

PROCEEDINGS  
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A NEW CARDINAL FISH OF THE GENUS *ARCHAMIA*  
FROM NORTHERN AUSTRALIA

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The study of the apogonid fishes collected by the Arnhem Land Expedition of 1948 revealed a species of *Archamia* Gill believed new to science. The expedition to Arnhem Land, Northern Territory, Australia, was conducted under the auspices of the Commonwealth of Australia, the National Geographic Society and the Smithsonian Institution. About 15,000 specimens representing many families of fishes were collected under the direction of Robert Rush Miller, Museum of Zoology, University of Michigan. A faunal report of these collections is in progress by William Ralph Taylor.

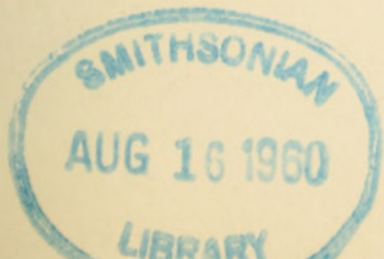
The morphological divergence among the species of *Archamia* was reviewed by Lachner (1951). A previously recognized polymorphic species, *Archamia lineolata* (Cuvier), was demonstrated to represent four distinct species. The new species is related to the *A. lineolata* complex. All members of the genus are marine and are found in the Indian and west-central Pacific Oceans.

The generic allocation of the new species is substantiated by the presence of the following characters: body slab-sided, comparatively deep; dentition complete, with small villiform teeth in a narrow band on the jaws and in single rows on the palatines and vomer; spinous dorsal with six spines; base of anal fin long, the number of rays ranging from II,16 to II,18.

*Archamia melasma* new species

*Archamia lineolata* Paradice and Whitley, Mem. Queensland Mus., 9(1): 84, 1927 (species listed, Pellew Islands; material re-examined under Australian Mus. No. IA.1499).

*Holotype*: Australian Museum register No. IB.4473, a female specimen



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60 mm in standard length taken on a coral reef with rotenone poison at Yirrkalla, near Cape Arnhem, Arnhem Land, Northern Territory, Australia, on 11 August 1948 by Robert Rush Miller and Bill Harney, in water at a depth of about four feet.

*Paratypes:* USNM No. 173794, totaling 6 specimens, taken with the holotype and bearing the same data, one specimen a male 55 mm in standard length and 5 female specimens ranging from 55.5 mm to 59 mm in standard length; Australian Museum No. IA.1499, one specimen, 56.5 mm in standard length, taken in the Pellew Islands, Gulf of Carpentaria by W. E. J. Paradise in June, 1923.

*Additional specimens examined:* Australian Mus. No. IA.2334, 2 specimens, 56.5 and 60.5 mm in standard length, taken at North Barnard Island, Great Barrier Reef, Queensland by W. E. J. Paradise, 1924.

*Diagnosis:* *Archamia melasma* is most closely related to *A. biguttata* of the *lineolata* complex. It differs from *biguttata* in having the dark humeral spot descend downward over the operculum and in the absence of the large, intensely black, basi-caudal spot characteristic of *biguttata*. These closely related species of *Archamia* are compared in Table 1.

*Description:* This description is based on all of the specimens listed above. The methods of recording the counts and measurements are given by Lachner (1951:581). Counts of several meristic characters are given first for the holotype, followed by counts taken from the remaining specimens. Where the data for the holotype are identical with that of all the other specimens, but one number is given.

Dorsal fin rays VI-I,9(10 specimens); anal fin rays II,17, II,16(2), II,17(5), II,18(2); pectoral fin rays, counting the left and right sides, 14-14, 14-14(5), 13-14(1), 14-13(1), 14-15(1); pelvic fin rays I,5 (10); branched caudal fin rays 8,7(10); scale rows along the lateral line about 24 in holotype, 22(1), 23(3), 24(2), 25(1); scale rows above lateral line 2 in the holotype, 2(6); scale rows below lateral line about 7 in holotype, 7(7), 8(2); gill rakers including all rudiments 21, 21(1), 22(3), 23(5). There were either 1 or 2 rudiments and 4 well-developed rakers on the upper arch, one developed raker at the angle of the arch, and 15 or 16 developed rakers and an occasional rudiment on the lower arch.

