

## **Bivalves diversity (Mollusca) in the collection of the University of agribusiness and rural development**

Mihail Kechev

*University of Agribusiness and Rural Development*

---

### **Abstract**

Twenty bivalves species from 18 genera (*Anadara* Gray 1847, *Arca* Linnaeus 1758, *Glycymeris* da Costa 1778, *Crassostrea* Sacco 1897, *Ostrea* Linnaeus 1758, *Mytilus* Linnaeus 1758, *Mimachlamys* Iredale, 1929, *Flexopecten* Sacco, 1897, *Chamelea* Mörch 1853, *Polititapes* Chiamenti, 1900, *Cerastoderma* Poli 1795, *Venericardia* Lamarck 1801, *Loripes* Poli 1791, *Spisula* Gray 1837, *Atactodea* Dall 1895, *Solen* Linnaeus 1758, *Gastrana* Schumacher, 1817, *Donax* Linnaeus, 1758) are presented. The shells were collected from Black Sea, Adriatic Sea, Aegean Sea, Dardanelles, Ionian Sea, Sea of Marmara, and Indian Ocean (Maldives).

**Key words:** *marine species, Black Sea, Adriatic Sea, Aegean Sea, Dardanelles, Ionian Sea, Sea of Marmara, Indian Ocean.*

---

### **Introduction**

In the present paper are listed 20 species from 18 genera. The shells were collected on the shores of Black Sea, Marmara Sea, Dardanelles, Aegean Sea, Adriatic Sea, Ionian Sea, Mediterranean Sea and Indian Ocean.

### **Material and Methods**

The shells were gathered by hand in the period from 2004 to 2014. The material is preserved in the collection of the department of Technology of the University of Agribusiness and Rural Development. For the identification of genera was used paper by J.H. Leal and for some species was used paper by G. B. Sowerby (1859). For the distribution of the bivalves listed below in this paper was used Gofas, S. (2014).

## Results

### Order *Arcoida*

#### Family *Arcidae*

##### Genus *Anadara* Gray 1847

###### *Anadara inaequalvis* (Bruguière, 1789)

= *Scapharca inaequalvis* (Bruguière, 1789) (fig. 10)

**Material examined:** Black sea: Tsarevo, June 2004, 3 shells, collected by Mihail Kechev; March 2014, 1 shell, collected by Valentin Alamanski; Albena, August 2014, 2 shells, collected by Ivan Sharkov; Adriatic sea: Rimini, Italy, September 2014, 3 shells, collected by Zoya Zhekova.

**Distribution:** Ionian Sea, India to Australia, Adriatic Sea, Aegean Sea, Gibraltar, Mediterranean Sea, Black sea, North Atlantic Ocean.

##### Genus *Arca* Linnaeus 1758

###### *Arca noae* Linnaeus 1758 (fig. 7)

**Material examined:** Dardanelles: Chanakkale, April 2012, 1 shell, collected by Mihail Kechev; Aegean Sea: Izmir, Turkey, 1 shell, collected by Zoya Zhekova.

**Distribution:** Mediterranean Sea, North Atlantic Ocean.

#### Family *Glycymerididae*

##### Genus *Glycymeris* da Costa 1778

###### *Glycymeris glycymeris* (Linnaeus, 1758) (fig. 1)

**Material examined:** Dardanelles: Chanakkale, April 2012, 1 shell, collected by Mihail Kechev; Sea of Marmara: Tekirdag, May 2014, 1 shell, collected by Radka Tosheva.

**Distribution:** Mediterranean Sea, North Atlantic Ocean, North Sea.

### Order *Ostreoida*

#### Family *Ostreidae*

##### Genus *Crassostrea* Sacco 1897

###### *Crassostrea gigas* (Thunberg, 1793)

**Material examined:** Adriatic Sea: Rimini, Italy, September 2014, 7 shells, collected by Zoya Zhekova.

**Distribution:** Adriatic Sea, Alboran Sea, Celtic Sea, Ionian Sea, Mediterranean Sea, North Atlantic Ocean, North Pacific Ocean, North Sea.

