The cusk eel Ophidion smithi (Ophidiiformes: Ophidiidae): new data and northernmost record from the Gulf of Aqaba

Authors: Fricke, Ronald, Golani, Daniel, and Appelbaum-Golani, Brenda

Source: Integrative Systematics: Stuttgart Contributions to Natural History, 5(2) : 103-107

Published By: Stuttgart State Museum of Natural History

URL: https://doi.org/10.18476/2022.959496

The BioOne Digital Library (https://bioone.org/) provides worldwide distribution for more than 580 journals and eBooks from BioOne's community of over 150 nonprofit societies, research institutions, and university presses in the biological, ecological, and environmental sciences. The BioOne Digital Library encompasses

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use

RESEARCH ARTICLE

The cusk eel *Ophidion smithi* (Ophidiiformes: Ophidiidae): new data and northernmost record from the Gulf of Aqaba

Ronald Fricke[1], Daniel Golani[2] & Brenda Appelbaum-Golani[3]

Abstract

The cusk eel *Ophidion smithi* (Fowler, 1934) is recorded from the Gulf of Aqaba, Red Sea, based on a specimen collected at Eilat, Israel. This report confirms a previous record from the Red Sea and the Gulf of Aqaba without more precise locality information. This also represents the first record of this species from Israel and the northernmost record of this species.

Keywords: distribution, Israel, new record, Red Sea, Teleostei.

Zusammenfassung

Das Bartmännchen *Ophidion smithi* (Fowler, 1934) wird beschrieben auf Grundlage eines Exemplares, das bei Eilat, Israel im Golf von Akaba, Rotes Meer, gesammelt wurde. Hiermit wird ein früherer Fund aus dem Roten Meer (und dem Golf von Akaba) ohne genaue Fundortangabe bestätigt. Letzterer ist zugleich der erste Fund dieser Art aus Israel sowie der nördlichste Fund dieser Art.

Introduction

Cusk eels (Ophidiidae) are benthopelagic marine fish species found in tropical and sub-tropical regions of all oceans. They are found on soft bottoms, from shallow waters to the greatest depths where fishes have been found; *Abyssobrotula galatheae* Nielsen, 1977 was recorded from 8,370 metres in the Puerto Rico Trench (Nelson et al. 2016). The family was defined by Nielsen et al. (1999) as having dorsal, caudal and anal fins confluent; supramaxilla present; dorsal-fin origin anterior to anal-fin origin; dorsal-fin rays usually longer than opposing anal-fin rays; body with scales; so far as known no vexillifer larval stage. Nelson et al. (2016) estimated 258 species in 50 genera; Fricke *et al.* (2022a) counted 280 valid species in 51 genera. The genus *Ophidion* Linnaeus, 1758 was first described by Linnaeus (1758: 259) based on *Ophidion barbatum* Linnaeus, 1758 as type species, by Linnaean tautonymy [also designated by Gill (1863: 210)]. *Ophidion* was placed on the Official List of Genus Names in Zoology (Opinion 92, Anonymous 1926), while *Ophidium* Linnaeus, 1766 (Linnaeus 1766: 431) is an unjustified emendation placed on the Official Index of Genus Names in Zoology (Direction 56, Anonymous 1956). The genus currently includes 27 valid species; in the Indo-West Pacific, there are only the following five species: *O. asiro* (Jordan & Fowler, 1902) (Jordan & Fowler 1902: 752; fig. 4) from the northwestern Pacific (Taiwan, China, Korea and Taiwan); *O. exul* Robins, 1991 (Robins 1991: 3; fig. 1) from Easter Island; *O. genyopus* (Ogilby, 1897) (Ogilby 1897: 93; as *Otophidium genyopus*) from New South Wales, Australia; *O. muraenolepis* Günther, 1880 (Günther 1880: 46; pl. 20, fig. A) from the eastern Indian Ocean and western Pacific; *O. smithi* (Fowler, 1934) (Fowler 1934: 508; fig. 52; as *Otophidium smithi*) from the Indian Ocean.

