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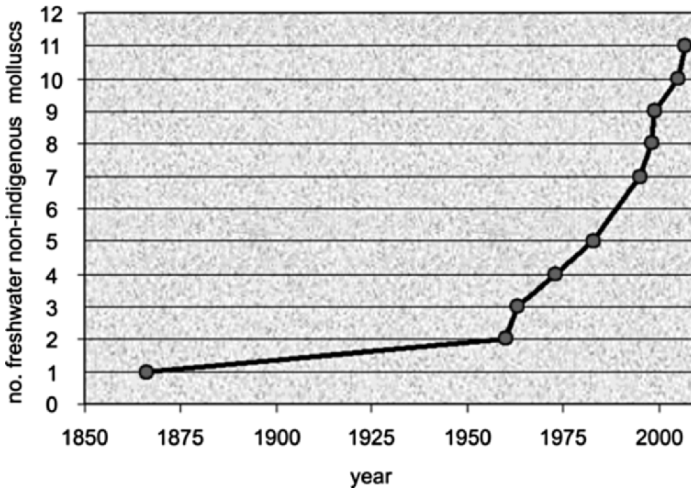
# ***Non-indigenous freshwater molluscs and their distribution in Italy***

Simone Cianfanelli, Elisabetta Lori, and Marco Bodon

## INTRODUCTION

Since the second half of the 19th century, there have been reports of the presence of non-indigenous freshwater molluscs in Italy, though they were not yet recognized as “alien”. Most species of molluscs were introduced into Italy more recently, in the second half of the 20th century, as the result of the development of commercial routes and the intensification of intercontinental traffic (Fig. 1). A complete list of non-indigenous freshwater mollusc species was not published until recently (Cianfanelli *et al.* 2007), though certain species were already considered “alien” in the “Checklist delle specie della fauna italiana” (Bodon *et al.* 1995, 2005a, 2005b; Castagnolo 1995; Manganelli *et al.* 1995, 1998) and in other articles (Lori *et al.* 2005). Eleven species of non-indigenous freshwater molluscs, differing in invasiveness (Fig. 2), are currently known (Table 1). Using data from the literature and unpublished records from field research, we created a data bank that enabled mapping of the distribution of non-indigenous molluscs. To show collection sites, UTM maps (10 km grid) were used (Fig. 3a–h, Fig. 4a–d).

Invasiveness varies widely between mollusc species and depends on their biology, vectors, availability of ecological niches, compatibility with new habitats, and habitat integrity. It is almost impossible to eradicate invasive species once they have successfully colonized a new environment. The best defence is therefore prevention (Genovesi and Shine 2004). Our aim here is to contribute



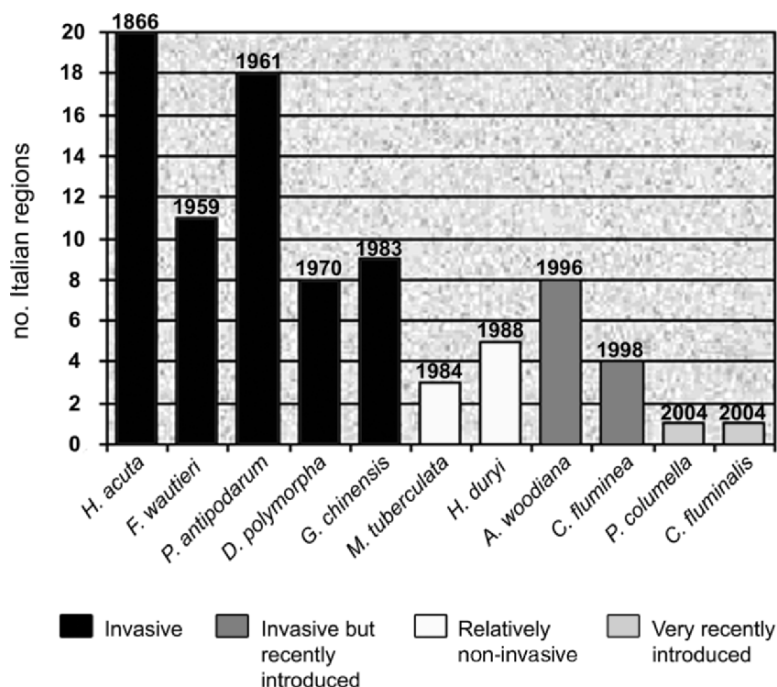
**Fig. 1** Temporal trend in the number of non-indigenous freshwater mollusc species introduced into Italy. Dates for each species denote the year of the first published report of their occurrence.

to the knowledge of the Italian status and to suggest measures to prevent the spread of the non-indigenous malacofauna.

#### NON-INDIGENOUS MOLLUSCS: STATE-OF-THE-ART

Some non-indigenous species (NIS), such as *Melanoides tuberculata* (O. F. Müller) and *Helisoma duryi* (Wetherby), propagate slowly but their impact on the ecosystem is only apparently negligible. Though these two species have been reported in Italy for at least 10 years, their distribution still seems to be limited. Their low invasiveness is probably due to environmental factors that prevent their spread (Fig. 2).