The vertebral count, including the fused urostyle vertebrae as one, was 24 in all specimens.

Measurements expressed in thousandths of the standard length are given for the holotype and two paratypes in Table 2.

Body compressed and deep; mouth terminal; eyes large (Table 2); posterior margin of preopercle serrated, particularly the lower margin; anterior margin of preopercle smooth; angle of jaw nearly reaches vertical drawn through middle of eye; first spine of spiny dorsal fin small; second spine equal to or slightly smaller than third; third spine of spiny dorsal fin about one and one-fourth times greater than diameter of eye; anal spines comparatively stout, the first spine short, only one-fifth length of second spine; second anal spine slightly longer than diameter of eye;

TABLE 1.—Comparison of closely related species of *Archamia*

| SPECIES                      | ANAL FIN RAYS                    | BASE-CAUDAL SPOT                                                  | HUMERAL SPOT                                                                                               | DUSKY SPOT ON BODY JUST POSTERIOR TO OPERCULUM AND BELOW LATERAL LINE |
|------------------------------|----------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
| <i>A. lineolata</i> (Cuvier) | II,13 to II,15<br>(49 specimens) | Usually well-developed, blackish and about equal to size of pupil | Absent                                                                                                     | Absent                                                                |
| <i>A. fucata</i> (Cantor)    | II,15 to II,18<br>(58 specimens) | Diffuse, dusky and large, notably larger than pupil               | Absent                                                                                                     | Absent                                                                |
| <i>A. dispilus</i> Lachner   | II,16 to II,18<br>(13 specimens) | Diffuse, faint, somewhat larger than pupil                        | Absent                                                                                                     | Diffuse, dusky spot present, deeper than wide                         |
| <i>A. biguttata</i> Lachner  | II,16 to II,17<br>(22 specimens) | Intense black, nearly circular, slightly larger than pupil        | Intensely black, circular to squarish, at junction of gill opening and body                                | Absent                                                                |
| <i>A. melasma</i> , n. sp.   | II,16 to II,18<br>(10 specimens) | Absent                                                            | Blackish, vertically elongate, extending downward on opercular flap from junction of gill opening and body | Absent                                                                |

TABLE 2.—Measurements of *Archamia melasma*, expressed in thousandths of the standard length.

| CHARACTER                                                  | HOLOTYPE<br>IB.4473 | PARATYPES<br>USNM 173794 |     |
|------------------------------------------------------------|---------------------|--------------------------|-----|
|                                                            |                     | ♀                        | ♂   |
| Standard length, mm .....                                  | 60                  | 56                       | 55  |
| Body depth at origin of spinous dorsal fin .....           | 428                 | 446                      | 424 |
| Body width at mid-body just behind<br>opercular flap ..... | 138                 | 148                      | 131 |
| Head length .....                                          | 397                 | 407                      | 398 |
| Head depth at occiput .....                                | 400                 | 368                      | 355 |
| Length of caudal peduncle .....                            | 175                 | 179                      | 178 |
| Least depth of caudal peduncle .....                       | 153                 | 155                      | 144 |
| Length of longest pectoral ray .....                       | 323                 | 325                      | 304 |
| Length of second spine of spinous dorsal fin ..            | —                   | 180                      | 129 |
| Diameter of eye .....                                      | 137                 | 137                      | 142 |
| Length of upper jaw .....                                  | 183                 | 193                      | 193 |
| Length of snout .....                                      | 87                  | 93                       | 80  |
| Least width of bony interorbital .....                     | 98                  | 104                      | 102 |
| Tip of snout to origin of spinous dorsal fin .....         | 438                 | 445                      | 431 |
| Tip of snout to origin of anal fin .....                   | 602                 | 589                      | 575 |
| Tip of snout to insertion of pectoral fin .....            | 358                 | 368                      | 373 |
| Tip of snout to insertion of pelvic fin .....              | 383                 | 377                      | 384 |

