First records of Cochlicella conoidea A. Férussac, 1821 (Gastropoda: Geomitridae) from the Cantabrian coast

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First records of *Cochlicella conoidea* A. Férussac, 1821 (Gastropoda: Geomitridae) from the Cantabrian coast

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The genus *Cochlicella* A. Férussac, 1821 is represented by three species, all of them present in the Iberian Peninsula. *Cochlicella acuta* (O. F. Müller, 1774) and *C. barbara* (Linnaeus,1758) (Figures 1A-C) are widely distributed, often far inland (e.g. Puente, 1994). On the other hand, *C. conoidea* (Draparnaud, 1801) (Figures 1D-L) has a strong preference for coastal areas, requiring higher temperatures than the other *Cochlicella* species, occurring all along the Mediterranean coast and along the Atlantic coast northward to western Galicia (e.g. Puente, 1994). At such localities frequently all three species occur syntopically (Welter-Schultes, 2012). According to all overview papers (Castillejo, 1986; Puente, 1994; Altonaga *et al.*, 1994; Rolán & Otero-Schmitt, 1996; Welter-Schultes, 2012; Cadevall & Orozco, 2016) *C. conoidea* does not occur along the Cantabrian Sea, and Gargominy *et al.* (2011) did not list the species from the French Atlantic coast. Prieto (1986) and Puente (1994) rejected the record by Ortiz de Zárate López & Ortiz de Zárate Rocandoi (1949) from San Sebastián, Guipúzcoa (based on material in the collection Altimira) and assigned it to *C. barbara*. As they did not see the material themselves, reidentification of the material collected by Altimira is recommended. Records from the French department Pyrénées-Atlantiques (e.g. Locard, 1882) have been rejected by Germain (1930).

This paper is based on material collected by the author during the last five decades, supplemented by some lots in Naturalis Biodiversity Center (Leiden, The Netherlands). *Cochlicella conoidea* is recorded from several localities in Asturias and Cantabria. The author found the first populations in 1990-1991 and recognised the species as it generally occurs sympatrically with the other two more widely distributed *Cochlicella* species. As the specimens are slightly longer than *C. conoidea* recorded from other parts of the peninsula, most observers appear to have confused them with *C. barbara*. Already in 1961 H. van der Naaden collected specimens at Laredo, Cantabria (see below). Where present, *C. conoidea* typically occurs in large numbers. Nearby some of these populations, later additional populations were found, but there is no evidence of those resulted from recent expansion. More likely the specimens were already present, but not noticed before. An additional record is based on a photograph by Pantxo Zuazu (2020) who correctly identified the species collected at Liencres, Cantabria.

The new localities are listed from west to east (Figure 2). The code at the end indicates which species were found living syntopically: **a** = *C. acuta*, **b** = *C. barbara*, **c** = *C. conoidea*. After the locality, the UTM and collection code are recorded: R = Raven, RMNH = Rijksmuseum van Natuurlijke historie, now part of Naturalis Biodiversity Center, Leiden, The Netherlands.

Pontevedra, Galicia

- La Lanzada beach, O Grove [29TNG09-NG19; R L0499], 5 m, 25.08.1989. In dunes with grass and herbs (**abc**).

Asturias

- Bañugues, Luanco [30TTP7334; R L2810], 0 m. 03.11.2019. Alive on grass in low areas with long grass bordering the beach (**c**).
- El Puntal, W side of Villaviciosa estuary [30TUP0722; R L1079], 1 m, 21.12.1990. Alive in short vegetation (mainly grass) on very low dunes on the upper part of the beach (**abc**).
- Playa de Rodiles, 10 km NNW of Villaviciosa [30TUP0823, R L2142], 5 m, 07.1998. Alive on plants in the dunes behind the beach (**abc**).
- Playa de Misiego, E side of Villaviciosa estuary [30TUP0821, R L2933], 0 m, 08.2012. In flotsam along the beach (**abc**).
- Playa de La Isla, La Isla, Colunga [30TUP2017, R L1826], 2 m, 29.07.2008. Alive in short grass on very low dunes along the beach (**abc**); xii.2019. Dead at same locality (**abc**) (Figure 3).
- Playa la Espasa, 2 km SE of La Isla, Colunga [30TUP2116, R L1075], 1 m, 28.12.1990. In very low dunes (up to 1 m) with lime grass immediately behind the beach (**abc**).
- Playa de la Vega, Vega [30TUP2716; R L1070], 5 m; 28.12.1990. In dunes, up to a few metres high, behind the beach next to the mouth of rivulet. Predominantly lime grass (**abc**).

Cantabria

- Dunas de Liencres [30TVP21], 01.2020, *leg.* Pantxo Zuazu. Dead in dunes (**ac**) (Facebook, 15.01.2020).

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Figure 1: A-C) *Cochlicella barbara*, La Isla, Colunga, Asturias, *leg*. R (R L2118). **A)** L 9.5 mm). **B)** L 7.8 mm). **C)** L 7.6 mm). **D-L)** *Cochlicella conoidea*: **D)** Playa de la Lanzada, Pontevedra, Galicia, *leg*. R (R L0499, L 5.1 mm). **E-H)** El Puntal beach, N of Villaviciosa, Asturias, *leg*. R (R L1097). **E)** L 10.2 mm. **F)** L 8.5 mm. **G)** L 8.6 mm. **H)** L 9.3 mm. **I-J)** La Isla, Colunga, Asturias, *leg*. R (R L1826). **I)** L 7.8 mm. **J)** L 9.5 mm. **K-L)** La Espasa beach, La Isla, *leg*. R (R L1075). **K)** L 10.3 mm. **L)** L 10.0 mm.

