Silurus imberbis Gmelin 1789, a senior synonym of the platycephalid *Inegocia japonica* (Cuvier 1829), with a proposal to suppress the name

Hisashi Imamura · Taichi Nagao

H. Imamura (✉) · T. Nagao

Laboratory of Marine Biology and Biodiversity (Systematic Ichthyology), Faculty of Fisheries Sciences, Hokkaido University, 3-1-1 Minato-cho, Hakodate, Hokkaido 041-8611, Japan

e-mail: imamura@fish.hokudai.ac.jp

Suggested running head: Platycephalid synonymy

Manuscript category: Short Report

Number of text pages: 10

Number of figures: 1

Abstract *Silurus imberbis* Gmelin 1789 is a replacement name for *Silurus inermis* Houttuyn 1782, a primary junior homonym of *Silurus inermis* Linnaeus 1766. Although *S. imberbis* has recently been regarded as a junior synonym of *Silurus asotus* Linnaeus 1758, it is considered here to be conspecific with *Inegocia japonica* (Cuvier *in* Cuvier and Valenciennes 1829) based on a comparison of the original description of *S. inermis* Houttuyn with specimens of *I. japonica*. Although *S. imberbis* has priority over *I. japonica*, an argument for a "reversal of precedence" of the International Code of Zoological Nomenclature is presented, establishing *I. japonica* as the valid name for the species. Although "*Platycephalus inermis* Jordan and Evermann 1902" has been regarded as an available name, it is not considered to be available.

Keywords *Silurus imberbis* · *Silurus inermis* · *Inegocia japonica* · homonym · synonym · Platycephalidae

Introduction

Houttuyn (1782) originally described *Silurus inermis* from Japan. Gmelin (1789) proposed *Silurus imberbis* as a replacement name for *Silurus inermis* Houttuyn 1782, a primary junior homonym of *Silurus inermis* Linnaeus 1766. Recently Ferraris (2007) considered *Silurus imberbis* to be a junior synonym of the silurid *Silurus asotus* Linnaeus 1758. In contrast, Jordan and Evermann (1902) treated *Silurus imberbis* as a platycephalid, *Platycephalus inermis* (Houttuyn), but no gave reason for the determination. Jordan and Richardson (1908) speculated that *Silurus imberbis* (as *Silurus inermis* Houttuyn) might be conspecific with *Inegocia japonica* (Cuvier *in* Cuiver and Valenciennes 1829) [as "*Thysanophrys japonicus* (Tilesius 1812)"] as the color description of *S. inermis* Houttuyn corresponds with that of *I. japonica*.

After examining the morphological description of *Silurus inermis* Houttuyn, for which the type is unknown (Eschmeyer et al. 1998; see also Boeseman 1995, who considered Houttuyn's types must be lost), and specimens of *Inegocia japonica*, we support Jordan and Richardson's (1908) proposition. Although *S. imberbis* would therefore become the senior synonym of *I. japonica*, we feel the "reversal of precedence" of ICZN (1999: Art. 23.9) should be invoked to preserve nomenclatural stability. We discuss our observations, reasoning and conclusion below.

Counts and measurements were made according to Hubbs and Lagler (1958). Measurements were made with calipers to the nearest 0.1 mm accuracy. Institutional acronyms are from Eschmeyer (1998), except for Hokkaido University Museum, Hakodate (HUMZ) and National Museum of Nature and Science, Tokyo (NSMT). Standard length is abbreviated as SL.

Results and discussion

Houttuyn (1782) stated that *Silurus imberbis* (as *S. inermis*) has a very flat head, small body scales, two dorsal fins and no barbels [see also Jordan and Richardson (1908), who translated Houttuyn's (1782) description into English], characters that agree with members of the family Platycephalidae. In contrast, representatives of the Siluridae lack scales, have a single dorsal fin and possess barbels (Burgess 1989). Although Houttuyn (1782) pointed out that the species has large eyes, which are close together as in the Uranoscopidae, it was also described as having the posterior margin of the gill membrane with two fine spines, a feature of platycephalids (Imamura 1996), but not uranoscopids (e.g., Pietsch 1989). The species was also described as having a reddish body and black and white spots on all fins. Although no Japanese platycephalids have this coloration, *Inegocia japonica* comes close in having a reddish brown body, and no white spots but brownish to black spots on all fins except for its pale anal fin (Fig. 1). Other platycephalids lack this color combination, especially the brownish to black spots on both dorsal and caudal fins. Jordan and Richardson (1908) also recognized the similarity of color in *S. inermis* Houttuyn and *I. japonica*. *Silurus imberbis* was described by Houttuyn (1782) as having 7 dorsal fin spines, 10 anal fin rays and jaws without teeth, while *I. japonica* usually has 9 dorsal spines, including a single isolated short anteriormost spine, 11–13 (mode 12) anal fin rays and jaws with minute villiform teeth. Similar differences between original descriptions in old literature and type specimens, especially with regard to fin ray counts, have been observed in several species of the Platycephalidae. For example, although *Platycephalus endrachtensis* Quoy and Gaimard 1825 was originally described as possessing 14 second dorsal and anal fin rays, it was revealed that the lectotype and paralectotype have 13 rays in the fins (Imamura 2008). Bleeker (1853) originally described *Platycephalus polijodon* as having 2 + 12 + 7 (thus 21 in total) pectoral fin rays, while Imamura and Amaoka (1996) pointed out two specimens of the species, including the holotype, possess 22–23 rays. We regard *S. imberbis* and *I. japonica* as being conspecific and support Jordan and Richardson's (1908) earlier assumption.

