

SHORT REPORT

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Redescription of the Korean sandlance *Hypoptychus dybowskii* from Korea

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Abstract

Hypoptychus dybowskii, the Korean sandlance, is widespread in cold areas of the North Pacific. Although *H. dybowskii* has been considered to occur on the coast of Hamgyeongnam-do in Korea, the species is also distributed along the coast of Goseong-gun, Gangwon-do, south of Hamgyeongnam-do in the eastern part of the Korean Peninsula on the basis of newly collected specimens. In addition, many Koreans confuse *H. dybowskii* and *Ammodytes japonicus* (= *A. personatus* for Korean specimens) because the Korean common name or dialect of both species is “Yang-mi-ri”, yet the two species differ in their external morphology. *Hypoptychus dybowskii* differs from *A. japonicus* in the location of the origin of the dorsal fin and the number of dorsal and anal fin rays.

Keywords: Redescription, Misidentification, *Hypoptychus dybowskii*, Sand lance, *Ammodytes personatus*

Background

Fishes of the genus *Hypoptychus* Steindachner 1880 (family Hypoptychidae) occurs in cold areas of the North Pacific near Korea, Japan, and Russia (Froese and Pauly 2017). The single species of this genus, *Hypoptychus dybowskii* Steindachner 1880, has been recognized in those regions (Kim et al. 2005a; Senou 2013; Parin et al. 2014). In Korea, Mori and Uchida (1934) were the first to report *H. dybowskii* from the coast of Hamgyeongnam-do, North Korea, but no morphological description was provided. Subsequently, Chyung (1977) described the species morphology and distribution and defined the Korean common name as “Yang-mi-ri”. Subsequently, many Korean ichthyologists regarded the distribution of this species in Korea as on the coast of the East Sea (Kim et al. 2005a; Kim et al. 2005b). However, no additional confirmed record of this species has been reported south of Hamgyeongnam-do, except that of Lee et al. (1997), for which confirmation is required. Another issue is the incorrect identification of this species. Chyung (1977) named *Ammodytes personatus* Girard 1856 (revised to *Ammodytes japonicus* Duncker and Mohr 1939 for Korean specimens by Kim et al. 2017), which is similar to *H. dybowskii* in external shape. In Korean, *A. japonicus* is called “Kka-na-ri”; however, Korean people who are not ichthyologists called this species “Yang-mi-ri” rather than

“Kka-na-ri”. Subsequently, some researchers have used the incorrect scientific name or the Korean common name (Kim et al. 2008a; Lee et al. 2011; Kim et al. 2012). Providing wrong information can cause serious problems in communication and scholarship, so a correction is required.

Therefore, the present study provides a morphological description of *H. dybowskii* on the basis of new material from Korea and compares this species with *A. japonicus* (= *A. personatus* for Korean specimens) in terms of external morphology.

Methods

Two specimens of *H. dybowskii* were collected from Goseong-gun, Gangwon-do, Korean coast of the East Sea, with a hand net in May 2017. They were fixed as whole-body specimens in 99% ethanol. Counts and measurements follow Hubbs and Lagler (2004) using digital vernier calipers (to the nearest 0.1 mm). The fin rays were counted under a stereomicroscope (SZX16, Olympus, Japan). The specimens have been deposited at the National Marine Biodiversity Institute of Korea, Marine Fish Diversity (MFD).

Results

Hypoptychus dybowskii Steindachner 1880

(Korean name: Yang-mi-ri) (Figs. 1 and 2a)

Hypoptychus dybowskii Steindachner 1880: 158 (type locality: Peter the Great Bay); Mori and Uchida 1934: 31;

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Fig. 1 *Hypoptychus dybowskii*, MFD-1052, 71.3 mm SL

Lindberg and Krasnyukova 1975: 201; Kim et al. 2005a: 199; Senou 2013: 609; Parin et al. 2014: 203.

Hypoptychus steindachneri Franz 1910: 8 (type locality: Fukuura, Japan).

Examined material

MFD-1052–1053, two specimens, Machajin beach, Machajin-ri, Hyeonnae-myeon, Goseong-gun, Gangwon-do, Korea, hand net, 31 May 2017.