##### Genus *Ostrea* Linnaeus 1758

###### *Ostrea edulis* Linnaeus 1758

**Material examined:** Black Sea, Tsarevo, Bulgaria, June 2004, 1 shell, collected by Mihail Kechev; Black Sea: Primorsko, Bulgaria, 1 shell, collected by Valentin Alamenski; Dardanelles: Chanakkale, Turkey, 1 shell, collected by Mihail Kechev.

**Distribution:** Adriatic Sea, Black Sea, Mediterranean Sea, North Atlantic Ocean, North Sea, Indian Ocean.

**Order Mytiloida**

**Family Mytilidae**

**Genus *Mytilus* Linnaeus 1758**

***Mytilus edulis* Linnaeus, 1758**

**Material examined:** Adriatic Sea: Rimini, Italy, September 2014, 3 shells, collected by Zoya Zhekova.

**Distribution:** Adriatic Sea, Arctic Ocean, Baltic Sea, Beaufort Sea, Mediterranean Sea, North Sea, North Atlantic Ocean, Wadden Sea.

***Mytilus galloprovincialis* Lamarck, 1819**

**Material examined:** Black Sea: Tsarevo, June 2004, 10 shells, collected by Mihail Kechev.

**Distribution:** Netherlands to Mediterranean, worldwide invasive.

**Order Pectinoida**

**Family Pectinidae**

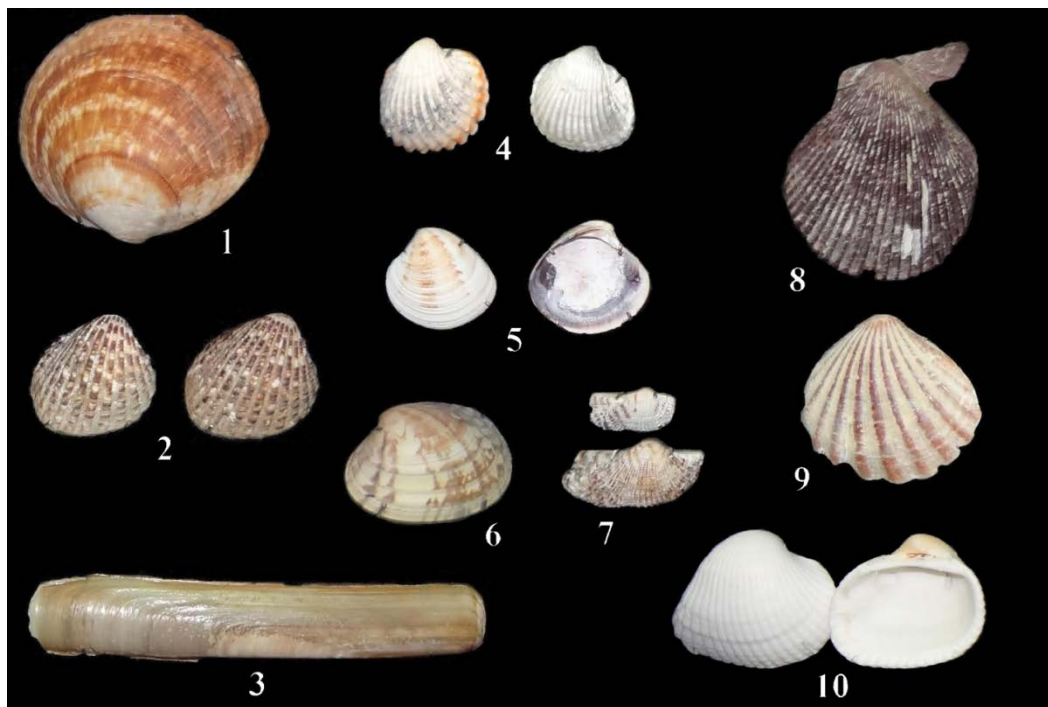
**Genus *Mimachlamys* Iredale, 1929**

***Mimachlamys varia* (Linnaeus, 1758) (fig. 8)**

**Material examined:** Dardanelles: Chanakkale, Turkey, April 2012, 2 shells, collected by Mihail Kechev; Ionian Sea: Peloponnese, 4 shells, collected by Galina Parmakova.

