The Recent Rissoidae of the Mediterranean Sea. Notes on the genus *Onoba* s.s. H. Adams et A. Adams, 1852 (Gastropoda Prosobranchia)

Bruno Amati & Italo Nofroni

1Largo Giuseppe Veratti 37/D, 00146 Rome, Italy; e-mail: bruno.amati@yahoo.it
2Via Benedetto Croce 97, 00142 Rome, Italy; e-mail: italo.nofroni@uniroma1.it
*Corresponding author

ABSTRACT

The Mediterranean species belonging to the genus *Onoba* H. Adams et A. Adams, 1852 as currently conceived, are reviewed. With the exception of *O. semicostata* (Montagu, 1803) and *O. aculeus* (Gould, 1841) that range mostly in the European North-Eastern Atlantic and are rarely found in the Western Mediterranean, this genus is represented by six species with rather limited ranges: *O. dimassai* Amati et Nofroni, 1991; *O. josae* Moolenbeek et Hoenselaar, 1987; *O. guzmani* Hoenselaar et Moolenbeek, 1987; *O. tarifensis* Hoenselaar et Moolenbeek, 1987; *O. gianninii* (Nordsieck, 1974) and *O. oliverioi* Smriglio et Mariotti, 2000. A further possibly undescribed species is figured. For all species comparative morphometrics are provided. *Onoba josae* Moolenbeek et Hoenselaar, 1987 is here recorded for the first time in Italy, with the easternmost locality in this range.

KEY WORDS
taxonomy; Rissoidae; *Onoba*; Recent; Mediterranean Sea; first record.

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INTRODUCTION

The genus *Onoba* H. Adams et A. Adams, 1852 has been frequently discussed in the malacological literature (e.g. H. & A. Adams, 1852: 358; Jeffreys, 1867: 37; Watson, 1873: 387; Verril, 1884: 182; Friele, 1886: 28; Dautzenberg, 1889: 52; Warén, 1973: 4; Warén, 1974: 130; Rolán, 1983: 139; Ponder, 1985: 54; Templado & Rolán, 1986: 117; Bouchet & Warén, 1993: 659; Ponder & Worsfold, 1994: 26; Rolán, 2008: 233; Nekhaev et al., 2014: 269) and has a global distribution, ranging in both hemispheres from the poles to at least the subtropics (Ponder, 1985: 55; Rolán, 2008: 233; Avila et al., 2012: 4).

It is currently subdivided into some few subgenera: *Onoba* (type species *Turbo striatus* J. Adams, 1797), *Ovirissoa* Hedley, 1916 (type species *Rissoa adarensis* Smith, 1902), *Subestea* Cotton, 1944 (type species *Alvania seminodosa* May, 1915) and *Manawatawhia* Powell, 1937 (type species *M. analoga* Powell, 1937).

Seven central-western Mediterranean species, most of which have been described during the last forty years, are currently ascribed to the nominal subgenus (Rolán, 1983: 139; Aartsen et al., 1984: 20; Templado & Rolán, 1986: 117; Oliverio et al., 1986: 35; Moolenbeek & Hoenselaar, 1987: 153; Hoenselaar & Moolenbeek, 1987: 17; Amati & Nofroni, 1991: 30; Smriglio & Mariotti, 2000: 15;

The missing of new further records convinced some Authors to exclude this species from the main Mediterranean check-lists (Rolán, 2008: 241; Nekhaev et al., 2014: 272). A further possibly undescribed species has been recorded (Onoba sp.: Amati & Nofroni, 1991: 34), but never formally named. The anatomy of the genus Onoba has been studied by Ponder (1985: 56): Here we utilize the only shell morphology for the description and comparisons of the Mediterranean species. The most important iconographic references are reported for each species.


SYSTEMATICS

Family Rissoidae Gray, 1847: 152 (as Rissoaina)
Genus Onoba H. Adams et A. Adams, 1852: 358
Type-species: Turbo striatus J. Adams, 1797 non Da Costa, 1778 = Onoba semicostata (Montagu, 1803: 326 (by monotypy)

MORPHOLOGY. Diagnosis shell of genus Onoba (from Ponder, 1985: 54): “Shell: minute to small, ovate-conic to elongate-ovate, non-umbilicate to narrowly umbilicate, smooth or with weak to strong spiral sculpture, with a few spiral keels. Axial sculpture usually rather weak to very weak; sometimes axial ribs present but do not extend over base; sculpture rarely clathrate. Aperture with simple peristome, oval, weakly angled and channelled posteriorly, simple and rounded anteriorly; outer lip opisthocline, varix weak to heavy. Protoconch dome-shaped, sometimes with 1 or more spiral keels; smooth (Ovirissa) or with microsculpture of granules, anastomosing or spirally aligned raised threads or, sometimes, wavy, spirally arranged rows of granules. Periostracum very thin to well developed”.

