



**The GLYCYMERIDIDAE  
of the NE Atlantic  
and the  
Mediterranean Sea**

# 6 endemic species and 1 immigrant species:

- \* NE Atlantic Ocean:

- *G. glycymeris*

- \* Mediterranean Sea:

- *Glycymeris bimaculata*;

- *G. inflata*;

- *G. nummaria*;

- *G. pilosa*;

- \* Canary Islands, Madeira, NW Africa:

- *G. vanhengstumi*

- \* Israel:

- *G. adenensis* (Lessepsian immigrant from the Red Sea)

# General characteristics

- limited to the genus *Glycymeris*;
- very puzzling family;
- from 30 mm (*G. vanhengstumi*) to 130 mm (*G. bimaculata*);
- equivalve, almost symmetric (= equilateral);
- outline: circular or oval, often posteriorly angled = not a good identification tool;
- shells are usually thick and heavy, occasionally rather smooth (*G. nummaria*);

- opisthogyrate = the umbos are turned to the posterior end of the valves: *G. inflata*;
- ligamental area: amphidetic (= umbo in the middle above the ligament) or prosodetic (= ligament at the anterior side):
  - \* amphidetic: *G. arabica*, *G. bimaçulata*;
  - \* slightly prosodetic: *G. nummaria*, *G. glycymeris*, *G. vanhengstumi*;
  - \* clearly prosodetic: *G. pilosa*
- taxodont hinge: 2 rows of teeth = unusable as identification tool;
- anterior muscle scar: narrower and obliquely truncated;
- posterior muscle scar: nearly circular but narrower below;
- no pallial sinus;

- **microsculpture: unique for each species and most important identification tool, concentric growth lines or reticulated pattern;**
- **outline: circular, oblique or truncated (especially at the anterior side);**
- **European species: periostracum with fine, separate bristles, in comparison with West African species which have a velvety periostracum;**
- **measurements: from 30 mm (*G. vanhengstumi*) to 130 mm (*G. bimaculata*);**
- **habitat: in sand, gravel or mud from the infralittoral zone to very deep waters.**

# *Glycymeris adenensis* (Jousseaume in Lamy, 1916)

- Lessepsian immigrant from the Red Sea via the Suez Channel;
- only 1 record (Israel - 2011);
- highly inequilateral, anterior margin protruding;
- slightly opisthogyrate, nearly orthogyrate;
- ligament: small and narrow, amphidetic;
- about 30 low ribs;
- periostracum: mostly absent;
- small (30 mm)



***Glycymeris adenensis* (Jousseaume in Lamy, 1916)**  
**Israel**



***Glycymeris adenensis* (Jousseaume in Lamy, 1916)  
inside**



# *Glycymeris bimaculata* (Poli, 1795)

- geographic distribution : from Morocco to Israel;
- almost circular;
- very slightly opisthogyrate, nearly orthogyrate;
- amphidetic;
- microsculpture: many distinct radiating ribs, obsolete concentric cords (larger number than in *G. pilosa*);

- periostracum: dark brown, nearly black;
- short bristles in comparison with *G. glycymeris* and *G. pilosa*;
- colour: brown, often with alternating yellow and brown concentric rings;
- designation '*bimaculata*': white blotch at the beaks, but not always present, also observed in *G. pilosa*;
- measurements: large (80-130 mm)



***Glycymeris bimaculata***  
**(Poli, 1795)**  
**Málaga, Spain**



***Glycymeris bimaculata***  
**(Poli, 1795)**  
**Capraia, Italy**



***Glycymeris bimaculata***

**(Poli, 1795)**

**Capraia, Italy**

**inside**



***Glycymeris bimaculata***  
**(Poli, 1795)**  
**Bodrum, Turkey**



***Glycymeris bimaculata***  
**(Poli, 1795)**  
**Ormideia, Cyprus**



***Glycymeris bimaculata***

**(Poli, 1795)**

**Ormideia, Cyprus**

**inside**



# *Glycymeris glycymeris* (Linnaeus, 1758)

- geographic distribution: Faroe Islands, British Islands, North Sea, the English Channel, Gulf of Biscay, the Azores, Madeira, occasionally found in the Mediterranean Sea;
- valves thick and solid, but thinner and lighter specimens also commonly found;
- inflated or compressed, circular, ovate or oblique;
- very opisthogyrate;
- ligamental condition: slightly prosodetic, nearly amphidetic;

