artdi) fits *glaucopareius* well: a blackish fish with whitish caudal fin, dorsal rays IX, 29 (bear in mind that 9/38 meant 38 dorsal elements, of which 9 are spines), anal rays III, 26, pectoral rays 16. Even more convincing is the description by Artdi (1738: 530) (Linnaeus having reproduced only a diagnosis from Artdi) which included the information that the dorsal and anal fins are blackish, distinctly white at the base. There was no valid reason for Cuvier to substitute the name *glaucopareius* for *Chaetodon nigricans* Linnaeus; therefore, *Acanthurus glaucopareius* Cuvier is here referred to the synonymy of *Acanthurus nigricans* (Linnaeus).

Unfortunately no type specimen of *Chaetodon nigricans* is extant. A. C. Wheeler (pers. comm.) could not find any type material of the species in the Linnaean collections in Sweden.

Lesson (1830: 150) created another synonym of *Acanthurus nigricans* when he described *A. aliala* from the Caroline Islands; this name has also been used frequently, as by Aoyagi (1943: 209) and Schultz and Woods in Schultz and collaborators (1953: 627), though not as often as *A. glaucopareius*.

*A. nigricans* is found throughout the islands of Oceania, the western Pacific from the Ryukyu Islands through the Philippines and East Indies to the southern Great Barrier Reef, and at Christmas Island and the Cocos-Keeling Islands in the eastern Indian Ocean. In the western Indian Ocean it is replaced by the related *A. leucosternon*. It is most closely related to *A. japonicus* from southern Japan and Taiwan. It is one of three species of *Acanthurus* to have crossed the Eastern Pacific Barrier to colonize the Galapagos and other islands off the west coast of Mexico and Central America.

As noted by Randall (1956), many authors have used the name *Acanthurus nigricans* for a wide-ranging, Indo-Pacific species with a longitudinal black band in the shoulder region and a lanceolate black line extending anteriorly from the caudal spine (Figure 2). Ran-

dall applied the name *Acanthurus gahhm* Forsskål to this species. Later when he made extensive collections in the Red Sea he discovered that the true *Acanthurus gahhm* (Figure 3) is a larger fish, also with a dark band on the shoulder, which is endemic to the Red Sea and Gulf of Aden; the species he had called *gahhm* does not occur in the Red Sea. Dunccker and Mohr (1926: 75) described *Acanthurus gahhm* var. *nigricauda* from three specimens from New Britain and Mussau Island in the Saint Matthias Group (NE of New Ireland). Ladiges et al. (1958) designated ZMH 149 as the lectotype. The author examined this specimen, 199 mm SL, at the Zoologisches Institut und Museum, Universität Hamburg. It is typical of the species previously identified as *gahhm* by Randall and as *nigricans* by most authors. *Acanthurus nigricauda* Duncker and Mohr is adopted here from this surgeonfish. The name *Acanthurus gahhm* Forsskål remains with the larger Red Sea species.

#### THE STATUS OF *ACANTHURUS MATA* AND *A. BLOCHII* VALENCIENNES

In the same footnote where *Acanthurus glaucopareius* was named, Cuvier (1829) proposed *Chaetodon meta* Russel (misprint for *mata* Russell), referring only to the one surgeonfish from the Coromandel coast of India that Russell (1803: 64, pl. 82) identified as *Chaetodon nigrofuscus* Forsskål with a question mark. Russell gave the native name as "Mata" and provided a description with the figure. Valenciennes in Cuvier and Valenciennes (1835: 202) offered a brief description of *mata* from Russell's account and figure. Randall (1956: 220), who admitted to not seeing Russell, followed such authors as Fowler (1928: 267) and Schultz and Woods in Schultz and collaborators (1953: 639) in applying the name *mata* to a species allied to *A. xanthopterus* Valenciennes and *A. dussumieri* Valenciennes. After seeing Russell (1803), collecting fishes in India, and obtaining only the true *mata* (Figure 4) but none of the species previously called *mata*, the author has concluded that *mata* is the fish he had identified as *A. bleekeri* Günther (Randall, 1956: 180). The