According to the ICZN (1999: Art. 60.2), if a rejected junior homonym has one or more

available and potentially valid synonyms, the oldest of these becomes the valid name of the taxon with its own authorship and date. However, if a rejected junior homonym has a replacement name, the name competes with any synonym recognized later for priority (ICZN 1999: Art. 60.3). Therefore, *Silurus imberbis*, the replacement name for *S. inermis* Houttuyn, has priority over *I. japonica*. However, *S. imberbis* does not appear to have been used as a valid name after 1899 and *I. japonica* has been regarded as valid in more than 25 publications by more than10 authors in the immediately proceeding 50 years and encompassing a span of not less than 10 years (e.g., Anonymous 1962; Masuda et al. 1975; Knapp 1984, 1992, 1999, 2000; Ochiai 1984; Gloerfelt-Tarp and Kailola 1984; Sainsbury et al. 1985; Shao and Chen 1987, 1993; Paxton et al. 1989, 2007; Imamura 1996, 1997, 2005, 2010; Lee and Joe 1998; Nakabo 2000, 2002; Sadovy and Cornish 2000; Hutchins 2001; Youn 2002; Kim et al. 2005; Imamura et al. 2006; Imamura and Yoshino 2009). These conditions satisfy an article of ICZN (1999: Art. 23.9.1) dealing with a reversal of precedence. We therefore recognize the precedence of *I. japonica* over *S. imberbis* and consider the former to be valid.

Eschmeyer (1998) regarded "*Platycephalus inermis* Jordan and Evermann 1902" as an available species. Jordan and Evermann (1902) treated a specimen from Keerun, Taiwan, as:

169. *Platycephalus inermis* (Houttuyn)
(*Platycephlus crocodilus* Tilesius; *Platycephalus guttatus* Schlegel.)

We interpret Jordan and Evermann (1902) as recognizing *Platycephalus inermis* (Houttuyn) as a valid species of the family Platycephalidae, and *P. crocodilus* and *P. guttatus* as junior synonyms of *P. inermis*. Therefore, "*Platycephalus inermis* Jordan and Evermann 1902" is not an available name.

After the examination of the specimen regarded as *P. inermis* (Houttuyn) by Jordan and Evermann (1902) (SU 7973), it was found the specimen to be identical with *Cociella crocodia* in

this study. Therefore, Jordan and Evermann (1902) mistakenly recognized conspecifisity of *P. inermis* (Houttuyn) (= *I. japonica*) and *C. crocodila*.

Material examined. *Inegocia japonica*: HUMZ 190441–190443, 3 specimens, 152.4–180.2 mm SL, Nha Trang, Vietnam; HUMZ 193320, 163.8 mm SL, Bintan Island, Indonesia; NTM S.10938-012, 143.5 mm SL, Northern Territory, Australia; NMW 11276, 94.6 mm SL, Tokyo, Japan; WAM P. 5885-001, 118.0 mm SL, Western Australia. Other materials, deposited at AMS, MNHN and NSMT, were listed by Imamura and Yoshino (2009).

Cociella crocodila: SU 7973, 171.8 mm SL, port at northern end of Keerun, Taiwan.

Acknowledgments We are deeply indebted to M. Yabe (HUMZ) for providing various suggestions during this study. Our thanks also go to M.F. Gomon (NMV) for his critical reading of the draft manuscript. We also express sincere thanks to M.J.P. van Oijen (RMNH) for providing an English translation of Houttuyn (1782) and information on Houttuyn's (1782) type specimens. We are grateful to H. Larson, G. Dally and R. Williams (NTM), M. McGrouther (AMS), S. Morrison (WAM), P. Pruvost (MNHN), G. Shinohara (NSMT) and H. Wellendorf (NMW) for providing access to specimens when the first author (HI) visited their museums. D. Catania (CAS) kindly sent us the specimen of *C. crocodila*. The first author was provided generous support by Japan Society for the Promotion of Science when collecting specimens in Vietnam and Indonesia.

