LIMNOFISH-Journal of Limnology and Freshwater Fisheries Research 11(2): 100-107 (2025)

Journal of Limnology and Freshwater Fisheries Research

http://www.limnofish.org

Updated locality records for two Truncatelloidean species *Ecrobia maritima* (Milaschewitsch, 1916) and *Potamopyrgus antipodarum* (J. E. Gray, 1843) in Türkiye

Mustafa Emre GÜRLEK[1]*

[1]Burdur Vocational School of Food Agriculture and Livestock, Mehmet Akif Ersoy University, 15100 Burdur, Türkiye

ABSTRACT

In this study, new locality records of the previously reported species *Ecrobia maritima* and *Potamopyrgus antipodarum* in Turkish coastal and inland waters are presented. Samples were collected from different localities in 2013, 2014, and 2016. In addition, the morphological descriptions of the species were provided and potential dispersal routes were discussed.

Keywords: *Ecrobia maritima*, *Potamopyrgus antipodarum*, new locality records, invasion, Türkiye

ARTICLE INFO

RESEARCH ARTICLE

Received : 10.03.2025
Revised : 29.05.2025
Accepted : 04.07.2025
Published : 31.08.2025

DOI:10.17216/LimnoFish.1654809

*** CORRESPONDING AUTHOR**

malacoturk@gmail.com
Phone : +90 248 213 22 77
Fax : +90 248 213 10 00

Türkiye'deki iki Truncatelloidean türü *Ecrobia maritima (Milaschewitsch, 1916)* ve *Potamopyrgus antipodarum (*J. E. Gray, 1843) için güncellenmiş lokalite kayıtları

Öz: Bu çalışmada, daha önce kaydı verilmiş olan *Ecrobia maritima* ve *Potamopyrgus antipodarum* türlerinin Türkiye kıyı ve iç sularındaki yeni lokalite kayıtları sunulmuştur. Örnekler, 2013, 2014 ve 2016 yıllarında farklı lokalitelerden elde edilmiştir. Ayrıca türlerin morfolojik tanımlamaları verilmiş ve potansiyel yayılım rotaları tartışılmıştır.

Anahtar kelimeler: *Ecrobia maritima*, *Potamopyrgus antipodarum* yeni lokalite kaydı, invazyon, Türkiye

How to Cite
Gürlek ME. 2025. Updated locality records for two Truncatelloidean species *Ecrobia maritima* (Milaschewitsch, 1916) and *Potamopyrgus antipodarum* (J. E. Gray, 1843) in Türkiye 11(2): 100-107. doi: 10.17216/LimnoFish.1654809

Introduction

Members of the subfamily Hydrobiinae, including *Ecrobia maritima*, are of great importance to coastal ecosystems and serve as a primary food source for fish, birds, and other predators. This species has previously been recorded in the Black Sea along the coasts of Ukraine and Bulgaria, as well as in the Aegean Sea near the Greek coast close to the Turkish border (Kevrekidis et al. 2005; Haase et al. 2010; Szarowska and Falniowski 2014). The first record of this species in Türkiye was reported from the Karaburun Peninsula in the Aegean by Örstan and Haase (2014). Later records were reported from the Kızılırmak Delta (Samsun) (Kabak et al. 2023). Also known as the New Zealand mud snail, *Potamopyrgus antipodarum* is one of the most invasive aquatic invertebrates in the world. It has been recorded on the continents of North America, Europe, Asia, and Australia, except for Africa and Antarctica (Ponder 1988). Some studies have shown that the previously increasing populations and spread have declined due to pressure, competition, and environmental factors, and that certain habitats have reached saturation; however, this does not mean that the invasion has come to an end (Schächinger et al. 2025).

The first record of *P. antipodarum* from Türkiye was reported by Bilgin (1980) from Afyon-Çay, İzmir-Selçuk, and Antalya-Finike. After that study, species was reported from different localities of Türkiye (Yıldırım 1999; Ustaoğlu et al. 2001a;

Ustaoğlu et al. 2001b; Ustaoğlu et al. 2003; Demir 2003; Özbek et al. 2004; Yıldırım et al. 2006; Kalyoncu et al. 2008; Kılıçaslan and Özbek 2010; Kebapçı and Yıldırım 2010; Gürelli and Özbek 2012; Gürlek 2015; Odabaşı and Aslan 2015; Gürlek et al. 2019; Odabaşı et al. 2019; Aydemir et al. 2021; Gümüş et al. 2022; Yıldırım et al. 2022).

