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CLARIFICATION OF THE WESTERN PACIFIC RAZORFISHES (LABRIDAE: XYRICHTYINAE) IDENTIFIED AS *INIISTIUS BALDWINI, I. EVIDES* AND *I. MACULOSUS*

John E. Randall
Bishop Museum, 1525 Bernice St., Honolulu, HI 96817-2704, USA

Leif Jonsson
Göteborgs Naturhistoriska Museum, Box 7283, SE-402 35 Göteborg, Sweden

***ABSTRACT.* –** The razorfish *Iniistius evides* is a valid labrid species, not a synonym of *I. baldwini*; it ranges from southern Japan and Taiwan (type locality) at least to Peninsular Malaysia at 3°N. The razorfish described as *Hemipteronotus maculosus* by Fourmanoir (1967) from Vietnam is a synonym of *I. evides*. The marketing in Sweden of three species of razorfishes from Vietnam led to the present study. We suspect these fishes were not caught by accepted commercial methods.

***KEY WORDS*. –** Taxonomy, Labridae, *Iniistius evides*, eastern Asia.

INTRODUCTION

The labrid fishes popularly known as razorfishes are named for their very compressed body and the firm sharp ridge of their steep forehead and snout. They live over open sand bottom and dive head-first into the sand with the approach of a predator. The Indo-Pacific genus *Iniistius* Gill is represented by 18 species, one of which, *I. pavo* (Valenciennes), ranges to the eastern Pacific. The second genus of razorfishes, *Xyrichtys* Cuvier, consists of six Atlantic species, four eastern Pacific species, and five Indo-Pacific species (Randall et al., in press).

The second author was surprised to find one-kilogram packages of frozen razorfish for sale in an Asian fish market in Göteborg, Sweden that were labeled as the parrotfish *Scarus ghobban* (Fig. 1). Single lots of razorfishes in museum collections rarely include more than one or two specimens. He was told that the fish were imported from Vietnam via a company in the Netherlands. Checking with the latter, he learned that they were caught in the sea off Vung Tau in southern Vietnam (just north of the Mekong delta). He went back to the shop and bought all the remaining razorfish, totaling 11 kg. There are 172 specimens: 76 *Iniistius trivittatus* Randall & Cornish, one *I. dea* (Temminck & Schlegel), and 95 of a species then unidentified but now determined as *I. evides* (Jordan & Richardson).

No information was available on how these fishes were caught. Hook and line was ruled out, because there were no hook marks in the mouth. Explosives and gill nets were also excluded due to the excellent condition of the specimens (except for having the scales, viscera and gill arches removed). Trawling is highly unlikely because razorfishes are usually able to escape an oncoming trawl by taking refuge in the sand. We are investigating the possibility that the fishes were captured with the use of a chemical such as sodium cyanide.

The original documents of the present export/import shipping of fishes, Vietnamese Ministry of Fisheries Health Certificate

Fig. 1. Razorfishes (*Iniistius evides* with black spot, and *I. trivittatus* with three blackish bars) purchased in a fish shop in Göteborg, Sweden.

- reference No YD 7082A/2006C, states that the amount of "*Scarus ghobban*" of 50–100 gram size was 2,000 kg. We do not know if all the fishes in the lot labled as "*Scarus ghobban*" where of *Iniistius* spp or actually *Scarus* spp. (no *Scarus* were found in the shop but a photo of *Scarus* in labled plastic bags was found on the Dutch fish dealer's home page). Anyhow, the stated identity as *Scarus* of immature age/size should alarm both the Vietnamese and European Union authorities because juvenile stages of this important food fish have been targeted by the fisheries. The second author has followed the spectrum of SE Asian fishes occurring on the Göteborg market for more than 10 years and has seen a decrease in body size of "normal" commercial species and increase of occurrence of odd species, like the *Iniistius* reported here.

The purpose of the present paper is to determine the taxonomic status of *Iniistius baldwini* (Jordan & Evermann, 1903), type locality Hawaiian Islands; *I. evides* (Jordan & Richardson, 1909), type locality Taiwan; and *I. maculosus* (Fourmanoir, 1967), type locality, Vietnam.

Randall (1996: 142) listed *Xyrichtys evides* as a synonym of *X. baldwini*, but without documentation. He was followed by Parenti & Randall (2000: 48) in their checklist of labrid and scarid fishes of the world. They also treated *Hemipteronosus maculosus* Fourmanoir, type locality Vietnam, as a synonym of *Xyrichtys baldwini*. Randall & Earle (2002) reviewed the Hawaiian razorfishes of the genus *Iniistius* Gill, noting its distinction from the other razorfish genus *Xyrichtys* Cuvier, and the suppression of the generic name *Hemipteronotus* Lacepède, as proposed by Randall & Bauchot (1993). They recognised five Hawaiian species of the genus, including *I. baldwini*, and continued to regard *I. evides* as a junior synonym of *I. baldwini.*

We present evidence that *I. evides* is a valid species and a senior synonym of *I. maculosus*, following the species account below of *I. evides*.

