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**TWO NEW CICHLID FISHES,
GENUS *CICHLASOMA*, FROM CHIAPAS, MEXICO**

BY JEFFREY N. TAYLOR* AND ROBERT RUSH MILLER

INTRODUCTION

The Neotropical cichlids of the genus *Cichlasoma* attain their maximum number and diversity in Middle America, where about 75 species are known. In reviewing the systematics of these fishes in México, we have encountered two undescribed Atlantic-slope species that inhabit the upper Río Grijalva basin in Chiapas.

Measurements and fin-ray counts were taken as by Hubbs and Lagler (1958: 19-26), except that the splint along the uppermost ray of the pectoral fin is excluded. The scale count in lateral series is made as described by Miller (1974:465) and is equivalent to Regan's (1905) "longitudinal series". The transverse scale count equals the scale rows between the dorsal origin and the upper lateral line, one for the upper lateral line, plus the rows between the upper lateral line and the anal origin. The scale-row overlap of the upper lateral line on the lower is calculated by subtracting the lateral count from the sum of the counts for the upper and lower lateral lines. All rudimentary gill rakers on the first branchial arch are counted.

The following museum abbreviations are used: AMNH, American Museum of Natural History; CAS, California Academy of Sciences; FMNH, Field Museum of Natural History; LACM, Los Angeles County Natural History Museum; MNHN, Muséum National d'Histoire Naturelle, Paris; UMMZ, University of Michigan Museum of Zoology; USNM, National Museum of Natural History, Washington, D.C.

*Department of Biological Sciences, Florida Atlantic University, Boca Raton, Florida 33431.

Cichlasoma grammodes, new species

Fig. 1

Cichlasoma sp. Miller (1966:793). Río Grande de Chiapa basin, Chiapas, México.

Cichlasoma mento Miller (1976:155, misidentification; not *Heros mento* Vaillant and Pellegrin).

DIAGNOSIS. — A moderately slender, long-headed, large-mouthed species of the *Parapetenia* group (Regan, 1906-08:26), distinguished from all other members of this group by a series of thin, dark lines (typically 7, varying to 10 or 12 in large adults) across interorbital region, snout, and anterior part of cheek, that become disrupted with age (Fig. 1). In addition, there are typically 29 scales in lateral series; XVII,10 elements in dorsal and VI,8 in anal fins; 3 or 4 + 8 or 9 gill rakers (11-14 total) on first branchial arch; and 13 + 16 or 17 vertebrae (29-31 total). A conspicuous quadrate blotch lies above or just beyond tip of pectoral fin and a large oval spot is approximately centered on base of caudal fin. Length of caudal peduncle much greater than two-thirds its least depth, varying from almost as long as deep to longer than deep. Preorbital region deep, about equal to or much greater than diameter of orbit.

MATERIAL. — Holotype, UMMZ 204200, an adult male 178 mm SL, and 8 paratopotypes, UMMZ 183921, 31-56 mm, from Río Grande de Chiapa, about 1 km above bridge between Tuxtla Gutiérrez and Chiapa de Corzo, lat. 16° 44' N, long. 93° 02' W, elevation ca. 500 m, Chiapas, México, R. R. Miller and W. D. Sable, 31 Mar. 1965. Paratypes from Guatemala (Huehuetenago): UMMZ 176734 (2), 37 and 39 mm, tributary and ditch of Río Lagartero in Ciénega Lagartero (Río Grijalva basin), L. C. Stuart, 28 Mar. 1955; UMMZ 193905 (4), 34-85 mm, and AMNH 32113 (4), 31-57 mm, Río Lagartero near Finca Miramar airstrip, 11 km NW Nentón, D. E. and P. Rosen and R. M. Bailey, 27 Mar. 1973. Paratypes from México (Chiapas): UMMZ 157637 (9), 22-37 mm, Tuxtla Gutiérrez, N. E. Hartweg and S. Coronado, 26 Apr. 1941; UMMZ 159274 (1), 93 mm, Villa Flores, H. O. Wagner, Apr. 1950; UMMZ 173958 (7), 32-203 mm, Hartweg, 30 July 1958; UMMZ 181815 (17), 38-94 mm, and CAS 44170 (6), 47.8-73.5 mm, trib. Río Grande de Chiapa, 48 km SE Comitán, Clifton and Kuhn, 16 Feb. 1956; UMMZ 184735 (6), 92-154 mm, and USNM 219905 (2), 130 and 135 mm, Río Sabinal, Tuxtla Gutiérrez, Miller and R. J. Schultz, 23 Feb. 1959; UMMZ 186366 (15), 20-136 mm, and LACM