With this study, new records of *E. maritima* (2) and *P. antipodarum* (11) have been reported from different localities of Türkiye.

Materials and Methods

Samples were collected from two different brackish water (lagoons) localities, (Adana (Seyhan River flows in to the sea in 2013, 36.72882 N 34.92156 E)), Muğla (Dalyan, Iztuzu Beach in 2014, $36^{0}46^{I}41.41^{II}$ N $28^{0}37^{I}55.22^{II}$ E) for *E. maritima* (Figure 1) and eleven different localities [(Uluırmak (Aksaray) 38.379795 N 34.047150 E, Karasu (Aksaray) 38.387454 N 34.281725 E, Melendiz Stream (Aksaray) 38.356496 N 34.228985 E, Külhasan Stream (Ankara-Aksaray way) 38.484551 N 33.886300 E, Yanarkaç Stream (Ankara-Şereflikoçhisar) 38.953171 N 33.555986 E, Emet Stream (Kütahya) three different locality 39.242762 N 29.238040 E, 39.273932 N 29.227446 E, 39.411058 N 29.238709 E, Çayköy Stream (Bilecik) 40.04390 N 30.45200 E , Tohma Stream (Malatya-Darende) (no coord. data), Darende Stream (Malatya-Darende) (no coord. data)] for *P. antipodarum* (Figure 2) in 2016.

Samples were collected from sand and stones on their localities. After that, they were preserved in 80% ethanol. The dissections and measurements were carried out by using a stereo microscope and the photographs were taken using a digital camera system.

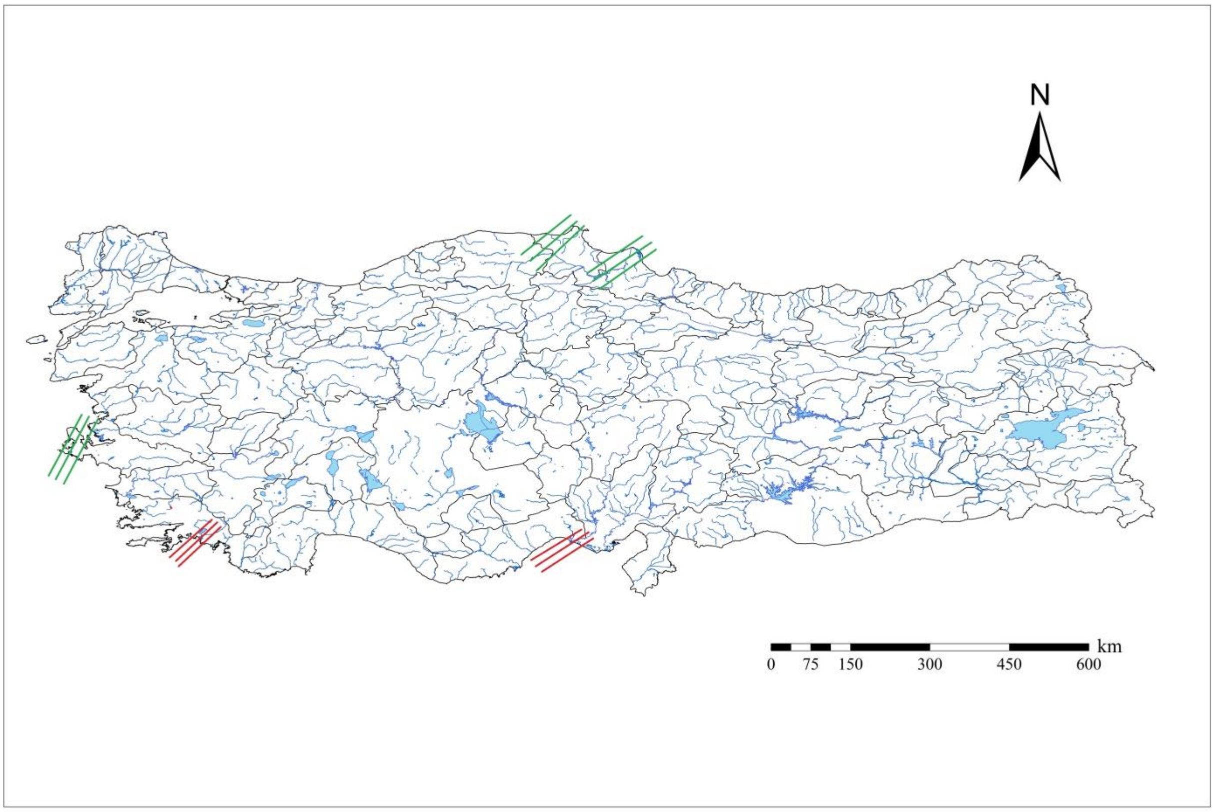

Figure 1. *Ecrobia maritima* localities in Türkiye. Green lines show the previous studies; red lines show the new localities.