Diagnosis shell of subgenus Onoba: (from Ponder, 1985: 56): “Shell: broadly ovate-conic to elongate ovate, rather solid, non-umbilicate, usually with many well developed spiral cords and, sometimes, weak axial ribs; microsculpture of fine spiral lirae usually present. Strong spiral cords in a few species and, in some species, surface smooth. Aperture subcircular, subangled and weakly channelled posteriorly, varix on outer lip strong to moderate. Protoconch domeshaped of about 11/2 whorls in nearly all species, rarely up to 2 2/4 whorls (as in O. 'semicostata'); sculptured variously, for example, with exceedingly weak to moderately strong spiral lines with either parallel to oblique wrinkles or granules between, as in O. aculea (Gould) and O. moreleti Dautzenberg and in Fretter & Graham's (1978) figure of O. 'semicostata'; with irregular, raised, wavy threads, as in O. foveauxiana. (Suter); with scattered granules, as in O. fumata. O. kermadecensis (Powell) and several other southern species, as well as O. n. sp. from the Eocene of France; (see also Thiriot Quevivreux & Babio, 1975; Fretter & Graham, 1978).”

**Onoba semicostata** (Montagu, 1803) (Figs. 1–6)

*Turbo striatus* J. Adams, 1797: 66 non da Costa, 1778: 86

*Turbo semicostatus* Montagu, 1803: 326, pl. XXI, fig. 5

Rissoa ecostata Michaud, 1830 (WoRMS: Bouchet, 2014)

Rissoa minutissima Michaud, 1830 (WoRMS: Bouchet, 2014)

Rissoa peticularis Menke, 1830 (WoRMS: Bouchet, 2014)
Onoba candida (Brown, 1827) (Giannuzzi-Savelli, 2002: 80)

Iconographic references. Montagu (1803: 326, pl. XXI, fig. 5); Reeve (1878: pl. V fig. 40 as Rissoa striata); Rolán (1983: 139, 140, 3 unnumbered figures as Onoba aculeus and 5 unnumbered figures as Onoba striata); Rolán (2008: 234, figs. 1-12); Giannuzzi-Savelli et al. (2002: 80, fig. 255 as Onoba candida (Brown, 1827)); Nekhaev et al. (2014: 269, figs. 1 A–B, 4 A, D).

Type locality. Atlantic Ocean, south coast of Devonshire, United Kingdom.

Type material. Not seen. Probable syntypes in Montagu collection (RAMM)

Examined material. Norway: Grande, Viken, -100/200 m, 07.1974, 1 sh (BA); Spain: Vigo-Baiona, North-West Atlantic, beached, 08.1982, 1 sh (IN); Vigo Bay (Atlantic) -15 m (legit Palazzi, 1982), 11 juv. sh (IN); Fuengirola, (Malaga) beached (ex coll. Bogi), 1 sh (IN); France: Carteret, Normandy, (Atlantic, 1976), beached, 1 sh (IN); Binard (Atlantic, 1975) among littoral seaweeds, 2 lv (IN); no locality, 1 sh (IN).

Original description. Montagu, 1803: “T. with a short, conic, white shell, obtusely pointed: volutions four or five, rounded, well defined by the separating line, and wrought with faint ribs, and fine obsolete transverse striae on the body whorl, both of which are inconspicuous on the superior spires: the ribs do not extend to the lower part even of the body, where the spiral transverse striae become most conspicuous: aperture suborbicular; pillar lip a little reflexed, Columella smooth. Length half a line; breadth one half its length. Found in sand on the south coast of Devonshire, but very rare. This at first sight might be confounded with Turbo Spiralis, but differs in the volutions being more rounded, in the ribs being coarser, and in being destitute of the tooth-like plication of the columella.”