While sorting material from the Hebrew University Fish Collection (Jerusalem, Israel), we found a specimen of cusk eel of the family Ophidiidae that was subsequently identified as *Ophidion smithi*, collected in Aug. 2009 in Eilat, Israel, Gulf of Aqaba, northern Red Sea. This report confirms a previous record without specified locality from the Red Sea and the Gulf of Aqaba, and constitutes the first record of this species from Israel and its northernmost record. The specimen is described in the present paper.

Material and methods

Measurements and counts follow Hubbs & Lagler (1947). The classification follows Fricke et al. (2022b); family authorship follows Laan et al. (2014). Abbreviations used: HUJ – The Hebrew University of Jerusalem, Israel; KU – University of Kansas Natural History Museum and Biodiversity Research Center, Division of Ichthyology, Lawrence, Kansas, USA; MNHN – Muséum National d'Histoire naturelle, Systématique et Évolution, Laboratoire d'Ichthyologie Générale et Appliquée, Paris, France; SMNS – Staatliches Museum für Naturkunde Stuttgart, Stuttgart, Germany; USNM – National Museum of Natural History, Washington, DC, USA; SL – standard length.

© Staatliches Museum für Naturkunde Stuttgart

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use

Fig. 1. *Ophidion smithi* (Fowler, 1934). HUJ 21171, 1 specimen, 83.8 mm SL, Israel, Eilat, Dolphin Reef, 29º31′33.14″N 34º56′12.98″E, Gulf of Aqaba, Red Sea. Lateral view of freshly collected specimen; scale bar: 1 cm. (Photograph: D. Golani)