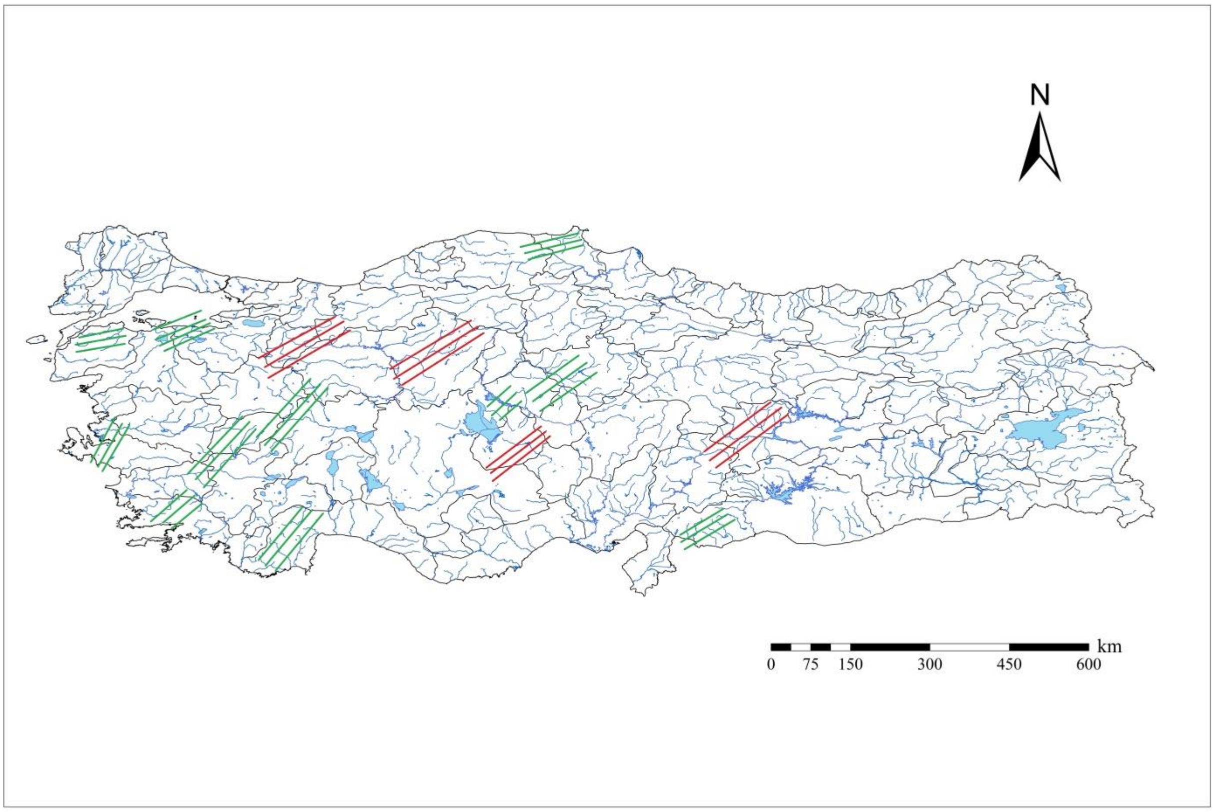

Figure 2. *Potamopyrgus antipodarum* localities in Türkiye. Green lines show the previous studies; red lines show the new localities.

Results

Morphological descriptions were made to identify *E. maritima*, focusing specifically on shell and penis morphology. The structure of the penis was compared with the penis photograph in Örstan and Haase (2014) (similar morphology to it).

The shell is whitish to yellowish, elongated conical with 4.5–5.5 convex whorls (Figure 3a). The umbilicus is slit-like. The aperture is ovate to angled at the top. The mantle and face are white. Eyes are not clearly visible. The penis is long with small outgrowths, broad at the base and acute at the distal end (Figure 3b,c).