- **microsculpture: strong radiating ribs crossed by equal strong concentric growth lines;**
- **periostracum: hooked fine hairs are short;**
- **colouration: very variable patterns;**
- **measurements: 30-90 mm;**
- **habitat: in sand or mud, from 75 to 1200 m;**
- **very variable in colour and shape: confusion with West African species is possible, especially with *G. pilosa* (Mediterranean Sea)!**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Palamos, Spain**



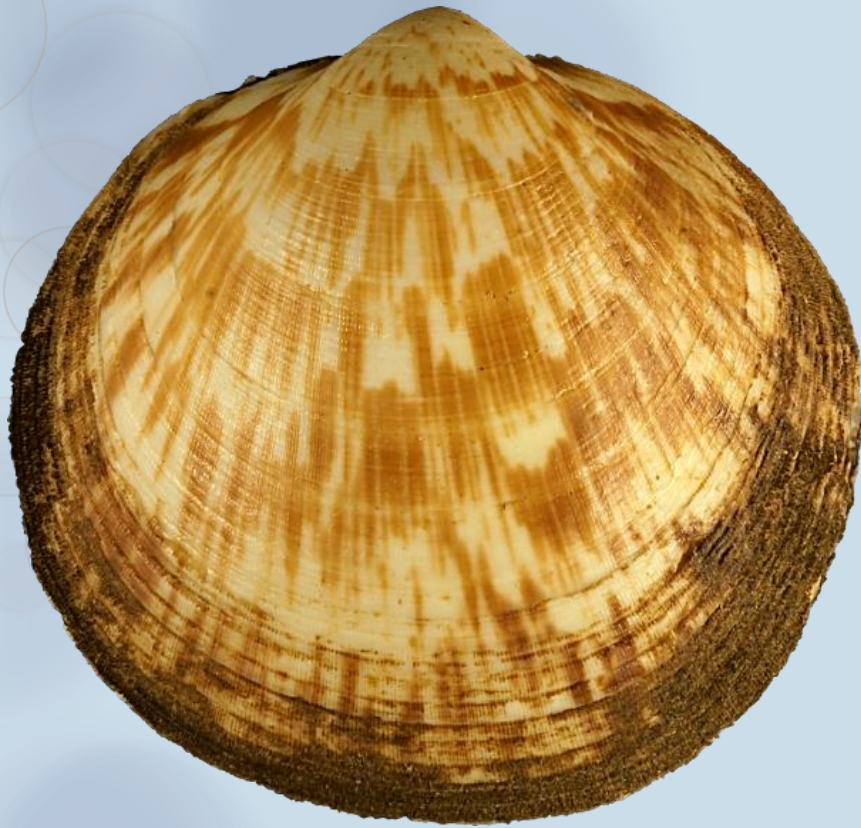
***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Gulf of Biscay**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Land's End, SW England, UK**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Brittany, France**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Brittany, France**



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**(Linnaeus, 1758)**  
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***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Brittany, France**  
**inside**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Brittany, France**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Brittany, France**





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**(Linnaeus, 1758)**  
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**(Linnaeus, 1758)**  
**Brittany, France**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Brittany, France**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Normandy, France**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Madeira**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Madeira**



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**  
**Canary Islands**



***Glycymeris vanhengstumi***  
**Goud & Gulden, 2009**  
**Morocco**





***Glycymeris glycymeris***  
**(Linnaeus, 1758)**

Madeira



***Glycymeris vanhengstumi***  
**Goud & Gulden, 2009**

Madeira



***Glycymeris glycymeris***  
**(Linnaeus, 1758)**

Normandy, France  
juvenile specimen



***Glycymeris vanhengstumi***  
**Goud & Gulden, 2009**

Madeira  
juvenile specimen



# *Glycymeris inflata* (Brocchi, 1814)

- geographic distribution: Mediterranean Sea (Mallorca);
- valves thick and solid, strongly inflated, rounded trapezoid outline, clearly inequilateral, upper margin smoothly arched ending in blunt obtuse edges;
- umbos prominent and opisthogyrate, covered with concentric ridges unaffected by a faint radial sculpture;
- ligament area: wide with irregular V-shaped ridges;
- microsculpture: clearly visible growth lines;
- colour: outside brown or grey, inside white with a deep brown posterior blotch always reaching the shell edge.

