**Data paper**

**New records on the land and freshwater molluscs of Gran Canaria (Canary Islands, Spain)**

**Authors:**   
Ward Langeraert: 1) Master student Biology, Ghent University (UGent), Belgium  
ward.langeraert@ugent.be

Dimitri Brosens: 2) Research Institute for Nature and Forest (INBO), Brussels, Belgium   
3) Belgian Biodiversity Platform, Brussels, Belgium

**Abstract**

“Land and freshwater molluscs of Gran Canaria (Spain)” is an occurrence dataset containing 389 observations of 62 different taxa of land and freshwater molluscs encountered on Gran Canaria, an island central in the Canarian archipelago (Spain). Various sites were inspected in a period between 1988 to 2020. The aim is to contribute to the knowledge on the ecology and distribution of these species on the island such that it may aid conservation and research of these organisms in the future. The dataset is published as a standardized Darwin Core Archive and includes for each observation a stable occurrenceID, scientific name, date, and location of the observation, as well as info on lifeStage and organismQuantity, and supplementary remarks on the determination and the observation itself. We have released this dataset to the public domain under a CC0 1.0 Universal (CC0 1.0) Public Domain Dedication (https://creativecommons.org/publicdomain/zero/1.0/).

**Keywords**

snails, Mollusca, terrestrial, freshwater, Gran Canaria, Spain, occurrence, observation, open data, data paper

**Rationale**

The Canary Islands (Spain) are an archipelago of the coast of northwest Afrika. Gran Canaria is the third-largest island and located in the centre (Carracedo & Troll, 2016). The island contains a number endemic land snail species (e.g. Brito & Fraga, 2010). Freshwater molluscs are of smaller significance, but are also present. The research of land and freshwater molluscs of the Canaries mainly goes back to the 19th century with the famous works of Webb & Berthelot (1833), Shuttleworth (1852a, 1852b), Mousson (1872), Wollaston (1878), Mabille (1884), Odhner (1931), and others. Recent checklists are available (Bank et al., 2002; Brito & Fraga, 2010; Helixebas, 2019) and some more recent papers are cited further in this article. Nevertheless, taxonomic research is still largely based on these old works and many species were never found again since their description or the ecology or proper range is not known. This, together with the threats of global warming (Luque et al., 2013) and the increase of demographic and touristic pressure (Ibáñez et al., 1997) could (and probably already has) detrimental consequences for the survival of these species (see also the assessments on <https://www.iucnredlist.org/>). Therefore, there is an urgent need for information on ecology, distribution and taxonomy. We hope that this dataset of land and freshwater snail occurrences can contribute to the knowledge on these species and contribute to their survival on Gran Canaria and the Canary islands as a whole.

**Taxonomic coverage**

Land and freshwater molluscs do not comprise a monophyletic taxonomic group, but are all mollusc species that live in respectively land and freshwater habitats. On land, only gastropods occur (class Gastropoda, snails and slugs) and in freshwater, both gastropods as bivalves (class Bivalvia) occur. No observations of bivalves are present in this dataset. The dataset includes 389 observations of 62 taxa belonging to 27 genera (fig. 1) and 18 families.

Determination was mainly done on two meetings concerning the land snails of Gran Canaria organized by the Dutch Malacological Society (Nederlandse Malacologische vereniging, NMV) coordinated by Theo Ripken. These meetings took place on 21 April 2018 and 23 February 2019 in resp. Leiden and Den Haag (Netherlands). Reference material and expert knowledge provided many determinations. Determinations were further based on the following articles: Alonso & Ibáñez (2015b) and Yanes et al. (2011) for the genus *Napaeus*, Alonso & Ibáñez (2015a) and Valido et al. (1990) for *Insulivitrina*, Ibáñez et al. (2003) for the genus *Obelus*, Gittenberger & Ripken (1987) for the genus *Theba*, and Hutterer & Groh (1991) for the genus *Truncatellina* (see also Langeraert, 2019). Also Groh et al. (1992), Mabille (1884), Mousson (1872) (version of 1873, see Bank et al., 2002), Neiber (2015), Odhner (1931), Serna & Gómez (2008), Shuttleworth (1975), and Wollaston (1878) were consulted. Additional information was found in Bank et al. (2002), Brito & Fraga (2010), Helixebas (2019) and as well on <https://www.malacowiki.org/> and <https://www.iucnredlist.org/>. Finally, for species with a wider, European, distribution the following works were consulted: Cadevall & Orozco (2016), Cameron (2008), Glöer (2015), Horsák (2013), Jansen (2015) and Welter-Schultes (2012).