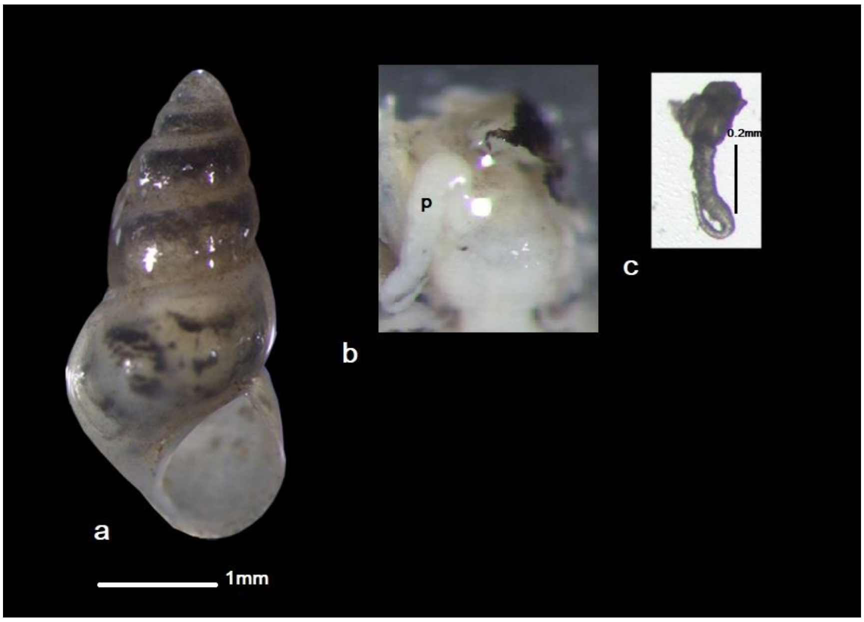

Figure 3. a. Shell of *Ecrobia maritima* (Seyhan specimen) b. penis in situ c. penis. Abbreviation: p = penis.

The similarity in shell morphology at the genus level makes identifications challenging and sometimes leads to confusion. In fact, it is sometimes even mistaken for certain *Graecoanatolica* species in Türkiye. For example, the species described as *Graecoanatolica yildirimi* by Glöer and Pešić (2015) was later revised as *E. maritima* (Wesselingh et al. 2019) (Table 1). Therefore, to resolve this confusion, it is necessary to conduct molecular taxonomy in addition to the morphological analysis of all these brackish water species.

The most prominent feature in the morphological identification of *P. antipodarum* is its elongate conic shell with 5.5-6 convex whorls. Aperture is oval, operculum is thick and orange brown (Figure 4).

Table 1. Distribution and habitat types of *Ecrobia maritima* in Türkiye

Location	Habitat type	References
İzmir-Karaburun	Creek	Örstan and Haase 2014
Sinop	Lake	Glöer and Pešić 2015
Samsun-Kızılırmak Delta	Wetland	Kabak et al. 2023
Muğla-Dalyan	Wetland (brackish)	(new)
Adana	Lower Stream (brackish)	(new)

Figure 4. Shell of *Potamopyrgus antipodarum* (Malatya specimen)

In previous studies conducted in the Türkiye, *P. Antipodarum* was recorded from 21 localities. With this study, 11 new locality records, mostly from western Türkiye, are reported for the first time. The total number of localities increased to 33 (Table 2). Although the majority of these 33 localities are in western Türkiye, recent records indicate that the species has been spreading toward Central and Eastern Anatolia. There are several pathways for the spread of invasive species, including ship ballast water, aquatic plant and fish transfers, and birds (Alonso and Castro-Diez 2008). The observed west-to-east expansion in this study may have been facilitated by birds, as well as human-mediated transfers within inland waters.

Table 2. Distribution and habitat types of *Potamopyrgus antipodarum* in Türkiye

Location	Habitat type	References
Afyon-Çay	Lake	Bilgin1980
İzmir-Selçuk	Spring water	Bilgin1980
Antalya-Finike	Stream	Bilgin1980
İzmir-Menemen	Drainage channel	Ustaoğlu et al. 2001a
Denizli-Çivril	Spring water	Ustaoğlu et al. 2001b
Sea of Marmara	Sea	Demir 2003
Muğla-Köyceğiz	Stream	Ustaoğlu et al. 2003
Muğla-Köyceğiz	Lake	Ustaoğlu et al. 2003
Antalya-Kırkgöz	Wetland	Özbek et al. 2004
Muğla-Gökova Bay	Stream	Kalyoncu et al. 2008
Muğla-Akyaka	Stream	Kılıçaslan and Özbek 2010
Antalya-Kırkgöz	Wetland	Kılıçaslan and Özbek 2010
Muğla-Köyceğiz	Lake	Kebapçı and Yıldırım 2010
İzmir	Stream	Gürelli and Özbek 2012
Gaziantep	Lake	Gürlek 2015
Bursa	Lake	Odabaşı and Aslan 2015
Çanakkale-Kırıkkale	Stream	Odabaşı et al. 2019
Sinop	Stream	Aydemir et al. 2021
Konya	Stream	Gümüş et al. 2022
Sinop	Lake	Yıldırım et al. 2022
Aksaray (three localities)	Stream	(new)
Ankara (two localities)	Stream	(new)
Kütahya	Stream	(new)
Bilecik (three localities)	Stream	(new)
Malatya (two localities)	Stream	(new)