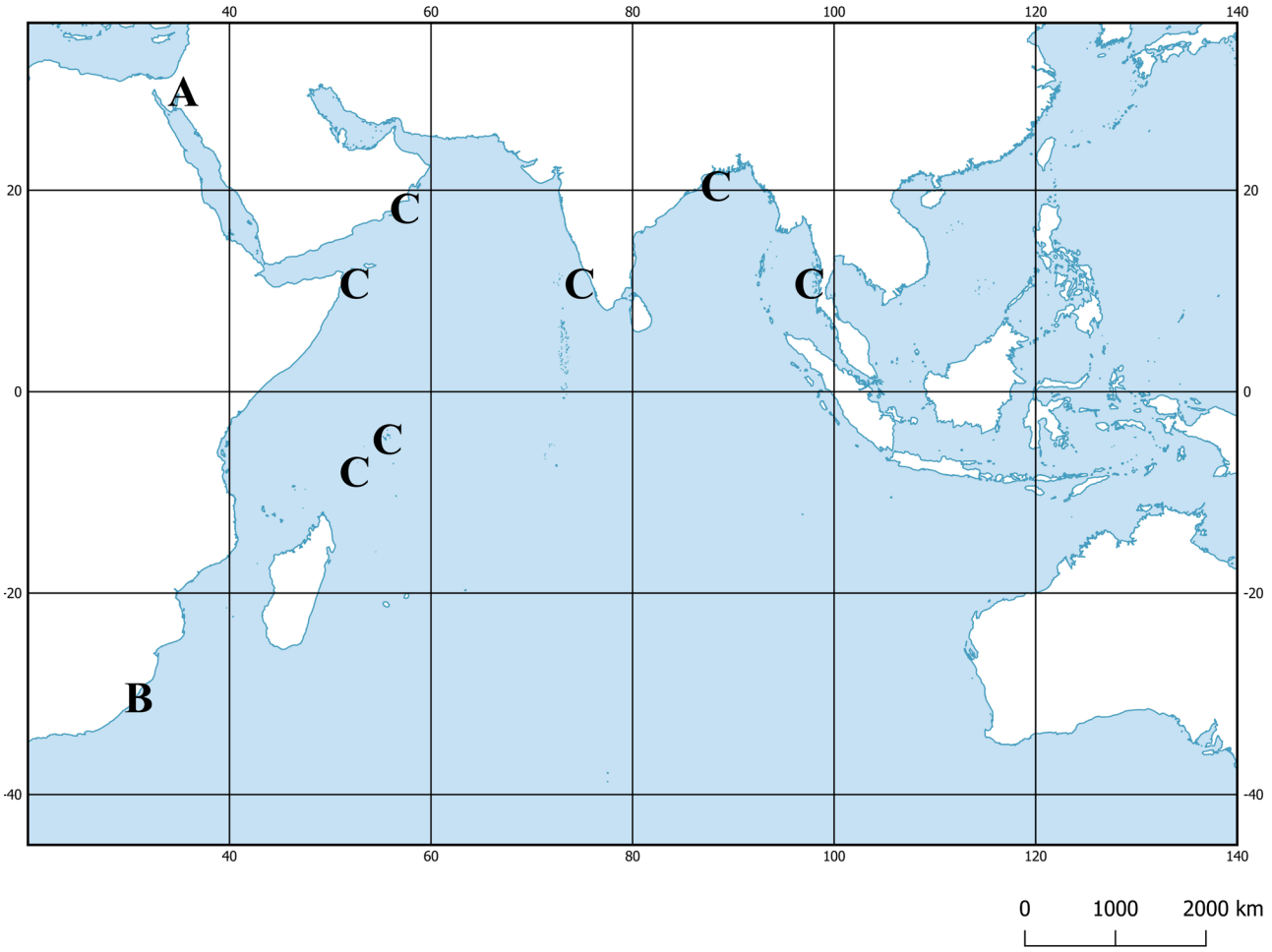

Fig. 2. Geographical distribution of *Ophidion smithi* (Fowler, 1934). **A**. Present record from Gulf of Aqaba, Red Sea. **B**. Type locality. **C**. Other verified records based on the literature and material in collections.

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use

Table 1. *Ophidion smithi* (Fowler, 1934), HUJ 21171. Measurements (mm).

	HUJ 2117	
	mm	% of SL
Standard length	83.8	100
Head length	14.5	17.3
Body depth	ca. 10.7	12.8
Predorsal length	23.3	27.8
Preanal length	32.9	39.3
Prepectoral length	16.7	19.9
Prepelvic length	3.3	3.9
Orbit diameter	5.9	7.0
Preorbital length	3.3	3.9
Interorbital distance	2.0	2.4
Pectoral-fin length	7.0	8.4
Pelvic-fin length	7.8	9.3
Dorsal-fin base length	61.9	73.9
Anal-fin base length	52.2	62.3

Comparative material. *Ophidion barbatum*: SMNS 987 (2), Italy, Trieste; SMNS 25941 (2), Italy, Venice; SMNS 25942 (1), Italy, Venice. *Ophidion genyopus*: AMS I.45752-001-003 (3), Australia, New South Wales, off Gosford. *Ophidion rochei*: SMNS 11215 (1), Italy, Giglio Island. *Ophidion smithi*: KU 36644 (1), Somalia; MNHN 1982-0001 (1), Seychelles.

Family Ophidiidae Rafinesque, 1810
Ophidion smithi (Fowler, 1934)
(Figs. 1, 2)

Otophidium smithi Fowler, 1943. Fowler 1934: 508, fig. 52 (Umgui [= Umgeni, Durban], KwaZulu-Natal, South Africa, southwestern Indian Ocean).

References: Smith (1949: 364); Smith (1953: 364); Smith (1961: 364); Smith (1965: 364). *Ophidium smithi*: Cohen & Nielsen (1978: 16; review); Böhlke (1984: 135; holotype at ANSP, Philadelphia); Nielsen & Cohen (1986: 349; KwaZulu-Natal, South Africa; Red Sea); Goren & Dor (1994: 15; Red Sea); Randall & Egmond (1994: 49; Poivre Atoll, Seychelles; Gulf of Aqaba without precise location, based on specimen from southern Sinai, Egypt); Robins in Nielsen et al. (1999: 40; Red Sea to Natal, Seychelles and northwestern coast of Australia; questionably distinct from *O. genyopus,* New South Wales, Australia); Bijukumar & Deepthi (2009: 149; Kerala, India); Golani & Fricke (2018: 39; Red Sea); Nielsen & Uiblein (2022: 252); Ray & Mohapatra (2022: 2; Bay of Bengal, India).