References

Anonymous (1962) Platycephalidae. In: Institute of Zoology, Academia Sinica, Institute of Oceanology, Academia Sinica, and Shanghai Fisheries College (eds) Fishes of the South

China Sea. Science Press, Beijing, pp 909–937

Bleeker P (1853) Diagnostische beschrijvingen van nieuwe of weinig bekende vischsoorten van Batavia. Nat Tijdschr Ned Indië 4:451–610

Boeseman M (1995) Martinus Houttuyn (1720–1798) and his Japanese fishes. Uo (Fish) (43):1–9

Burgess WE (1989) An atlas of freshwater and marine catfishes. A preliminary survey of the Siluriformes. TFH Publications, Inc, Neptune

Cuvier G, Valenciennes A (1829) Histoire naturelle des poissons. Tome quatrième. Livre quatrième. Des acanthoptérygiens à joue cuirassée. Hist Nat Poiss 4

Eschmeyer WN (1998) Collection abbreviations. In: Eschmeyer WN (ed) Catalog of fishes. Vols 1–3. Calif Acad Sci, San Francisco, pp 16–22

Eschmeyer WN, Ferraris CJ, Hoang MD, Long DJ (1998) Part 1. Species of fishes. In: Eschmeyer WN (ed) Catalog of fishes. Vols 1–3. Calif Acad Sci, San Francisco, pp 25–1820

Ferraris CJ Jr (2007) Checklist of catfishes, recent and fossil (Osteichthyes: Siluriformes), and catalogue of siluriform primary types. Zootaxa 1418:1–628

Gmelin JF (1789) Caroli a Linné ... Systema naturae per regna tria naturae, secundum classes, ordines, genera, species; cum characteribus, differentiis, synonymis, locis. Editio decimo tertia, aucta, reformata 1:1033–1516

Gloerfelt-Tarp T, Kailola PJ (1984) Trawled fishes of southern Indonesia and northern Australia. Australian Development Assistance Bureau, Directorate General of Fisheries, Indonesia, and German Agency for Technical Cooperation, Jakarta

Houttuyn M (1782) Beschryving van eenige Japanese visschen, en andere zee-schepzelen. Verhandelingen der Hollandsche Maatschappij der Wetenschappen, Haarlem 20:311–350

Hubbs CL, Lagler KF (1958) Fishes of the Great Lakes region. Bull Cranbrook Inst Sci 26:1–213, 44 pls

Hutchins JB (2001) Checklist of the fishes of Western Australia. Rec West Aust Mus Suppl

(63):9–50

ICZN (International Commission on Zoological Nomenclature) (1999) International code of zoological nomenclature. 4th edition. The International Trust for Zoological Nomenclature, London

Imamura H (1996) Phylogeny of the family Platycephalidae and related taxa (Pisces: Scorpaeniformes). Spec Divers 1:123–233

Imamura H (1997) Platycephalidae, Bembridae, Plectrogeniidae (in part), Platycephalidae, Hoplichthyidae. In: Okamura O, Amaoka K (eds) Sea fishes of Japan. Yama-Kei Publishers Co Ltd, Tokyo, pp 218–221

Imamura H (2005) Platycephalidae. In: Matsuura K, Kimura S (eds) Fishes of Libong Island, west coast of southern Thailand. Ocean Res Inst Univ Tokyo, Tokyo, pp 24–25

Imamura H (2008) Synonymy of two species of the genus *Platycephalus* and validity of Platycephalus westraliae (Teleostei: Platycephalidae). Ichthyol Res 55: 399–406

Imamura H (2010) A new species of the flathead genus *Inegocia* (Teleostei: Platycephalidae) from East Asia. Bull Nat Mus Nat Sci, Ser A Suppl 4: 21–29

Imamura H, Amaoka K (1996) *Rogadius serratus* (Cuvier, 1829), a senior synonym of *R. polijodon* (Bleeker, 1853) (Scorpaeniformes: Platycephalidae). Ichthyol Res 43: 97–100

Imamura H, Komada M, Yoshino T (2006) Record of the flathead fishes (Perciformes: Platycephalidae) collected from Nha Trang, Vietnam. Coast Mar Sci 31:293–300

Imamura H, Yoshino T (2009) Authorship and validity of two flatheads, *Platycephalus japonicus* and *Platycephalus crocodilus* (Teleostei: Platycephalidae). Ichthyol Res 56: 308–313

