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A new genus and miniature species of pipehorse (Syngnathidae) from Indonesia

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Abstract

A new genus and species of the gasterosteiform family Syngnathidae, *Kyonemichthys rumengani*, is described from a single 26.8 mm TL adult female collected in Lembeh Straits, Sulawesi, Indonesia. It is one of the smallest members of the family relative to body mass, and resembles the pipehorse genera *Acentronura, Amphelikturus* and *Idiotropiscis* in having a short head and snout angled slightly to the axis of the body, dermal appendages and flexible tail lacking a caudal fin. It differs from the three most notably in having fewer trunk rings (9, versus 11-15), more tail rings (51, versus 37-46), a posteriorly positioned dorsal fin originating on the eighth tail ring (versus usually originating on the trunk, but not posteriorly farther than the second tail ring) and a uniquely swollen trunk with a medial constriction.

Zusammenfassung

Beschrieben wird eine neue Gattung und Art der Familie der Syngnathidae (Gasterosteiformes, Stichlingsartige): *Kyonemichthys rumengani,* auf der Grundlage eines einzelnen erwachsenen weiblichen Exemplars von 26,8 mm Gesamtlänge (TL), das in den Lembeh Straits, Sulawesi, Indonesien, gefangen wurde. Bezogen auf die Körpermasse, zählt diese Seenadel zu den kleinsten Vertretern der Familie; durch den kurzen Kopf und die kurze Schnauze in flachem Winkel zur Körperachse, die Hautanhänge und den beweglichen Schwanz ohne Schwanzflosse ähnelt sie den Gattungen *Acentronura, Amphelikturus* und *Idiotropiscis.* Deutliche Unterscheidungsmerkmale sind aber die geringere Zahl an Rumpfringen (9 im Vergleich zu 11-15), eine höhere Zahl an Schwanzringen (51 im Vergleich zu 37-46), eine weit hinten sitzende Rückenflosse, die am achten Schwanzring ansetzt (üblicherweise beginnt sie am Rumpf, spätestens am zweiten Schwanzring) und ein auffällig geschwollener Rumpf mit einer Einschnürung in der Mitte.

Résumé

Un nouveau genre et une nouvelle espèce de la famille gastérostéiforme des Syngnathidae, *Kyonemichthys rumengani* est décrit sur base d'un seul adulte femelle (26,8 mm de LT), collecté dans les détroits de Lembeh, Sulawesi, Indonésie. C'est un des plus petits représentants de la famille en ce qui concerne le volume du corps et il ressemble aux genres de Syngnathidés *Acentronura, Amphelikturus* et *Indiotropiscis* par sa tête et son rostre courps, formant un léger angle par rapport à l'axe du corts, par des appendices dermiques et une queue flexible sans caudale. Il se distingue des trois genres les plus représentatifs par un nombre plus réduit de segments du tronc (9 au lieu de 11-15), plus de segments de la queue (51 au lieu de 37-46), une dorsale en position postérieure prenant naissance sur le 8e segment caudal (au lieu de se situer sur le tronc, mais pas plus en arrière que le deuxième segment caudal) et un tronc gonflé de façon unique avec constriction médiane.

Sommario

Un nuovo genere e specie di gasterosteiforme della famiglia Syngnathidae, *Kyonemichthys rumengani,* è descritto sulla base di un singolo esemplare adulto femmina di 26.8 mm TL raccolto a Lembeh Straits, Sulawesi, Indonesia. Considerando la massa corporea è uno dei membri più piccoli della famiglia e assomiglia ai generi di cavallucci marini *Acentronura, Amphelikturus* e *Idiotropiscis* per avere un capo breve e un muso leggermente angolato rispetto all'asse del corpo, appendici dermiche e l'estremità flessibile senza pinna caudale. Differisce dai tre suddetti generi principalmente per aver un numero inferiore di anelli del tronco (9 verso 11-15), più anelli caudali (51 verso 37-46), la pinna dorsale posizionata posteriormente che si origina sull'ottavo anello caudale (verso un'origine generalmente sul tronco, ma mai posteriormente al secondo anello caudale) e il tronco con un particolare rigonfiamento e una costrizione mediana.