**Distribution:** Mediterranean Sea, North Atlantic Ocean, North Sea.

**Genus *Flexopecten* Sacco, 1897**



**Figs. 1-10.** 1. *Glycymeris glycymeris*; 2. *Cardites antiquatus*; 3. *Solen marginatus*; 4. *Cerastoderma glaucum*; 5. *Chamelea gallina*; 6. *Polititapes aureus*; 7. *Arca noae*; 8. *Mimachlamys varia*; 9. *Flexopecten glaber*; 10. *Anadara inaequalis*.

***Flexopecten glaber* (Linnaeus, 1758)** (fig. 9)

**Material examined:** Black sea: Tsarevo, Bulgaria, June 2004, 2 shells, collected by Mihail Kechev; Sea of Marmara: Tekirdag, Turkey, May 2014, 2 shells, collected by Radka Tosheva.

**Distribution:** Adriatic Sea, Black sea, Sea of Marmara, Mediterranean Sea, North Atlantic Ocean.

**Order Veneroida**

**Family Veneridae**

**Genus *Chamelea* Mörch 1853**

***Chamelea gallina* (Linnaeus, 1758)** (fig. 5)

**Material examined:** Black sea: Tsarevo, Bulgaria, June 2004, 18 shells, collected by Mihail Kechev; Albena, August 2014, 7 shells, collected by Ivan Sharkov; Dardanelles: chanakkale, Turkey, April 2012, collected by Mihail Kechev; Sea of Marmara: Tekirdag, Turkey, May 2014, collected by Radka Tosheva.

**Distribution:** Adriatic Sea, Black Sea, Mediterranean Sea, Marmara Sea, North Atlantic Ocean, North Sea.

***Chamelea striatula* (da Costa 1778)**

**Material examined:** Aegean Sea: Keramoti, Greece, August 2014, 6 shells, collected by Ivan Sharkov.

**Distribution:** Mediterranean Sea, North Atlantic Ocean, North Sea.

**Genus *Polititapes* Chiamenti, 1900**

***Polititapes aureus* (Gmelin, 1791)** (fig. 6)

**Material examined:** Dardanelles: Chanakkale, Turkey, April 2011, 6 shells, collected by Mihail Kechev; Adriatic Sea: Rimini, Italy, September 2014, 2 shells, collected by Zoya Zhekova.

**Distribution:** Aegean Sea, Mediterranean Sea.

**Family *Cardiidae***

**Genus *Cerastoderma* Poli 1795**

***Cerastoderma glaucum* (Bruguière, 1789)** (fig. 4)

**Material examined:** Black Sea: Tsarevo, Bulgaria, June 2004, 3 shells, collected by Mihail Kechev; Sea of Marmara: Tekirdag, Turkey, May 2014, 4 shells, collected by Radka Tosheva; Dardanelles: Chanakkale, Turkey, 1 shell, collected by Mihail Kechev; Aegean Sea: Keramoti, Greece, 1 shell, collected by Ivan Sharkov.