Jordan DS, Evermann BW (1902) Notes on a collection of fishes from the island of Formosa. Proc US Nat Mus 25:315–368

Jordan DS, Richardson RE (1908) A review of the flat-heads, gurnards, and other mail-cheeked fishes of the waters of Japan. Proc US Nat Mus 33: 629–670

Kim IS, Choi Y, Lee CL, Lee YJ, Kim BJ, Kim JH (2005) Illustrated book of Korean fishes. Kyohak Publishing, Co Ltd, Seoul

Knapp LW (1984) Platycephalidae. In: W. Fischer and G. Bianchi (eds) FAO species identification sheets for fishery purposes. Western Indian Ocean (fishing area 51). Vol 3. FAO, Rome, 22 pp

Knapp LW (1992) Status of type specimens of *Platycephalus rodericensis* Cuvier, 1829 and *P. borboniensis* Cuvier, 1829 (Pisces: Platycepalidae). Proc Biol Soc Wash 104:23–39

Knapp LW (1999) Platycephalidae. In: Carpenter KE, Niem VH (eds) FAO species identification guide for fishery purposes. The living marine resources of the western Central Pacific. Vol 4. Bony fishes part 2 (Mugilidae to Carangidae). FAO, Rome, pp 2385–2421

Knapp LW (2000) Family Platycephalidae (flathead). In: Randall JE, Lim KKP (eds). A checklist of the fishes of the South China Sea. Raffles Bull Zool 2000 Suppl No 8, Singapore, pp 607–608

Lee CL, Joo DS (1998) Taxonomic review of flathead fishes (Platycephalidae, Scorpaeniformes) from Korea. Korean J Ichthyol 10: 216–230

Linnaeus C (1758) Systema naturae, 10th ed vol 1. Laurentii Salvii, Holmiae

Linnaeus C (1766) Systema naturae, 12th ed vol 1. Laurentii Salvii, Holmiae

Masuda H, C Araga, T Yosihno (1975) Coastal fishes of southern Japan. Tokai Univ Press, Tokyo

Nakabo T (2000) Platycephalidae. In: Nakabo T (ed) Fishes of Japan with pictorial keys to the species, 2nd edn. Tokai Univ Press, Tokyo, pp 615–620, 1530–1531

Nakabo T (2002) Platycephalidae. In: Nakabo T (ed) Fishes of Japan with pictorial keys to the species, English edn. Tokai Univ Press, Tokyo, pp 615–620, 1523–1524

Ochiai A (1984) Platycephalidae. In: Masuda H, Amaoka K, Araga C, Uyeno T, Yoshino T (eds) The fishes of the Japanese Archipelago. English text and plates. Tokai Univ Press, Tokyo, pp 321–322, pls 288–289

Paxton JR, Hoese DF, Allen GR, Hanley JE (1989) Zoological catalogue of Australia. Vol 7.

Pisces. Petromyzontidae to Carangidae. Aust Govern Publ Serv, Canberra

Paxton JR, Hoese DF, Gates JE and Bray DJ (2007) Platycephalidae. In: Beesley PL, Wellas A (eds) Zoological catalogue of Australia. Vol 35, fishes, part 2. ABRS & CSIRO Publishing, Collingwood, pp 933–948

Pietsch TW (1989) Phylogenetic relationships of trachinoid fishes of the family Uranoscopidae. Copeia 1989:253–303

Quoy JRC, Gaimard JP (1825) Chapter IX. Description des Poissons. In: Freycinet L de. Voyage autour du Monde … exécuté sur les corvettes de L. M. “L'Uranie” et “La Physicienne,” pendant les années 1817, 1818, 1819 et 1820. Paris. Voyage Uranie, Zool

Sadovy Y, Cornish AS (2000) Reef fishes of Hong Kong. Hong Kong Univ Press, Hong Kong

Sainsbury KJ, Kailola PJ, Leyland GG (1985) Continental shelf fishes of northern and north-western Australia. Clouston and Hall and Peter Pownall Fish Information Serv, Canberra

Shao KT, Chen JP (1987) Fishes of the family Platycephalidae (Teleostei: Platycephaloidei) of Taiwan with descriptions of two new species. Bull Inst Zool Academia Sinica 26:77–94

Shao KT, Chen JP (1993) Platycephalidae. In: Shen SC (ed) Fishes of Taiwan. Dep Zool Nat Taiwan Univ, Taipei, pp 255–260

Youn CH (2002) Fishes of Korea with pictorial key and systematic list. Acad Book, Seoul

Figure Caption

Fig. 1 Lateral view of *Inegocia japonica*, HUMZ 193320, 163.8 mm SL, from Bintan Island, Indonesia