**Taxonomic ranks**

**Kingdom:** Animalia  
**Phylum:** Mollusca  
**Class:** Gastropoda  
**Families:** Achatinidae, Enidae, Ferussaciidae, Geomitridae, Helicidae, Lauriidae, Lymnaeidae, Oxychilidae, Physidae, Planorbidae, Pomatiidae, Pristilomatidae , Punctidae, Streptaxidae, Trissexodontidae, Valloniidae, Vertiginidae, Vitrinidae  
**Species:** *Ancylus striatus, Caracollina lenticula, Cernuella virgata, Cochlicella acuta, Cochlicella barbara, Cornu aspersum, Ferussacia folliculum, Gibbulinella* aff. *dealbata, Gibbulinella* aff. *dewinteri, Gyraulus parvus, Hawaiia minuscula, Hemicycla berkeleii, Hemicycla ethelema, Hemicycla* cf. *gaudryi, Hemicycla glasiana, Hemicycla guamartemes, Hemicycla psathyra psathyra, Hemicycla psathyra temperata, Hemicycla psathyra* cf. *temperata, Hemicycla saponacea, Hemicycla saulcyi carta, Hemicycla* spec.*, Insulivitrina nogalesi, Insulivitrina parryi, Lauria cylindracea, Monilearia arguineguinensis, Monilearia montigena, Monilearia* cf. *praeposita, Monilearia pulverulenta, Monilearia tumulorum, Monilearia* spec.*, Napaeus exilis, Napaeus interpunctatus, Napaeus isletae, Napaeus josei, Napaeus moquinianus, Napaeus obesatus, Napaeus validoi, Napaeus venegueraensis, Napaeus* cf. *venegueraensis, Napaeus* spec.*, Obelus despreauxii, Obelus pumilio, Otala lactea, Oxychilus draparnaudi, Paralaoma servilis, Physella acuta, Physella* cf. *acuta, Pomatias adjunctus, Pomatias* aff. *laevigatus, Pseudosuccinea columella, Radix auricularia, Rumina decollata, Theba arinagae, Theba geminata, Theba grasseti, Theba pisana, Truncatellina atomus, Vallonia costata, Vallonia pulchella, Xerotricha conspurcata, Xerotricha* aff. *orbignii*

**Geographic coverage**

The dataset comprises three trips taken to Gran Canaria (Canary Islands, Spain) by the first author in the period between 2016 and 2020 and three shells of *Monilearia arguineguinensis* (Seddon & Aparicio, 1998) obtained as a gift (WL:SNAIL:GC:OCC:00000) (figs 2-4).

**Bounding box**

West: -15.78273773; East: -15.389485; North: 28.160023; South: 27.73919296

**Temporal coverage**

1988-04-08 to 2020-02-08

**Methodology**  
**Sampling description**

Sampling was done ad random along random routes. Locations were not predefined, but some regions were specifically visited because of known species richness or endemics occurrence. At site, observations were incidental, but microhabitats or elements that were thought to be favourable for snails or were given more attention (e.g. dead wood, north facing slopes etc.). Collection of specimens was mainly done by hand on sight. In some cases, a soil sample was taken that was later examined at home.

Individuals were observed as living snails or empty shells (recent or (sub)fossil). Juveniles were treated as individuals with a shell that lack adult characteristics, like an underdeveloped peristome or the presence of a keel that is not present in adult shells. Following this practice, subadult specimen were often classified as juveniles.

