

New record of the deep-sea *Nassarius subsimilis* (E.A. Smith, 1906) (Gastropoda: Nassariidae) after more than a century

R. RAVINESH¹ & N. SARAVANANE^{1,2}

¹ Centre for Marine Living Resources and Ecology, Ministry of Earth Sciences, Atal Bhavan, LNG Road, Puthyuvype, Ochanthuruthu, Kochi, 682508, Kerala, India

² National Centre for Coastal Research, 2nd Floor, NIOT Campus, Velachery–Tambaram Main Rd, Pallikaranai, Chennai, Tamil Nadu 600100, India

Corresponding author: R. Ravinesh (ravineshr08@gmail.com)

Abstract. *Nassarius subsimilis* (E.A. Smith, 1906) was initially described from the Arabian Sea off Karwar on the west coast of India. Since its description, no further records have been found from India or elsewhere. Recent collections during the FORV *Sagar Sampada* deep-sea expeditions yielded three specimens of *N. subsimilis* from a seamount close to the type locality in the Lakshadweep Sea. This new material represents the first confirmed record since the collection of the type specimen 119 years ago. This rediscovery underscores the importance of deep-sea sampling and offers valuable insights into the persistence of poorly known molluscs in the Indian Ocean.

Key words. Deep Ocean Mission, Samudrayaan, taxonomy, northern Indian Ocean, Lakshadweep Sea, seamount

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INTRODUCTION

The family Nassariidae (Gastropoda: Nassariidae) comprises over 1,320 described species (Galindo *et al.* 2016). They are predominantly found in intertidal sandy, muddy, and rocky habitats, although some species inhabit subtidal zones and a few extend to abyssal depths (Patterson Edward *et al.* 2022). *Nassarius* Duméril, 1805, is the most diverse genus within the subfamily Nassariinae and is restricted to the Indo-West Pacific region (Dekker *et al.* 2016; Galindo *et al.* 2016). Information on members of this genus from the Indian subcontinent remains scarce and limited. A comprehensive literature review of Indian Nassariidae by Nerurkar *et al.* (2020) revealed that the family is predominantly represented by the genus *Nassarius*, which accounts for 88 of the 117 recorded nassariid species.

Nassarius subsimilis (E.A. Smith, 1906) was initially described by Smith (1906) from a single specimen collected at R.I.M.S. Investigator Station 244 off the west coast of India in the Arabian Sea (14°31'15"N, 073°10'00"E), at depths of 119–127 fathoms (= 218–232 m). Smith (1906) compared *Nassa subsimilis* with *Nassa ranida* A. Adams, 1852 and *Nassa eucomista* Melvill & Sykes, 1897; however, both of these taxa were subsequently placed in synonymy with

Nassarius crematus (Hinds, 1844) by Cernohorsky (1984). Cernohorsky (1984) commented that *Nassa subsimilis* was unidentifiable from the description alone; it had not been illustrated, and the type was presumed lost. Dey (2016: 376) considered *Nassa subsimilis* a synonym of *Nassarius crematus* but provided no justification. Recently, Nerurkar (in press) rediscovered the holotype of *N. subsimilis* in the collections of the Zoological Survey of India, Kolkata (catalogue no. M830/1).

The present paper documents a new record of *N. subsimilis* from the Lakshadweep Sea, approximately 65 km from the type locality. This is the only collection of this species since its original description 119 years ago.

MATERIALS AND METHODS

The specimens of *Nassarius subsimilis* were collected during deep-sea exploratory fishery surveys conducted in the Arabian Sea, off the west coast of India, by the FORV *Sagar Sampada*, which is a research vessel operated by the Centre for Marine Living Resources and Ecology (CMLRE), Kochi, India. Specimens were collected in a Challenger dredge towed at 2.5 knots between the coordinates 14°48.282'N,

072°40.541'E and 14°47.227'N, 072°41.208'E at depths of 341–345 m (Fig. 1). Target organisms were separated from the trawl catch and preserved in 90% ethanol (Ravinesh and Biju Kumar 2022; Ravinesh *et al.* 2025). *Nassarius subsimilis* were photographed using a Fujifilm GFX 100S mirrorless camera with a 120 mm macrolens, and measurements of shell length and width were taken using digital vernier callipers. The specimens are deposited in the National Zoological Collections at CMLRE, Cochin, Kochi. Identification was done by comparing the type material housed in the National Repository for Zoological Collections of India, Zoological Survey of India (ZSI catalogue no. M830/1).