INTRODUCTION

The increasing popularity of recreational diving and underwater photography has raised our awareness of new species worldwide. This has been particularly the case where hobbyists have focused their efforts on smaller and smaller animals, aided by better and more affordable photographic gear. On 1 Oct 2006, W. Tan photographed some tiny individuals of an odd little pipehorse-like syngnathid in Lembeh Strait at the northern end of Sulawesi, Indonesia. The images were emailed to

R. Kuiter for identification as the species did not appear to be among those in his photographic guide to syngnathiforms (Kuiter 2003). Although similar to species referred in that publication to the genera *Acentronura* Günther, 1870, *Amphelikturus* Parr, 1930 and *Idiotropiscis* Waite & Hale, 1921, and especially a pair identified as *Acentronura breviperula* (Kuiter 2003: 63, Fig. A), the species in question has more pronounced dermal appendages, an oddly swollen trunk and a more posteriorly placed dorsal fin. The status of the photographed fishes as adults, and not juveniles of a previously known species, was evident in one photo of a pair, the likely male carrying eggs. The subsequent collection of a female of the species close to the original photographic site allowed the verification of the species as both new and belonging to a previously undescribed genus. A formal description based on that individual is provided below.

METHODS

Methods for counts and measurements and anatomical terminology follow Dawson (1977, 1984); anatomical abbreviations used in the description include 'HL' (head length), 'ITR' (inferior trunk ridge), 'TAR' (tail ring), 'TL' (total length), 'TR' (trunk ring), 'SnL' (snout length), 'STAR' (superior tail ridge) and 'STR' (superior trunk ridge); numbers appended to these abbreviations refer to body ring or the structure on the relevant body ring counted from the anterior end (eg. 'STAR5' is the superior tail ridge on the fifth tail ring); 'pre-anal length' is the distance from the tip of the lower jaw to the origin of the anal-fin base; 'tail length' is the distance from the posterior end of the anal-fin base to the tip of the tail; trunk and tail depths are the distances between the dorsal and ventral profiles of the trunk and tail respectively, perpendicular to the axis of the body. The description is of the holotype with variations for the species gleaned from photographs noted. The holotype of the new species is deposited in the Museum Victoria (NMV) fish collection.

Kyonemichthys n. gen.

Type species: *Kyonemichthys rumengani* n. sp.

Diagnosis: Superior trunk and tail ridges continuous; inferior trunk ridge ending about the anal ring, but greatly obscured by swollen trunk; lateral trunk ridge confluent with inferior tail ridge; head mostly in line with longitudinal body axis, angled about 25° from that of the trunk, immediately behind; median snout ridge reduced to two tubercular bumps, the smaller before the nares, the larger between them; opercular ridge very low, entire, just below dorsal edge of opercle, low horizontal lateral flange anteriorly, behind middle of eye; dorsal rim of orbit fluted with bump-like sculpturing completely encircling eye, pronounced bulge just above eye; pectoral-fin base on ventrolateral bulge of first trunk ring with small raised plate-like structure in front of fin base dorsally and larger raised star-like structure in front of base ventrally; trunk greatly swollen ventrally between third and last trunk rings with a constriction on the sixth and seventh trunk rings, the anterior portion bulging more than the posterior portion; dorsal-fin origin on ninth tail ring, the fin base elevated, all fin rays except the first branched; second anal-fin ray branched; principal body ridges distinct on tail and except superior trunk ridges obscure on trunk, lateral trunk ridge reduced to a series of dorsoventrally flattened, but laterally rounded flanges; tail rings of uniform depth over most of length, but getting progressively shorter and smaller near posterior tip, tail very flexible but not distinctly prehensile; scutella not evident; without elongate spines but with variable dermal ornamentation in the form of elongate appendages on mid-dorsal ridge. Trunk rings 9, total rings 61, dorsal-fin rays 15, total subdorsal rings 2.5, pectoral-fin rays 12, anal-fin rays 3, caudal fin absent; brood pouch fully enclosed.

Comparison: This genus superficially resembles the assemblage of closely related species, comprising *Acentronura, Amphelikturus* and *Idiotropiscis* (sensu Kuiter 2004), which have the head angled slightly ventrally from the abdominal axis, a prehensile tail and no caudal fin. Representatives of the last three genera possess dermal ornamentations in the form of flaps or simple to highly branched cirri, although none has the structures developed to the filamentous length in at least some individuals of the new genus. The tail in *Kyonemichthys* is much longer and more slender relative to the trunk of any species in the three genera, and appears to be less flexible. Unlike those genera it has a uniquely swollen trunk with a constriction at about the sixth or seventh trunk ring, a number of distinctly enlarged, bilaterally paired expansions of the superior body ridges and a dorsal fin that is located much farther posteriorly. The

position of the dorsal fin and relative number of trunk and tail rings overlap with the pipefish genus *Urocampus* Günther, 1870, which has a conventional pipefish shape, as well as a caudal fin, albeit very small. That genus also has the relative reduction in size of the posteriormost tail rings present in the genus described here. The temperate Australian species *Urocampus carinirostris* Castelnau, 1872 shares a very short snout with the species described below.