Material

HUJ 21171, 1 specimen, 83.8 mm SL, Israel, Eilat, Dolphin Reef, 29º31’33.14’’N 34º56’12.98’’E, Gulf of Aqaba, Red Sea, 9 Aug. 2009.

Description of HUJ 21171

D 108; A 105; P1 15; P2 2. Developed gill rakers 7. Measurements (as part of this description): see Table 1. Teeth in villiform bands on jaws, upper jaw with 4 transverse rows, with outer row slightly enlarged; patch of small villiform teeth on vomer, followed by a band on each palatine. Scales absent from top and sides of head. Pelvic fin situated below anterior margin of eye.

Colouration (when fresh; see Fig. 1): Head and body light brown, cheeks whitish, eyes rose, barbel white; dorsal and anal fins white, with a distal black margin; pectoral fins translucent.

Discussion

The characters of the Red Sea ophidiid specimen examined well agree with those of *Ophidion smithi* (for references, see above; for measurements and proportions of HUJ 21171, see Table. 1), and the morphological characters are well within the range of previous findings.

Robins in Nielsen et al. (1999: 40) suspected that *O. smithi* might be the same species as *O. genyopus*, but a comparison revealed that *O. genyopus* has the beginning of the pelvic fin below the middle of the eye, while *O. smithi* has it below the anterior margin of the eye. Pending further revision of the genus, we meanwhile maintain the two species as different.

Ophidium smithi was claimed to occur in northwestern Australia by Froese & Pauly (2022), based on Robins in Nielsen et al. (1999: 40). However, no source was provided for this record, and no material from that region could be obtained. The record might have been based on a misidentified *O. muraenolepis*, which has been recorded from northwestern Australia. Therefore, the Australian record of *O. smithi* cannot be verified.

Ophidion smithi was originally described by Fowler (1934: 508, fig. 52) based on a single specimen from KwaZulu-Natal, South Africa. The species was subsequently

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use

recorded from the Red Sea by Nielsen & Cohen (1986: 349), but without reference to a specimen or a specific locality. Randall & Egmond (1994: 49) recorded it from the Seychelles and the Gulf of Aqaba (without precise locality, but based on a specimen from southern Sinai), Bijukumar & Deepthi (2009: 149) from Kerala (India), and Ray & Mohapatra (2022: [4]) from the Bay of Bengal (India). In addition, there is a specimen in the USNM collection (USNM 408055) from Myanmar. A specimen from Somalia (KU 36644) was previously misidentified as *Ophidion genyopus* (not Ogilby, 1897) in that collection. Uiblein et al. (2020) stated several additional localities for *O. smithi* in the Indian Ocean (including Chagos Archipelago, Christmas Island, Cocos Keeling Islands, Comoros, Djibouti, Egypt, Eritrea, Iles Éparses/Mozambique Channel, Indonesia, Jordan, Kenya, Madagascar, Mauritius, Mayotte, Mozambique, Réunion, Saudi Arabia, Singapore, Sri Lanka, Sudan, Tanzania, Thailand, Timor-Leste and Yemen) without providing sources, and which therefore could not be confirmed.

This new record from North Beach at Eilat, Israel represents the northermost distribution limit of this species so far. Based on confirmed records, *Ophidion smithi* has a wide distribution range in the Indian Ocean from the Gulf of Aqaba (Red Sea), East Africa, South Africa and the Seychelles east to India and Myanmar (Fig. 2). The species is distributed at depths of 0–116 metres. The IUCN Red List designated this species to be in the category of "Least Concern" (Uiblein et al. 2020).