Specimens for this study are from the collections of the Bernice P. Bishop Museum, Honolulu (BPBM) and the Göteborgs Naturhistoriska Museum, Göteborg (GNM). Length of specimens is given as standard length (SL), measured from the front of the upper lip to the base of the caudal fin. Head length is taken from the same anterior point to the most posterior end of the opercular membrane. Eye diameter is the greatest bony diameter of the orbit; lengths of spines and rays were measured from base in a straight line to tip.

Iniistius evides
(Fig. 2)

Hemipteronotus evides Jordan & Richardson, 1909: 196, Pl. 72 (type locality, Takao, Taiwan).

Hemipteronotus maculosus Fourmanoir, 1967: 269, Fig. 2 (type locality, Vietnam).

Diagnosis. **–** Dorsal rays IX,12; anal rays III,12; pectoral rays 12, the first very short; lateral line interrupted, the pored scales 19 or 20 + 4 or 5 (not including last on caudal-fin base); gill rakers 18 or 19; body depth of adults 2.6–2.8 in SL; body compressed, the width about 3 in body depth; head length 3.15–3.4 in SL; eye small, 5.0–5.6 in head length; small scales on cheek in about 9 irregular oblique rows, with about 8 scales in upper row, narrowing to 2 in lowermost row behind corner of mouth; a pair of large, slender, recurved, laterally flaring canine teeth anteriorly in each jaw, the lower pair medial; tips of canine teeth overlapping lips of opposite jaw when mouth closed; side of jaws with a single row of stout conical teeth; origin of dorsal fin directly above posterior edge of orbit; first two dorsal spines flexible and curved (in contrast to rigid, straight, sharp-tipped remaining

Fig. 2. *Iniistius evides*, BPBM 21948, male, 154 mm, Tioman Island, Malaysia.

Fig. 3. *Iniistius baldwini*, BPBM 37237, 173 mm, O'ahu, Hawaiian Islands.

Fig. 4. *Iniistius baldwini*, BPBM 37301 49 mm, O'ahu, Hawaiian Islands.

spines); first dorsal spine 2.2–2.55 in head length; third dorsal spine 4.0–4.5 in head length; space between second and third dorsal spines more than twice as broad as space between first two spines, the second membrane deeply incised; caudal fin rounded, 3.85–4.5 in SL; pectoral fins 4.1–4.6 in SL; pelvic fins 3.4–4.65 in SL, the first soft ray varying from reaching anus to extending slightly beyond first anal spine; colour in alcohol of newly preserved specimens pale yellowish, of old museum specimens pale brown, with a dark brown spot over eighth lateral-line scale and one to four scales above, but not covering a scale below lateral line, and not reaching dorsal edge of body (80% of our 95 Vietnam fish with two dark scales, the rest with one); fins pale yellowish. Colour when fresh as in Fig. 2 (orange edge of anus not visible).

***Material examined*. –** BPBM 21948, 121–154 mm, Tioman Island, Malaysia; BPBM 40900, 10: 131–145 mm, and GNM Pi-ex 3359–3362, 4: 141–156 mm, Pi-ex 3367-3372, 6: 125–152 mm, Pi-ex 3383, 168 mm, market specimens from Vung Tau, Vietnam.

***Remarks*. –** Jordan & Richardson (1909) described this species from two specimens from Takao (now Kaoshiung), southwestern Taiwan, for which the lengths were given as four and five inches. A drawing was made of the larger specimen and indicated as the type. Only one specimen is listed by Henn (1928: 96) as "Type, No. 343" in the Carnegie Museum. It was transferred to the Field Museum of Natural History, Chicago where Ibarra & Stewart (1987: 45) reported it as the holotype, FMNH 52392, formerly CM 343. The standard length of 104 mm was provided by Mary Anne Rogers of the Field Museum of Natural History. The fate of the paratype remains unknown.

Since its description, *Iniistius evides* has been reported from the South China Sea (Kyushin et al., 1982: 239, Fig.), the Ryukyu Islands (Yamakawa in Masuda et al., 1984: 211, Pl. 207 I), again from Taiwan with three colour figures (Shen & Yeh, 1987: 66, Figs. 18–20), and from Malaysia (Mohsin & Ambak, 1996: 486, 732, Fig. 375). The last-mentioned authors provided no specific localities in Malaysia; they gave the distribution only as southern Japan to the South China Sea.

The first author collected two specimens of this species (BPBM 21948, 121 and 154 mm SL) from Tioman Island, 32 km off the coast of Peninsula Malaysia at nearly 3°N. They were speared over sand in 5 m in 1977, and were initially identified only to genus. The colour photo of Fig. 2 was taken of the largest, a male. The smaller specimen is a mature female.