Distribution and habitat. Eastern Atlantic, Madera (Ávila et al., 2012), Spain (Rolán, 2008), British Isles (Jeffreys, 1867: 37; Fretter & Graham, 1978), Faroe Islands (Warén, 1996; Sneli et al., 2005), Iceland (Warén, 1996), Norway (Heisaster, 2009), Barents Sea, Kola Peninsula (Golikov & Kussakin, 1978; Nekhaev et al., 2014: 271). Mediterranean Sea (Ávila et al., 2012), Alboran Sea, Fuengirola (Giannuzzi-Savelli et al., 2002: 80). Common and abundant under rocks and among algae, from the intertidal to -1000 m depth (Templado & Rolán, 1986: 120); common on rocks in -8 m, less common in -80 m, rare under -200 m in the Zelenetskaya Bay, Barents Sea (Nekhaev et al., 2014: 272).

Remarks. Onoba semicostata is the only Mediterranean Onoba with a planktotrophic larval development, and is therefore easy to identify (Rolán, 2008: 35, figs. 3–6; Nekhaev et al., 2014: 276, figs. 4 A, D). Shells tend to be curved (var. distorta Marshall fide Jeffreys, 1887: 35) and occasionally may have an additional labial varix. Shells collected in the central Mediterranean are probably fossils (Würm). Onoba aculeus differs from O. semicostata in having a paucispiral protoconch (indicating a non planktotrophic development), a slightly scalariform suture with more convex whorls without subsutural axial ribs. Onoba breogani Rolán, 2008, known, at moment, for Galicia (Spain, Atlantic), is very similar to O. semicostata in shell morphology, having also subsutural axial ribs, but differs in its paucispiral protoconch.

Onoba aculeus (Gould, 1841) (Figs. 7, 8)

Cingula aculeus Gould, 1841: 266, fig. 172
Rissoa saxatilis Möller, 1842: 9
Rissoa artica Lovén, 1846: 156
Rissoa multilineata Stimpson, 1851: 14
Onoba aculeus (Gould, 1841) (Giannuzzi-Savelli et al., 2002: 80)

Iconographic references. Gould, (1841: 172, fig. 172) (not a good picture); Bouchet & Warén (1993: 660, fig. 1507); Delongueville & Scaillet (2001: 12, fig. 10); Giannuzzi-Savelli et al. (2002: 80, fig. 254); Nekhaev et al. (2014: 272, figs. 2 C–D, 4 B, E).

Type locality. East Boston, Massachusetts (USA).


Examined material. Bergen (Norway, Atlantic), -1 m, 2 lv (IN).
Original description. Gould, 1841: “Shell minute, sub-cylindrical; whorls convex, covered with regular, microscopic revolving lines; aperture ovate; umbilicus partial. Shell minute, ovate-cylindrical, elongated, light yellowish horn-color; whorls six, convex, and separated by a deep sutural region; the two upper ones forming a blunt apex, the lowest rather more than half the length of the shell; the whole covered with regular, crowded, microscopic revolving lines; aperture one third the length of the shell, oval, oblique, angular behind, the margin simple and entire, barely touching the preceding whorl, somewhat expanded, and on the left side elevated, and slightly turned over an...
umbilical depression or chink; operculum horny. Length 3/20 inch, breadth 1/15 inch, divergence 23°. Found sparingly on the partially decayed timbers of an old wharf, and plentifully on stones, about low-water mark, at East Boston.”

**Distribution and Habitat.** Western Atlantic (Gould, 1841), Greenland (Møller, 1842; Schiøtte & Waren, 1992), Eastern Atlantic, Faroe Islands (Sneli et al., 2005), Iceland (Ingolfsson, 1996; Waren, 1996), British Isles (Fretter & Graham, 1978), Northern Norway (Høisæter, 2009). Barents Sea, Kola Peninsula and White Sea (Golikov, 1987), Galicia (Templado & Rolán, 1986: 121). Mediterranean Sea, Alboran Sea (Giannuzzi-Savelli et al., 2002: 80). Very common in the Barents Sea in 0/-3 m on sandy bottoms (Nekhaev et al., 2014: 272). The species seems to prefer shallow waters with algae, and can tolerate brackish waters (Templado & Rolán, 1986: 121).

