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PUNTIUS PADAMYA, A NEW SPECIES OF CYPRINID FISH FROM MYANMAR (TELEOSTEI: CYPRINIDAE)

Sven O. Kullander[1] and Ralf Britz[2]

[1] Department of Vertebrate Zoology, Swedish Museum of Natural History, PO Box 50007, SE-104 05 Stockholm, Sweden. E-mail: sven.kullander@nrm.se.
[2] Department of Zoology, The Natural History Museum, London, SW7 5BD, United Kingdom. E-mail: r.britz@nhm.ac.uk

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Abstract: *Puntius padamya*, new species, is described from the type locality near Mandalay, in the Ayeyarwaddy River drainage, Myanmar. Referred specimens are reported from the lower Chindwin River. *Puntius padamya* is distinguished from other species of the *P. conchonius* species group above all by the colour pattern. Males possess a broad red band from the head to the base of the caudal fin, abdominal scales with dark margins, and hyaline dorsal, anal and pectoral fins with conspicuous black spots and black distal margins. Both sexes possess a vertically elongate dark humeral blotch and a small, inconspicuous dark blotch on the side of the caudal peduncle. *Puntius padamya* is a well known aquarium fish, commercialized as "Odessa barb".

Keywords: Cypriniformes – Taxonomy – Odessa barb – Ayeyarwaddy River – Chindwin River

Introduction

The small-sized south Asian cyprinid species contained in the *Puntius conchonius* species group, diagnosed by Taki et al. (1978), are popular ornamental fishes with about 10 species regularly available. One of these species is generally known as the "Odessa barb" or "ruby barb" and was first introduced in the aquarium hobby in the early 1970s. It was said to have first appeared in pet fish enthusiasts' circles in Odessa, Ukraine, from where it got the name, and was treated later variously as an undescribed species of unknown origin (Sterba, 1988), as a subspecies of *P. ticto* (Stallknecht, 1973), or as *P. conchonius* (Axelrod et al., 1980). No wild material has been known until recently, when the junior author came across the species in the vicinity of Mandalay, in central Myanmar. This paper reports on the first known locality of the "Odessa barb", and provides a formal description of the species.

Materials and methods

Morphometry. Measurements were taken point to point with digital callipers measuring to 0.01 mm, rounded to nearest 0.1 mm. Standard length, head length, and snout length are taken from the tip of the snout to the caudal-fin base, posterior opercular margin, and anterior orbital margin, respectively. Predorsal, prepelvic and preanal lengths are taken from the tip of the snout to the anterior base of each fin. Head depth is taken immediately behind the orbit. Body depth is taken at the origin of the dorsal fin. Dorsal-, pectoral-, pelvic-, and anal-fin lengths are taken from the base of the first ray to the distal tip of the longest ray. Caudal peduncle length is taken from the base of the last anal fin ray to the middle of the base of the caudal fin. Lateral line scale counts include only scales on the body. Scales in the lateral row equates the lateral line scale count, or, when the lateral line is abbreviated, includes the lateral line scales and pos-

terior scales in the same horizontal row. Dorsal-, anal-, and caudal-fin ray counts, and vertebral counts were obtained from radiographs. Vertebral counts include the Weberian apparatus (individual centra not distinguishable in radiographs, but considered to be four, as known from other cyprinids), and the last half-centrum. Vertebrae anterior to the first interneural dorsal-fin pterygiophore are distinguished as predorsal vertebrae, and are included in the count of precaudal vertebrae. Homology interpretation of infraorbitals follows Taki et al. (1978).

Molecular data. DNA sequences were obtained as described in Rüber et al. (2007), and Sevilla et al. (2007).

Toponomy. Local toponomy is used in descriptions of collecting sites, but it should be noted that local transliteration of Burmese geographical names is not consistent.

Collection codes. NRM Swedish Museum of Natural History, Stockholm; USNM National Museum of Natural History, Smithsonian Institution, Washington, D.C.

Comparative material. Same as in Kullander & Fang (2005), and Kullander (2008).

Puntius padamya, new species

(Figures 1-3)

Holotype. USNM 385952, adult male, 44.1 mm SL; Myanmar: Mandalay Division, Ayeyarwaddy River drainage, artificial pond in Toe Gyi village, above Anisakan falls, near Pyin Oo Lwin, on the road Mandalay-Hsipaw; 21°58′36″N 96°23′24″E; 21 March 2003, R. Britz & R. Roesler.

Paratypes. USNM 392623, 12 males, 35.1-45.9 mm SL; 16 females, 32.2-46.4 mm SL; 5 juveniles, 21.2-25.5 mm SL; collected with the holotype.