We correct here the listing of *Iniistius evides* as a synonym of *I. baldwini*. We first noted a difference in the prominent black spot dorsally on the body of the two species. It is centered on the ninth lateral-line scale of *I. baldwini* (the eighth scale in *I. evides*), is broader, and expands well below as well as above the lateral line (Fig. 3). In addition, males of *I. baldwini* have a large black spot posteriorly on the anal fin that is lacking in *I. evides*, and they may have a few lesser black markings in the median fins. We present also a photograph of a juvenile of *I. baldwini* as Fig. 4. We have no specimens of juvenile *I. evides*, but the two smallest GNM specimens, 125 and 130 mm SL seem to be in transition from the late juvenile to the mature stage. The dorsal spot is dark olive, without bluish-white margin, and without a preceding orangish zone; both specimens lack the oblique yellow bands in the anal fin, having only a small yellow spot between each ray. The smallest specimen has a few scales along the back with a blackish spot as seen in juveniles of *I. baldwini*.

We also report the following morphological differences: the head of *I. baldwini* is a little longer, 32.2–33.8% SL in five adult specimens, 146–173 mm SL, compared to 29.7–31.8% SL in 12 specimens of *I. evides*, 121–145 mm SL, and the paired fins are shorter, especially the pelvics, 18.5–20.0% SL, compared to 22.8–29.3% SL in *I. evides*.

Randall & Earle (2002: 395) listed 13 lots of *Iniistius baldwini* from the Hawaiian Islands in the Bishop Museum and the U.S. National Museum of Natural History, including the holotypes of *I. baldwini* and its synonym *I. jenkinsi* (Snyder). In addition, the Bishop Museum has specimens identified as *I. baldwini* from the D'Entrecasteaux Islands, Papua New Guinea (an adult is illustrated by Randall & Earle, 2002: pl. II, fig. B), New Britain (BPBM 39058, 97 mm), Solomon Islands (BPBM 15569, 65 mm), and American Samoa (BPBM 17453, 74 mm). These seem to differ from Hawaiian specimens only in having a smaller dorsal black spot on the body.

Fourmanoir (1967: 269, Fig. 2) described the razorfish *Hemipteronotus maculosus* as a new species from ten specimens, 110–150 mm SL, that he found in the collection of the Oceanographic Institute in Nha-Trang, Vietnam. He selected one of 12.5 cm as the holotype, which he deposited in the Muséum National d'Histoire Naturelle in Paris as no. 1965-245. His species is clearly *Iniistius evides*, not a synonym of *I. baldwini*.

LITERATURE CITED

Fourmanoir, P., 1967. Sur cinq nouvelles espèces de poissons du Vietnam. *Bulletin du Muséum National d'Histoire Naturelle*, sér. 2, **39**: 267–274.

Henn, A. W. 1928. List of types of fishes in the collection of the Carnegie Museum on September 1, 1928. *Annals Carnegie Museum* **19**: 51–99.

Ibarra, M. and D. J. Stewart. 1987. Catalogue of type specimens of Recent fishes in Field Museum of Natural History. *Fieldiana, Zoology*, new series, no. **35**: 1–112.

Jordan, D. S. & R. E. Richardson, 1909. A catalog of the fishes of the island of Formosa, or Taiwan, based on the collections of Dr. Hans Sauter. *Memoirs of the Carnegie Museum*, **4**: 159–204.

Kyushin, K., K. Amaoka, K. Nakaya, H. Ida, Y. Tanino & T. Senta. *Fishes of the South China Sea*. Japan Marine Fishery Resource Research Center. 333 pp. (in Japanese and English).

Mohsin, A. K. M. & M. A. Ambak. 1996. *Marine Fishes and Fisheries of Malaysia and Neighbouring Countries.* Serdang: Universiti Pertanian Malaysia Press. xxxvi + 744 pp.

Parenti, P. & J .E. Randall, 2000. An annotated checklist of the species of the labroid fish families Labridae and Scaridae. *Ichthyological Bulletin of the J. L. B. Smith Institute of Ichthyology,* No. **68**: 1–97.

Randall, J. E. 1996. *Shore Fishes of Hawai'i*. Natural World Press, Vida , OR. 126 pp.

Randall, J. E. & M. L. Bauchot. 1993. Case 2842. *Naucrates* Rafinescque, 1810 and *Xyrichtys* Cuvier, 1814 (Osteichthyes, Perciformes): Proposed conservation. *Bulletin of Zoological Nomenclature* **50**: 277–281.

Randall, J. E. & J. L. Earle, 2002. Review of the Hawaiian razorfishes of the genus *Iniistius* (Perciformes: Labridae). *Pacific Science*, **56**: 389–402.

Randall, J. E., J. L. Earle & L. A. Rocha. In press. *Xyrichtys pastellus*, a new razorfish from the southwest Pacific, with discussion of the related *X. sciistius* and *X. woodi*. *Aqua*

Shen, S.-C. & H.-S. Yeh, 1987. Study on the razorfish genus *Xyrichtys* (Labridae) of Taiwan. *Journal of the Taiwan Museum*, **40**: 61–71.