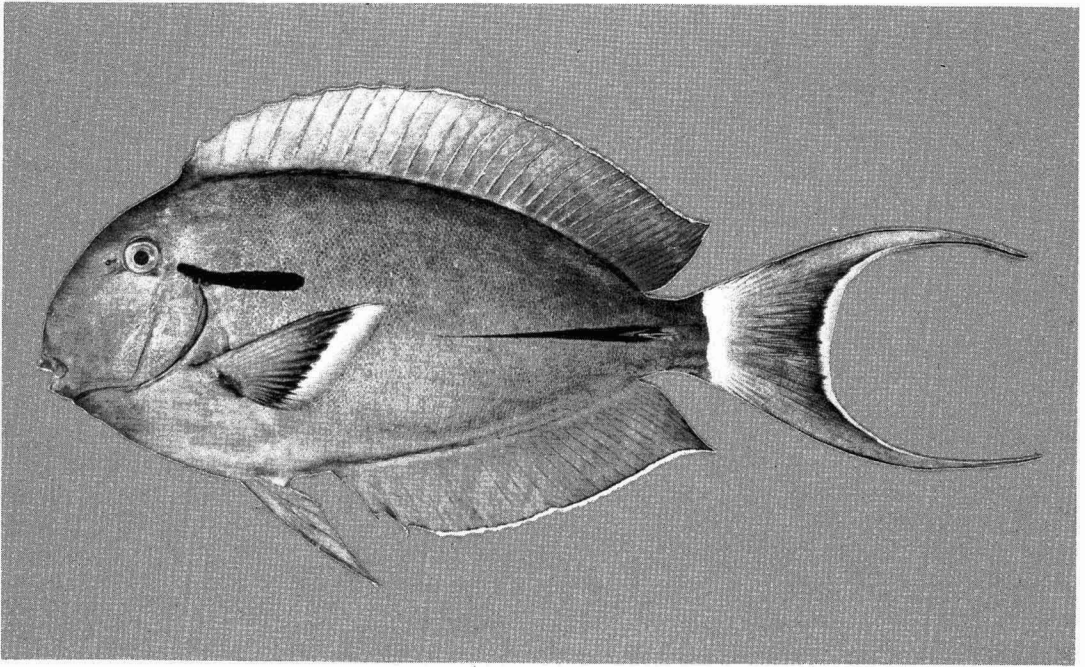


FIGURE 2. *Acanthurus nigricauda*, BPBM 6336, 220 mm SL, Enewetak, Marshall Islands.

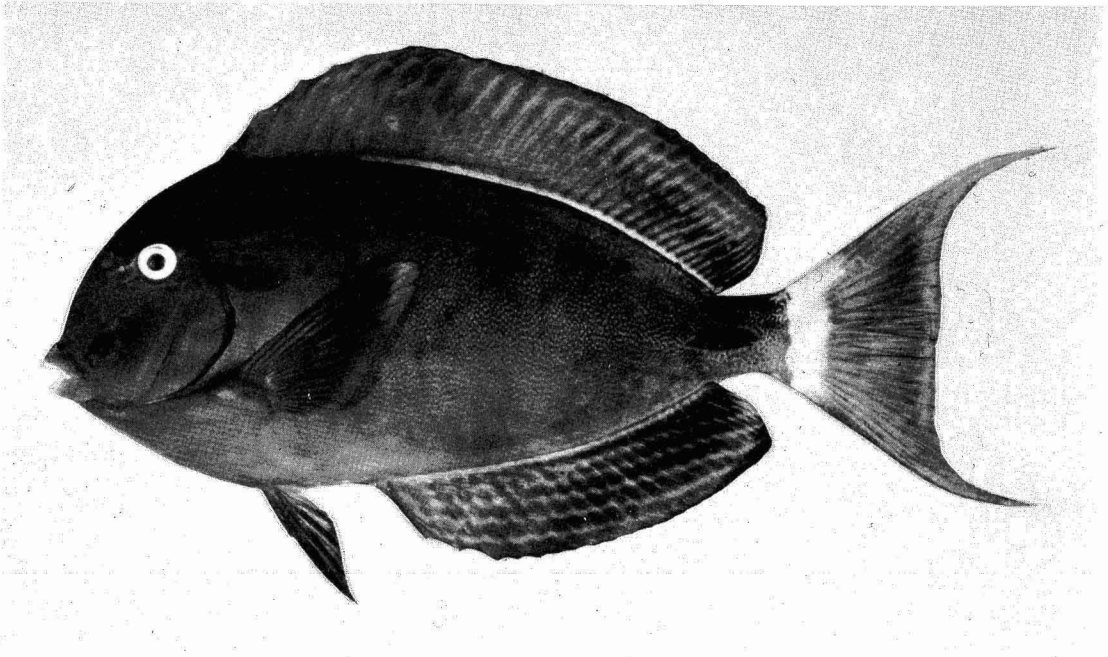


FIGURE 3. *Acanthurus gahhm*, BPBM 20739, 282 mm SL, Sanganeb, Red Sea.

