Supplemental Material 1
Critique of *Pogonophryne minor* Balushkin and Spodareva 2013

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Balushkin & Spodareva (2013) state that the paratype (ZIN no. 55238) of *Pogonophryne minor* sp. n. ("small specimen," 70 mm TL juvenile *P. marmorata*, Andriashev, 1967) differs from the adult (173 mm TL female) *P. marmorata* caught at the same locality (Ob' station 164, Davis Sea, January 17, 1957, depth 540-430 m) in having a narrower interorbital space, a larger eye and a longer mental barbel—character differences Andriashev (1967) attributed to age. The authors compare this specimen with another (holotype: ZIN no. 55237, 103.4 mm TL female; R/V *Chatyr-Dag* stn. 56, cruise 18, trawl 53, Mawson Sea, March 14, 1983, depth 420 m) and conclude that the two represent a new species—the "dwarf toad plunderfish" (so named because the holotype is supposedly mature at a smaller-than-normal size for the genus). They calculate, based on Kock & Kellerman (1991), that *P. minor* "can not exceed 150 mm" TL. Dwarfism has not been previously reported in notothenioid fishes and this purported example may simply reflect the range of variation in a genus that does not exceed about 340 mm TL (Eakin 1990). More material is needed to determine if this is a true example of dwarfism.

Dwarfism aside, *P. minor* differs in no significant way from *P. marmorata*, based on the evidence provided by the authors from seven specimens (106-173 mm TL) of *P. marmorata* and two type specimens of *P. minor*. They state that their "measurements based on large samples of two species" indicate that *P. marmorata* differs from the new species in having a short barbel (8.9-11.3 vs. 14.9-15.5% SL) with a short (3.4-5.3 vs. 5.5-6.4% SL) and narrow (1.5-2.2 vs. 2.6-2.8% SL) terminal expansion, a high and wide head (20.5-24.5 vs. 19.9-20.2% SL; 26.6-31.7 vs. 24.2-25.5% SL), and a wide interorbital space (4.7-5.8 vs. 4.3-4.6% SL).

Data from 32 specimens (84-227 mm TL) of *P. marmorata* from four different collections (Weddell Sea, 1985: ISH 50/85, 109/85, 122/85; South Orkney Islands, 1999) indicate a wider range of variation in the above characters than the authors present. A range of 8.9-15.9% SL (mean 12.9% SL) shows that there is no difference in barbel length between the two species. A range of 4.2-7.8% SL (mean 5.7% SL) shows that there is no difference in the length of the terminal expansion between the two species. (Width of the terminal expansion is variable in the "*P. marmorata*" group and therefore of no taxonomic significance, in my opinion. Far more important is the similarity, noted by the authors, in both "shape and structure" of the terminal expansion in both species.) A range of 3.9-6.1% SL (mean 4.8% SL) shows that there is no difference in interorbital width between the two species. A range of 19.4-25.7% SL (mean 22.8% SL) shows that there is no difference in head depth between the two species. A range of 26.0-35.9% SL (mean 29.9% SL) in head width does not overlap with *P. minor*, but this slight difference (head width greater than 26% SL for *P. marmorata* and less than 26% SL for *P. minor*) is likely not of significance as a diagnostic character.

Other purported differences between *P. marmorata* and *P. minor* noted by the authors include caudal-fin pattern (which in the above samples examined varies from dark and unstriped to

dark and striped to light and striped), dark color ("almost black in holotype" of *P.minor*) of the peritoneum, and length of pelvic fins (19.9-23.1 vs. 24.2-24.5% SL). Data from 24 specimens of *P. marmorata* (ISH collections referred to above) show a range in pelvic-fin length of 17.5-23.7% SL which supports the difference, albeit slightly.

In conclusion, the two type specimens of *P. minor* differ from *P. marmorata* in having slightly narrower heads, slightly longer pelvic fins, slightly narrower terminal expansions on their mental barbels and darker peritonea. Given the overall similarity between these two specimens (in more critical characters such as barbel structure, head shape and meristics) and *P. marmorata*, however, it seems unwarranted to suggest that they represent a new species based on relatively insignificant differences. *P. minor* is therefore best considered a junior synonym of *P. marmorata*.