scales ctenoid with about 7 to 18 radii in the anterior field; lateral line complete and located rather high on body (see Fig.); gill rakers on first arch long, slender and simple, longest raker about one-half diameter of eye; contour of outer margin of soft dorsal fin slightly rounded; outer margin of anal fin slightly falcate; caudal fin emarginate or weakly forked; pelvic fins extend posteriorly slightly beyond origin of anal fin; inner rays of pelvic fin weakly united to body by thin membrane.

Teeth on both jaws, the vomer and palatines; those on lower jaw are short, conical and in several irregular rows anteriorly, tapering to 1 or 2 rows posteriorly; teeth on upper jaw short and pointed and in several irregular rows anteriorly and in a wider, villiform band posteriorly; the palatines and vomer have a single row of small, pointed teeth.

*Color in Alcohol:* The characteristic markings in both sexes are: The conspicuous, black humeral spot or bar that descends downward over the posterior margin of the opercle, and the wide, blackish, oblique bar below the eye (see Fig.). The humeral spot is intensely developed in all specimens. As the pigmentation descends over the margin of the opercle it becomes less intense. The two specimens from North Barnard Island, Great Barrier Reef, Queensland, have the weakest markings on the opercular margin.

The body coloration, otherwise, is pale and the fins transparent. The

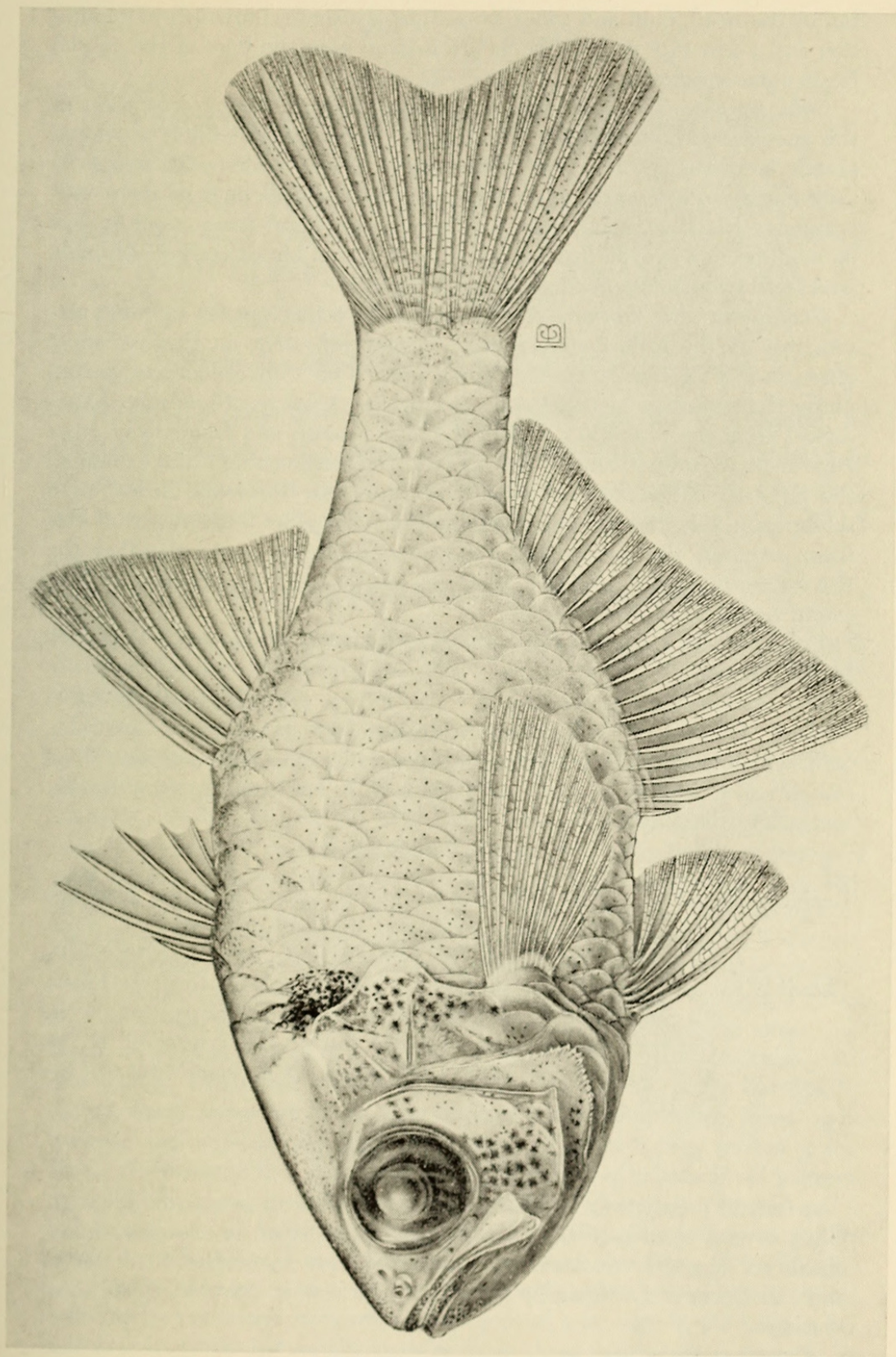


FIG. 1

top of the head, chin and snout have some scattered, brownish pigmentation and a few tiny melanophores are located near the base of the caudal fin in some specimens.

*Color in life:* The following notes describing the living coloration of this species were recorded in the field by Robert Rush Miller; a colored sketch accompanied the field notes: body silvery white with about 23 very narrow downward and forward curving vertical lines of deep red-orange; a black scapular bar; a yellow-orange band from snout to eye passing through eye; all fins pale pink; dark brown bar extending obliquely backward from below eye to edge of preopercle.