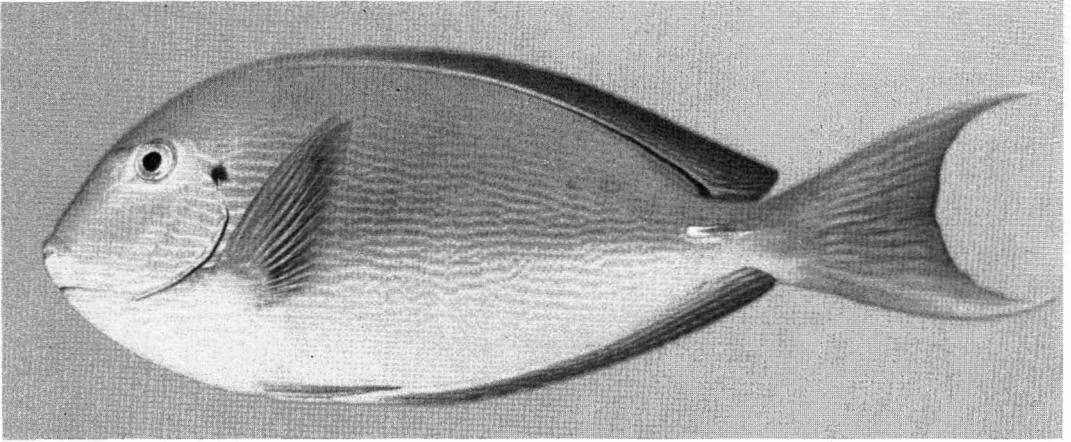


FIGURE 4. *Acanthurus mata*, underwater photo. Sri Lanka.

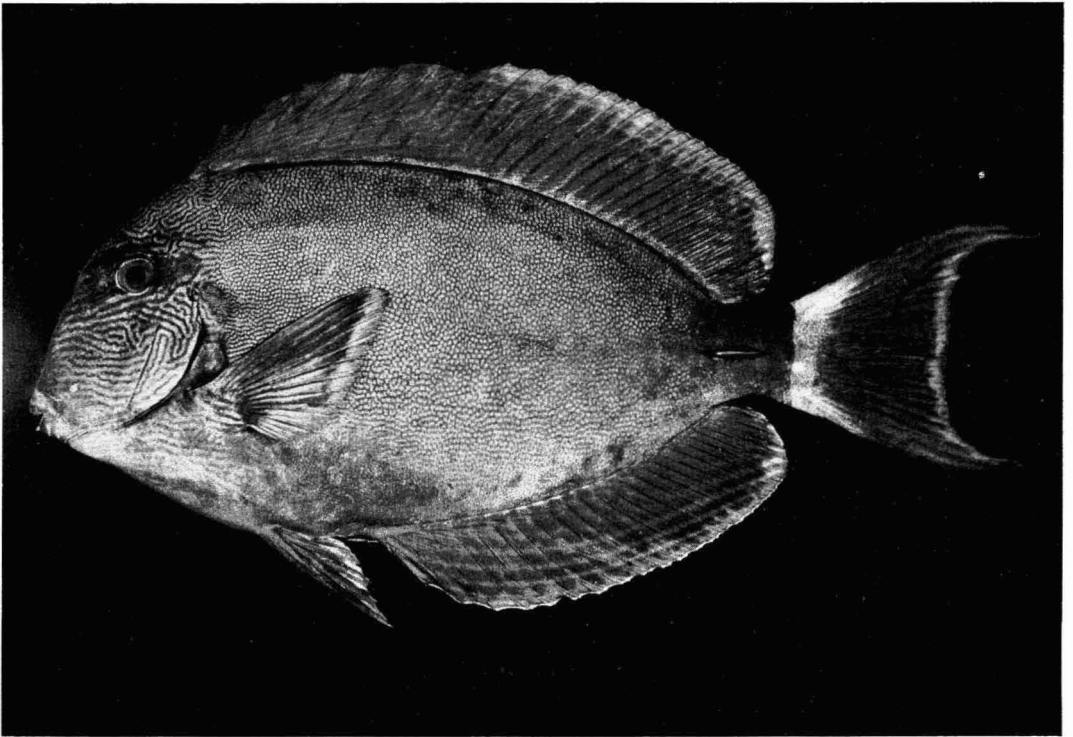


FIGURE 5. *Acanthurus blochii*, BPBM 8127, 252 mm SL, Enewetak, Marshall Islands.