ANDRIASHEV, A.P. 1967. A review of the plunder fishes of the genus *Pogonophryne* Regan (Harpagiferidae) with description of five new species from the East Antarctic and South Orkney Islands. In: ANDRIASHEV, A.P & USHAKOV, P.V. *eds. Biological Results of the Soviet Antarctic Expedition (1955–1958),* **3.** Leningrad: Academy of Sciences of the U.S.S.R, Zoological Institute, 389–412 [In Russian].

BALUSHKIN, A.V., & SPODAREVA, V.V. 2013. Dwarf toad plunderfish *Pogonophryne minor* sp. n. (Artedidraconidae; Notothenioidei; Perciformes)—a new species and one of the smallest species of autochthonous ichthyofauna of marginal seas of the Antarctic continent. *Journal of Ichthyology,* **53**, 1–6.

EAKIN, R.R. 1990. Artedidraconidae. *In* GON, O., & HEEMSTRA, P.C. *eds. Fishes of the Southern Ocean.* Grahamstown: J.L.B. Smith Institute of Ichthyology, 332–356.

KOCK, K.-H., & KELLERMANN, A. 1991. Reproduction in Antarctic notothenioid fish. *Antarctic Science,* **3**, 125–150.

Critique of *Pogonophryne pallida* Balushkin and Spodareva 2015

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In light of the continuing discovery of new species of *Pogonophryne*, it seems appropriate to comment on the status of *P. pallida*, considered herein a synonym of *P. immaculata*. Balushkin & Spodareva (2015) based their description of the "Pallid Plunderfish" on an adult holotype (ZIN 55973; female, 228 mm TL, Ross Sea). The authors distinguished their new species from *P. immaculata* by three main characters: 1) longer (12% SL vs. maximum 8.5% SL for *P. immaculata*) mental barbel of different structure (small processes distally resembling a "cat's paw"); 2) certain measurements (head width and depth, body depth and caudal-fin length); 3) paler, less distinct, color pattern. While the mental barbel of the specimen in question differs from any so far seen in the *P. albipinna* group in its length and ornamentation, the full extent of variation in this organ is unknown for the group. The few specimens of *P. immaculata* available exhibit tapered barbels ranging from a mere stub to nearly 9% SL. It is entirely possible that a longer, tapered but slightly embellished, barbel is within the range of variation, especially given the variation shown in other artedidraconid barbels (Eakin *et al*. 2001; Eastman & Eakin 2001; Eakin *et al*. 2006). The other differences given are not significant in distinguishing this specimen from *P. immaculata*: wider head (38.5% SL vs. 28.8-35.0% SL); deeper head (22.2% SL vs. 19.9-21.3% SL); deeper body at anal-fin origin (16.3% SL vs. 11.9-15.7% SL); total gill rakers on first gill arch (18 vs. 12-16). Upper lateral-line pores fall within the range for *P. immaculata* (23 vs. 19-28).

Given the minor differences noted above and the similarity between this specimen and *P. immaculata* in more critical characters (overall appearance and colour pattern, tapered barbel and meristics) and the absence of additional specimens and/or genetic evidence to the contrary, it seems unwarranted to conclude that it represents a new species.

BALUSHKIN, A.V., & SPODAREVA, V.V. 2015. New species of the toad plunderfish of the "Albipinna" group, genus *Pogonophryne* (Artedidraconidae) from the Ross Sea (Antarctica). *Journal of Ichthyology,* **55**, 757–764.

EASTMAN, J.T., & EAKIN, R.R. 2001. Mental barbel and meristic variation in the Antarctic notothenioid fish *Dolloidraco longedorsalis* (Perciformes: Artedidraconidae) from the Ross Sea. *Polar Biology,* **24**, 729–734.

EAKIN, R.R., EASTMAN, J.T., & JONES, C.D. 2001. Mental barbel variation in *Pogonophryne scotti* Regan (Pisces: Perciformes: Artedidraconidae). *Antarctic Sciemce,* **13**, 363–370.

EAKIN, R.R., EASTMAN, J.T., & VACCHI, M. 2006. Sexual dimorphism and mental barbel structure in the South Georgia plunderfish *Artedidraco mirus* (Perciformes: Notothenioidei: Artedidraconidae). *Polar Biology,* **30**, 45–52.