

Case 3383***Gobius lagocephalus* Pallas, 1770 (currently *Sicyopterus lagocephalus*; Osteichthyes, Teleostei, GOBIIDAE): proposed suppression of the specific name**

Wm. Leo Smith and John S. Sparks

*American Museum of Natural History, Department of Ichthyology,
Central Park West at 79th Street, New York, New York 10024, U.S.A.
(e-mails: leosmith@amnh.org and jsparks@amnh.org)*

Abstract. The purpose of this application, under Article 81.1 of the Code, is to suppress the name *Gobius lagocephalus* Pallas, 1770 (currently *Sicyopterus lagocephalus*) commonly used for a species of sicydiine goby. The name was originally applied to a species from the western Atlantic, but is currently applied to various populations of sicydiine gobies in the Indo-West Pacific. The species identity of *Gobius lagocephalus* is uncertain, and previous neotype designations were based on Indo-Pacific species and are rendered invalid. Further use of this name will disturb stability in the nomenclature of GOBIIDAE. The name *Gobius lagocephalus* has not been used for an Atlantic sicydiine goby since 1837. If a neotype is designated based on an Indo-West Pacific species, the use of the current combination *Sicyopterus lagocephalus* will be confusing and not consistent with the original description. It is proposed to suppress the name *Gobius lagocephalus* Pallas, 1770 to avoid further confusion in gobiid nomenclature.

Keywords. Nomenclature; taxonomy; Teleostei; GOBIIDAE; SICYDIINAE; *Gobius*; *Sicyopterus lagocephalus*; western Atlantic; Indo-West Pacific; goby.

1. Pallas (1770) described *Gobius lagocephalus* from a single specimen from the zoological collection of St. Petersburg (presumably from the Kunstkammer, which is now housed at the St. Petersburg Zoological Museum). The original description of the goby, to which the name was applied, was somewhat brief, but it did provide an illustration that is clearly identifiable as a sicydiine goby. This species had been described earlier by Koelreuter (1764) who did not use binominal nomenclature. Koelreuter (1764) did not provide locality information; however, Pallas (1770) wrote, '*Pisculum ipse ex America habui Koelreuterus e specimen Musei Petropolitani descripsit, ignoravit autem patriam*'. We translate this as, 'I myself regard this small fish as being from America. Koelreuter described [the species] from a specimen in the St. Petersburg Museum, however he was ignorant of [its] native land'. The limited character states that are provided by Pallas (e.g. number of rays in the second dorsal fin [10]) are inconclusive with regard to establishing the specific identity of this name; however, the pectoral-ray counts provided by Pallas exclude *Gobius lagocephalus* from *Sicyopterus*. Furthermore, the specimen upon which Pallas based his description has been lost (see Kottelat, in press).

2. The present difficulties not only arise from Pallas's work but also from the frequent use of the name *Gobius lagocephalus* for a taxon from the Indo-West Pacific, a region that is far removed from the type locality ('American Seas'). The first use of *lagocephalus* for an Indo-West Pacific sicydiine goby was by Valenciennes in Cuvier & Valenciennes (1837), who included *Gobius lagocephalus* in a newly described genus *Sicydium* Valenciennes in Cuvier & Valenciennes, 1837 (p. 167). In that study, *Sicydium lagocephalus* was attributed, without justification, to the Mascarene region. Since Valenciennes's incorrect attribution, *lagocephalus* has frequently but intermittently been used for various populations of Indo-West Pacific (primarily Mascarene) sicydiine gobies of the genus *Sicyopterus* Gill, 1860 (p. 101). This assignment to *Sicyopterus* began with Bleeker (1876, p. 276) and has been generally followed since (e.g. Kiener, 1963; Allen, 1991; Reinthal & Stiassny, 1991; Watson et al., 2000; Keith et al., 2005a). To complicate matters, on two separate occasions invalid neotype designations have been made based on specimens collected in the Mascarene region. Fricke (1999, p. 523) designated a neotype for *Gobius lagocephalus* and many other species, but these designations were invalid because they did not satisfy several Articles of the Code (75.3, 75.3.2, 75.3.4, 75.3.5 and 75.3.6 – Neotype qualifying conditions). Shortly thereafter, Fricke (2000) rescinded his neotype designations. Watson et al. (2000, p. 13) followed up Fricke's work by designating a neotype for *G. lagocephalus*. However, this designation is also invalid because the Watson et al. (2000) study did not discuss Pallas's description, the need for designating a neotype, or their efforts to locate type material. Therefore, the conditions of Article 75.3 (neotype qualifying designations) were not met. Sparks & Nelson (2004) discussed the availability of the name *Gobius lagocephalus* and concluded at that time that it must be considered a nomen dubium.