**Dataset  
Dataset description**

The following Darwin Core terms (<https://dwc.tdwg.org/terms/>) are used in the dataset: occurrenceID, family, scientificName, identificationQualifier, genus, specificEpithet, infraspecificEpithet, scientificNameAuthorship, eventDate, year, basisOfRecord, lifeStage, organismQuantity, organismQuantityType, decimalLatitude, decimalLongitude, coordinateUncertaintyInMeters, locality, municipality, stateProvince, island, islandGroup, country, countryCode, recordedBy, identifiedBy, identificationRemarks, occurrenceRemarks, kingdom, taxonID, language, license, rightsHolder, datasetID, institutionCode, datasetName, taxonRank, nomenclaturalCode

**Object name:** Land and freshwater molluscs of Gran Canaria (Spain)

**Format name:** Darwin Core Archive format

**Format version:**

**Character encoding:** UTF-8

**Language:** English

**License:** <https://creativecommons.org/publicdomain/zero/1.0/>

**Usage norms:**

**Publication date:** 2020-03-12

**Distribution:** <https://ipt.biodiversity.be/resource?r=snail-gran-canaria-occurrences>

**DOI:** https://doi.org/10.15468/ny1f9n

**Data records:**

**Additional information**

**Acknowledgements**

We would like to thank Theo Ripken for the coordination of the two meetings on the land snails of Gran Canaria organized by the Dutch Malacological Society and also for his numerous helpful remarks and answers regarding determination and systematics of the land and freshwater molluscs of the Canaries.

**References**

Alonso, M. R. & Ibáñez, M. (2015a). El material tipo de las especies de moluscos terrestres de Canarias: Familia Vitrinidae Fitzinger, 1833 (Mollusca, Gastropoda, Stylommatophora). - Vieraea 43: 115-126.

Alonso, M. R. & Ibáñez, M. (2015b). Las especies de la familia Enidae BB Woodward, 1903 (1880) (Mollusca, Gastropoda, Stylommatophora) de las islas Canarias: el género *Napaeus* Albers, 1850. - Vieraea 43: 153-188.

Bank, R. A., Groh, K., & Ripken, T. E. J. (2002). Catalogue and bibliography of the non-marine Mollusca of Macaronesia. In: Collectanea Malacologica. Festschrift für Gerhard Falkner. - Conchbooks, Hackenheim: 89-235, pl. 14-26.

Brito, L. N. & Fraga, J. N. (2010). Mollusca. In: Lista de especies silvestres de Canarias. Hongos, plantas y animales terrestres. 2009. Arechavaleta, M., Rodríguez, S., Zurita, N. & García, A. (coord.). - Gobierno de Canarias: 182-189.

Cadevall, J. & Orozco, A. (2016). Caracoles y babosas de la península Ibérica y Baleares. - Omega Ediciones SA, Barcelona: 817 pp.

Cameron, R. (2008). Keys for the identification of Land Snails in the British Isles. Second Edition. - FSC, Shrewsbury: 84 pp.

Carracedo, J. C. & Troll, V. R. (2016). The geology of the Canary Islands. - Elsevier, Amsterdam: 621 pp.

Gittenberger, E., & Ripken, T. E. (1987). The genus *Theba* (Mollusca: Gastropoda: Helicidae), systematics and distribution. - Zoologische Verhandelingen 241: 1-59.

Glöer, P. (2015). Süβwassermollusken. Ein Bestimmungsschlüssel für die Muscheln und Schnecken im Süβwasser der Bundesrepublik Deutschland. 14., überarbeitete Auflage. - Deutscher Jugendbund für Naturbeobachtung (DJN), Götingen: 135 pp.

Groh, K., Alonso, M. R., Ibáñez, M., & Henríquez, F. C. (1992). Rediscovery of *Hemicycla saulcyi* (d'Orbigny, 1839), a revision of its fossil allies (Gastropoda: Helicidae), and a description of a new species of *Napaeus* (Enidae), both from La Isleta, Gran Canaria, Canary Islands. - Schriften zur Malakozoologie 5: 1-12.

Helixebas (2019, February). Lista de moluscos continentales de la Península Ibérica e Islas. Retrieved from: <http://www.malacowiki.org/files/checklist_peninsula_iberica_e_islas.pdf>

Horsák, M., Juřičková, L. & Picka, J. (2013). Molluscs of the Czech and Slovak Republics. - Nakladatelství kabourek, Zlín: 264 pp.

Hutterer, R. & Groh, K. (1991). A review of Macaronesian *Truncatellina* (Gastropoda: Vertiginidae) with descriptions of four new species. - Bocagiana 151: 1-19.