# *Glycymeris nummaria* (Linnaeus, 1758)

- geographic distribution: Mediterranean Sea, from Gibraltar to Israel, the Canary Islands and Morocco;
- a light-shelled species with quadrangular outline;
- very opisthogyrate, nearly orthogyrate;
- ligament area: prosodetic, slightly amphidetic;
- microsculpture: clear concentric ribs; in adult condition: also broad radial ribs, sharp and narrow near the margins; surface rather smooth and polished in the centre;
- periostracum: olive-brown to dark brown, many short thin bristles giving the whole a velvety appearance;

- colour: outside bluish grey to brown; white or pale-brown radial lines run from the beaks to the ventral margin onwards; inside: off white;
- measurements: 30-90 mm;
- habitat: on muddy sand in the infralittoral zone;
- several forms without taxonomic value:
  - \* *var. obliquata*: more flattened and oblique;
  - \* *var. pallida*: with small greyish blotches and dots on a whitish background;
  - \* *var. zonalis*: more solid and swollen, nearly as high as wide with concentric dark grey zones and whitish dots on a lighter background.



***Glycymeris nummaria***  
**(Linnaeus, 1758)**  
**Gibraltar, South Spain**



***Glycymeris nummaria***  
**(Linnaeus, 1758)**  
**Gibraltar, South Spain**



***Glycymeris nummaria***  
**(Linnaeus, 1758)**  
**Lazio, Italy**



***Glycymeris nummaria***  
**(Linnaeus, 1758)**  
**Lazio, Italy**





***Glycymeris nummaria***  
**(Linnaeus, 1758)**

**Greece**

***Glycymeris nummaria***  
**(Linnaeus, 1758)**

**Canary Islands**



***Glycymeris nummaria***  
***var. obliquata***  
**(de Rayneval & Ponzi, 1854)**  
**Tunisia**



***Glycymeris nummaria***  
***var. obliquata***  
**(de Rayneval & Ponzi, 1854)**  
**Barcelona, Spain**



***Glycymeris nummaria***  
***var. pallida***  
**(B.D.D., 1891)**  
**Barcelona, Spain**



***Glycymeris nummaria***  
***var. zonalis***  
**(Lamarck, 1819)**  
**El Arenal, Spain**



# *Glycymeris pilosa* (Linnaeus, 1767)

- geographic distribution: NW Africa and the Mediterranean Sea (from Gibraltar to Israel);
- almost globose, truncated posteriorly , heavy and solid valves, occasionally lighter and flatter, equivalve;
- outline: circular or ovate;
- highly opisthogyrate;
- ligamental condition: prosodetic, slightly amphidetic;

- **microsculpture: many strong radiating primary ribs, broader than in *G. bimaculata* en *G. glycymeris*, bifurcate into 4-6 secondary ribs crossed by concentric growth lines;**
- **periostracum: hooked dark brown to black long hairs;**
- **colour: from light brown in juvenile shells to very dark brown nearly black in adults; interior off-white with a large brown blotch at the posterior side;**
- **measurements: 50-95 mm;**
- **habitat: on muddy bottoms from a depth of 15 m.**

# Comparison *G. glycymeris* - *G. pilosa*

- more elongate or ovate shape
- ligamental area: slightly prosodetic, less amphidetic
- larger number of secondary ribs (12-15) per primary rib
- periostracum: shorter bristles
- typical NE Atlantic species

- more swollen with distinct beaks
- ligamental area: much more prosodetic (very clear in juvenile specimens)
- smaller number of secondary ribs (4-6) per primary rib
- periostracum: bristles are mostly longer and more hooked
- typical Mediterranean species