38431-1 (1), 116.5 mm, Río Sabinal (Río Grande), 0.4 km W. Tuxtla Gutiérrez, M. Gordon, J. Atz, and E. Zurian, 23 Jan. 1939; UMMZ 186369 (7), 50-97 mm, Río Sabinal E of Tuxtla Gutiérrez, Gordon et al., 25 Jan. 1939; UMMZ 186389 (2), 25 and 28 mm, Río Nandayapa 4 leagues from Chiapa de Corzo, Gordon et al., 29 Jan. 1939; UMMZ 186395 (11), 43-70 mm, lagoon of Río Frío, 0.4 km above mouth at Río Chiapa, Gordon et al., 31 Jan. 1939; UMMZ 186404 (1), 85 mm, Río Salado 2 km S Chiapilla, Gordon et al., 1 Feb. 1939; UMMZ 186406 (8), 55-117 mm, Río Salado 1 km from Chiapilla, Gordon et al., 1 Feb. 1939; UMMZ 186415 (11), 43-147 mm, and MNHN 1978-765 (1), 85.5 mm, Río Sabinal, 0.4 km W Tuxtla Gutiérrez, Atz and Zurian, 4 Feb. 1939; UMMZ 201719 (2), 55 and 75 mm, Río Chiapa between Chiapa de Corzo and Acala, Gordon et al., 29-30 Jan. 1939; FMNH 93577 (9), 24-108 mm, Río Chico at E edge of Chiapa, Gordon et al., 25 Jan. 1939.

DESCRIPTION. — Body form and color pattern are shown in Fig. 1 and proportional measurements are given in Table 1. Meristic data appear below.

Dorsal spines, XVII (80), XVIII (2); dorsal soft rays, 10 (67), 11 (6); anal spines, V (6), VI (74), VII (2); anal soft rays, 7 (9), 8 (59), 9 (14); pectoral rays (both fins counted in 26 specimens), 14 (9), 15 (43).

Scales: lateral series, 28 (4), 29 (17), 30 (4); upper lateral line, 17 (1), 18 (2), 19 (10), 20 (11), 21 (2), and lower lateral line, 8 (1), 9 (5), 10 (9), 11 (6), 12 (4); scale-row overlap of upper lateral line on lower, -1 (4), 0 (11), 1 (7), 2 (3); transverse scales, 18 (8), 19 (5), 20 (12), 21 (2); upper lateral line to soft dorsal origin (not including scales on scaly sheath along fin base), 2 (3), 2½ (18), 3 (5); lower lateral line to origin of anal fin, 8 (3), 9 (19), 10 (4); rows between bases of pectoral and pelvic fins, 7 (5), 8 (14), 9 (5), 10 (1); rows around caudal peduncle, 17 (1), 18 (12), 19 (8), 20 (4); rows on cheek, 7 (1), 8 (12), 8 or 9 (6), 9 (5).

Gill rakers on first arch: upper limb, 3 (7), 4 (18), 5 (1); lower limb, 7 (1), 8 (15), 9 (10); total, 11 (2), 12 (19), 13 (3), 14 (1).

Vertebrae: precaudal, 12 (1), 13 (41), 14 (2); caudal, 16 (16), 17 (27), 18 (1); total, 29 (13), 30 (30), 31 (1).

Body streamlined, elongate, head long; predorsal contour straight or nearly so anteriorly, gradually becoming convex before origin of dorsal fin (large individuals of both sexes often have a well-developed nuchal hump); prepelvic contour much flatter, gently curved below mandible, then straight to pelvic base. Greatest depth of body at or near origin of dorsal fin. Mouth large, oblique (horizontal in young);

lower jaw strong, projecting; upper jaw included or jaws nearly equal. Preorbital region rather deep, its depth in specimens 70 to 200 mm SL varying from about equal to orbit to much greater than orbit. Premaxillary process extending posteriorly over anterior $1/3$ to $1/2$ of eye (Fig. 1). Gill rakers well-spaced, short and broad in adults, more club-like in subadults. Frenum variably developed (generally weak) or absent.

Dorsal origin over or slightly ahead of posterior margin of opercle; dorsal spines increasing in length rapidly to fourth or fifth, then more gradually to last (longest); the latter is approximately equal to or slightly greater than preorbital depth in large individuals (130 mm SL or greater) but equal to snout length in others; soft part of dorsal fin when laid back not reaching beyond anterior third of caudal fin (except when prolonged in adults). Pectoral fin $1/2$ to $2/3$ head length, rarely extending to anus; pelvic fin extending to anus or falling short, except where filaments are prolonged in adults (then reaching anal origin). Caudal fin rounded.

Jaw teeth of inner series tiny, numerous, needle-like and curved inward. Teeth of outer series without posterior cusp, modified to form large, well-spaced canines anteriorly; central pair in upper jaw largest, flanked by a series of 4 or 5 teeth gradually decreasing in size; first pair in lower jaw of reduced size, second pair largest (but smaller than first pair in upper jaw), followed by 4 or 5 teeth gradually decreasing in size.