**Remarks.** The record from Ria de Vigo (Galicia: Templado & Rolán, 1986: 121) is the southernmost occurrence in the Atlantic Ocean, whilst the Alboran Sea record (Giannuzzi-Savelli et al., 2002: 80) should represent the southern limit overall. Shells tend to be curved. *O. aculeus* is very similar to *O. galaica* Rolán, 2008, from Galicia (Spain). Whilst some measurements of teleoconchs (e.g. number of spirals cords on the penultimate and the body whorl) and protoconchs (maximum diameter) are similar in the two species (Rolán, 2008), the different protoconch sculpture (with fine spiral cords in *O. aculeus* and almost smooth in *O. galaica*) (Fretter & Graham, 1978; Warén, 1996; Rolán, 2008) and the less marked teleconch microsculpture, along with other minor differences (e.g. deeper suture, larger size according to Warén, 1996) allow an easy separation of *O. aculeus* and *O. galaica*. See below under *Onoba semicostata* for the differences from *Onoba aculeus*.

**Onoba dimassai** Amati et Nofroni, 1991 (Figs. 9–12)

*Onoba dimassai* Amati & Nofroni, 1991: 30, figs. 1–4

**Iconographic references.** Amati & Nofroni (1991: 30, figs. 1–4); Giannuzzi-Savelli et al. (2002: 82, 83, fig. 256)
**Onoba josae** Moolenbeek et Hoenselaar, 1987 (Figs. 13-15, 27)

**Onoba moreleti** sensu van Aartsen et al. (1984: 20 fig. 81), not Dautzenberg, 1889

**Onoba josae** Moolenbeek & Hoenselaar (1987: 153 figs. 6-8)

**Iconographic references.** van Aartsen et al., 1984: 20, fig. 81; Moolenbeek & Hoenselaar, 1987: 153, figs. 6–8; Giannuzzi-Savelli et al., 2002: 82, 83, figs. 260–261; Gofas et al., 2011: 193, two unnumbered figures; Scaperrotta et al., 2013: 62, five unnumbered figures.

**Type locality.** Getares, Bay of Algeciras, Spain.

**Type material.** Not seen. Holotype (ZMA Moll. no. 3.87.034), 40 paratypes (ZMA Moll. no. 3.87.035), 40 paratypes (coll. H.J. Hoenselaar), 1 paratype (MNHN of Paris), 1 paratype (IRScNB), 4 juv. paratypes Spain, Getares, 3 paratypes Getares, 28 paratypes Getares (coll. H.J. Hoenselaar), 19 paratypes Getares (ZMA no. 3.87.036 and coll. H.P.M.G. Menkhorst).

**Examined material.** Italy: S. Felice Circeo, Central Tyrrhenian Sea, -30/50 m, 07/1982, 1 sh (BA); Spain: North of Getares (Cadiz - Mediterranean), legit Gubbioli, 09/1987, 3 sh and 9 fragments, beached (IN); Tarifa -30 m, 1 sh (SB-MS).

**Original description.** Moolenbeek & Hoenselaar, 1987: “Description of the holotype. – Length 2.5 mm, width 1.3 mm (fig. 6). Shell oval-conical, semitransparent with some gloss on the surface, umbilicum closed. Protoconch dome-shaped, with about 1 ¼ whorls and with 8 weak and irregular spirals, protruding very little. Teleoconch about 3 ½ whorls with smooth spiral cords. The interstices are broader than the spiral cords (ratio 1:2) and are covered with 7-8 very fine, somewhat undulating spiral striae. Penisultimate whorl with about 9 spiral cords. The upper half of the penultimate whorl with very weak costae. Body whorl somewhat convex, with about 22-24 spiral cords. Aperture subcircular below and rather angular above (angle about 90°), weakly channelled posteriorly. Peristome simple, sharp and continuous. Outer lip clearly opisthocline. Colour white. Operculum, periostracum and soft parts unknown.”

**Distribution and habitat.** Strait of Gibraltar, -30 m. One specimen without soft parts from Latial coast (Italy), in bioclastic sediment, -30/50 m.

**Remarks.** van Aartsen et al. (1984) erroneously identified specimens from Getares (Spain) with O. moreleti Dautzenberg, 1889 (Ponder, 1985: 162, figs. 113c, d; Moolenbeek & Hoenselaar, 1987: 155, figs. 1–5), currently considered endemic to the Azores (originally reported as living at great depths, but later collected also in shallower waters: Gofas, 1990: 125). So far, O. josae was never reported from outside the area of Gibraltar Strait. The specimen collected in the Central Tyrrhenian and herein reported is the first record from outside that area. The record is based on a single, partly broken and empty adult shell (Fig. 13) so it does not provide information on the local population viability. The shell was sorted out from a sample collected by fishing nets residuals from -30/50 m depth, along with many specimens of O. dimassai. Onoba moreleti differs from O. josae in having a more slender and smaller shell, (1.7–1.9 mm v. 2.2–3.2 in O. josae),
less convex spire, smaller aperture, more or less dark yellowish colour v. white colour in *O. josaee*, and a lower number of spiral cordlets both on the penultimate whorl and on the body whorl (respectively 8–9 and 16–17 v. 9–14 and 22–26 in *O. josaee*). *Onoba josaee* may have thin subsutural axial ribs and, very rarely, an additional labial varix.