Non-types. USNM 3909101, 1 female, 31.9 mm SL; Myanmar: Mandalay Division, Chindwin River drainage, from fishermen at shore of Chindwin River, altitude 250 ft., 22°40′44″N 94°46′29″E; 27 Mar 2007, R. Britz & R. Roesler. - USNM 390103, 18, not sexed, 13.1-34.2 mm SL; Myanmar: Mandalay Division, Chindwin River drainage, Maukkataw, small pond about 500 m from Chindwin River shore, 257 ft. above sea level, 22°58′30″N 94°40’26″E; 27 Mar 2003, R. Britz & R. Roesler. - NRM 51972, 1, 27.3 mm SL; Myanmar, wild fish from Shan State sampled in Hein Aquarium, Yangon, Myanmar; 31 Oct 2004, F. Fang. - NRM 52535, 1, 32.9 mm SL; Aquarium, wild import, sampled in ornamental fish importer stock, IMAZOO, Vara, Sweden; 9 Nov 2005, S.O. Kullander.

Diagnosis. *Puntius padamya* belongs to the *Puntius conchonius* species group and is distinguished from all species in that group by a combination of characters: maxillary barbels present, minute; lateral line abbreviated, on 5-8 scales; circumpeduncular scales 12; dorsal, anal and pelvic fins in adult males hyaline, margined with black and crossed by two or three rows of contrasting deep black spots; humeral spot vertically elongate, three or more scales deep; caudal peduncle blotch covering parts of one or two scales, and indistinct in adult males. Similar only to *P. didi*, sharing abbreviated lateral line, presence of maxillary barbels, 12 circumpeduncular scales, and colour pattern including both vertically extended humeral blotch and caudal peduncle blotch, other vertical bars absent. Distinguished from *P. didi* in extension of humeral blotch which reaches ventrally to lateral line scales, vs. extending down to level of pectoral fin base in *P. didi*; in colour pattern of adult males in which sides yellowish white with contrasting brown blotches at scale bases and abdomen dark pigmented, vs. sides lightly pigmented, gradually lighter ventrally, abdomen whitish in males of *P. didi*; pelvic fins in males hyaline with two rows of deep black spots and deep black marginal band vs. pelvic fins either without dark markings or blackish marginal stripe and single row of black spots across middle of fin in *P. didi*; anal fin in males hyaline with deep black margin and two or three rows of deep black spots, vs. blackish margin and at most one row of blackish spots in *P. didi*; males with conspicuous red colour along middle of side from opercle to base of caudal fin vs. red colour absent from sides in males of *P. didi*.

Figure 1. *Puntius padamya*, holotype, USNM 385952, male, 44.1 mm SL; Myanmar: artificial pond in Toe Gyi village.

Figure 2. *Puntius padamya*, paratype, USNM 392623, female, 44.3 mm SL; Myanmar: artificial pond in Toe Gyi village.

Figure 3. *Puntius padamya*, paratypes, USNM 392623, adult male specimens not individually identified, photographed alive immediately after capture at type locality. Photo by R. Roesler.

Description. Based on the holotype and paratypes. Refer to Table 1 for summary of morphometric data. Morphometric analysis did not find any differences between sexes. Moderately deep, slightly elevated, compressed laterally. Predorsal contour ascending, almost straight, nape slightly elevated. Dorsal contour straight slanting from dorsal-fin base to caudal-fin base. Prepelvic contour about straight to below about pectoral-fin base where curved, continued straight horizontal to pelvic fin bases, from pelvic-fin base slanting to anal-fin base, which forms a gently concave outline continuous with caudal peduncle outline. In some females abdomen distended and curvature of ventral contour at pelvic-fin insertion.

Head short, laterally compressed. Orbit in anterior half of head. Snout rounded. Mouth subterminal, not reaching to vertical at anterior margin of orbit. Lips exposed, moderately thick, upper lip curved; lower lip interrupted symphysially, straight. Lateral fold on snout present. Rostral barbels absent; pair of maxillary barbels present, minute. Infraorbital 3+4 broad, anterior end at or anterior to middle of orbit, anteriorly extending to middle of depth of cheek, posteriorly extending to preopercle. Breeding tubercles short, numerous on top of head in males, absent in females. Gill rakers 2 on epibranchial, 1 in angle, and 5 (17), 6 (3) on ceratobranchial.