**Distribution:** Adriatic Sea, Baltic Sea, Black Sea, Mediterranean Sea, Marmara Sea, North Atlantic Ocean, North Sea.

**Genus *Venericardia* Lamarck 1801**

***Cardites antiquatus* (Linnaeus, 1758)**

= ***Venericardia antiquata* (Linnaeus, 1758)** (fig. 2)

**Material examined:** Dardanelles: Chanakkale, Turkey, April 2012, 10 shells, collected by Mihail Kechev.

**Distribution:** Dardanelles, Mediterranean Sea, North Atlantic Ocean.

**Family *Mactridae***

**Genus *Spisula* Gray 1837**

***Spisula subtruncata* (da Costa, 1778)**

**Material examined:** Aegean Sea: Keramoti, Greece, August 2014, 6 shells, collected by Ivan Sharkov.

**Distribution:** Aegean Sea, Black Sea, Mediterranean Sea, North Atlantic Ocean.

**Family *Mesodesmatidae***

**Genus *Atactodea* Dall 1895**

***Atactodea striata* (Gmelin, 1791)**

**Material examined:** Indian Ocean: Maldives, May 2014, collected by Teodora Mihailova and Mihail Mihailov.

**Distribution:** Indian Ocean, Madagascar, Mediterranean Sea, North Atlantic Ocean, Red Sea.

**Family Tellinidae**

**Genus Gastrana Schumacher, 1817**

**Gastrana fragilis (Linnaeus, 1758)**

**Material examined:** Dardanelles: Chanakkale, Turkey, April 2011, 5 shells, collected by Mihail Kechev.

**Distribution:** Aegean Sea, Black Sea, Mediterranean Sea, North Atlantic Ocean, North Sea.

**Family Donacidae**

**Genus Donax Linnaeus, 1758**

**Donax trunculus Linnaeus, 1758**

**Material examined:** Black Sea: Tsarevo, Bulgaria, June 2004, 3 shells, collected by Mihail Kechev; Black Sea: Primorsko, Bulgaria, August 2014, 5 shells, collected by Valentin Alamanski; Aegean Sea: Keramoti, Greece, August 2014, 9 shells, collected by Ivan Sharkov.

**Distribution:** Aegean Sea, Black Sea, Mediterranean Sea, North Atlantic Ocean, North Sea.

**Family Solenidae**

**Genus Solen Linnaeus 1758**

**Solen marginatus Pulteney, 1799 (fig. 3)**

**Material examined:** Aegean Sea: Cheshme, Izmir, Turkey, collected by Zoya Zhekova.

**Distribution:** Aegean Sea, Black Sea, Mediterranean Sea, North Atlantic Ocean, North Sea.

**Order Lucinoida**

**Family Lucinidae**

**Genus Loripes Poli 1791**

**Loripes lucinalis (Lamarck, 1818)**

**Material examined:** Dardanelles: Chanakkale, Turkey, April 2012, 12 shells, collected by Mihail Kechev; Aegean Sea: Keramoti, Greece, August 2014, collected by Ivan Sharkov.

**Distribution:** Aegean Sea, Mediterranean Sea.

### **Acknowledgements**

Thanks are due to Ivan Sharkov, Teodora Mihailova, Mihail Mihailov, Valentin Alamanski, Zoya Zhekova, Radka Tosheva and Galina Parmakova for the shells presented in this paper.

### **References**

1. Gofas, S. 2014. Bivalvia. Accessed through: World Register of Marine Species at <http://www.marinespecies.org/aphia.php?p=taxdetails&id=105> on 2014-10-30.
2. Leal, J.H. Bivalves. – Bailey-Matthews Shell Museum, Florida, USA. <http://www.shellmuseum.org/BivalvesLeal.pdf>.
3. Sowerby, G. B. 1859. Illustrated index of British shells. – Simpkin, Marshall, and Co., Peternoster Row; The author, 9, Pembroke Square, Kensington.

### Order Veneroida

#### Family Veneridae

##### Genus *Chamelea* Mörch 1853

##### *Chamelea gallina* (Linnaeus, 1758)

Material examined: Black sea: Tsarevo, Bulgaria, June 2004, 18 shells, collected by Mihail Kechev; Albena, August 2014, 7 shells, collected by Ivan Sharkov; Dardanelles: chanakkale, Turkey, April 2012, collected by Mihail Kechev; Marmara sea: Tekirdag, Turkey, May 2014, collected by Radka Tosheva.