Occlusal surface of lower pharyngeal bone with dentigerous portion about 1.25 to 1.35 times broader than long, the teeth arranged in approximately 20 to 25 irregular rows; 6 to 9 teeth in each of the two median rows conical, with cusps on anterior face, increasing in size posteriorly (those in largest specimens may be rounded and blunt due to wear, but are not flattened to form molars). Thirteen juvenile to adult specimens (55-155 mm SL, including both sexes) were examined.

COLORATION. — The color pattern consists of a broad, but often indistinct, horizontal stripe, varying from about as wide as eye to wider than orbit, that extends from eye to quadrate lateral blotch above or usually just beyond tip of pectoral fin; a series of 8 or 9 vertical bars may be visible (more notable in juveniles), especially 3 or 4 posterior to the lateral blotch; a well-defined vertical oval spot is approximately centered on base of caudal fin; the lower flanks and head are often covered with spots, arranged in rows along the scales; a series of thin, dark lines occur on side and top of head but these lines are often indistinct or absent in juveniles and frequently obscured

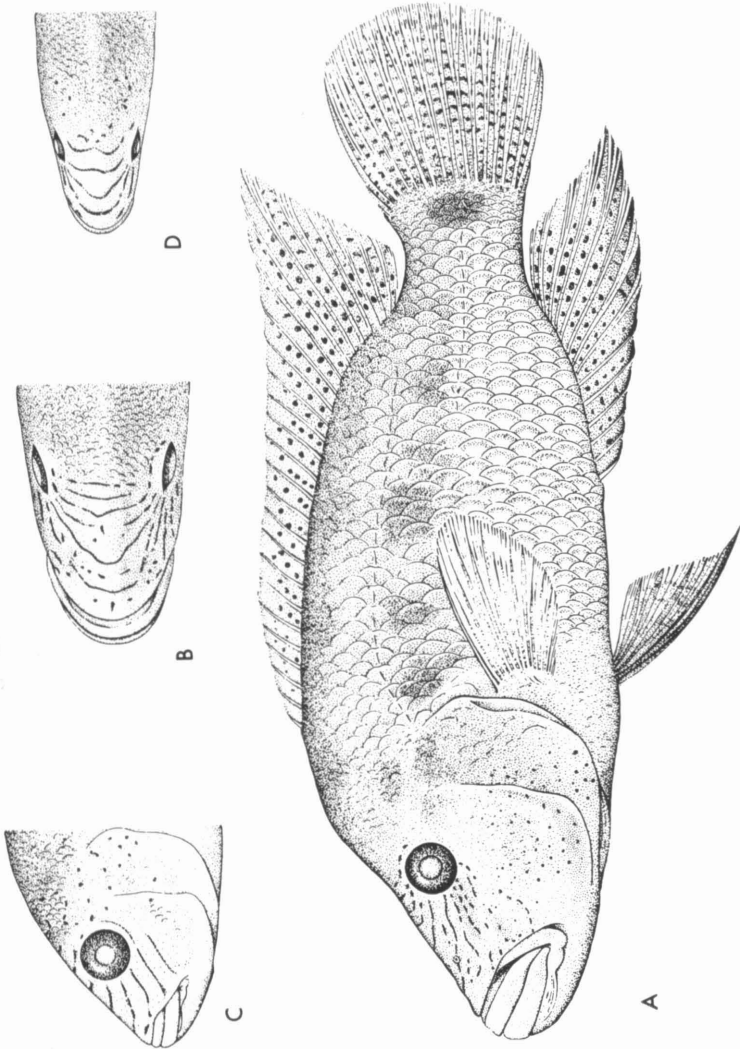


FIGURE 1. *Cichlasoma grammodes*, new species. A, holotype, UMMZ 204200, 178 mm SL, male; B, top of head of same. C, paratype, UMMZ 186366, 73 mm SL; D, top of head of same.

in dark-headed large adults. The basic number of these lines is 7 (as developed in juveniles and subadults), with 2 below eye on anterior part of cheek, one extending onto snout but not continuous across it, followed by 4 across top of head from snout to occiput (Fig. 1C, D). Some juveniles may have only 5 or 6 lines. With growth, the lines tend to become disrupted and irregular, and supernumerary ones may be interposed between the regular series so that in large adults as many as 10 or 12 "lines" (some represented almost entirely by rows of dots and dashes) can be counted (Fig. 1A, B). The lines generally are undeveloped on fish smaller than 40 to 50 mm although they sometimes occur in specimens as small as 30 mm SL. The soft vertical fins are dusky or have rows of spots on their interradiial membranes.

Life colors have not been recorded in detail and few outstanding features have been noted. The large male holotype had horizontal rows of coppery orange spots along the side of the body. Additionally, N. E. Hartweg (pers. comm., 18 Aug. 1958) reported that the sides and underside of head to about base of pelvic fins were suffused with delicate pale blue in a large male (203 mm SL) from Río Chiapa in Tuxtla Gutiérrez (UMMZ 173958).