The absence of male specimens prevents a description of the adult brood structure apart from it appearing to be fully enclosed, contiguous with the posterior bulge of the abdomen and ending about the seventh or eighth tail ring (Fig. 3).

Etymology: A combination of the Greek words *kyo* for 'swollen', *nema* for 'thread' and *ichthys* for 'fish', in reference to the thread-like form of this fish with noticeably swollen trunk of both males and females.

Kyonemichthys rumengani n. sp.

(Figs 1-3)

Holotype: NMV A29573-001, 26.8 mm TL, Lembeh Straits, Sulawesi, Indonesia, 16.5–18 m (54–59 feet), 27 December 2006.

Diagnosis: See generic diagnosis.

Description: In addition to the characters pre-

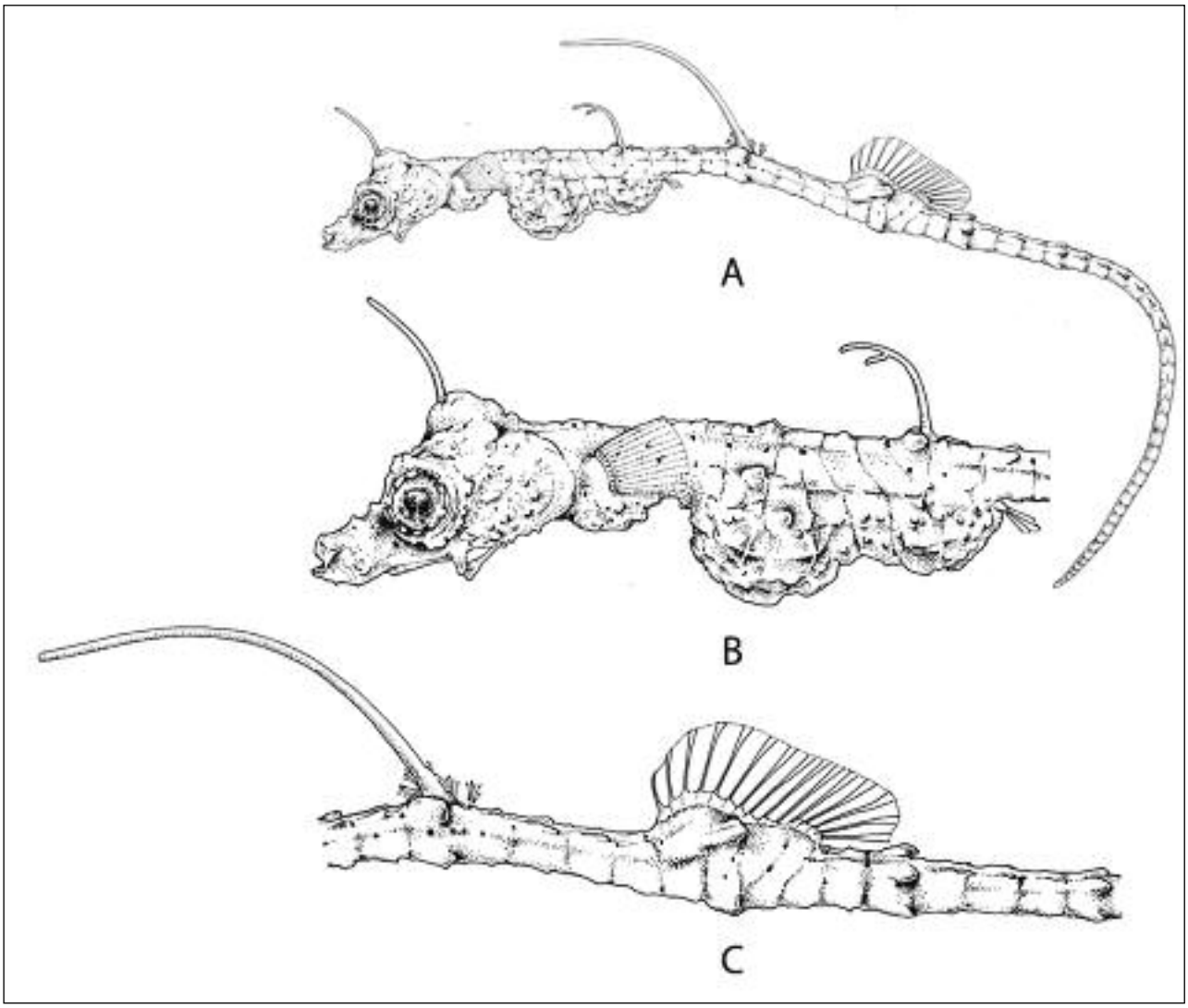

Fig. 1. *Kyonemichthys rumengani* n. sp., holotype, NMV A29573-001, 26.8 mm TL, female, Lembeh Straits, Sulawesi, Indonesia. (**A**) Full view (**B**) Head and trunk (**C**) Anterior portion of tail.