Discussion

Haase et al. (2010), suggested that it is highly probable that the species *Ecrobia grimmi* reached Iraq's Sawa Lake via bird migrations from the Caspian Sea. In Türkiye, bird migrations occur from south to north in spring and from north to south in autumn. Of the two main migration routes used during these migrations, the first starts from the Bosphorus in Istanbul, used by birds coming from Europe and western Siberia, follows western and central Anatolia, and heads to Africa via Hatay. The other main route starts from the Artvin valley, used by birds coming from Central Asia and eastern Siberia, follows eastern and southeastern Anatolia, and reaches Africa via Syria. Each year, more than 200,000 raptors use these migration routes, entering Türkiye from the Eastern Black Sea region, crossing the Çoruh River and spreading into the wetlands of Eastern Anatolia (Göktürk et al. 2008; Özkazanç and Özay 2019). When considering both these birds and the bird species they prey upon, the total number involved becomes considerably high. Furthermore, dispersal by birds is not limited to passive attachment to feathers. Freshwater snails, which constitute part of the diet of many bird species, are capable of surviving within the digestive tract for extended periods. In certain *Hydrobia* species ingested by fish, survival rates have been reported to reach as high as 92% and numerous individuals of the species *Hydrobia ulvae* (=*Peringia ulvae*) have been observed to survive passage through the digestive tract of the shelduck (*Tadorna tadorna*) (Cadée 1988, 1994; Aarnio and Bonsdorff 1997). Additionally, there are secondary migration routes in a north to south direction. Considering the migration routes, the presence of *E. maritima* in the Black Sea, Aegean, and Mediterranean could be attributed to this factor. The upper current flowing from the Bosphorus strait into the Sea of Marmara carries colder and less saline water. In contrast, the lower current flowing in the opposite direction toward the Black Sea is warmer and more saline. This phenomenon facilitates transport toward the Sea of Marmara rather than into the Black Sea. The presence of *E. maritima* in the Aegean Sea can be explained in this way (Osikowski et al. 2016).

Recent paleontological evidence indicates that members of the genus *Ecrobia* have been present in Western Asia since ancient geological periods. *E. grimmi* has been identified in Middle to Upper Miocene deposits along the southern shores of the Caspian Sea in present-day Iran. Furthermore, *Ecrobia* species were present in the northeastern Mediterranean during the Late Miocene. The extinct species *E. polysarca* (Cossmann and Peyrot 1919) was described from Neogene strata in the Aquitaine region, located on the Atlantic coast of France. Although *E. grimmi* has traditionally been regarded as a Caspian Sea endemic, its occurrence in the Hormozgan Province of southern Iran suggests a broader historical distribution. These findings imply that *E. grimmi* may have inhabited both the Caspian and Persian Gulf basins (Asnafi 2010; Glöer and Pešić 2012; Büyükmeriç et al. 2018; Artamonova et al. 2021). To validate this expanded biogeographical hypothesis and to understand the ecological and environmental factors behind the dispersal of *Ecrobia* species, particularly *E. grimmi*, there is a clear need for experimental studies. If the genus is native to the Mediterranean, a migration-based dispersal route would be inaccurate; however, if it is not, such studies should focus on the species' ecological tolerances, dispersal capabilities, and survival strategies in inland waters and coastal lagoons of Türkiye, which may serve as potential migration corridors or refugia.