***Glycymeris pilosa* is a very variable species:**

**\* var. *neapolitana* (B.D.D., 1891): slightly inequilateral (asymmetric), flattened valves;**

**\* var. *subtruncata* (B.D.D., 1891): posteriorly truncated;**

**\* var. *tumida* (B.D.D., 1891): more globular, swollen.**





***Glycymeris pilosa***  
**(Linnaeus, 1767)**  
**Barcelona, Spain**



***Glycymeris pilosa***  
**(Linnaeus, 1767)**  
**Barcelona, Spain**  
**inside**



***Glycymeris pilosa***  
**(Linnaeus, 1767)**  
**Barcelona, Spain**





***Glycymeris pilosa***  
**(Linnaeus, 1767)**  
**Barcelona, Spain**  
**inside**



***Glycymeris pilosa***  
**(Linnaeus, 1767)**  
**Porto Cesareo, Italy**



***Glycymeris pilosa***  
**(Linnaeus, 1767)**  
**Cabo Blanco, Mauritania**



***Glycymeris pilosa*  
var. *neapolitana*  
(B.D.D., 1891)  
Cadiz, South Spain**



***Glycymeris pilosa* var. *neapolitana*  
(B.D.D., 1891)  
Sicily, Italy**



***Glycymeris pilosa* var.  
*subtruncata*  
(B.D.D., 1891)  
Sicily, Italy**





***Glycymeris pilosa* var. *tumida***  
**(B.D.D., 1891)**  
**Barcelona, Spain**

# ***Glycymeris vanhengstumi***

## **Goud & Gulden, 2009**

- **geographic distribution: Madeira, the Selvagens, Canary Islands, Mauritania, Western Sahara;**
- **small, rounded or slightly acute shells;**
- **circular to subcircular, barely inequilateral;**
- **thick and relatively globose;**
- **anterior margin perfectly rounded, upper posterior margin slightly acute; juvenile specimens mostly oblique (*'Limopsis'* form)**

- **opisthogyrate;**
- **ligamental condition: prosodetic, slightly amphidetic;**
- **microsculpture: regular pattern of secondary radial ribs (9-12 per primary rib) and very fine growth lines;**
- **periostracum: dense and velvety;**
- **colour: off-white to cream with smaller to larger reddish-brown streaks and blotches; occasionally with small brown dots in the region of the umbos; interior white but sometimes a brown blotch is present between the posterior and the centre;**
- **measurements: a small species reaching 20-50 mm;**
- **habitat: from 20 to 110 m on coarse-grained sand.**

# Comparison *G. glycymeris* – *G. vanhengstumi*

- less globose, irregular shape (circular, ovate or oblique)
- largest diameter below midway
- ligamental area: prosodetic, slightly amphidetic
- larger number of secondary ribs per primary rib (12-15)
- juvenile stage: larger number of primary ribs
- less regular reticulate pattern
- periostracum: shorter bristles
- typical NE Atlantic species
- more globose, inflated and rounded
- largest diameter in the centre of the valves
- upper posterior margin slightly acute
- ligamental area: more prosodetic (more distinct in juvenile specimens)
- broader hing plate, especially in the center
- smaller number of secondary ribs per primary rib (9-12)
- juvenile stage: broader primary ribs
- distinct reticulate pattern
- periostracum: bristles almost longer and more hooked;
- interior mostly white to off-white
- range limited to Madeira, the Canary Islds and NW Africa



***Glycymeris vanhengstumi***

**Goud & Gulden, 2009**

**Funchal, Madeira**



***Glycymeris vanhengstumi***

**Goud & Gulden, 2009**

**Funchal, Madeira**



***Glycymeris vanhengstumi***

**Goud & Gulden, 2009**

**Funchal, Madeira**

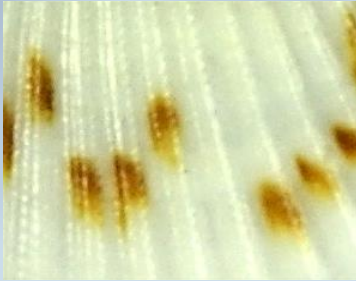


***Glycymeris vanhengstumi***  
**Goud & Gulden, 2009**  
**Funchal, Madeira**

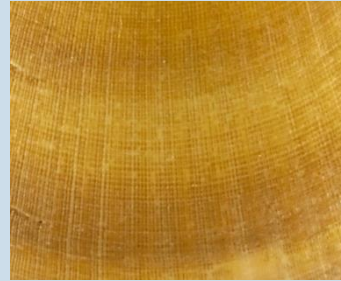
***G. vanhengstumi***  
**Goud & Gulden, 2009**  
**Morocco**



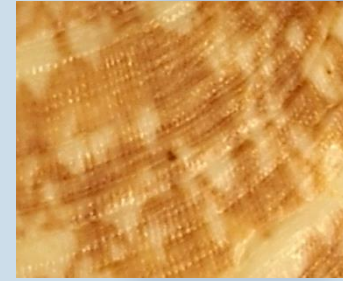
# Comparison of the microsculpture



*G. adenensis*



*G. bimaculata*



*G. glycymeris*



*G. nummaria*



*G. pilosa*



*G. vanhengstumi*