References

Anonymous (1926): Opinion 92. Sixteen generic names of Pisces, Amphibia, and Reptilia placed in the Official List of Generic Names. – Smithsonian Miscellaneous Collections **73** (4): 3–4. https://www.biodiversitylibrary.org/page/8911075

Anonymous (1956): Direction 56. Completion and in certain cases correction of entries relating to the names of genera belonging to the Classes Pisces, Amphibia and Reptilia made in the Official List of Generic Names in Zoology in the period up to the end of 1936. – In: Hemming, F. (ed.): Opinions and declarations rendered by the International Commission on Zoological Nomenclature. Volume 1. Section D, Part D17, pp. 337–364; London (International Trust on Zoological Nomenclature). https://www.biodiversitylibrary.org/page/34613562

Bijukumar, A. & Deepthi, G. R. (2009): Mean trophic index of fish fauna associated with trawl bycatch of Kerala, southwest coast of India. – Journal of the Marine Biological Association of India **41** (2): 145–157.

Böhlke, E. B. (1984): Catalog of type specimens in the ichthyological collection of the Academy of Natural Sciences of Philadelphia. – Special Publication, Academy of Natural Sciences of Philadelphia **14**: i–viii + 1–216.

Cohen, D. M. & Nielsen, J. G. (1978): Guide to the identification of genera of the fish order Ophidiiformes with a tentative classification of the order. – NOAA (National Oceanic and Atmospheric Administration) Technical Report NMFS (National Marine Fisheries Service) Circular **417**: 1–72.

Fowler, H. W. (1934): Fishes obtained by Mr. H. W. Bell-Marley chiefly in Natal and Zululand in 1929 to 1932. – Proceedings of the Academy of Natural Sciences of Philadelphia **86**: 405–514.

Fricke, R., Eschmeyer, W. N. & Fong J.D. (2022a): Genera/species by family/subfamily in Eschmeyer's catalog of fishes. Online version, updated 5 April 2022. https://researcharchive.calacademy.org/research/ichthyology/catalog/SpeciesByFamily.asp

Fricke, R., Eschmeyer, W. N. & Laan R. van der (eds.) (2022b): Eschmeyer's catalog of fishes: Genera, species, references. Online version, updated 5 April 2022. http://research.calacademy.org/research/Ichthyology/Catalog/fishcatmain.asp

Froese, R. & Pauly, D. (eds.) (2022): FishBase. World Wide Web electronic publication. Available from: www.fishbase.org [version 02/2022.]

Gill, T. N. (1863): Description of a new generic type of ophidioids. – Proceedings of the Academy of Natural Sciences of Philadelphia **15**: 209–211. https://www.biodiversitylibrary.org/page/26298528

Golani, D. & Fricke, R. (2018): Checklist of the Red Sea fishes with delineation of the Gulf of Suez, Gulf of Aqaba, endemism and Lessepsian migrants. – Zootaxa **4509** (1): 1–215. https://doi.org/10.11646/zootaxa.4509.1.1

Goren, M. & Dor, M. (1994): An updated checklist of the fishes of the Red Sea. CLOFRES II, 120 pp.; Jerusalem (The Israel Academy of Sciences and Humanities).

Günther, A. C. L. G. (1880): Report on the shore fishes procured during the voyage of H. M. S. Challenger in the years 1873–1876. – In: Report on the scientific results of the voyage of H. M. S. Challenger during the years 1873–76, Zoology **1** (6): 1–82, pls. 1–32. https://www.biodiversitylibrary.org/page/41269972

Hubbs, C. L. & Lagler, K. F. (1947): Fishes of the Great Lakes Region, 186 pp.; Michigan, USA (Cranbrook Institute of Science).

Jordan, D. S. & Fowler, H. W. (1902): A review of the ophidioid fishes of Japan. – Proceedings of the United States National Museum **25** (1303): 743–766. https://www.biodiversitylibrary.org/page/7533303

Laan, R. van der, Eschmeyer, W. N. & Fricke, R. (2014): Family-group names of recent fishes. – Zootaxa **3882** (2): 1–230. http://dx.doi.org/10.11646/zootaxa.3882.1.1

Linnaeus, C. (1758): Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio decima, reformata, 824 pp.; Holmiae (Laurentius Salvius). https://www.biodiversitylibrary.org/page/445126

Linnaeus, C. (1766) Systema naturae sive regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. 12th edition, tomus 1, pars 1, 532 pp; Holmiae (Laurentius Salvius).