Aksu et al. (2024) modeled the spread of *P. antipodarum* from west to east, particularly in the Black Sea region, due to climate change. However, based on field observations, although climate change may partially contribute to the species' rapid expansion into new areas, it is not considered the primary factor. Because an invasive species that likely entered Türkiye from the west will inevitably spread eastward, and this process occurs in a much shorter time frame than the time required to observe the effects of climate change. In the same study (Aksu et al. 2024), the oversight of the Karkamış (Gaziantep) locality (Gürlek 2015) and the addition of the Malatya locality in this study further weaken this hypothesis. If *P. antipodarum* is to spread in the Eastern Black Sea region, this spread is more likely to occur in a south to north direction rather than west to east. The spread of the species into the Eastern Black Sea can only be considered after its arrival in the Malatya- Elazığ region and the Kelkit Basin. However, the species has not yet been recorded in Eastern Black Sea region (Kara et al. 2024). Moreover, the fact that the waters of the Eastern Black Sea region are cleaner compared to other basins in Türkiye limits both the species access to the region and the speed of its spread. Field observations have shown that *P. antipodarum* thrives in organically polluted waters and reproduces more rapidly under such conditions. The presence of a species exhibiting a west-to-east spread directly at the Syrian border while bypassing the Mediterranean region can only be explained by a hypothesis other than climate change. Apart from these, the study by Geist et al. (2022), which highlights the importance of calcium in the parthenogenetic reproductive strategy of *P. antipodarum*, is not sufficient to explain the species spread in Türkiye due to the already high calcium levels in the water. The fact that *P. antipodarum* is not as prevalent in the inland waters of the Mediterranean region, which have high $CaCO_3$ content (Baba and Tayfur 2011), as it is in inland Aegean waters further supports this argument.

References

Aarnio K, Bonsdorff E. 1997. Passing the gut of juvenile flounder, *Platichthys flesus* :differential survival of zoobenthic prey species. Marine Biology (1997) 129: 11–14. doi: 10.1007/s002270050140

Aksu S, Mercan D, Arslan N, Emiroğlu Ö, Haubrock PJ, Soto I, Tarkan AS. 2024. Determining environmental drivers of global mud snail invasions using climate and hydroclimate models. Hydrobiologia, vol.851, no.16, 3991-4006. doi: 10.1007/s10750-024-05554-x

Artamonova VS, Bolotov IN, Vinarski MV, Makhrov AA. 2021. Fresh and Brackish Water Cold Tolerant Species of Southern Europe: Migrants from the Paratethys That Colonized the Arctic. Water, 13, 1161. doi: 10.3390/w13091161

Asnafi MR. 2010. Biostratigraphy of Miocene sediments of southern Caspian sea. In Proceedings of the The 1st International Applied Geological Congress, Mashhad, Iran, 26–28 April 2010; Department of Geology, Islamic Azad University: Mashhad, Iran, p. 1025.

Alonso A, Castro-Diez P. 2008. What explains the invading success of the aquatic mud snail *Potamopyrgus antipodarum* (Hydrobiidae, Mollusca)? Hydrobiologia, 614, 107–116. doi: 10.1007/s10750-008-9529-3

Aydemir Çil E, Özbek M, Yardım Ö, Yıldız S, Taşdemir A, Rasouli H, Gürbüzer P. 2021. Diversity of benthic macroinvertebrates and water quality of Karasu Stream (Black Sea). Ege Journal of Fisheries and Aquatic Sciences, 38(4), 467-477. doi: 10.12714/egejfas.38.4.08

Baba A, Tayfur G. 2011. Groundwater contamination and its effect on health in Turkey. Environ Monit Assess. doi: 10.1007/s10661-011-1907-z

Bilgin FH. 1980. Batı Anadolu`nun bazı önemli tatlı sularından toplanan Mollusca türlerinin sistematiği ve dağılışı. T.C. Diyarbakır univ. Tıp Fakultesi Dergisi Suplement 8 (2), 1–64.

Büyükmeriç Y, Tekin E, Herece E, Sözeri K, Akça N, Varol B. 2018. Early Pliocene molluscs from the easternmost Mediterranean region (SE Turkey): Biostratigraphic, ecostratigraphic, and palaeobiogeographic implications. Turk. J. Earth Sci., 27, 127–151.
doi: 10.3906/yer-1705-2

Cadée GC. 1988. Levende wadslakjes in bergeend faeces. Correspondentieblad van de Nederlandsche Malacologische Vereeniging, 243: 443–444.

Cadée GC. 1994. Eider, shellduck and other predators, themain producers of shell fragments in the Wadden Sea:palaeoecological implications. Palaeontology, 37: 181–202.

Demir M. 2003. Shells of Mollusca collected from the seas of Turkey. Turkish Journal of Zoology, 27, 101–140.