Dorsal-fin origin opposite pelvic-fin origin; distal margin straight or slightly convex anteriorly, concave posteriorly, anterior and posterior corners rounded; last ray reaching to vertical from slightly posterior to middle of anal fin base. Last unbranched dorsal-fin ray almost as long as first branched ray; proximal 2/3 compact, much thicker than first branched ray, rigid, strongly serrated, with 13-21 pairs of serrae; apical 1/3 flexible, segmented, without serrations. D. iii.8 (1), iv.8 (19). Pectoral fin rounded, not reaching to vertical at base of pelvic fin, except in juveniles. P. i.13 (1), i.14 (10). Pelvic fin rounded, reaching vent. V. i.8 (20). Anal-fin base posterior to vertical at dorsal-fin base, distal margin straight with acute or sub-

Table 1. Standard length (in millimeters) and proportional measurements in percents of standard length of *Puntius padamya* (USNM 385952, 392623). SD = standard deviation. Regression line parameters, a (intercept), b (slope), and r (Pearson's correlation coefficient) are calculated from measurements expressed in millimeters. The holotype is included in calculated values.

	Holotype	n	min	max	mean	SD	a	b	r
Standard length (mm)	44.1	20	32.2	46.4	40.9	3.57			
Head length	27.0	20	25.7	27.7	26.7	0.55	0.814	0.247	0.971
Snout length	7.5	20	6.2	7.5	7.0	0.32	-0.629	0.085	0.941
Orbit diameter	9.1	20	8.8	10.3	9.3	0.37	1.274	0.062	0.935
Interorbital width	11.3	20	10.2	12.0	11.2	0.35	-0.364	0.121	0.961
Head width	15.2	20	14.4	15.5	14.8	0.31	0.021	0.148	0.973
Head depth	20.6	20	19.8	22.2	20.9	0.64	-0.371	0.218	0.948
Body depth	38.1	20	38.1	44.6	41.2	1.53	1.250	0.381	0.908
Predorsal length	55.1	20	53.4	55.9	54.4	0.76	-1.761	0.587	0.992
Prepelvic length	51.9	20	48.6	51.9	50.2	0.94	0.834	0.482	0.976
Preanal length	74.6	20	71.0	75.7	74.1	1.07	0.511	0.728	0.985
Caudal peduncle depth	16.6	20	14.8	16.8	15.8	0.61	-0.357	0.167	0.921
Caudal peduncle length	17.5	20	17.5	20.6	19.4	0.83	-2.022	0.144	0.872
Dorsal fin length	26.3	20	23.3	27.2	26.0	0.90	1.372	0.226	0.909
Anal fin length	17.7	20	16.1	20.4	18.4	0.96	0.866	0.162	0.829
Pectoral fin length	22.0	20	19.8	23.4	21.4	0.83	-0.692	0.231	0.937
Pelvic fin length	21.5	20	19.5	22.6	21.0	0.91	-0.037	0.211	0.897

acute corners, last ray reaching about middle of caudal peduncle; anal-fin rays iii.5 (20). Caudal fin deeply emarginated; lobes making up slightly less than half of fin length, tips rounded. Principal caudal-fin rays 9+9 (2), 10+9 (18); procurrent rays dorsally 6 (20), ventrally 5 (19), 6 (1).

Lateral line abbreviated, lateral-line scale row straight horizontal for 4-5 scales, then descending due to insertion of additional horizontal scale row above, running in a smooth curve ascending to a median position on side of caudal peduncle. Scales in lateral row 19 (6), 20 (16), 21 (2); lateral-line scales 5 (3), 6 (8), 7 (8), 8 (1). Predorsal scales 8 (19), 9 (1); prepelvic scales 9 (5), 10 (15); circumpeduncular scales 12 (20). Scales in transverse row ½4 /1/3½ (20). Pelvic axillary scale reaching to 1/3 of adpressed pelvic fin.

Predorsal vertebrae 4+4 (17), 4+5 (3), abdominal 4+12 (2), 4+13 (10), 4+14 (8), precaudal+caudal 4+12+12=28 (1), 4+12+13=29 (1), 4+13+13=30 (1), 4+14+11=29 (1), 4+14+12=30 (11), 4+15+11=30 (1). Vertebrae contained in caudal peduncle 5 (1), 6 (11), 7 (8). One specimen dissected, 42.5 mm SL (USNM 392623) with pharyngeal teeth 5,3,2.

Coloration in preservative. Adult males (Figure 1) ground colour pale yellowish. Dorsum light brownish, predorsal midline dark grey. Top of head and snout greyish brown; sides of head slightly pigmented, brownish on pale yellowish ground. Scale margins dorsally on side narrowly margined with brown; from 3rd horizontal scale row below dorsal fin, and emphasized from 4th, dark brown blotch present at each scale base, contrasting with otherwise pale yellowish scales. Dark pigmentation absent from middle sides of caudal peduncle from about caudal peduncle blotch caudad. Abdomen duskied, mainly from pigmentation along margins of scales.