- Noja [30TVP5814; R L1999], 3 m; 22.12.1991. Alive in low sand dunes with lyme grass, immediately behind the beach (**abc**). Also 07.06.1980 *leg*. B.J. Gomez & C.E. Prieto (RMNH.MOL.661295, labelled as *C. barbara*).
- Laredo, precise locality unknown [30TVP6407; RMNH. MOL.308604], 07.08.1961, *leg*. H. van der Naaden, coll. Theo Ripken (**c**). Also 09.1982 *leg*. H. Haak, coll. A.J. de Winter (RMNH. MOL.308655, labelled as *C. barbara*). On 29.07.2017 the author found *C. acuta* and *C. barbara* alive in the dunes along Salvé beach in Laredo.

All populations here recorded occur in dune-like areas adjacent to beaches (Figure 3), likely because of the presence of shell fragments, as the species is chalcophile (Puente, 1994; Cadevall & Orozco, 2016). Although *C. acuta* and *C. barbara* live syntopically at most of these localities, they also occur in a variety of other habitats. Especially *C. barbara* occurs far inland (e.g. Altonaga *et al*., 1994; Puente, 1994). The shells of *C. conoidea* of populations along the Cantabrian coast are all very similar, but are somewhat different from those of other parts of Spain. They are longer (about 1.7 times longer than wide, whereas elsewhere *C. conoidea* is equally long and wide). They thus appear similar to *C. barbara*, from which they can be differentiated by their lower spire (shells of *C. barbara* are almost twice longer than wide), having a fully or almost fully open umbilicus (shells of *C. barbara* have a very narrow umbilicus, largely covered) and having a deeper suture. The colour pattern of *C. conoidea* is variable, from completely white to having one or two dark brown spiral bands below the periphery, one band below and

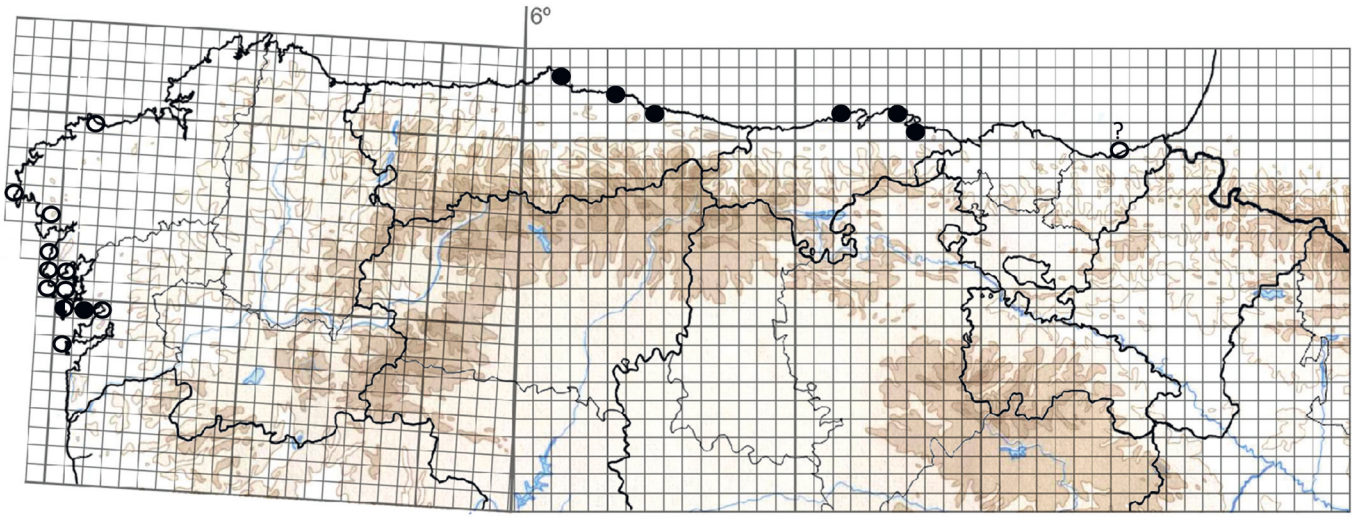

Figure 2: Distribution map including literature records from Galicia. Circles: Puente, 1994; circle with question mark: record to be reconfirmed from Ortiz de Zárate López & Ortiz de Zárate Rocandoi, 1949. Solid dots: new records. Base map with UTM grid 10 x 10 km.

Figure 3: Typical habitat of *Cochlicella conoidea*: the grassy low dunes/upper part of the beach at La Isla, Colunga, Asturias (3D view from Google Earth, looking to the SW).

one above the periphery, to being almost fully dark brown with a white band along the periphery and whitish spire (Figures 1D-1L). In this area *C. barbara* shells are white, with a single band just below or a single broad band above the periphery (Figures 1A-C). The latter colour form has not been seen in *C. conoidea* along the coast of the Cantabrian Sea.

Naturalis holds numerous lots from the collection Altimira. The lot of *C. conoidea* from San Sebastián was not found, but lots of *C. conoidea* from NE Spain and *C. barbara* from Galicia identified by him show that he knew how to differentiate these species. Therefore, his record of *C. conoidea* from San Sebastián is almost certainly correct.

Thus far the species has been found at a small number of localities. It likely occurs at other localities along the coast and further examination of suitable habitats is recommended. Due to its specialisation to a habitat that only occurs as isolated patches, also its populations are isolated. Therefore, it is not plausible they have been able to disperse fully by themselves. Accidental transport by birds has probably been a key mechanism (compare Gittenberger, 2012).

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