3. If the existing name-bearing type of a species-group taxon is indeterminate (i.e. a nomen dubium), the introduction to the Code makes it clear that an application should be made to the Commission to either suppress the name or designate a neotype. In this particular case, there are three options, which we list and discuss below; however, it is important to note that *Gobius lagocephalus* is the oldest available name for any sicydiine goby:

- (1) designating a neotype for a currently recognized species that is most consistent with Pallas's description (i.e. assigning the name to any one of the species currently assigned to the Atlantic genus *Sicydium*);
- (2) designating a neotype that is most consistent with current usage (*Sicyopterus*);
- (3) suppressing the name *Gobius lagocephalus* and placing it on the Official Index of Rejected and Invalid Specific Names in Zoology.

The choice among these three options should be based on stabilizing nomenclature and Article 75.3 of the Code (neotype qualifying designations). We will discuss all three options; however, we believe that suppression of the name *Gobius lagocephalus* Pallas, 1770 is preferable in this case. Pallas's original description notes that he regards the specimen as originating from 'American Seas', although with some uncertainty. This locality information is supported by his reference to the holotype having 15 pectoral-fin rays. Generally speaking, the western Atlantic and Caribbean sicydiine gobies of the genus *Sicydium* and the two *Cotylopus* species (Réunion and Mayotte (Comoros)) have lower pectoral-fin ray counts than the Indo-West Pacific *Sicyopterus* species ([17–22 rays in *Sicyopterus*]; Watson, 1995; Watson, 2000;

Watson et al., 2000; Keith et al., 2005b), which would be more consistent with Pallas's count of 15 rays. Therefore, a correct neotype designation for *Gobius lagocephalus* would be most consistent with one of the *Sicydium* gobies from the 'American seas.' However, the designation of a neotype that is consistent with the type-locality and species description that would fix the name *Gobius lagocephalus* to any one taxon of *Sicydium* goby would be arbitrary and threaten the usage of names of the well-established Atlantic and Caribbean species of *Sicydium*. This is particularly true because the name *lagocephalus* has not been used for an 'American' sicydiine since Valenciennes in Cuvier & Valenciennes (1837) misattributed the name to a species from the Mascarene region. The second option of designating a neotype that is most consistent with recent usage (e.g. Fricke, 1999; Watson et al., 2000; Keith et al., 2005a) contradicts two Articles of the Code, 75.3.5 and 75.3.6. Designating a neotype from the Mascarene region would violate these two Articles because a *Sicyopterus* assignment would be inconsistent with the original description (Article 75.3.5) because of inconsistent pectoral-ray counts and because it would be designating a neotype from nearly halfway around the world, which is not proximate to the original type locality (Article 75.3.6). Furthermore, if a western Indian Ocean sicydiine were to be designated as a neotype, it would be inappropriate for it to be a *Sicyopterus* species when only the two *Cotylopus* Guichenot, 1863 (p. 9) species have pectoral-fin ray counts that are consistent with Pallas's description. However, the designation of a neotype that would fix the name *Gobius lagocephalus* to either one of the *Cotylopus* species would also be arbitrary and threaten the usage of either species-group names of this well-established Indian Ocean genus. Given that these previous two options would threaten the usage of well-established names and/or contradict one or more of the neotype qualifying designations (Article 75.3), we believe that the best action is to suppress the name *Gobius lagocephalus* Pallas, 1770 and place it on the Official Index of Rejected and Invalid Specific Names in Zoology. It is also important to note that there are numerous available names for sicydiine gobies described from the Mascarene region that were synonymized with *G. lagocephalus* by Watson et al. (2000) when they invalidly designated a neotype for this species-group name. Although we recognize that this eliminates a commonly used species-group name, we believe that it is the only justifiable action that does not threaten usage of well-established and nomenclaturally unproblematic names or violate any Articles or guidelines of the Code.

4. In order to avoid confusion and promote stability, as outlined in Article 81, we propose the suppression of the specific name *Gobius lagocephalus* Pallas, 1770. We have discussed this proposal with many of our colleagues within ichthyology and herpetology. Everyone that we have spoken to (including various researchers at the American Museum of Natural History, Los Angeles County Museum, Smithsonian Institution, University of Michigan, and Villanova University) has agreed with our recommendation that the name should be suppressed because the problems outweigh any benefits that designating a neotype would provide.

5. The name *Gobius lagocephalus* Pallas, 1770 is currently used for a large number of species in the Indo-West Pacific, the situation that follows the assignments by Watson et al. (2000) and Keith et al. (2005). Until detailed phylogenetic and taxonomic investigations are undertaken, all of the names synonymised with *Sicyopterus lagocephalus* by Watson et al. (2000) that were not dealt with in Sparks

& Nelson (2004) should be recognized: *Sicydium laticeps* Valenciennes in Cuvier & Valenciennes, 1837; *Sicydium macrostetholepis* Bleeker, 1853; *Sicydium gymnauchen* Bleeker, 1858; *Sicydium taeniurum* Günther, 1877; *Sicydium halei* Day, 1888; *Sicyopterus tauae* Jordan & Seale, 1906; *Sicyopterus extraneus* Herre, 1927; *Bryanina inana* Fowler, 1932; *Sicyopterus eudentatus* Parenti & Maciolek, 1993. The oldest available name for a *Sicyopterus* from the Mascarene region is *Sicyopterus laticeps*, but other species (e.g. *Sicyopterus punctissimus* Sparks & Nelson, 2004) are also found in that region, so no broad generalisations can be made.

6. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary power to suppress the name *lagocephalus* Pallas, 1770, as published in the binomen *Gobius lagocephalus*, for the purposes of the Principle of Priority but not for those of the Principle of Homonymy;
- (2) to place on the Official Index of Rejected and Invalid Specific Names in Zoology the name *lagocephalus* Pallas, 1770, as published in the binomen *Gobius lagocephalus* and as suppressed in (1) above.

Acknowledgements

We thank A.M. Bauer, T. Grant, D.W. Nelson and S.A. Schaefer for discussions and for offering opinions about this taxonomic issue. We also thank W.N. Eschmeyer for relaying information about the loss of the holotype of *Gobius lagocephalus*. Finally, we thank D.W. Nelson and D. Ross for help with the translation of Pallas (1770).

References

- Allen, G.R. 1991. *Field guide to the freshwater fishes of New Guinea*. 268 pp. Christensen Research Institute, Madang, Papua New Guinea.
- Cuvier, G. & Valenciennes, A. 1837. *Histoire naturelle des poissons*, vol. 12. 507 pp. Levrault, Paris.
- Fricke, R. 1999. *Fishes of the Mascarene Islands (Réunion, Mauritius, Rodriguez): An annotated checklist, with descriptions of new species*. 759 pp. Koeltz Scientific Books, Koenigstein.
- Fricke, R. 2000. Invalid neotypes. *Copeia*, **2000**: 639–640.
- Keith, P., Galewski, T., Cattaneo-Berrebi, G., Hoareau, T. & Berrebi, P. 2005. Ubiquity of *Sicyopterus lagocephalus* (Teleostei: Gobioidae) and phylogeography of the genus *Sicyopterus* in the Indo-Pacific area inferred from mitochondrial cytochrome *b* gene. *Molecular Phylogenetics and Evolution*, **37**: 721–732.
- Keith, P., Hoareau, T. & Bosc, P. 2005a. The genus *Cotylopus* (Teleostei: Gobioidae) endemic to the rivers of islands of the Indian Ocean with description of a new species from Mayotte (Comoros). *Journal of Natural History*, **39**: 1395–1405.
- Kiener, A. 1963. Poissons, pêche et pisciculture à Madagascar. *Centre Technique Forestier Tropical. Nogent-sur-Marne (France)*, **24**: 1–244.
- Koelreuter, J. 1764. Descriptions piscium rariorum e museo petropolitano exceptorum continuatio. *Novi commentarii Academiae scientiarum imperialis petropolitanae*, **9**: 420–470.
- Kottelat, M. In press. Nomenclatural status and identity of *Gobius lagocephalus* (Teleostei: Gobiidae). *Molecular Phylogenetics and Evolution*.
- Pallas, P.S. 1770. *Spicilegium Zoologicum quibus novae imprimis et obscurae animalium species iconibus, descriptionibus atque commentariis illustrantur*, vol. 1, fasc. 8. 56 pp. Gottl. August. Lange, Berolini.

- Reinthal, P.N. & Stiassny, M.L.J.** 1991. The freshwater fishes of Madagascar: A study of an endangered fauna with recommendations for a conservation strategy. *Conservation Biology*, **5**: 231–241.
- Sparks, J.S. & Nelson, D.W.** 2004. Review of the Malagasy sicydiine gobies (Teleostei: Gobiidae), with descriptions of a new species and comments on the taxonomic status of *Gobius lagocephalus* Pallas, 1770. *American Museum Novitates*, **3440**: 1–20.
- Watson, R.E.** 1995. Review of the freshwater goby genus *Cotylopus* (Teleostei: Gobiidae: Sicydiinae). *Ichthyological Exploration of Freshwaters*, **6**: 61–70.
- Watson, R.E., Marquet, G. & Pöllabauer, C.** 2000. New Caledonia fish species of the genus *Sicyopterus* (Teleostei: Gobioidae: Sicydiinae). *Aqua*, **4**: 5–34.

Acknowledgement of receipt of this application was published in BZN **63**: 153.

Comments on this case are invited for publication (subject to editing) in the *Bulletin*; they should be sent to the Executive Secretary, I.C.Z.N., c/o Natural History Museum, Cromwell Road, London SW7 5BD, U.K. (e-mail: iczn@nhm.ac.uk).