HABITAT AND ASSOCIATES. — The new species lives in flowing streams tributary to, as well as in the mainstream of, the Río Grande de Chiapa (or Río Chiapa), the upper segment of the Río Grijalva system. In the dry season the generally clear water was sometimes cloudy or slightly murky; current was moderate to strong, except in backwater areas where young and juveniles were taken. The bottom composition was variable, with gravel, boulders, marl, sand, and some mud. Vegetation was usually sparse or absent, but *Potamogeton* and green algae were noted; fish often occurred around brush piles in some of the tributaries. Depth varied in streams from about $1\frac{1}{2}$ to 1 m and was as deep as about 1.7 m in the main river. While streams varied from 3 to 6 m in width, the Río Grande de Chiapa was about 60 m wide where fished east of Tuxtla Gutiérrez. Water temperatures between January and April varied from about 20° to 29° C.

The fish fauna of the Río Grande de Chiapa basin comprises 15 species in eight families (records in UMMZ): Characidae — *Astyanax fasciatus* and *Brycon guatemalensis*; Catostomidae — *Ictiobus meridionalis*; Ictaluridae — *Ictalurus furcatus*; Pimelodidae — *Rhamdia guatemalensis* and *R. c.f. salvini*; Cyprinodontidae — *Profundulus punctatus*, *P. candalarius* and *P. labialis*; Poeciliidae — *Poecilia sphenops* and *Poeciliopsis gracilis*; Mugilidae — *Agonostomus monticola*; and Cichlidae — *Cichlasoma hartwegi* n. sp. (see below) and *C.*

c.f. *guttulatum* (Guatemalan records only). The new species has been taken with all of these fishes except *Agonostomus monticola*.

COMPARISONS. — *Cichlasoma mento* (Vaillant and Pellegrin), re-described by Pellegrin (1904:193-194), was said to have come from "Rio Negro" in "southern Mexico". However, the Paris Museum catalog entry for the four syntypes of this species (MNHN 94:283-286, one of which is now UMMZ 203326) gives no locality. On the line above there is the entry "Rio Negro, So. Mexico" after *Heros irregularis* (= *Cichlasoma irregulare*), a species known to occur in the Río Negro (tributary to Río Usumacinta) in Guatemala. No species agreeing with the characteristics of *C. mento* is known from the Usumacinta basin (including the Río Grijalva drainage of México). Madame Bauchot told us that the types of *C. mento* could have come from Central America or México where the collectors, Bocourt and Méhédin, worked.

Study of the 4 syntypes (80-140 mm SL) shows that *C. mento* differs markedly from *C. grammodes* as follows (measurements are in thousandths of SL, first for *mento* followed by those of 19 *grammodes* of the same size range): head length 356-363 vs. 377-414; snout length 114-136 vs. 137-173; mandible length 142-150 vs. 170-211; caudal-peduncle length 156-168 vs. 133-157; total gill rakers 10 vs. 11-13; and no lines visible on the anterior part of the head, as diagnostic of *grammodes*. (No such markings were noted by the original describers or by Regan, 1905:329.) Comparison with other cichlids from southern México suggests that *C. mento* may be a synonym of *C. istlanum* (Jordan and Snyder), which inhabits Pacific coastal river systems from the Rio Armeria, Jalisco, to the Río Papagallo, Guerrero.

The immediate relationships of *Cichlasoma grammodes* are not obvious, but it appears to be closest to Pacific *Parapetenia*, and specifically to *C. istlanum*. This relationship to Pacific rather than to Atlantic forms receives some support from the relationships of other fishes in the upper Grijalva (Río Grande de Chiapa). This river flows through a major, east-west trending, structural trough, called the Central Valley of Chiapas (Tamayo and West, 1964:93), which is of moderate gradient, varying from 645 m inside the Guatemalan border to 500 m near Chiapa de Corzo, some 200 km distant. At that point the river exits from the valley through a narrow, deep gorge, which presumably serves as an ecological barrier for some fishes. Thus *Poecilia sphenops* is unknown from the lower Grijalva or from elsewhere in southeastern México, the upper Grijalva population showing close resemblance to Pacific-slope *sphenops* in Oaxaca and Chi-

apas. *Profundulus punctatus* is common in Pacific-slope streams from near Acapulco, México, eastward nearly to El Salvador (Miller, 1955), and presumably the upper Grijalva stock came from the west. *Poeciliopsis gracilis* shows the same relationship (see Rosen and Bailey, 1963:133, 137). That there may have been multiple invasions of fishes into the upper Grijalva is suggested by the "salvini"-like *Rhamdia*, a species otherwise confined to the Río Usumacinta basin; also *Profundulus labialis* may have moved into the upper Grijalva basin from the Usumacinta basin in the Guatemalan highlands. Other big-river fishes such as *Brycon*, *Ictiobus*; and *Ictalurus* clearly invaded the basin from the lowlands. The present gorge (more than 600 m deep) that commences below Chiapa de Corzo, and the cooler highland temperatures of the upper Grijalva, may be effective ecological barriers for other lowland fishes.