species misidentified as *mata* should now be referred to as *A. blochii* Valenciennes in Cuvier and Valenciennes (1835: 209). It is illustrated herein as Figure 5. Valenciennes had specimens of *blochii* from Mauritius and

the Seychelles, but none could be found at the Museum National d'Histoire Naturelle in Paris (M. L. Bauchot, pers. comm.). The two species are easily distinguished. The true *A. mata* has a more sloping forehead, a small

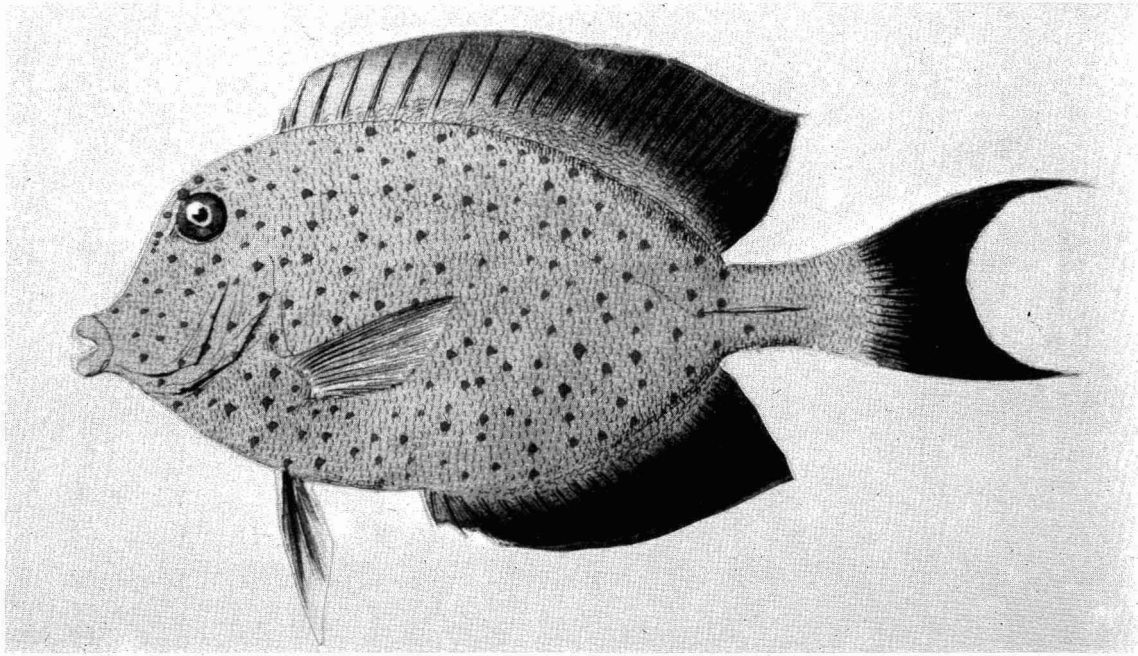


FIGURE 6. Reproduction of figure of *Acanthurus guttatus* Kittlitz (1854) [= *Ctenochaetus marginatus* (Valenciennes)].

mouth and small but numerous teeth (24 upper and 26 lower in a specimen 283 mm SL), a short snout (6.6–6.9 in SL, compared to 4.3–4.5 in *blochii*), and a more elongate body (the depth 2.1–2.5 in SL compared to 1.9–2.1 for *blochii*). Both species are widely distributed in the Indo-Pacific region from East Africa to French Polynesia; *mata* extends its range into the Red Sea, and *blochii* to the Hawaiian Islands.

*Acanthurus blochii* Bennett, published 22 December 1835, is a junior synonym of *Zebra-soma veliferum* (Bloch) and a primary homonym of *Acanthurus blochii* Valenciennes, published September 1835.

#### THE STATUS OF *CTENOCHAETUS MARGINATUS* (VALENCIENNES)

Kittlitz (1834: 193, pl. 13, fig. 4) described *Acanthurus guttatus* from Luganor Island (Lukunor Island), Mortlock Group, Caroline Islands. It was brown with small blue spots; the dorsal rays were given as VIII, 26 and the

anal rays as II, 23. Kittlitz's illustration of *A. guttatus* is reproduced herein as Figure 6. Realizing that the name *Acanthurus guttatus* was preoccupied by Bloch, Valenciennes in Cuvier and Valenciennes (1835: 221) gave Kittlitz's fish a new name, *Acanthurus marginatus*. He grouped it with typical *Acanthurus*, not with those such as *strigosus* which were later placed in *Ctenochaetus*.