Dark brown to blackish vertical blotch crossing lateral line scales 3-4; blotch most intensely pigmented on dorsal half of lateral line scales 3-4, and two scales immediately above, but brown pigmentation extending to almost predorsal midline dorsally, ventrally to include lateral line scales and occasionally scales immediately below lateral line scales; in juveniles not reaching below lateral line scales. Caudal peduncle blotch greyish or brownish, small, rounded, positioned on scales 16, 17, or 16-17 in lateral line scale row, slightly posterior to vertical from anal fin base.

Dorsal fin hyaline with contrasting black distal margin and two rows of black oval spots in two rows, inner row in interradial position, outer row between major fin ray branches. Anal fin hyaline with black distal margin and two or three irregular rows of oval black spots. Pelvic fin hyaline with black distal margin and two rows of black elongate or rounded black spots. Caudal fin hyaline, slightly duskied basally.

Females (Figure 2) similar in respect to lateral blotches, but sides lightly pigmented throughout, dark blotches at bases of scales not as contrasted as in males, and no pigment free area on caudal peduncle. Chest and abdomen pale yellowish, unpigmented. Dorsal fin with indistinct pigmentation representing marginal dark band and two rows of spots. Anal fin with indistinct pigmentation representing marginal stripe and one or two indistinct rows of spots. Pelvic fin without pigment. In juveniles body like females, fins lightly patterned as in females or hyaline.

Live coloration. Adult males (Figure 3) with beige to light brown background colour. Humeral blotch black with bluish iridescence in dorsal area. Iris red except narrow black streak through middle of eye. Dorsoposterior part of opercle red. Middle of body with bright red band, three to four scales high extending from cleithrum to base of caudal fin. Several rows of scales behind humeral blotch with dark bluish-black base; two longitudinal rows of scales below humeral blotch with bright white middle. Belly whitish to light beige. Membrane of dorsal fin, proximal two thirds of membrane of anal fin, and proximal third of membrane of pelvic fins yellowish-green, with black marks contrasted prominently. Caudal fin with wide red band in the middle representing

posterior extension of red body band, distal areas of upper and lower lobes yellowish-green.

Females with a light beige background colour and reflecting silvery sheen on scales. Humeral blotch black and prominent. Dark marks on base of scales visible. Fins light yellowish-greenish, dark marks restricted to dorsal fin. Caudal peduncle blotch present but small and inconspicuous.

Chindwin specimens. Measurements summarised in Table 2. D. iv.7 (1), iv.8 (9); A. iii.5 (10); P. i.13 (8), i.14 (2); V. i.8 (10); lateral line scales 5 (5), 6 (2), 7 (2), 8 (1); scales in lateral row 19 (1), 20 (4), 21 (5); transverse scales ½4/1/3½ (10); predorsal scales 8 (8), 9 (2); prepelvic scales 8 (1), 9 (1), 10 (8); circumpeduncular scales 12 (10); ceratobranchial gill rakers 4 (5), 5 (3), 6 (1); predorsal vertebrae 4(5), 5 (3); vertebrae 4+13+13=30 (6), 4+13+14=31 (2), 4+14+13=31 (1), 4+14+14=32 (1), dorsal procurrent caudal fin rays 6 (2), 7 (8); dorsal procurrent caudal fin rays 6 (2), 7 (9), ventral procurrent caudal fin rays 5 (4), 6 (5), 7 (1). Colour overall much lighter than in type series, probably a preservation artefact. Humeral blotch more concentrated, limited to upper half of lateral line scales, two scales above and scale topping these. Fins lightly patterned, dorsal fin as in females in type series, anal and pelvic fins with dark spots along middle and outer part respectively.

Mitochondrial DNA sequences. Sequences of the mitochondrial cytochrome *b* gene were obtained from one specimen obtained as wild imported fish in an ornamental fish importer stock in Sweden (NRM 52535, GenBank Accession number pending), one wild specimen from a Myanmar ornamental fish exporter (NRM 51972, GenBank Accession number pending) and one specimen from the type locality (GenBank Accession No. EF151093; Rüber et al., 2007). The sequences are identical.

Etymology. Padamya is the Burmese word for ruby, given here with reference to the name ruby barb used in the ornamental fish trade, and to the bright red colour of the males. It is to be treated as a noun in apposition.