DISTRIBUTION. — *Cichlasoma grammodes* is known only from the Río Grande de Chiapa basin, from Villa Flores, Chiapas, México, eastward to the Río Lagartero, Huehuetenango, in extreme western Guatemala.

ETYMOLOGY. — The specific name is from the Greek word meaning linear or in lines, in reference to the diagnostic head markings.

Cichlasoma hartwegi, new species

Fig. 2

DIAGNOSIS. — A moderately deep-bodied species of the *Theraps* group (Regan, 1906-08:17) most closely related to *C. bifasciatum*, distinguished from it and other members of *Theraps* by the following combination of traits: snout and upper jaw usually projecting beyond lower jaw; dorsal elements typically XVII,12; scale rows between origin of anal fin and lower lateral line usually 9; total vertebrae 29-31; color pattern consisting of lateral blotches or irregular vertical bars associated with a nearly complete, straight, longitudinal stripe on side and usually two broad interorbital bars; a black crescent on posterodorsal margin of opercle (in specimens over 60 mm SL); and ventral surface dark in breeding adults (Fig. 2).

MATERIAL. — All specimens are from Chiapas, México. Holotype, UMMZ 207701, an adult male 131.1 mm SL, and 14 paratopotypes, UMMZ 183922 (13), 8-118 mm, and USNM 219904 (1), 110 mm, from Río Grande de Chiapa about 1 km above bridge between Tuxtla Gutiérrez and Chiapa de Corzo, lat. 16° 44' N, long. 93° 02' W, elevation ca. 500 m, R. R. Miller and W. D. Sable, 31 Mar. 1965. Paratypes:

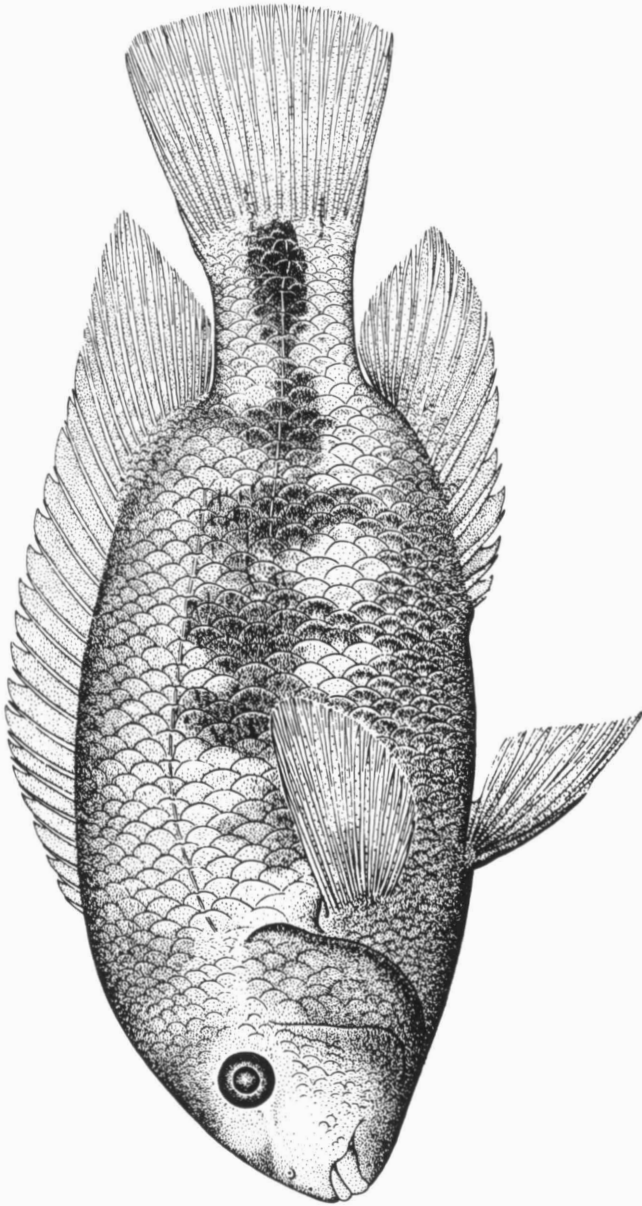


FIGURE 2. *Cichlasoma hartwegi*, new species. Holotype, UMMZ 207701, 131 mm SL, male.