Description

Counts are provided in Table 1. Proportions as a percentage of standard length: head length 22.3–22.6; predorsal length 63.3–64.8; preanal length 65.4–66.8; body depth 7.3–8.4; caudal peduncle depth 2.8–3.0; caudal peduncle length 7.9–9.1; postorbital length 8.7–9.4; pectoral fin length 13.7–13.9. Proportions as a percentage of head length: eye diameter 26.4; snout length 34.0–35.2; interorbital width 24.5–25.8; suborbital width 10.1–10.7; upper jaw length 32.7–34.6. Body elongate, compressed. Head small and eyes large. Snout somewhat long and pointed. Mouth moderate and terminal. Anterior tip of lower jaw projects beyond anterior tip of upper jaw. Posterior tip of the maxilla does not reach anterior margin of eye. Small conical teeth on upper jaw. Interorbital region slightly wide and flat. Head and body naked. A single lateral line

extending to caudal-fin base in a straight line. Dorsal fin located opposite to anal fin on posterior part of body; origin of dorsal fins just above that of anal fin. Dorsal and anal fins high anteriorly and gradually decreasing in height posteriorly. Pectoral fins slightly large. Caudal fin forked. Pelvic fin absent. Longitudinal dermal fin fold developed on ventral surface of body; its posterior tip in male hook-like.

Coloration

When fresh, head and body reddish-yellow and semi-transparent with small black dots (Figs. 1 and 2a). Black dots well developed on anterior region of lower jaw and ventral region of gill membrane. All fins semi-transparent. Membranes of dorsal and anal fins with small black melanophores. After alcohol fixation, head and body pale and whitish.

Distribution

Hypoptychus dybowskii occurs in the northern coastal waters of the East Sea, Korea (present study, Kim et al. 2005a), the Pacific and East Sea coasts of Japan (Senou 2013), and the Okhotsk Sea and East Sea coasts of Russia including Peter the Great Bay Lindberg and Krasnyukova 1975.



Fig. 2 External shapes. **a** *Hypoptychus dybowskii* (MFD-1053, 70.5 mm SL). **b** *Ammodytes japonicus* (cited in Orr et al. 2015 Figure 6C, FAKU 130765, 104.8 mm SL). Arrows indicate the origin of dorsal fin

Table 1 Comparison of meristic characters of *Hypoptychus dybowskii* and *Ammodytes japonicus*

	<i>Hypoptychus dybowskii</i>		<i>Ammodytes personatus</i>
	Present study	Senou (2013)	Kim et al. (2008b)
Number of specimens	2	–	90
Standard length (mm)	70.5–71.3	–	91.0–228.1
Counts			
Dorsal fin rays	21	19–21	53–60
Anal fin rays	21–22	19–22	27–33 (<i>n</i> = 89)
Pectoral fin rays	9	9–10	13–16

Discussion and conclusion

The present study provides a morphological description of *H. dybowskii* on the basis of specimens collected from the coast of the East Sea, Goseong-gun, Gangwon-do, south of Hamgyeongnam-do. The present specimens can be identified as *H. dybowskii* in the family Hypoptychidae based on the following characters: absence of scales and pelvic fin; dorsal and anal fins without spines and located in the posterior region of the body; and elongate body (Nelson et al. 2016). The present specimens well agree with the original description of *H. dybowskii* in terms of body shape and the locations of the dorsal and anal fins (Steindachner 1880). Many people often confuse *H. dybowskii* and *A. japonicus* because the Korean common name or dialect “Yang-mi-ri” is applied to both species. Although they have a similar body shape, these two species possess different external morphologies. *Hypoptychus dybowskii* can be distinguished from *A. japonicus* by means of the location of the origin of the dorsal fin (behind to above anus in *H. dybowskii* vs. above the pectoral fin in *A. japonicus*) (Fig. 2), and the number of dorsal and anal fin rays (19–21 and 19–22, respectively, vs. 53–60 and 27–33, respectively) (Table 1) (Kim et al. 2005a; Kim et al. 2008b; Senou 2013). Furthermore, *H. dybowskii* is not exploited as a fisheries resource, but *A. japonicus*, which can easily be found in local fish markets in Korea, is commonly consumed in Gangwan-do. Therefore, the samples used in several studies (Kim et al. 2008a; Lee et al. 2011; Kim et al. 2012), which were collected from fish markets, are more likely to be *A. japonicus* than *H. dybowskii*.

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Authors' contributions

Both authors read and approved the manuscript.

Ethics approval and consent to participate

Not applicable.

Competing interests

The authors declare that they have no competing interests.

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