Geographical distribution. Known only from the type locality, an artificial pond in Toe Gyi village, situated just above the Anisakan Falls, near Pyin Oo Lwin, on the road Mandalay-Hsipaw, and from the lower Chindwin River (Figure 4).

Discussion

The sex ratio (16 females, 13 males) in the type series of *P. padamya* is close to 1:1, and there is no obvious sex dimorphism in body length. This contrasts with other samples reported of species of *Puntius* from Myanmar, in which usually females outnumber males, and females are of larger size than males (Kullander & Fang, 2005, Kullander, 2008).

Puntius padamya is similar in proportions to other species of the *P. conchonius* group, *P. didi, P. tiantian, P. macrogramma, P. thelys, P. nankyweensis*, and *P. erythromycter* (Kullander, 2008), but shares a relatively small eye only with *P. tiantian* (Figure 5).

The colour pattern in preservative is similar to that of *P. meingangbii*, *P. didi*, *P. tiantian*, *P. bandula*, and *P. cumingii*, which all share a principal colour pattern with an enlarged, vertically extended humeral blotch in addition to the caudal peduncle blotch. In other species of the *P. conchonius* group the humeral blotch is either restricted to one or two scales or absent, or, as in *P. setnai, P. nigrofasciatus*, and *P. phutunio*, large humeral and caudal peduncle blotches are complemented by a dark bar below the dorsal fin.

Puntius meingangbii and *P. manipurensis* are the only other species in the *P. conchonius* group in which the sides and the caudal fin are red (cf. Arunkumar & Tombi Singh, 2003; and photograph provided by W. Vishwanath). *Puntius manipurensis*, from the Loktak Lake in the Manipur River valley, has a relatively small humeral marking; barbels are absent, and spots are absent from the pelvic and anal fins (Menon et al., 2000).

Puntius meingangbii and its synonym *P. bizonatus* were described from Moreh on the Lokchao River in Manipur near the Myanmar border at Tamu. In *P. meingangbii* barbels are said to be absent (Arunkumar & Tombi Singh, 2003; Vishwanath & Laisram, 2004). The original descriptions and photographs of specimens deposited in the Manipur University fish collection suggest that the caudal peduncle blotch is large and strongly pigmented. According to the original description of *P. meingangbii* the pelvic and anal fins are blackish-red to red, suggesting it may not be patterned as in *P. padamya*; the colour of these fins can, however, not be made out from the photograph in which those fins are laid back against the body. Vishwanath & Laisram (2004) describe the pelvic fin as dusky, the anal fin reddish; images of preserved specimens in Manipur University fish collection show the anal fin to be dark on the middle.

Puntius cumingii, from Sri Lanka, is silvery or slightly brassy in life. It has only 10 circumpeduncular scales, and 3½ instead of 4½ scales above the lateral line scale row. In *P. bandula*, also from Sri Lanka, barbels are absent, the caudal peduncle blotch is represented by a band encircling the caudal peduncle, and the dorsal, anal, and pelvic fins are blackish and immaculate (Kullander & Fang, 2005).

In *P. tiantian* from northernmost Myanmar, the lateral line is complete (vs. abbreviated in *P. padamya*), the last unbranched dorsal fin ray much more slender than in other species of the *P. conchonius* group, the caudal peduncle blotch always large and prominent, and the fin coloration of males less distinct although the pelvic fin was observed with black marks in one specimen (Kullander & Fang, 2005). Spots as in male *P. padamya* are absent from the dorsal and anal fins, but there is a band of dark pigment across the middle of each fin. No notes were made on life colours in the field of *P. tiantian*, but it seems unlikely that bright red colours such as in *P. padamya* would have escaped us.

Puntius didi, from the Myitkyina area in Myanmar, is similar to *P. padamya* in the presence of a short maxillary barbel, the frequently indistinct caudal peduncle blotch, and the colour pattern of the dorsal, anal, and pelvic fins in males (Kullander & Fang, 2005). Scattered personal field observations and preserved coloration suggest that *P. didi* has no significant red colour on the sides in life. The fin spots are less distinct in *P. didi,* and only one row of spots is present on the pelvic and anal fins. The humeral blotch continues distinctly ventrally to about the level of the pectoral fin base vs. reaching ventrally only to the lateral line scales, but exceptions occur in both species. Males of *P. didi* have lightly pigmented sides, and the abdominal midline is pale yellowish to whitish, whereas in *P. padamya* the area which is red in life is devoid of dark pigment except for contrasting dark bases of scales, and the abdominal scales are margined with dark pigment. *Puntius padamya* gives a more slender impression than *P. didi*, as reflected in a principal component analysis which barely separates the two taxa chiefly on body depth, prepelvic length, caudal peduncle depth, and dorsal fin length (Figure 6, Table 3). In adults of comparable SL (32-41 mm SL), *P. padamya* has a smaller orbit (9.0-10.2 % SL vs. 10.0-11.5 % SL), less deep head (19.8-21.6 % SL vs. 21.2-23.7 % SL), less deep caudal peduncle (14.9-16.8 % SL vs. 16.4-19.4 % SL), and shorter dorsal fin (24.7-26.8 % SL vs. 26.6-31.8 % SL) than *P. didi*. Meristics are similar in the two species, except in vertebral counts where *P. didi* usually has 4+13+13=30 vertebrae, and *P. padamya* usually 4+14+12=30, but see Chindwin samples below.

