

## A Probable Hybrid Butterflyfish of the Genus *Chaetodon* from the Ogasawara Islands

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(Received September 9, 1983)

Two individuals of a probable hybrid butterflyfish of the genus *Chaetodon* were collected from inshore water at Chichi-jima, Ogasawara Islands. This case of hybridization was not included among 12 examples previously reported for the genus by Randall et al. (1977), Burgess (1978), Allen (1980), and Randall and Fridman (1981). A description and color photograph of the presumed hybrid are included herein, and a determination of the parent species is attempted.

Counting and measuring procedures follow those used by Hubbs and Lagler (1958). The specimens of the hybrid are deposited in the Department of Fisheries, University Museum, University of Tokyo (FUMT-P).

### A probable *Chaetodon* hybrid

(Fig. 1)

**Material examined.** FUMT-P 3122, 1 specimen, 135 mm SL (standard length), Tsurihama (27°06'N, 142°12'E), Chichi-jima, Ogasawara Is., Japan, Dec. 11, 1981; FUMT-P 3813, 1 specimen, 135 mm SL, Futami Bay (27°05'N, 142°12'E), Chichi-jima, Dec. 26, 1982.

**Description.** Counts and proportional measurements are shown in Table 1.

Body rounded-oval and highly compressed, predorsal profile greatly increasing from snout to origin of dorsal fin. Snout slightly produced. Mouth small, oblique. Maxillary reaching below anterior nostril. Teeth very close-set, in about 7 rows on anterior part of each jaw. Nostrils close-set in front of eye; the posterior elliptical; the anterior with a fleshy rim, forming a prolonged flap posteriorly. Margins of opercular bones smooth, except for crenulations or a few serrae on preopercular angle.

Origin of dorsal fin above upper edge of preopercular margin. Fifth to seventh dorsal spines longest. Soft dorsal fin rounded; the fifth and sixth rays longest. Base of spinous

portion of dorsal fin longer than soft portion. Second and third anal spines longest. Soft anal fin rounded; the first ray longest. Pectoral fin pointed, reaching below base of eighth or ninth dorsal spine. Pelvic fin short, not reaching to anus. Caudal fin truncate.

Table 1. Counts and proportional measurements of the probable *Chaetodon* hybrid.

Characters	FUMT-P 3122	FUMT-P 3813
Standard length in mm	135	135
Counts		
Dorsal fin rays	XIV, 21	XIII, 22
Anal fin rays	III, 18	III, 18
Pectoral fin rays	15	15
Pored lateral-line scales	38	40
Transverse scales	10/21	10/20
Total gill rakers	18	18
Measurements in standard length		
Head length	3.65	3.55
Body depth	1.59	1.67
Body width	6.14	6.43
Caudal peduncle depth	9.64	10.38
Caudal peduncle length	10.80	10.80
Snout to origin of dorsal fin base	2.65	2.76
Snout to end of dorsal fin base	1.06	1.06
Snout to origin of anal fin base	1.47	1.48
Snout to end of anal fin base	1.07	1.08
Snout to pectoral insertion	3.55	3.42
Snout to pelvic insertion	2.55	2.55
Length of spinous dorsal fin base	2.08	2.25
Length of soft dorsal fin base	3.00	2.93
Length of anal fin base	2.60	2.65
Length of pectoral fin	3.97	3.91
Length of pelvic fin	broken	broken
Length of sixth dorsal spine	4.82	5.00
Length of sixth dorsal soft ray	5.63	4.91
Length of third anal spine	4.82	4.50
Length of first anal soft ray	5.19	4.50
Measurements in head length		
Snout length	2.85	2.62
Eye diameter	3.70	4.22
Interorbital width	3.08	3.30
Upper jaw length	3.70	4.00

Scales ctenoid. Head covered with small scales, except for lips, chin and a narrow region just behind upper lip. Dorsal and anal fins scaled, except for their anterior spinous portions. Pectoral and pelvic fins with small scales near their bases. Lateral line highly arched, ending below base of about fourth-from-last dorsal soft ray.

Color in life: See Fig. 1. Centers of scales on body and head whitish, with dark marginal area. Eyeband narrow, almost as wide as orbit, fading rapidly above and below eye. Upper portions of dorsal and anal spines yellow, this color continuously extending on to soft dorsal and anal fins. A vertical black band through caudal peduncle and posterior parts of soft dorsal and anal fins. Edges of soft dorsal and anal fins white, with submarginal black line. Caudal fin yellow, its posterior margin translucent. Pectoral fin translucent. Pelvic fin gray.

**Biological and ecological notes.** Gonads in the first specimen (FUMT-P 3122) were not detected, and a very small, involuted gonad was observed in the second specimen (FUMT-P 3813).