Geist JA, Mancuso M, Morin, K, Bommarito E, Bovee D, Wendell B, Burroughs MR, Luttenton DL, Strayer SD, Tiegs. 2022. The New Zealand mud snail (*Potamopyrgus antipodarum*): autecology and management of a global invader. Biological Invasions 24: 905–938.
doi: 10.1007/s10530-021-02681-7

Glöer P, Pešic V. 2012. The freshwater snails (Gastropoda) of Iran, with descriptions of two new genera and eight new species. ZooKeys, 219, 11–61.
doi: 10.3897/zookeys.219.3406

Glöer P, Pešić V. 2015. Two new freshwater mollusk species of the genus *Graecoanatolica* Radoman, 1973 from Turkey (Gastropoda: Hydrobiidae). Ecologica Montenegrina. 4: 46-51.
doi: 10.37828/em.2015.4.8

Göktürk T, Artvinli T, Bucak F. 2008. Artvin kuş faunası. Artvin Çoruh Üniversitesi, Orman Fakültesi Dergisi. 9(1-2):33-43.

Gümüş BA, Gürbüzer P, Altındağ A. 2022. Towards a Sustainable World: Diversity of Freshwater Gastropods in Relation to Environmental Factors—A Case in the Konya Closed Basin, Türkiye. Diversity, 14(11), 934.
doi: 10.3390/d14110934

Gürelli G, Özbek M. 2012. Contribution to the knowledge on distribution of freshwater mollusc species of İzmir (Turkey). Ege J Fish Aqua Sci 29(3): 109-113.
doi: 10.12714/egejfas.2012.29.3.01

Gürlek ME. 2015. Present distribution and a new locality record of the invasive freshwater mud snail *Potamopyrgus antipodarum* (Gray, 1843) (Gastropoda: Tateidae) in Turkey. Ecologica Montenegrina. 2(3):191-193.

Gürlek ME, Şahin SK, Dökümcü N, Yıldırım MZ. 2019. Checklist of the freshwater mollusca of Türkiye (Mollusca: Gastropoda, Bivalvia). Fres. Environ. Bull. 28(4): 2992-3013.

Haase M, Naser MD, Wilke T. 2010. *Ecrobia grimmi* in brackish Lake Sawa, Iraq: indirect evidencefor long-distance dispersal of hydrobiid gastropods (Caenogastropoda: Rissooidea) by birds. Journal of Molluscan Studies. 76:101–105.
doi: 10.1093/mollus/eyp051

Kabak Ş, Gümüş BA, Tunoğlu C, Tuncer A, Bilen C. 2023. Freshwater snails (Mollusca, Gastropoda) of the Kizilirmak Delta (Samsun, Türkiye). Sustainable Aquatic Research. 2(3):171-182.
doi: 10.5281/zenodo.10423675

Kalyoncu H, Barlas M, Yıldırım MZ, Yorulmaz B. 2008. Gastropods of two important streams of Gökova bay (Muğla, Turkey) and their relationships with water quality. International Journal of Science & Technology, 3 (1), 27–36.

Kara C, Bozali N, Gürlek ME. 2024. Freshwater Malacofauna and Distribution of Trabzon Region, Türkiye. KSU J. Agric Nat 27(2), 469-477.
doi: 10.18016/ksutarimdoga.vi.1280166

Kebapçı Ü, Yıldırım MZ. 2010. Freshwater snails fauna of lakes region (Göller Bölgesi), Turkey. Muzeul Olteniei Craiova. Oltenia. Studii şi comunicari. Ştiintele Naturii, 26 (2), 75–83.

Kevrekidis T, Wilke T, Mogias A. 2005. When DNA puts ecological works back on the right track: genetic assessment and distribution patterns of mudsnail populations in the Evros Delta lagoons. Arch. Hydrobiol. 162(1):19–35.
doi: 10.1127/0003-9136/2005/0162-0019

Kılıçaslan I, Özbek M. 2010. Contributions to the knowledge on the distribution of freshwater Mollusca species of Turkey. Review of Hydrobiology, 3 (2), 127–144.