*Geographic distribution:* We do not expect this species to range extensively in the Indo-Pacific fauna. It may represent another endemic, characteristic of the Australian faunal area. Our rich collections, particularly the extensive material collected by the Albatross Philippine Expeditions from the Philippine and East Indies Islands and from many other Pacific areas, did not contain this species. The senior writer also examined the large collections housed in several European museums during 1956 while on a John Simon Guggenheim Fellowship, and did not find this form. Among the noteworthy collections examined were those at the Rijksmuseum van Natuurlijke Historie, Leiden, and the Zoological Museum, Amsterdam, Netherlands.

*Remarks:* This species was named *melasma* in reference to the black humeral spot.

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- Paradice, W. E. J. and G. P. Whitley. 1927. Northern territory fishes. An annotated list of fishes collected from the waters of the Northern Territory of Australia during the cruises of H. M. A. S. "Geranium," 1923-1925. *Mem. Queensland Mus.*, 9(1): 76-106, pls. 11-15.

#### EXPLANATION OF FIGURE

A female paratype of *Archamia melasma*, 56 mm in standard length, taken over a coral reef at Yirrkalla, near Cape Arnhem, Arnhem Land, Northern Territory, Australia on 11 August 1948 by Robert Rush Miller and Bill Harney. Drawing by Mrs. C. B. Lutz, staff artist, U. S. National Museum.



Lachner, Ernest A. and Taylor, William Randolph. 1960. "A new cardinal fish of the genus *Archamia* from northern Australia." *Proceedings of the Biological Society of Washington* 73, 29–34.

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