*Onoba guzman* Hoenselaar et Moolenbeek, 1987 (Figs. 21, 22)

*Onoba guzman* Hoenselaar & Moolenbeek 1987: 19, figs. 7–12

ICONOGRAPHIC REFERENCES. Hoenselaar & Moolenbeek (1987: 19, figs. 7–12; Giannuzzi-
Savelli et al. (2002: 82, 83, fig. 258); Gofas et al. (2011: 193, 1 unnumbered figure).

**Type locality:** Tarifa, Spain.

**Type material.** Not seen. Holotype (ZMA Moll. no. 3.87.001), 8 paratypes (ZMA Moll. no. 3.87.002), 15 paratypes (coll. Hoenselaar), 1 paratype, Tarifa, IV. 1985 (coll. Hoenselaar).

**Examined material.** Spain: Getares North, Cadiz (Mediterranean) legit Nofroni, 08/1985, 1 sh, beach (IN); Tarifa -30 m, 1 sh (SB-MS).

**Original description.** Hoenselaar & Moolenbeek, 1987: "Description of the holotype. - Length 1.8 mm, width 0.80 mm (fig. 7). Shell minute, elongate-conic, non-umbilicate, fragile, semitransparent with some gloss on its surface. Protoconch dome-shaped, 1 ½ whorls, smooth. Teleoconch with 2 ½ whorls with microscopical pit-marks more or less forming spirals (fig. 9). Suture deep; whorls concave. On the base 4 shallow whorls (fig. 10). Aperture ovate or drop-shaped, with an opisthocl ine outer lip, varix small or lacking, peristome simple (figs. 10, 12). Operculum, periostracum and soft parts of the animal unknown."

**Distribution and habitat.** Reported for the Strait of Gibraltar and Tangier (Atlantic Morocco) and Tarifa (Spain) -30 m.

**Remarks.** Onoba guzmani is very similar to *O. lincta* (Watson, 1873), endemic to Madeira (Atlantic) (Watson, 1873: 387), which has a different teleoconch sculpture of fine spiral threads and some strong cords on the base (v. numerous series of microtubercles spirally arranged, and 4 spiral cordlets on the base) and the suture more incised, canaliculated. The protoconch of *O. tarifensis* it is sculpted by 7 weak spiral cordlets (v. smooth in *O. guzmani*), a different teleoconch sculpture of 31–38 fine spiral cordlets on the last whorl (v. numerous series of microtubercles spirally arranged, and 4 spiral cordlets on the base) (Hoenselaar & Moolenbeek, 1987, figs 3 and 9) and a stronger labial varix.

**Onoba tarifensis** Hoenselaar et Moolenbeek, 1987 (Figs. 23, 24)

**Onoba tarifensis** Hoenselaar & Moolenbeek, 1987: 17, figs. 1–6

**Onoba gianninii** (Nordsieck, 1974) (Figs. 18–20)

**Setia (Crisillosetia) gianninii** Nordsieck, 1974: 11, fig. 4
**Cingula gianninii** (Nordsieck, 1974) (See Verduin, 1984: 61, fig. 25)

**Setia gianninii** Nordsieck, 1974 (See Amati & Nofroni, 1991: 32)

**ICONOGRAPHIC REFERENCES.** Nordsieck (1974: 11, fig. 4); Verduin (1984: 61, fig. 25); Oliverio (1988: 113, fig. 1 (operculum and radula)); Amati & Nofroni (1991: 32, figs. 6–10); Bouchet & Warén (1993: 662, figs. 1518, 1519); Ardovini & Cossignani (1999: 38, fig. 035); Smriglio & Marriottini (2000: 17, figs. 7, 8); Giannuzzi-Savelli et al. (2002: 82, 83, fig. 257); Scaperrotta et al. (2012: 63, 5 unnumbered figures).