UMMZ 159275 (2), 52 and 58 mm, Río Pando at Villa Flores, H. O. Wagner, Apr. 1950; UMMZ 186383 (6), 42-138 mm, Río Chiapa between Chiapa de Corzo and Acala, M. Gordon, J. Atz, and García, 29-30 Jan. 1939; UMMZ 186388 (1), 35 mm, Río Nandayapa 4 leagues from Chiapa de Corzo, Gordon et al., 29 Jan. 1939; UMMZ 186394 (3), 54-58 mm, Río Frío near mouth in Río Chiapa, Gordon et al., 31 Jan. 1939; UMMZ 186400 (5), 53-161 mm, Río Frío just above UMMZ 186394, same collectors and date; UMMZ 186407 (12), 55-141 mm, and FMNH 93578 (1), 88 mm, Río Salado 1 km from Chiapilla, M. Gordon et al., 1 Feb. 1939. Non-types: UMMZ 181813 (2), 28 and 30 mm, tributary to Río Grande de Chiapa 50 km SE Comitán, Clifton and Kuhn, 16 Feb. 1956.

DESCRIPTION. — Body form and color pattern are shown in Fig. 2, proportional measurements in Table 2. Meristic data are given below.

Dorsal spines, XVI (3), XVII (28), XVIII (4); dorsal soft rays, 11 (8), 12 (20), 13 (7); anal spines, V (3), VI (32); anal soft rays, 8 (1), 9 (26), 10 (8); pectoral rays (both fins counted in 21 specimens), 13 (1), 15 (35), 16 (6).

Scales: lateral series, 31 (12), 32 (10), 33 (3); upper lateral line, 18 (1), 19 (5), 20 (11), 21 (8), and lower lateral line, 10 (3), 11 (4), 12 (9), 13 (9); scale-row overlap of upper lateral line on lower, -2 (4), -1 (1), 0 (7), 1 (8), 2 (5); transverse scales, 19 (6), 20 (11), 21 (8); upper lateral line to soft dorsal origin (not including scales on scaly sheath along fin base), $2\frac{1}{2}$ (3), 3 (15), $3\frac{1}{2}$ (6), 4 (1); lower lateral line to origin of anal fin, 8 (3), 9 (16), 10 (6); rows between bases of pectoral and pelvic fins, 6 (2), 7 (11), 8 (12); rows around caudal peduncle, 18 (1), 19 (4), 20 (20); rows on cheek, 5 (11), 6 (14). Short supplementary lateral lines may occur on the caudal base 2 scale rows above and 3 scale rows below the axial lateral-line scale row. (Fig. 2).

Gill rakers on first arch: upper limb, 2 (4), 3 (28), 4 (1); lower limb, 7 (11), 8 (21), 9 (1); total 9 (1), 10 (13), 11 (17), 12 (2).

Vertebrae: precaudal, 14 (5), 15 (25), 16 (1); caudal, 14 (2), 15 (18), 16 (10), 17 (1); total, 29 (2), 30 (20), 31 (9).

Body moderately deep; predorsal contour steep, slightly convex in juveniles, evenly rounded in subadults, and straight, then rounded (producing a slight concavity over the eyes) in the largest adults; pre-pelvic contour gently curved; highest point along back at middle of spinous dorsal. Mouth small, low in position (its cleft well below upper base of pectoral fin), angled downward anteriorly; lower lip slightly thicker than upper. Snout and upper jaw usually project beyond lower jaw. Upper jaw extends to or beyond a vertical line

centered between nostril and anterior rim of orbit; lower jaw barely included. Premaxillary process extending to a point halfway between snout and anterior rim of orbit, not quite reaching level of second interorbital bar in adults (extends to about anterior rim of orbit in juveniles). Gill rakers short and thick in large adults, but more elongate in smaller individuals, evenly-spaced, the tips pointed or rounded, decreasing in size along the lower limb (from back to front) to 1 or 2 rudiments anteriorly. Frenum moderate to broad, $1/2$ to $2/3$ diameter of pupil in adults. Caudal peduncle deeper than long.

Dorsal origin above posterior tip of opercle, spines increasing in length rapidly to the fourth to sixth, then more gradually to the last (longest); soft part of fin when laid back not extending beyond anterior fourth of caudal fin. Pectoral fin rounded, shorter than head, its tip extending to second major lateral blotch or cross-bar, not reaching vertical from anus in adults; tip of pelvic extending from anus to slightly beyond anal origin. Caudal fin rounded to very slightly emarginate.

Jaw teeth conic or slightly flattened distally, without a posterior cusp, varying from bluntly to sharply pointed. Teeth of outer series in upper jaw number 8 to 11 on each side, increasing regularly in size anteriorly; in the lower jaw 3 or 4 (rarely 5) anterior teeth of outer series are enlarged, subequal, and sharply differentiated from the smaller lateral teeth.