The two samples of small specimens of *P. padamya* from the Chindwin River average one more dorsal caudal procurrent ray (7 vs. 6), more caudal vertebrae (13-14 vs. 12), and one more vertebrae within the caudal peduncle (usually 7 vs. usually 6) compared to the type series.. We did not find any obvious differences in morphometrics between the Chindwin specimens and the type series.

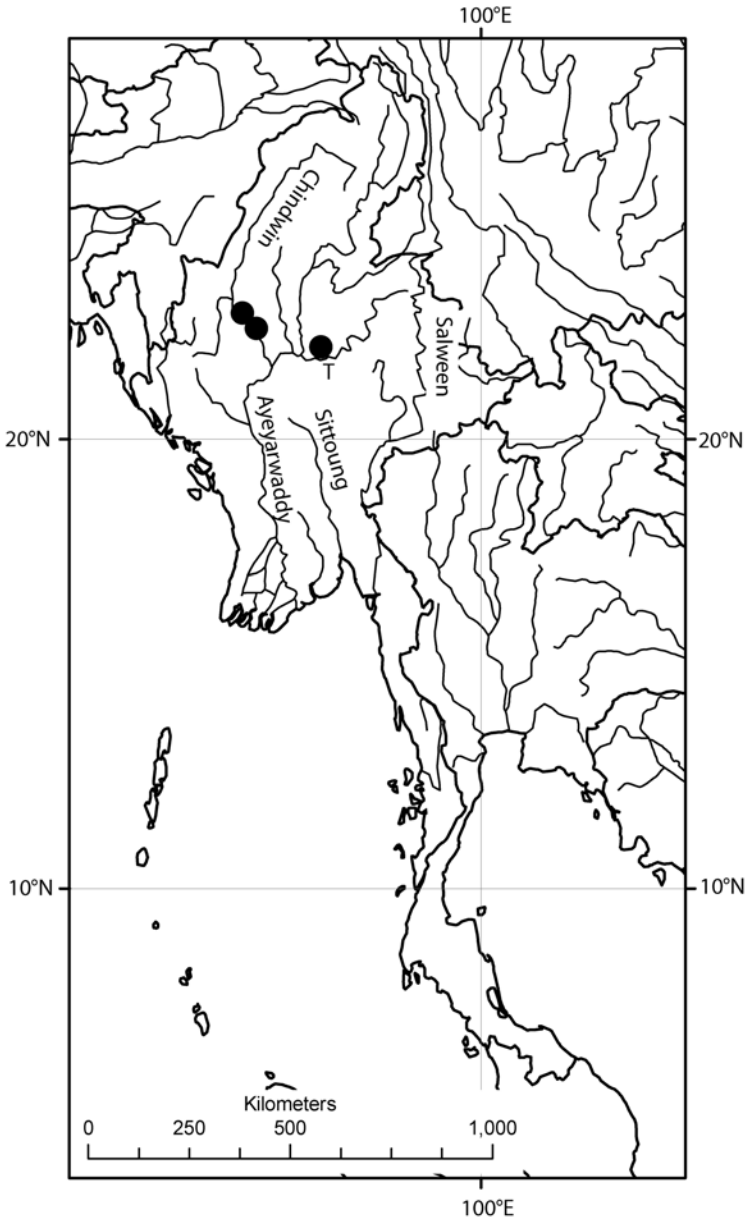

Figure 4. Map of Myanmar showing collecting localities for *Puntius padamya.* T= type locality.