**TYPE LOCALITY.** Strait of Bonifacio, Corsica, ‘station K1’, -200/220 m.

**TYPE MATERIAL.** Lectotype (designated by Amati & Nofroni, 1991) MCZR, 1 paralectotype (coll. Giannini, Empoli). Bouchet & Warén (1993: 662) reported some “paratypes” in coll. Carrozza, coll. van Aartsen and coll. SMNH (not listed in the original work), which should be more correctly defined as “paralectotypes”.

**EXAMINED MATERIAL.** Lectotype (MCZR); France: Bastia, Corsica, depth (unprecised) bioclastic sands sample, 1 sh (BA); Italy: Capraia Is., Northern Tyrrhenian Sea, -400 m, 1 sh (BA); off Fiumicino, Central Tyrrhenian Sea, -300 m, 4 sh (BA); Capraia Is., Northern Tyrrhenian Sea, -350 m, 3 sh (IN); Capraia Is., Northern Tyrrhenian Sea, 1 sh (Bogi collection, Livorno).

**ORIGINALE DESCRIPTION.** Nordsieck, 1974: “Setia (Crisillosetta) gianninii n. sp. 3/1,7 mm. Olotipo nella collezione Giannini. Pallida, semitransparente; 5 giri molto convessi, il primo (protoconca) attenuato. Sutura profonda. Circa 30/40 strie spirali sull’ultimo giro. 15 sul penultimo. Sottile plica ombelicale. Comparando questa indubbiamente nuova specie con tutte le altre del sottogenere (v. tavola R IV del Vol. III) ci si avvede che non esiste alcuna altra specie ad essa avvicinabile sia per la convessità dei giri, il numero delle spirali e le misure della conchiglia.”

**DISTRIBUTION AND HABITAT.** Central Mediterranean Sea: Corsica (France), Sardinia, Tuscany and Latiun (Italy), Algeria -93 m. (Bouchet & Warén, 1993: 663). In bioclastic sediments from -93/500 m depth.

**REMARKS.** O. gianninii may sometimes have an additional labial varix. *O. oliverioi* and *O. gianninii* have been found sympatric in the Central Tyrrhenian Sea, in the deepest bathymetric range of *O. gianninii* (-200/600 m *O. oliverioi* v. -93/500 m of *O. gianninii*). The shells of these two species are very similar; *O. oliverioi* differs mainly for the smaller size (H 1.6–2.3 mm at 2.5–3 whors v. H 2.5–2.6 mm at 2.5–3.25 whors in *O. gianninii*), the flatter more sculpted and slightly smaller protoconch, (maximum diameter 0.40–0.44 mm v. 0.46 mm (fide Bouchet & Warén, 1993: 663 in *O. gianninii*), the less slender outline (H/W = 1.44/1.65 v. H/W = 1.66–1.80 in *O. gianninii*), and the larger aperture (H/Ha = 1.84–2.16 v. H/Ha = 2.18–2.22 in *O. gianninii*). See under *O. dimassai* for distinction from *O. gianninii*.

**Onoba oliverioi** Smriglio et Mariottini, 2000 (Figs 16, 17)

**Onoba oliverioi** Smriglio & Mariottini, 2000: 16, figs. 1–6

**ICONOGRAPHIC REFERENCES.** Bouchet & Warén (1993: 663, figs. 1520, 1521) (sub nomine Onoba gianninii); Smriglio & Mariottini (2000: 16, figs. 1–6).

**TYPE LOCALITY.** Central Tyrrhenian Sea (41° 51’ N, 11° 28’ E) off coast of Latium -350/600 m.

**TYPE MATERIAL.** Holotype (MZB 14000); 1 paratype, type locality (MCZR); 9 paratypes, type locality (CS); 1 paratype, type locality (MO); 1 paratype, type locality (PM).

**EXAMINED MATERIAL.** Type material partly examined: type locality, 9 paratypes (CS), type locality, 1 paratype (MCZR).

**ORIGINALE DESCRIPTION.** Smriglio & Mariottini, 2000: “Shell small (from 1.61 to 2.32 mm in height), conical-ovate, with a large aperture, blunt apex. Protoconch dome-shaped consisting of about 1.5 whors, with a diameter of 400–440 um, sculptured with 6–8 fine and irregular spiral cords. Among them, several other interrupted fine furrows create a sort of micro-tuberculated sculpture. Teleoconch of about 3.0 rounded convex whors, the last one is about 2/3 of the entire length, average ratio H/W = 1.55, average ratio H/Ha = 1.99. Suture pronounced and shallowly channeled, axial growing lines evi-
ent, spiral sculpture consisting of about 27 evenly spaced ribs, with about 2-3 much smaller furrows in the inter-spaces. Aperture ovoid, umbilical crevice slightly visible. Colour milky-white or yellowish translucent. Operculum and animal unknown.”