Nelson, J. S., Grande, T. C. & Wilson, M. V. H. (2016): Fishes of the world. Fifth edition, 707 pp.; Hoboken, NJ (Wiley).

Nielsen, J. G. & Cohen, D. M. (1986): Family No. 96: Ophidiidae. – In: Smith, M. M. & Heemstra, P. C. (eds.): Smiths' Sea Fishes, pp. 345–350, pl. 10; Johannesburg (Macmillan South Africa).

Nielsen, J. G., Cohen, D. M., Markle, D. F. & Robins, C. R. (1999): FAO species catalogue. Volume 18. Ophidii-

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use

form fishes of the world (Order Ophidiiformes). An annotated and illustrated catalogue of pearlfishes, cusk-eels, brotulas and other ophidiirorm fishes known to date. FAO (Food and Agriculture Organization of the United Nations) Fisheries Synopsis **125**: 1–178.

Nielsen, J. G. & Uiblein, F. (2022): Family Ophidiidae, Cusk-eels,. – In: Heemstra, P. C., Heemstra, E., Ebert, D. A., Holleman, W. & Randall, J. E. (eds.): Coastal fishes of the western Indian Ocean. Volume 2, pp. 245–253, pls. 41–42; Makhanda (South African Institute for Biodiversity).

Ogilby, J. D. (1897): New genera and species of Australian fishes. – Proceedings of the Linnean Society of New South Wales **22** (1): 62–95. https://www.biodiversitylibrary.org/page/3344880

Randall, J. E. & Egmond, J. van (1994): Marine fishes from the Seychelles: 108 new records. – Zoologische Verhandelingen **297**: 43–83.

Ray, D. & Mohapatra, A. (2022): First report of subfamily Ophidiinae Rafinesque, 1810 and genus *Ophidion* Linnaeus, 1758 (Ophidiiformes: Ophidiidae) from Bay of Bengal, Indian coastal water. – National Academy of Science Letters **45**: 223–226. https://doi.org/10.1007/s40009-022-01100-2

Robins, C. R. (1991): Two new species of *Ophidion* (Pisces: Ophidiidae) from remote islands of the eastern Pacific. – Contributions in Science (Los Angeles) **427**: 1–11.

Smith, J. L. B. (1949): The sea fishes of southern Africa, i–xii + 550 pp.; Cape Town (Central News Agency).

Smith, J. L. B. (1953): The sea fishes of southern Africa. Revised enlarged edition, 564 pp.; Cape Town (Central News Agency).

Smith, J. L. B. (1961): The sea fishes of southern Africa. Fourth Edition, 580 pp.; Cape Town (Central News Agency).

Smith, J. L. B. (1965): The sea fishes of southern Africa. Fifth edition, 580 pp.; Cape Town (Central News Agency). [Also reprinted in 1977.]

Uiblein, F., Everett, B., Matiku, P. & Sithole, Y. (2020) *Ophidion smithi*. – The IUCN Red List of Threatened Species e.T141359863A141807503: 1–8. https://dx.doi.org/10.2305/IUCN.UK.2020-1.RLTS.T141359863A141807503.en

Authors' addresses:

[1]Staatliches Museum für Naturkunde, Rosenstein 1, 70191 Stuttgart, Germany;
e-mails (corresponding author): ronald.fricke@smns-bw.de, ronfricke@web.de; http://orcid.org/0000-0003-1476-6990

[2]National Natural History Collections and Department of Ecology, Evolution and Behavior, The Hebrew University of Jerusalem, 91904 Jerusalem, Israel; http://orcid.org/0000-0003-4575-3324

[3]The Hebrew University of Jerusalem, 91905 Jerusalem, Israel; http://orcid.org/0000-0002-3237-6980

ZooBank registration: https://zoobank.org/References/3E8CBFCC-6503-42F7-9CA0-AC6EDCEB4FC2

Manuscript received: 09.V.2022; accepted: 16.XI.2022.

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use

Downloaded From: https://staging.bioone.org/journals/Integrative-Systematics:-Stuttgart-Contributions-to-Natural-History on 23 Mar 2025
Terms of Use: https://staging.bioone.org/terms-of-use