Occlusal surface of lower pharyngeal plate with dentigerous portion 1.5 to 1.75 times broader than long (in specimens greater than 90 mm SL); 6 to 8 enlarged teeth in each median row, those in the center of the plate slightly flattened but retaining central cusps, those posteriad bluntly conical; teeth that flank the two median rows are also enlarged, but to a lesser degree.

COLORATION. — The minimal or "basal" color pattern (present in juveniles and some adults) consists of a nearly complete, straight, longitudinal stripe beginning above the axil of the pectoral fin and extending to a vertical bar (in juveniles) or rounded spot centered at the base of the caudal fin (in adults). Most adults, however, show a series of five dark, lateral blotches or partial cross-bars arranged along the often-disrupted longitudinal stripe (Fig. 2); the first (a blotch) lies, for the most part, above the center of the pectoral fin, the second to fourth are more bar-like (the fourth occurring under the anterior rays of the soft dorsal), and the fifth usually is more blotch-like, although sometimes it extends upward to the posterior base of the soft dorsal fin; the spaces between the blotches (or bars) are often

lighter than the usual ground color. The venter, including that part of the head below a line between the lower jaw and the upper extension of the free opercular margin, is often uniformly dark (Fig. 2); the remainder of the head, nape, and flanks above the lateral blotches are uniformly lighter (but not so light as the interspaces on the flank). Also present are (1) two broad interorbital bars (sometimes faint or absent, especially in juveniles), one between the lower $1/3$ to $1/2$ of the orbits and the second connecting the dorsal rims of the orbits, and (2) a black, crescent-shaped mark along the posterior margin of the opercle above the level of the pectoral-fin base. (In very dark individuals, the entire pattern may be obscured.) The soft parts of the vertical fins are dark-spotted or plain. Young (10-12 mm SL) have about 5 lateral bars and a prominent black spot near the base of the caudal fin; neither the bars nor the spot are developed in young 8.0 to 8.5 mm long (UMMZ 183922).

HABITAT AND ASSOCIATES. — *Cichlasoma hartwegi* is sympatric with *C. grammodes* in the Río Grande de Chiapa and its tributaries. Most collections were made in the dry season when the water was clear (slightly murky in the main river) and temperatures varied from about 20 to 29° C. Current varied from swift to weak or none; vegetation was usually absent, with only sparse green algae in shallow water; the bottom comprised rocks, sand, silt and mud. Adults were taken in water depths up to 3 m, young in shallow water; stream widths varied from about 3 to nearly 60 m.

All of the fishes associated with *C. grammodes*, and also *Agonostomus monticola*, were taken with *C. hartwegi*.

COMPARISONS. — Among the species of the *Theraps* group we recognize three that appear to be closely related to the new species. These are *C. bifasciatum* (Steindachner), *C. fenestratum* (Günther), and *C. guttulatum* (Günther). Common features are the moderately elongate body, a rather short and deep peduncle, 29 to 31 total vertebrae, and the teeth in the center rows of the lower pharyngeal plate enlarged and blunt but usually not molariform. *Cichlasoma hartwegi* most closely resembles the allopatric *C. bifasciatum*, which inhabits other parts of the Río Grijalva basin in Oaxaca, Chiapas, and Tabasco, and ranges eastward into the Usumacinta basin of Guatemala (Miller, 1966). In contrast to *C. hartwegi*, *C. bifasciatum* has two broad, black, longitudinal stripes on the side, although only the lower one is consistently developed. The upper stripe (sometimes reduced to a faint blotch in specimens less than 85 mm SL) extends from shortly behind the origin of the upper lateral line to or toward the end of the dorsal-fin base;

the lower, main stripe extends from the pectoral-fin base to the base of the caudal fin, typically curving upward posterior to the tip of the pectoral fin. (The two stripes are separated by a light area.) *C. bifasciatum* also has a larger orbit, longer pectoral fin, and the pelvics are inserted farther back than in *C. hartwegi*.

In comparison with *C. guttulatum*, *C. hartwegi* has a much steeper, more strongly curved predorsal profile and the mouth lower in position and directed downward. *C. hartwegi* lacks spots on the head, body, and caudal fin, and often has the lateral stripe disrupted; breeding adults, including the holotype (Fig. 2), also have the lower head, sides, and abdomen dark. In addition to these differences, an allotopic population from Guatemala catalogued as *C. c.f. guttulatum* (UMMZ 193906), has shorter dorsal-fin and anal-fin bases; in a sample of 10 individuals (64-198 mm SL), these measurements are 565-593 and 218-248 in thousandths of SL, respectively, versus 587-618 and 247-279 in a sample of 13 individuals of *C. hartwegi* (54-131 mm SL; Table 2).

In contrast to *C. fenestratum* (which occurs from just north of Veracruz City to the Río Coatzacoalcos basin — Miller, 1966), *C. hartwegi* has a smaller, more inferior mouth, scales between lateral line and anal-fin origin usually 9 rather than 7, and 5 rather than 6 bars on the side. We regard *C. gadowi* Regan as a synonym of *C. fenestratum*, body depth not being a reliable distinguishing feature.