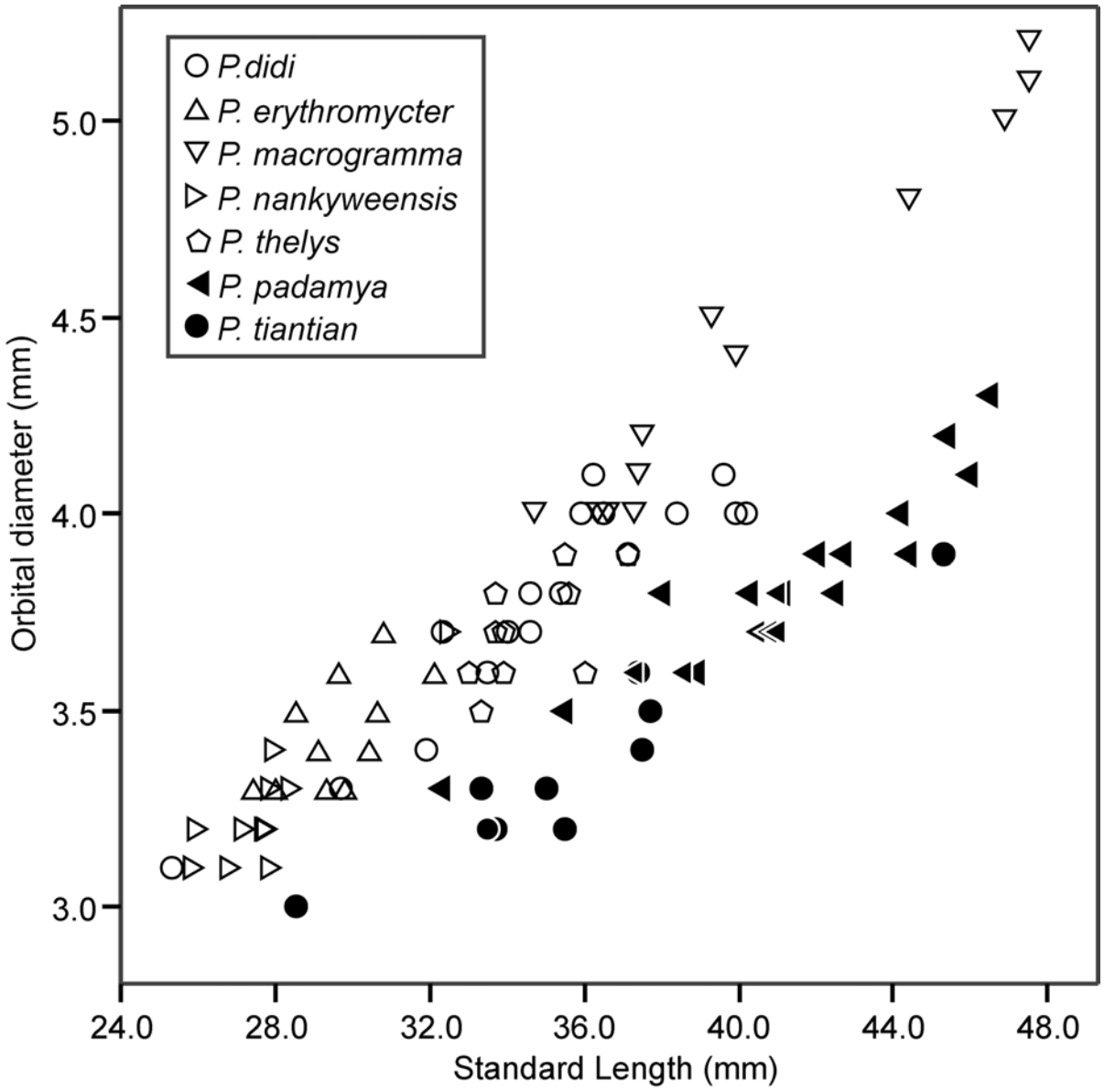

Figure 5. Orbital diameter plotted against standard length in species of the *Puntius conchonius* group from Myanmar. Data from Kullander & Fang (2005) and Kullander (2008).

The overall coloration of the Chindwin specimens is pale, and the humeral blotch appears smaller, but comparable in size to that in juveniles in the type series. There is a vestigial maxillary barbel and the caudal peduncle blotch is indistinct.

Puntius padamya is apparently the same species as the ornamental fish species known as the "Odessa barb" in aquarium literature (e.g., Sterba, 1988), the identity and origin of which has been the subject of considerable speculation (e.g., Dazkewitsch, 1973a, 1976, Stallknecht, 1973, Hochstrasser, 1980, v.d. Nieuwenhuizen, 1984).

The early aquarium history of the "Odessa barb" is not well documented. The first published mention that we are aware of is by Dazkewitsch (1973a), according to whom the species originated from a market, without having specified in what country, and arrived in Odessa, Ukraine, in 1971. van den Nieuwenhuizen (1984) summarized the early aquarium literature.