Abbreviations of collections: CMLRE = Centre for Marine Living Resources and Ecology, Kochi, India; IO/SS/GAS = Indian Ocean Biodiversity Information System, FORV *Sagar Sampada*, class Gastropoda (sample number); ZSI = Zoological Survey of India, Kolkata, India.

SYSTEMATICS

Family Nassariidae Iredale, 1916 (1835)

Subfamily Nassariinae Iredale, 1916 (1835)

Genus *Nassarius* Duméril, 1805

Nassarius subsimilis (E.A. Smith, 1906)

Figure 2A–C

Nassa subsimilis E.A. Smith 1906: 165–166. Cernohorsky 1984: 210.

Nassarius (*Zeuxis*) *crematus* (Hinds, 1844)—Dey 2016: 376.

Material examined. Arabian Sea: Lakshadweep Sea: FORV *Sagar Sampada* cruise no. 404, Seamount no. 9; Station 1, 341–345 m depth; Ravinesh leg.; 25 March 2024; IO/SS/GAS/00052 (Fig. 2A), IO/SS/GAS/00053 (Fig. 2B), IO/SS/GAS/00054 (Fig. 2C).

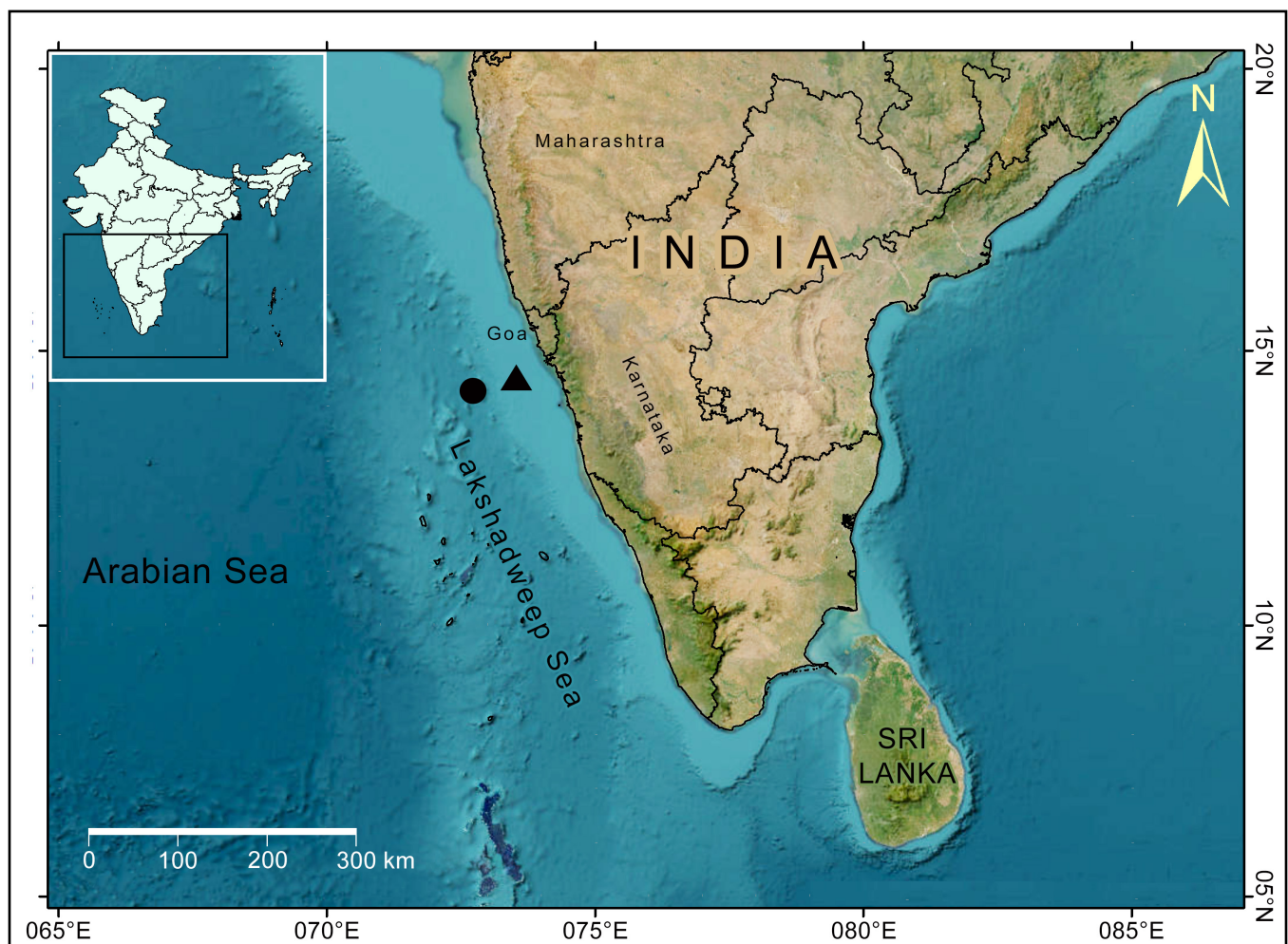


Figure 1. Collection sites of *Nassarius subsimilis* (E.A. Smith, 1906). ● = new record, ▲ = type locality. (Map by Nosad Sahu using Arc-GIS v. 10.8.)