Randall (1955: 160) described *Ctenochaetus cyanoguttatus* (Figure 7) from the Gilbert Islands (Kiribati), Phoenix Islands, and Cocos Island off Costa Rica. He placed *Acanthurus guttatus* Kittlitz and *Acanthurus marginatus* Valenciennes at the head of his list of synonyms with questionmarks. The count of eight dorsal spines given by Kittlitz is found in all species of *Ctenochaetus* but few *Acanthurus* (and none of these have blue dots). However, since Kittlitz counted only two instead of three anal spines, it seemed possible that he had a nine-spine *Acanthurus* and overlooked the small first dorsal spine, as he had the first anal spine. Randall also commented that no mention was made by Kittlitz of the dentition of *guttatus*. Had his fish been a *Ctenochaetus*,

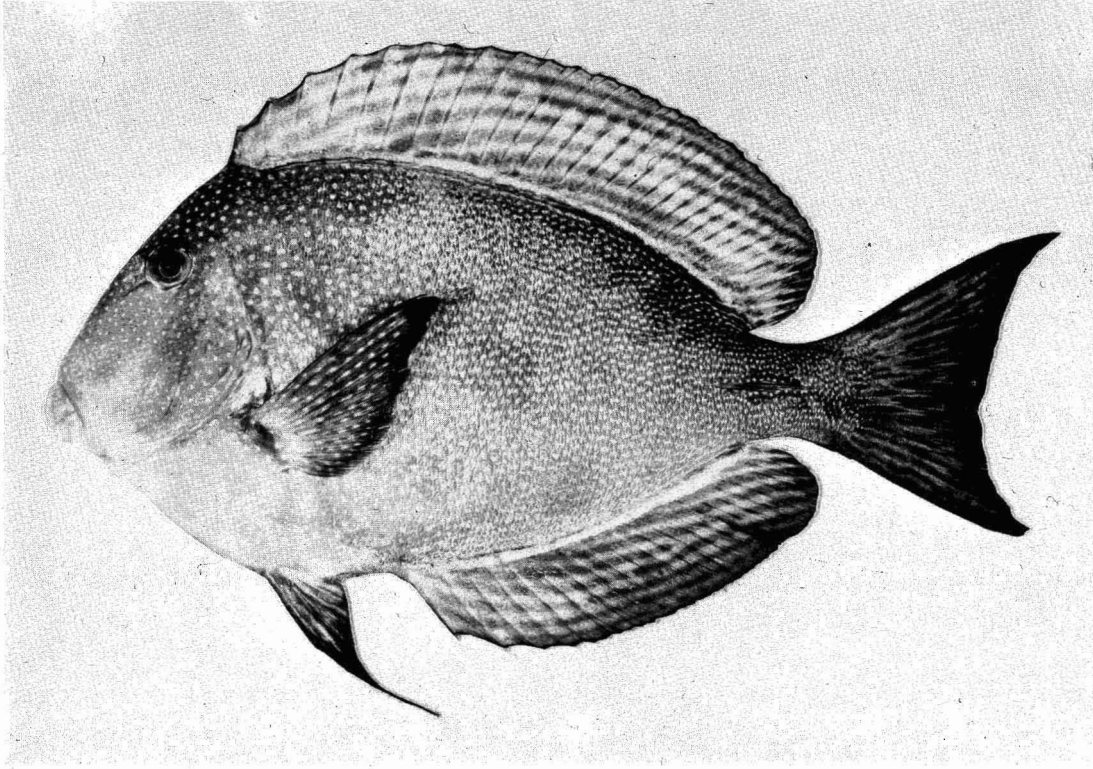


FIGURE 7. *Ctenochaetus marginatus*, BPBM 7583, 194 mm SL, Fanning Island, Line Islands.

one would have expected a sentence on the distinctive, flexible, comb-like teeth of all species of this genus. A possibility existed that Kittlitz may have had a specimen of *Acanthurus nigroris* Valenciennes, a common species in Oceania which usually has longitudinal blue lines on the body, but may have numerous small blue spots.

Unable to resolve the generic status of *Acanthurus marginatus*, Randall wrote the Zoological Institute in Leningrad to see if the holotype was extant. Eventually word was received from the late A. N. Svetovidov that no Kittlitz specimens of this species were in existence.

A reassessment of the Kittlitz figure and description has resulted in an opinion that Kittlitz's fish was most likely the same as Randall's *Ctenochaetus cyanoguttatus*, thus the latter is here placed in the synonymy of *C. marginatus*.

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