**Remarks.** *Onoba oliveroi* is characterized by having a shell with a low H/W ratio and to live at a maximum depth of -600 m. *O. oliveriori* differs

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**Figures 16–17.** *Onoba oliveroi* Smriglio et Mariottini, 2000, Central Tyrrhenian Sea, Latium (Italy) paratype H, height 1.8 mm (CS). Figure 18. *O. gianninii* (Nordsieck, 1974): Fiumicino, Central Tyrrhenian Sea (Italy), height 2.6 mm (BA). Figures 19, 20. *O. gianninii*: Bastia, Corsica (France), height 2.5 mm (BA).
from *O. dimassai* for the deeper habitat (-200/600 m v. -15/50 m in *O. dimassai*), by its higher number of protoconch whorls (about 1.5 v. 1.2–1.25 in *O. dimassai*), the protoconch sculptured with 6–8 fine irregular spiral cordlets v. an apparently smooth protoconch (also at SEM) in *O. dimassai* and a larger maximum diameter of the protoconch (0.40–0.44 mm v. 0.30–0.38 mm in *O. dimassai*). The number of the spiral cordlets on the teleoconch is broadly similar in the two species (about 25–30). See under *O. gianninii* for distinction from *O. oliverioi*.

*Onoba* sp. (Figs. 25, 26)

*Onoba* sp. A. Amati & Nofroni, 1991: 34, fig. 5
EXAMINED MATERIAL. Italy: San Felice Circeo, Central Tyrrhenian Sea, -30/50 m, VIII.1982, legit Angelo Amati, 1 sh (BA).

DESCRIPTION. Shell small, fragile, ovate-conical shape, semi-transparent, non umbilicated. Protoconch dome-shaped, paucispiral, with slightly twisted nucleus, consisting of just over one whorl (estimate uncertain, protoconch-teleoconch boundary not clearly visible), 0.25 mm high, with a nucleus diameter of 0.13 mm and a maximum diameter of 0.32 mm without microsculpture as seen at a magnification of 90x. Teleoconch of 2.8 convex whorls with deep suture. Outer lip not thickened (probably the specimen was not fully adult) orthocline. Sculpture of 24 fine and flat spiral cordlets on the body whorl, 12 of which above the aperture. Finer threads covering the entire surface, visible at a magnification of 90x. Color white. Operculum and soft parts unknown.

Dimensions: H = 1.7 mm, W = 1.05 mm, Ha = 0.84 mm, H/W ratio = 1.619; H/Ha ratio = 2.023.

DISTRIBUTION AND HABITAT. San Felice Circeo, Central Tyrrhenian Sea, Italy, a single shell in organogenic detritus in the infralittoral at -30/50 m. Found sympatric with O. dimassai and O. josae.

REMARKS. The single shell, so far known, is peculiar among the European Onoba, in its particular apex, with a paucispiral protoconch and a twisted nucleus. It is easily recognizable from all other species. Onoba dimassai is similar in the fragile shell, the white colour, the orthocline outer lip and the teleoconch spiral sculpture. It differs, however, in the different (not twisted) apex and the wider and more spaced teleoconch spiral cordlets. O. nunezi Rolán et Hernandez, 2004, endemic to the Canary Islands, is slightly smaller (about H 1.3 mm v. H 1.7 mm in Onoba sp.), is more slender, has a teleoconch spiral sculpture of about 10 weak well-spaced cordlets and the whole teleoconch surface is covered with finer and more numerous threads (Rolán & Hernandez, 2004: 174). Manzonia vigoensis (Rolán, 1983) was described as belonging to the genus Onoba but later Moolenbeek & Faber (1987)