It seems there that three species may have been involved, as also explained by

Dazkewitsch (1976) who placed the origin of the "Odessa barb" more precisely in a market in the Far East. One species from the Far East, which arrived in Odessa in 1972 is clearly indicated as being *P. semifasciolatus* based on colour information (Dazkewitsch, 1973b, 1976, v.d. Nieuwenhuizen, 1984). Another barb from Odessa is definitely identical with the long finned aquarium form of *P. conchonius* (Hochstrasser, 1980), called "Odessa barb" in the former Soviet Union.

The ornamental fish exports from Myanmar were very much limited until the 1990s, and still sporadic until the mid-2000s, and aquarium fish imports to the former Soviet Union were very much constrained in the 1970s. At the time the Soviet Union had considerable trade relations with Myanmar, however. It seems as possible as any other story, that a Ukrainian stationed in Myanmar may have hand carried specimens back home. Whatever the case, the species now has recovered its own home and its proper name.

The origin of the species currently called "Odessa barb" in the ornamental fish trade, and herein described as *P. padamya,* remains obscure. The Far East origin stated by Dazkewitsch (1976) is obviously incorrect, and possibly there was some confusion involving *P. semifasciolatus* which showed up in 1972, and which is a Far Eastern species, occurring in southern China and northern Viet Nam. Schäfer (2001) was the first to provide an alternative origin, although still imprecise, reporting on an ornamental fish importation of the "Odessa barb" from Singapore to Europe, said to have been collected in Myanmar.

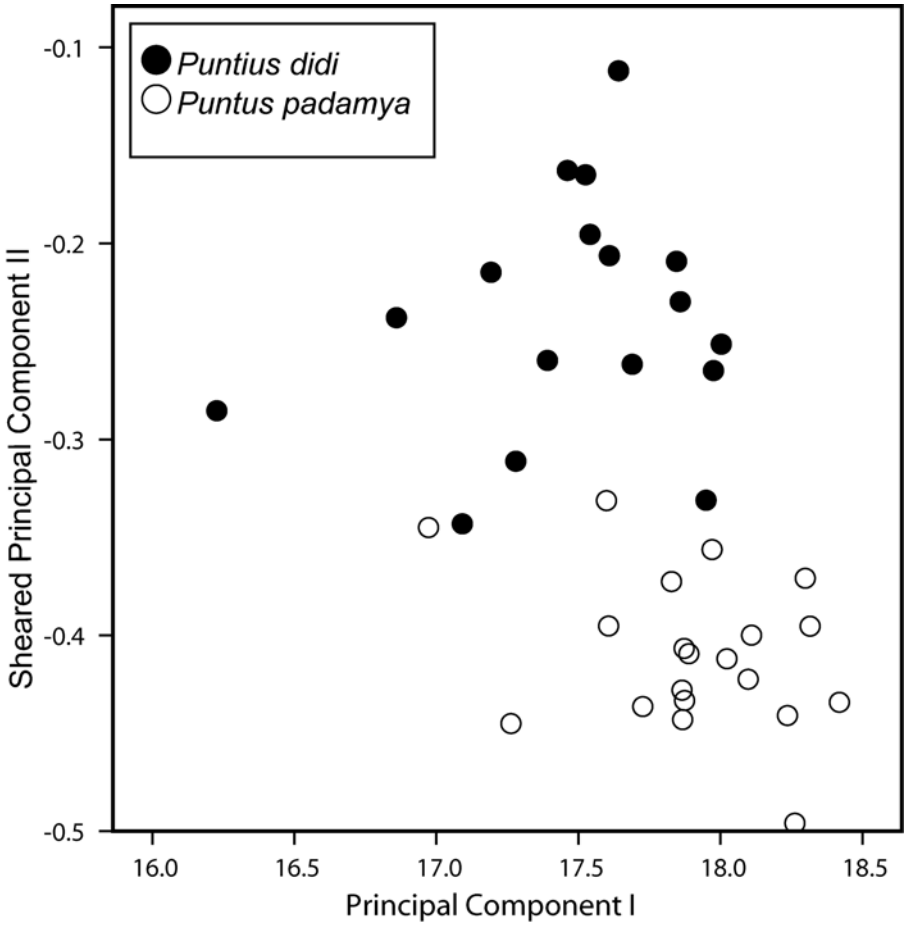

Figure 6. Plot of scores of sheared second principal component on first principal component of morphometric data from *Puntius padamya* and *P. didi.*

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