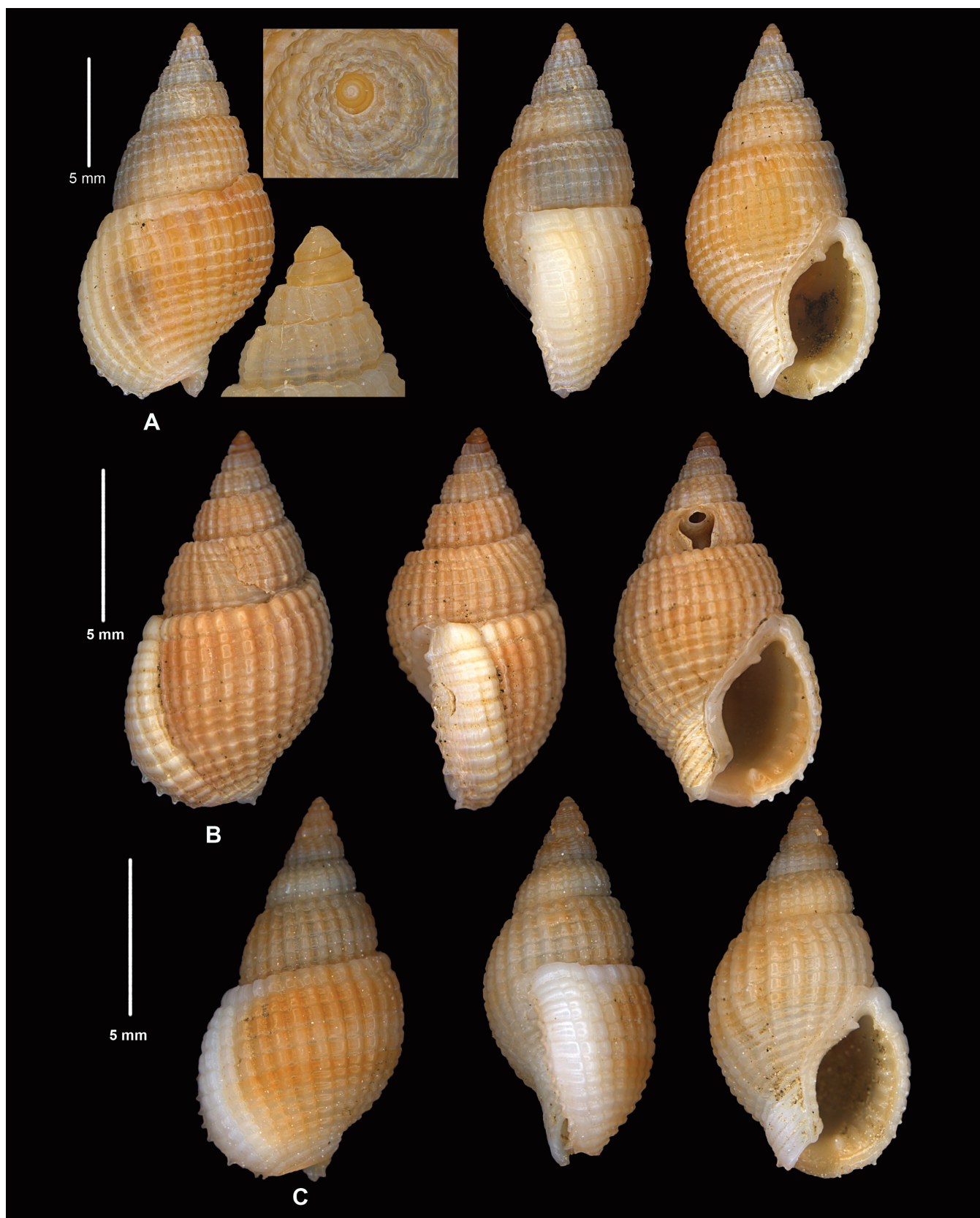


Figure 2. *Nassarius subsimilis* (E.A. Smith, 1906). A, IO/SS/GAS/00052, 16.0 × 8.5 mm, with protoconch shown (enlarged and not to scale). B, IO/SS/GAS/00053, 13.6 × 7.3 mm. C, IO/SS/GAS/00054, 12.9 × 6.2 mm.

Description (based on the new material). Shell small, solid, ovate-fusiform, conical with a high elevated spire; length 12.9–16.0 mm, width 6.2–8.5 mm. Protoconch with c. 3 whorls, glossy. Teleoconch whorls convex, sculptured with strong axial ribs intersected by equally strong spiral cords, forming a cancellate pattern. Teleoconch with 6 very weakly convex whorls; sculpture of numerous axial ribs forming rows of subquadratic nodules separated by deep channels. Penultimate whorl with 6 or 7 axial ribs on penultimate whorl; last whorl with 14 or 15 rows; intersections forming subquadrated nodules. Suture prominently channelled; sub-sutural nodules prominent and more narrowly spaced than main axial nodules. Interstices quadrangular, moderately deep. Sutures distinct and slightly impressed. Last whorl inflated, occupying more than half the shell length. Aperture ovate, moderately wide, light brown; outer lip thick, not strongly varicose, with 12 lirate denticles inside; edge crenulated with blunt, tuberculate denticles. Columella strongly arched, with a tuberculate callus distinctly marked; anterior canal short, oblique. Columellar callus whitish to light brown beige, narrow, well bordered or laminated, bearing 6 internal folds. Anterior siphonal canal short, wide, oblique, with 5 or 6 strong basal spiral grooves on siphonal fasciole. Siphonal notch shallow. Posterior anal canal distinct, deep, U-shaped. Parietal denticle prominent. Periostracum pale brown. Shell pale orange to light yellowish-brown. Spire whorls slightly darker, faint banded impression from pigmented axial ribs. Interspaces lighter, whitish to translucent, sculpture accentuated. Last whorl orange-buff, fading toward siphonal canal. Aperture glossy, pale cream to whitish. Protoconch yellowish to light brown, slightly contrasting with teleoconch.

Habitat. Dead shells were collected from the summit of the seamount and from the muddy substrate at the top of the mount.

Distribution. This species is known only from, and is considered endemic to, the Lakshadweep Sea.

Remarks. The species resembles *Nassarius eucomista* from the Andaman Islands but differs in having a longer spire, a shorter last whorl, closer and more quadrate granules, and a more strongly denticulated outer lip. It is also similar to *N. ravidus*, but that species is much more globose. As in many species of *Nassarius*, the upper row of nodules below the suture is slightly larger than those in the other rows (Smith 1906).