The first specimen swam with a small assemblage of about 6 individuals of *C. daedalma* Jordan et Fowler which hovered around a rocky reef at the depth of about 8 m, and was sometimes seen alone. The second specimen hovered solitarily around a sunken vessel on a sandy bottom at the depth of about 30 m, and sometimes swam with a small mixed-assemblage of about 10 individuals of *C. daedalma* and 3 individuals of *C. guentheri* Ahl. The hybrids always occurred within the same limited location over a period of 4 days until they were caught.

**Remarks.** On the basis of the ill-defined color patterns which appear to be a blending of other species, and on the basis of gonad condition, we suspect that the specimens probably represent a hybrid. The incomplete eyeband of the specimens is considered to be one of the most typical color features derived from the hybridization. Thus in the following discussion, we attempt to determine the parent species from among various western Pacific *Chaetodon*, according to color pattern features which are usually the best indication of possible parental species in *Chaetodon* hybrids (Allen, personal communication).

We first suspected that the parent species were *C. guentheri* which is rare in the Ogasawara Islands and *C. daedalma* which is common in the islands. The following color patterns are typical of *C. guentheri*: black eyeband; upper portions of dorsal and anal spines yellow, this color continuously extending on to soft dorsal and anal fins; edges of soft dorsal and anal fins white, with submarginal black line; caudal fin yellow. The dusky scale edges of the hybrid are typical of *C. daedalma*. In addition to the color pattern, counts of the hybrid were also within the ranges of the suspected parent species, except for dorsal spine count (one specimen XIV) (Table 2). The association of the second hybrid specimen with the mixed-assemblage of *C. guentheri* and *C. daedalma* could also be indicative of parental relationship.

The vertical black band on the posterior dorsal and anal fins and on caudal peduncle of the hybrid, however, is characteristic of neither *C. guentheri* nor *C. daedalma*, but is similar to the pattern of *C. nippon* Döderlein or *C. unimaculatus* Bloch. Therefore, we considered other possible

Table 2. Counts of the probable *Chaetodon* hybrid and presumed parents, *C. guentheri* and *C. daedalma*. \*, cited from Burgess (1978); \*\*, specimens examined are listed as comparative material at the end of this paper. Figures in parentheses indicate mean values.

Characters	<i>Chaetodon</i> hybrid	<i>C. guentheri</i>	<i>C. daedalma</i>
Number of specimens examined	2	2*	9**
Standard length in mm	135	85, 100	70-162 (125)
Dorsal fin rays	XIII-XIV, 21-22	XIII, 21-22	XIII, 21-23 (XIII, 22)
Anal fin rays	III, 18	III, 18	III, 16-17 (III, 16)
Pectoral fin rays	15	14	14-15 (15)
Pored lateral-line scales	38-40	36-38	37-39 (38)
Transverse scales	10/20-21	7-8/19	9-12/18-21 (11/19)
Total gill rakers	18	16-17	18-20 (19)