sented in the generic diagnosis: head short, 10.4% TL; snout short, 31.8% HL; its depth 73.9% SnL; eye diameter 2.6% TL; interorbital narrow, covered with low tubercles; frontal ridge moderately elevated and compressed, a vertically oriented filament 5.4% TL arising from a mid-dorsal notch, tubercular bumps on head lateral to it; tubercular bumps ventrally on head; pre-anal length 28.4% TL, tail length 71.6% TL; trunk depth at TR2 6.8% TL, at TR4 4.5% TL and at TR8 5.0% TL, length of the ventrally expanded portion of the trunk 44.7% of preanal length; tail depth at TAR1 2.2% TL; superior body ridge and inferior tail ridge distinct, ridges on each ring slightly elevated posteriorly, forming a low bump, those on first, fourth, eighth, fourteenth, eighteenth, twentieth, twenty-fourth and twenty-eighth superior body ridges noticeably enlarged, the third (STR8), fourth (STAR5) and seventh (STAR15) of these greatly so, those on STR8 and STAR5 with a ver-

Fig. 2. *Kyonemichthys rumengani* n. sp., holotype, female, Lembeh Straits, Sulawesi, Indonesia, in life. Photo by W. Tan.

tically oriented elongate hair-like appendage based on the low mid-dorsal ridge between each pair, appendage on TR8 6.5% TL, that on TAR5 19.0% TL, with appendages variably present, absent or of varying sizes in other individuals photographed, enlarged pair of bumps on STAR15 at the centre of the dorsal-fin base; swollen nature of trunk obscuring lateral and inferior trunk ridges; inferior trunk ridge expanded into large curved ventrolaterally directed plate-like bulges on ITR4, 5 and 8; dermal ornamentation, including elongate structures mid-dorsally on corona, on eighth to ninth trunk rings and fourth to fifth tail ring.

Colour in life: Brown, irregularly mottled with small scale paler and darker areas, body speckled with very fine white dots; fins transparent (Fig. 2).

Colour in alcohol: Head and trunk dusky with moderately dense concentration of melanophores, undersides of head posteriorly and trunk much darker; tail much paler with less dense distribution of melanophores except on rings having greatly enlarged bulges on STARs; small dark spot posteriorly on lateral surface of superior and inferior body ridge of each body ring and mid-laterally of some, especially those of trunk.

Distribution: Known only from Sulawesi, Indonesia at depths of 15-20 m; occurs on debris on mud and silt bottom having low, if any relief. The collector stated that the individuals observed were reluctant to leave the rock where they were first observed.

Etymology: After Noldy Rumengan, the first to recognise the species as being unique and the collector of the holotype. Treated as a noun in apposition.

Remarks: The diminutive seahorse *Hippocampus denise* Lourie & Randall, 2003, which apparently reaches maturity at less than 13.3 mm TL, is regarded as the smallest species of the family Syngnathidae. Although having a total length of nearly twice that at maturity, the extremely slender form of the species described here makes it one of the smallest species of syngnathid by overall body mass.

The photo identified as *Acentronura breviperula* in Kuiter (2003: 63, Fig. A) may be of a mated pair of this species, the male on the left and female on the right. These individuals lack the long hair-like structures on the dorsum of the holotype. Photos by Tan of other examples of *Kyonemichthys rumengani* at the type locality also show a variable nature of dermal features between individuals. Fine filaments at the base of the very elongate hair-like appendage on TAR5 of the holotype (Fig. 1C) and fan-like structures on the apparent male depicted in Fig. 3, may be attached invertebrates, such as bryozoans, or algae. The retention of these sessile invertebrates or plants would serve the same function of camouflage as the dermal cirri found in other members of the family.

Most photos provided (e.g. Figs 2 and 3) show the species assuming an attitude with a rigid, mostly straight body having an abruptly bent downward angle of about 130° at about the fifteenth tail ring, where the longest dorsal appendage is based. The trunk in these photos is arched upwards and the filamentous appendages are directed so that they are held parallel to the front of the trunk and rear of the head. The overall appearance is that of an algal covered stick or branching black coral. The contrasting position of the body in the individuals shown in the Kuiter photo, mentioned above, suggests that the species may be highly adaptable to conditions.

Fig. 3. *Kyonemichthys rumengani* n. sp., presumed male, Lembeh Straits, Sulawesi, Indonesia. Photo by W. Tan.

ACKNOWLEDGEMENTS

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