Nassarius subsimilis is similar to the *N. pseudoconcinnus* (E.A. Smith, 1895) and *N. crematus*, which differ in their

size, sculpture, and aperture morphology. Shell characters of these three species are presented in Table 1.

DISCUSSION

The malacofauna of India's deep waters remains largely unexplored, highlighting the need for focused taxonomic research (Biju Kumar & Ravinesh 2015; Patterson Edward *et al.* 2022). Recent contributions include the record of *Phos gemmulifer* Kilburn, 2000 from the Great Nicobar Islands (Ravinesh *et al.* 2022) and the description of a deep-water thyasirid, *Ascetoaxinus ravichandrani* Ravinesh, P.G. Oliver & Saravanane, 2024, from the northern Indian Ocean (Ravinesh *et al.* 2024). The finding of new specimens from a second locality of *Nassarius subsimilis* underscores the need for extensive deep-sea surveys throughout the Arabian Sea, including the Lakshadweep Sea, as well as the Bay of Bengal and the Andaman and Nicobar Islands, to uncover old and new taxa and reassess historical type localities.

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Table 1. Morphological comparison of *Nassarius subsimilis* shells with two similar *Nassarius* species.

Characters	<i>N. subsimilis</i>	<i>N. crematus</i>	<i>N. pseudoconcinus</i>
Type locality	Lakshadweep sea (off Karwar)	Malacca Straits, Indonesia	Arabian Sea (off Gujarat)
Max. size (mm)	16.0	33.0	18.0
Shape	Acuminate-ovate, conical with high spire; sturdy	Elongate-ovate to barrel-shaped; robust	Elongate-ovate; light weight
Embryonic whorls	~3 smooth, glassy, smooth	3–3½ glassy, finely carinate	~3½ glassy, smooth
Teleoconch	6 weakly convex whorls	5–6½ convex whorls	5–6½ convex whorls
Axial sculpture	Strong ribs forming rows of subquadratic nodules with deep channels; 6–7 rows on penultimate and 14–15 on last whorl	Close-set ribs (25–40 on last 2 whorls) overridden by spiral cords forming fine nodules	Numerous slender ribs (30–45 on penultimate, 30–40 on last whorl)
Spiral sculpture	5–6 strong grooves on siphonal fasciole	Overriding spiral cords (5–7 on penultimate, 14–20 on last whorl); 4–6 cords on siphonal fasciole	Fine spiral striae (5–12 on penultimate, 8–11 on last whorl); 7 basal, 7–10 oblique cords on siphonal fasciole
Suture	Deeply channelled, with strong subsutural nodules	Deeply channelled, Sutural nodules distinct or merge with sculpture	narrowly channelled, Simple, weakly impressed
Aperture	Ovate, moderately wide	Moderately wide	Moderately narrow
Outer lip	Thick, crenulated with blunt tuberculate denticles; 12 lirate denticles within	Thick, not crenulated, small spinose projections along the margin, denticulate-lirate within	Thickened, not crenulated, interior with 9–11 lirate denticles
Columella	Narrow, bordered, laminate with 6 internal folds; distinct parietal denticle present	Narrow to broadly laminate anteriorly; internal fold absent, distinctly wrinkled along entire length	Narrowly calloused, internal fold absent, minutely denticulate (obscure to distinct)
Siphonal canal	Short, wide, oblique, grooved; siphonal notch shallow	Siphonal fasciole with 4–6 cords; canal distinct but less deep	Distinct, narrower, with oblique cords; siphonal notch present
Anal canal	Deep, U-shaped	Distinct, shallow	Distinct, U-shaped
Colouration	Pale orange to light yellowish-brown. Columella whitish to light brown-beige	White, cream, fawn, or light grey with 1–3 moderately broad, brown bands (dorsally darker); aperture sometimes flushed with brown	White to fawn, occasionally with faint orange-brown bands; columella and aperture white

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