##### *Chamelea striatula* (da Costa 1778)

Material examined: Aegean Sea: Keramoti, Greece, August 2014, 6 shells, collected by Ivan Sharkov.

##### Genus *Polititapes* Chiamenti, 1900

##### *Polititapes aureus* (Gmelin, 1791)

Material examined: Dardanelles: Chanakkale, Turkey, April 2011, 6 shells, collected by Mihail Kechev; Adriatic Sea: Rimini, Italy, September 2014, 2 shells, collected by Zoya Zhekova.

#### Family Cardiidae

##### Genus *Cerastoderma* Poli 1795

##### *Cerastoderma glaucum* (Bruguère, 1789)

Material examined: Black Sea: Tsarevo, Bulgaria, June 2004, 3 shells, collected by Mihail Kechev;

Marmara Sea: Tekirdag, Turkey, May 2014, 4 shells, collected by Radka Tosheva; Dardanelles: Chanakkale, Turkey, 1 shell, collected by Mihail Kechev; Aegean Sea: Keramoti, Greece, 1 shell, collected by Ivan Sharkov.

##### Genus *Venericardia* Lamarck 1801

##### *Venericardia antiquata* (Linnaeus, 1758)

Material examined: Dardanelles: Chanakkale, Turkey, April 2012, 20 shells, collected by Mihail Kechev.

#### Family Lucinidae

##### Genus *Loripes* Poli 1791

##### *Loripes lucinalis* (Lamarck, 1818)

Material examined: Dardanelles: Chanakkale, Turkey, April 2012, 12 shells, collected by Mihail Kechev; Aegean Sea: Keramoti, Greece, August 2014, collected by Ivan Sharkov.

#### Family Macridae

##### Genus *Spisula* Gray 1837

##### *Spisula subtruncata* (da Costa, 1778)

Material examined: Aegean Sea: Keramoti, Greece, August 2014, 6 shells, collected by Ivan Sharkov.

#### Family Mesodesmatidae

##### Genus *Atactodea* Dall 1895

##### *Atactodea striata* (Gmelin, 1791)



Figure 3. Shells from Adriatic Sea and Mediterranean Sea

Material examined: Indian Ocean: Maldives, May 2014, collected by Teodora Mihailova and Mihail Mihailov.

#### Family Solenidae

##### Genus *Solen* Linnaeus 1758

##### *Solen marginatus* Pulteney, 1799

Material examined: Aegean Sea: Cheshme, Izmir, Turkey, collected by Zoya Zhekova.

#### Family Tellinidae

##### Genus *Gastrana* Schumacher, 1817

##### *Gastrana fragilis* (Linnaeus, 1758)

Material examined: Dardanelles: Chanakkale, Turkey, April 2011, 5 shells, collected by Mihail Kechev.

#### Family Donacidae E

##### Genus *Donax* Linnaeus, 1758

##### *Donax trunculus* Linnaeus, 1758

Material examined: Black Sea: Tsarevo, Bulgaria, June 2004, 3 shells, collected by Mihail Kechev; Black Sea: Primorsko, Bulgaria, August 2014, 5 shells, collected by Valentin Alamanski; Aegean Sea: Keramoti, Greece, August 2014, 9 shells, collected by Ivan Sharkov.

#### Conclusion

Bivalves have been an important source of food for humans at least since Roman times. Bivalves are also used in controlling pollutions. When they live in polluted waters, bivalve mollusks have a tendency to accumulate substances such as heavy metals and persistent organic pollutants in their tissues. Some kind of bivalves are used for production of pearls, shells collections and so on.

#### Acknowledgements

Thanks are due to Ivan Sharkov, Teodora Mihailova, Mihail Mihailov, Valentin Alamanski, Zoya Zhekova, Radka Tosheva and Galina Parmakova for the shells presented in this paper.

Contacts:

Mihail Kechev

[mkechev@uard.bg](mailto:mkechev@uard.bg)

[mkechev@gmail.com](mailto:mkechev@gmail.com)