Odabaşı DA, Arslan N. 2015. A New Species of *Bithyni*a (Gastropoda: Bithyniidae) from an Eutrophic Lake Uluabat (South Marmara Region), Northwest of Turkey. Turkish Journal Of Fisheries And Aquatic Sciences. 15:365-369.
doi: 10.4194/1303-2712-v15_2_20

Odabaşı S, Arslan N, Yalçın Özdilek Ş, Odabaşı DA. 2019. An Invasion report of The New Zealand Mud Snail (*Potamopyrgus antipodarum* Gray, 1843) in Turkish Freshwaters: Delice River and Kocabaş Stream. LimnoFish. 5(3): 213-219.
doi: 10.17216/LimnoFish.486626

Osikowski A, Hofman S, Georgiev D, Kalcheva S, Falniowski A. 2016. "Aquatic Snails *Ecrobia maritima* (Milaschewitsch, 1916) and *E. Ventrosa* (Montagu, 1803) (Caenogastropoda: Hydrobiidae) in the East Mediterranean and Black Sea," Annales Zoologici 66(3), 477-486,
doi: 10.3161/00034541ANZ2016.66.3.012

Örstan A, Haase M. 2014. The first record of *Ecrobia maritima* (Milaschewitsch, 1916) from the Aegean coast of Turkey (Gastropoda: Hydrobiidae). Zoology in the Middle East.
doi: 10.1080/09397140.2014.952131

Özbek M, Gökoğlu M, Ustaoğlu MR, Sarı HM. 2004. Kırkgöz (Antalya)'ün tatlısu Mollusca faunası. Ulusal Su Günleri 2004, 6-8 Ekim 2004, İzmir, pp. 149–159.

Özkazanç NK, Özay E. 2019. Göçmen Kuşları Tehdit Eden Faktörler. JONAS, 2 (1): 77-89.

Ponder WF. 1988. *Potamopyrgus antipodarum*, a molluscan colonizer of Europe and Australia. Journal of Molluscan Studies, 54, 271–286.

Schächinger PM, Beran L, Verhaegen G, Salvador RB, Ravalo LGO, Haase M. 2025. Following the snail trail–reconstructing the invasion route and world-wide distribution of the New Zealand mud snail *Potamopyrgus antipodarum* (Mollusca, Caenogastropoda). Biol Invasions 27, 132. doi: 10.1007/s10530-025-03588-3

Szarowska M, Falniowski A. 2014. *Ventrosia maritima* (Milaschewitsch, 1916) and *V. ventrosa* (Montagu, 1803) in Greece: Molecular Data as a Source of Information About Species Ranges Within the Hydrobiinae (Caenogastropoda: Truncatelloidea). Folia Malacol. 22(1): 61–67. doi: 10.12657/folmal.022.006

Ustaoğlu MR, Balık S, Özbek M. 2001a. Gediz Deltası ve Sazlıgöl (Menemen-İzmir)'ün tatlısu Mollusk faunası. XI. Ulusal Su Ürünleri Sempozyumu 4-6 Eylül Hatay.

Ustaoğlu MR, Balık S, Özbek M. 2001b. Işıklı Gölü (Çivril-Denizli)'nün Mollusca faunası. E.Ü. Su Ürünleri Dergisi, 18 (1-2), 135–139.

Ustaoğlu MR, Balık S, Özbek M. 2003. Yuvarlakçay'ın (Köyceğiz-Muğla) Mollusca faunası. Ege University Press, 20 (3-4), 433–438.

Wesselingh FP, Neubauer TA, Anistratenko VV, Vinarski M, Yanina T, ter Poorten, JJ, Kijashko P, Albrecht C, Anistratenko OY, D'Hont A, Frolov P, Gándara AM, Gittenberger A, Gogaladze A, Karpinsky M, Lattuada M, Popa L, Sands AF, Van de Velde S, Vandendorpe J, Wilke T. 2019. Mollusc species from the Pontocaspian region – an expert opinion list. ZooKeys. 5,827,31-124 doi: 10.3897/zookeys.827.31365

Yıldırım MZ. 1999. Türkiye Prosobranchia (Mollusca: Gastropoda) türleri ve zoocoğrafik yayılışları. 1. tatlı ve acı sular. Turkish Journal of Zoology, 23, 877–900.

Yıldırım MZ, Koca SB, Kebapçı Ü. 2006. Supplement to the Prosobranchia (Mollusca: Gastropoda). fauna of fresh and brackish waters of Turkey. Turkish Journal of Zoology, 30, 197–204.

Yıldırım MZ, Mercan D, Arslan N. 2022. Preliminary research on macrozoobenthic fauna and Gastropoda species in some fresh waters of The Black Sea Region, Türkiye. Biological Diversity and Conservation. 15/3, 339-347. doi: 10.46309/biodicon.2022.1169861