<table>
<thead>
<tr>
<th>Character</th>
<th>Onoba semicostata</th>
<th>Onoba aculeus</th>
<th>Onoba dimassai</th>
<th>Onoba josae</th>
<th>Onoba guzmanii</th>
<th>Onoba tarifensis</th>
<th>Onoba gianninii</th>
<th>Onoba oliveroi</th>
</tr>
</thead>
<tbody>
<tr>
<td>H</td>
<td>1.8-3.5</td>
<td>2.0-4.5</td>
<td>1.4-2.2</td>
<td>2.2-3.2</td>
<td>1.4-2.1</td>
<td>1.45-1.75</td>
<td>2.5-2.6</td>
<td>1.61-2.32</td>
</tr>
<tr>
<td>W</td>
<td>1.15-1.35</td>
<td>1.35-2.0</td>
<td>0.9-1.15</td>
<td>1.3-1.5</td>
<td>0.7-1.1</td>
<td>0.75-0.82</td>
<td>1.5-1.55</td>
<td>1.08-1.4</td>
</tr>
<tr>
<td>Ha</td>
<td>1.0-1.15</td>
<td>1.08-1.1</td>
<td>0.75-0.95</td>
<td>1.1-1.2</td>
<td>0.59-0.95</td>
<td>0.72-0.75</td>
<td>1.2-1.3</td>
<td>0.85-1.11</td>
</tr>
<tr>
<td>R.H/W</td>
<td>2.0-2.59</td>
<td>2.25-2.36</td>
<td>1.56-1.82</td>
<td>1.63-1.81</td>
<td>1.9-1.98</td>
<td>2.0-2.06</td>
<td>1.66-1.8</td>
<td>1.44-1.65</td>
</tr>
<tr>
<td>R.H/Ha</td>
<td>2.30-3.04</td>
<td>2.77-2.96</td>
<td>1.88-2.21</td>
<td>2.0-2.22</td>
<td>2.21-2.37</td>
<td>2.22-2.39</td>
<td>2.18-2.22</td>
<td>1.84-2.16</td>
</tr>
<tr>
<td>Tcs</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>St</td>
<td>deep, and channeled</td>
<td>deep, slightly to scalariform</td>
<td>slightly channeled</td>
<td>deep</td>
<td>deep</td>
<td>deep</td>
<td>deep</td>
<td>pronounced and shallow channeled</td>
</tr>
<tr>
<td>Nw</td>
<td>2.8-3.8 (5/5.5)*</td>
<td>3.8 (4.5/5.6)*</td>
<td>2-3</td>
<td>3.25-3.5</td>
<td>2.75-3</td>
<td>2.5-2.75</td>
<td>2.5-3.25</td>
<td>2.5-3</td>
</tr>
<tr>
<td>Nspw</td>
<td>12-15</td>
<td>10-14</td>
<td>8-15</td>
<td>9-14</td>
<td>microscopical pit-marks more or less forming spirals</td>
<td>18-24</td>
<td>15-17</td>
<td>11-12</td>
</tr>
<tr>
<td>Asc</td>
<td>yes</td>
<td>occasionally pronounced striae of growth</td>
<td>no</td>
<td>occasionally</td>
<td>no</td>
<td>no</td>
<td>no</td>
<td>no</td>
</tr>
</tbody>
</table>

Table I. Ranges of morphometric characters of the teleoconch in Mediterranean species of the genus Onoba. Measurements in mm. H: height; W: width; Ha: height aperture; R.H/W: ratio height/width; R.H/Ha: ratio height/height aperture; Tcs: Tendency to curved shells; St: Suture; Nw: number of teleoconch whorls; Nspw: Spiral cords on the penultimate whorl; Nslw: number of spirals cords on the last whorl; Asc: Axial subsutural cords. *( ) Da Nekhaev et al., 2014. Probably also include the whors of the protoconch.
and Moolenbeek & Hoenselaar (1992) assigned it to the genus *Manzonia* Brusina, 1870; it resembles *Onoba* sp. for the general shape of the shell and the paucispiral protoconch with a twisted nucleus; but differs for the different sculpture of the teleoconch, with aligned micro-perforations a thickened outer lip both typical of the genus *Manzonia*.

**ACKNOWLEDGMENTS**

We wish to thank our friends Stefano Bartolini and Maria Scaperrotta (Florence, Italy) and Carlo Smriglio (Rome, Italy) for the loan of some material of their collections and Emilio Rolán (Vigo, Spain) and Ermanno Quaggiotto (Longare, Vicenza, Italy) for the bibliographic help. Stefano Bartolini (Florence, Italy) made some of the light photographs (Figs. 21–24 and Fig. 27). Marco Oliverio (La Sapienza Rome University, Italy) commented an early draft of the manuscript.

**REFERENCES**