Ibáñez, M., Alonso, M. R., Groh, K., & Hutterer, R. (2003). The Genus *Obelus* Hartmann, 1842 (Gastropoda, Pulmonata, Helicoidea) and its phylogenetic relationships. - Zoologischer Anzeiger 242(2): 157-167.

Ibáñez, M., Alonso, M. R., Henríquez, F. & Valido, M. J. (1997). Distribution of land snails (Mollusca, Gastropoda, Pulmonata) on the island of Gran Canaria (Canary Islands) in relation to protected natural areas. - Biodiversity and Conservation 6(4): 627-632.

Jansen, E. A. (2015). Veldgids slakken en mossels - land en zoetwater. - KNNV Uitgeverij, Zeist: 272 pp.

Langeraert, W. R. (2019). First record of *Truncatellina atomus* (Shuttleworth, 1852) (Gastropoda, Truncatellinidae) and *Paralaoma servilis* (Shuttleworth, 1852) (Gastropoda, Punctidae) from the island of Gran Canaria. - Gloria Maris 58(3): 86-89.

Luque, A., Martín, J. L., Dorta, P. & Mayer, P. (2014). Temperature trends on Gran Canaria (Canary Islands). An example of global warming over the subtropical Northeastern Atlantic. - Atmospheric and Climate Sciences 4: 20-28. http://dx.doi.org/10.4236/acs.2014.41003

Mabille, M. J. (1884). Matériaux pour line faune malacologique des iles Canaries. - Nouvelles archives du muséum d’histoire naturelle, Paris (2)7(2): 201-284, pl. 15-18.

Mousson, A. (1872). Révision de la faune malacologique des Canaries. - Neue Denkschriften der allgemeinen Schweizerischen Gesellschaft für die gesammten Naturwissenschaften (3)25(1): I-IV, 1-176, pl. 1-6.

Neiber, M. T. (2015). On the generic placement of the narrow-range endemic '*Helix*' *arguineguinensis* Seddon & Aparicio, 1998 from Gran Canaria (Canary Islands). - Zootaxa, 3981(2): 296-300.

Odhner, N. H. (1931). Beiträge zur Malakozoologie der Kanarischen Inseln. Lamellibranchien, Cephalopoden, Gastropoden. - Arkiv für Zoologie 23A(14): 1-116, pl. 1-2.

Serna, J. T., & Gómez, J. T. (2008). Contribución al conocimiento de los moluscos fósiles de las Islas Canarias. - Spira 2(4): 199-221.

Shuttleworth, R.J. (1852a). Diagnosen einiger neuer Mollusken aus den Canarischen Inseln. - Mittheilungen der naturforschenden Gesellschaft in Bern 241/242: 137-146.

Shuttleworth, R.J. (1852b). Diagnosen neuer Mollusken. - Mittheilungen der naturforschenden Gesellschaft in Bern 260/261: 289-304.

Shuttleworth, R. J. (1975). Tabulae ineditae Molluscorum insularum Canariensium. W. Backhuys ed. - Goecke & Evers, Krefeld: 43 pp., 8 pls.

Valido, M. J., Alonso, M. R., & Ibañez, M. (1990). La familia Vitrinidae en Canarias. IV. Revisión de las especies de Gran Canaria, con descripción de 3 especies nuevas (Gastropoda: Pulmonata). - Archiv für Molluskenkunde 120(1-3): 95-114.

Webb, P. B. & Berthelot, S. (1833): Synopsis molluscorum terrestrium et fluviatilium quae in iteneribus per insulas Canarienses. - Annales des Sciences naturales, 28: 307-326.

Welter-Schultes, F. (2012). European non-marine molluscs, a guide for species identification. - Planet Poster Editions, Götingen: 679 pp.

Wollaston, T. V. (1878): Testacea Atlantica or the land and freshwater shells of the Azores, Madeiras, Salvages, Canaries, Cape Verdes, and Saint Helena. - L. Reeve & Co., London: XI + 588 pp.

Yanes, Y., Santana, J., Artiles, M., Deniz, F., Martín, J., Alonso, M.R., & Ibáñez, M. (2011). Five new *Napaeus* species (Gastropoda: Pulmonata: Enidae) from Gran Canaria and El Hierro (Canary Islands). – Zootaxa 2901(1): 35-51.