DISTRIBUTION. — *Cichlasoma hartwegi* is known only from the Río Grande de Chiapa basin in Chiapas, México.

ETYMOLOGY. — We are pleased to name this fish after the late Norman E. Hartweg, former Curator of Reptiles in the Museum of Zoology, who had a broad interest in Mexican biology and made valuable fish collections during his field studies in México.

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TABLE 1

MEASUREMENTS OF *CICHLASOMA GRAMMODES* IN PER MILE OF STANDARD LENGTH FROM MEXICO AND GUATEMALA (UMMZ 159274, 173958, 183921, 184735, 186366, 186369, 186377, 186404, 186406, 193905, 204200). Means are given in parentheses.

Measurement	Subadults and Adults		Holotype
	Juveniles (6)	(19)	
Standard length, mm	36.8-55.9 (48.5)	70.0-140.0 (102.7)	178.0
Predorsal length	399-420 (411)	396-448 (424)	410
Prenal length	644-664 (654)	661-704 (680)	674
Prepelvic length	419-448 (437)	410-447 (432)	454
Body depth	363-414 (390)	352-436 (390)	386
Head length, depth	383-408 (398)	377-414 (396)	411
Postorbital length	309-333 (322)	308-376 (329)	343
Snout length	166-179 (172)	161-177 (169)	167
Preorbital depth	114-147 (133)	137-173 (154)	170
Interorbital bony width	52-69 (64)	75-103 (89)	103
Orbit diameter	82-90 (88)	89-122 (99)	99
Cheek depth	89-111 (99)	70-98 (85)	71
Mandible length	111-129 (123)	128-160 (140)	152
Upper-jaw length	163-171 (167)	170-211 (184)	202
Mouth width	122-134 (129)	129-156 (139)	154
Caudal-peduncle length, least depth	114-132 (124)	119-148 (130)	144
Dorsal-base length	123-147 (137)	133-157 (143)	149
Longest (=last) dorsal spine length	134-142 (138)	125-149 (136)	144
Anal-base length	543-558 (551)	514-558 (539)	528
Pectoral length	138-162 (148)	101-152 (121)	125
Pelvic length	245-263 (252)	216-250 (232)	230
	236-259 (249)	217-261 (238)	222
	226-253 (238)	212-261 (230)	251

TABLE 2

MEASUREMENTS OF *CICHLASOMA HARTWEGI* IN PER MILLE OF STANDARD LENGTH FROM MEXICO (UMMZ 183922, 186383, 186388, 186407, 207701; USNM 219904). Figures in parenthesis are means. Data for holotype included with the 7 adults.

Measurement	Juveniles (3)	Subadults (6)	Adults (7)	Holotype
Standard length, mm	35.4-41.1 (37.7)	53.7-79.8 (68.5)	93.3-131.1 (107.8)	131.1
Predorsal length	438-462 (452)	425-446 (437)	411-437 (423)	420
Preanal length	664-710 (683)	670-685 (676)	652-684 (667)	652
Prepelvic length	435-467 (450)	404-425 (414)	377-405 (393)	384
Body depth	455-473 (465)	439-451 (445)	412-467 (433)	430
Head length, depth	361-365 (363) 322-333 (327)	328-346 (337) 344-365 (357)	323-349 (335) 331-365 (349)	335 346
Postorbital length	145-158 (153)	121-137 (128)	131-141 (133)	131
Snout length	113-126 (121)	134-143 (137)	147-154 (151)	151
Preorbital depth	56-63 (60)	71-82 (76)	85-94 (88)	94
Interorbital bony width	104-122 (113)	124-134 (128)	116-133 (123)	133
Orbit diameter	102-105 (104)	76-92 (87)	69-87 (77)	72
Cheek depth	113-122 (117)	116-132 (123)	124-137 (130)	137
Mandible length	130-136 (132)	112-121 (117)	115-121 (117)	119
Upper-jaw length	85-97 (93)	93-98 (95)	99-105 (102)	101
Mouth width	99-105 (103)	96-105 (101)	102-113 (106)	106
Caudal-peduncle length least depth	124-133 (128) 150-156 (154)	132-139 (137) 143-154 (148)	130-149 (138) 145-156 (151)	143 153
Dorsal-base length	565-574 (569)	587-618 (595)	587-599 (591)	588
Longest (=last) dorsal spine length	141-153 (147)	123-174 (148)	152-164 (159)	161
Anal-base length	251-273 (262)	250-279 (262)	247-267 (259)	262
Pectoral length	273-282 (277)	264-307 (279)	243-268 (257)	252
Pelvic length	254-281 (266)	273-292 (280)	264-304 (287)	281