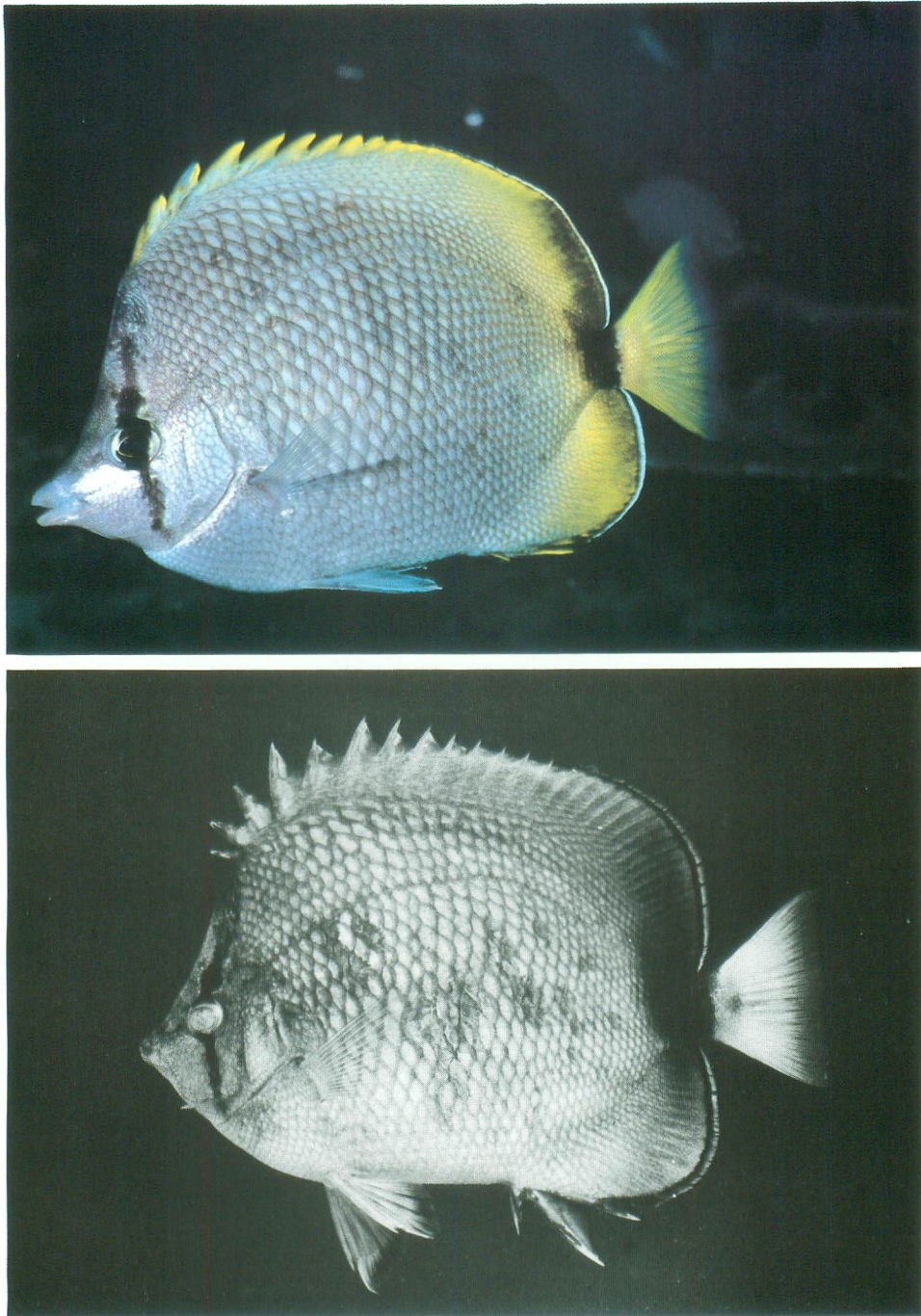


Fig. 1. Probable *Chaetodon* hybrid from Chichi-jima, Ogasawara Islands. Top, in life (underwater photograph), FUMT-P 3122, 135 mm SL; bottom, in alcohol, FUMT-P 3813, 135 mm SL.

combinations of parental species, i.e., *C. daedalma* × *C. nippon*, *C. daedalma* × *C. unimaculatus*, *C. guentheri* × *C. nippon*, and *C. guentheri* × *C. unimaculatus*. However, it is more difficult to derive the blended color pattern of the hybrid from these combinations than from the *C. guentheri* × *C. daedalma* pairing. For example, the presence of the hybrid's eye-band is illogical in the *C. daedalma* × *C. nippon* combination, since an eyeband is absent on both species. The *C. daedalma* × *C. unimaculatus* combination also seems unlikely because a large black spot on the side, which is characteristic of *C. unimaculatus*, is not found on the hybrid nor is there a vestige of this mark. Furthermore, in the remaining two possible combinations, none of the potential parent species possesses the dusky scale edges of the hybrid.

Although not completely conclusive, evidence suggests that the most likely parental species are *C. guentheri* × *C. daedalma*.

**Comparative material.** *C. daedalma*: FUMT-P 3120, 6 specimens, 105–162 mm SL, Miyanojima, Chichi-jima, Jun. 19, 1982; TUFO 68 and 123 (Tokyo University of Fisheries, Ogasawara Collection), 2 specimens, 151 and 149 mm SL, Chichi-jima; YCM-P 10169 (Yokosuka City Museum), 1 specimen, ca. 70 mm SL (snout of this specimen broken), locality unknown.

#### Acknowledgments

We are very grateful to Dr. Gerald R. Allen of the Western Australian Museum for critically reading the manuscript and giving us valuable advice. We wish to thank Prof. Yukio Nose of the University of Tokyo for critically reading the manuscript, and to thank Mr. Jack T. Moyer of the Tatsuo Tanaka Memorial Biological Station, Dr. Warren E. Burgess of T.F.H. Publications, Inc. and Mr. Roger C. Steene for their helpful suggestions concerning the parental species of the hybrid. For the loan of specimens under their care, our thanks are also extended to Prof. Kazunori Takagi and Mr. Jin Hattori of Tokyo University of Fisheries and Mr. Masayoshi Hayashi of the Yokosuka

City Museum. We are thankful to the following persons for their kind assistance to collection of the hybrid or *C. daedalma* specimens: Mr. Hiroyuki Tachikawa, the University of Tokyo; Mr. Yoji Kurata and his colleagues, the Ogasawara Fisheries Center of Tokyo; Mr. Hiroyuki Suganuma and his colleagues, the Ogasawara Marine Center; the members of the Tokyo University Marine Expedition Club.

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小笠原諸島から採集されたチョウチョウウオ属魚類の種間雑種

佐野光彦・奥沢公一・山川 卓・望月賢二

小笠原諸島の父島でチョウチョウウオ属魚類の種間雑種と思われる2個体を採集した。主に生時の体色に基づき、本雑種の両親種を推定したところ、それらはコクテンカタギとユウゼンの可能性がもっとも高いと判断された。

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