*Melanoides tuberculata* is a large prosobranch (shell length up to about 5 cm) from tropical and subtropical regions, introduced by the popularity of aquaria. Found for the first time in Italy in 1984 in the marshes of Comacchio, its distribution is currently limited to four sites in northern and central Italy (Bodon *et al.* 1995, 2005b). In southern Tuscany (Fig. 3a), its high population density (S. Cianfanelli, E. Lori, and M. Bodon 2005), that also derives from its parthenogenetic mode of reproduction, is a threat for the Italian endemic *Melanopsis etrusca* Brot, a species whose distribution is limited to a few sites (Cianfanelli *et al.* 1991, Bodon *et al.* 2005b) particularly in hot springs (Manganelli *et al.* 2000). The already critical status of *M. etrusca* is expected to deteriorate irreversibly due to the competition with the NIS. *Melanopsis*



**Fig. 2** Number of Italian regions in which non-indigenous freshwater molluscs are present. The species, reported in chronological order of finding (top of columns), are divided into four groups showing their current state of invasiveness in Italy (invasive, i.e. NIS spreading from the point of introduction and becoming abundant; invasive but introduced recently, i.e. from 1990 to 2000; relatively non-invasive; introduced very recently, i.e. after 2000).

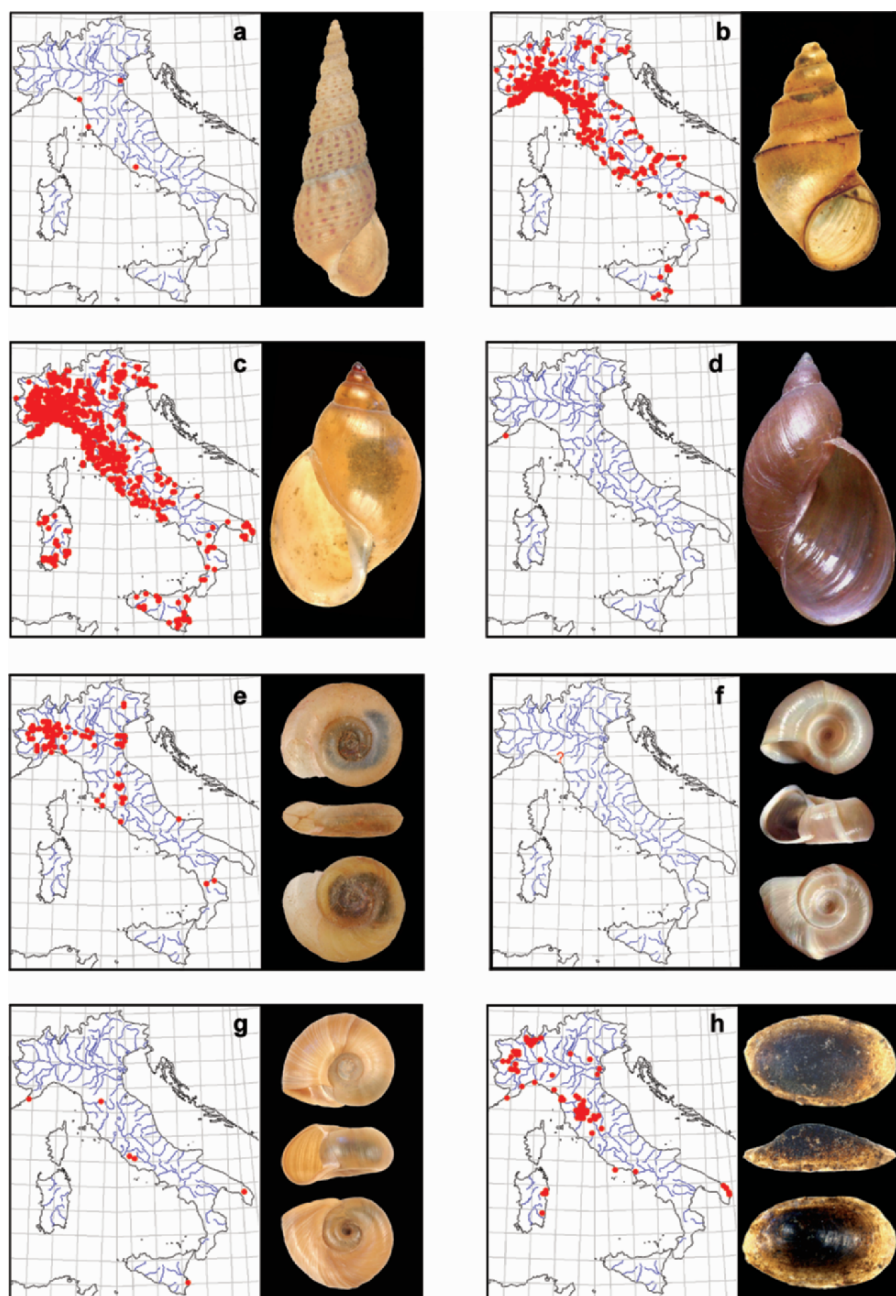
*tuberculata* has been reported in nine other European countries (Austria, France, Germany, Hungary, Malta, Netherlands, Poland, Slovak Republic, and Spain including Canary Islands; Falkner *et al.* 2001, Girardi 2003, Piechocki *et al.* 2003, Bank 2005).

*Helisoma duryi* is a medium-sized pulmonate with planospiral shell (maximum diameter: about 2.5 cm) from North America, first found in Italy in 1988 in the Lake of Albano (Giusti *et al.* 1995, Manganelli *et al.* 1995, Alexandrowicz 2003, Mienis 2004b). Today it is known in five sites between Liguria, Apulia, and Sicily (Fig. 3g). Its presence is caused by release of aquarium specimens or introduction of fish.

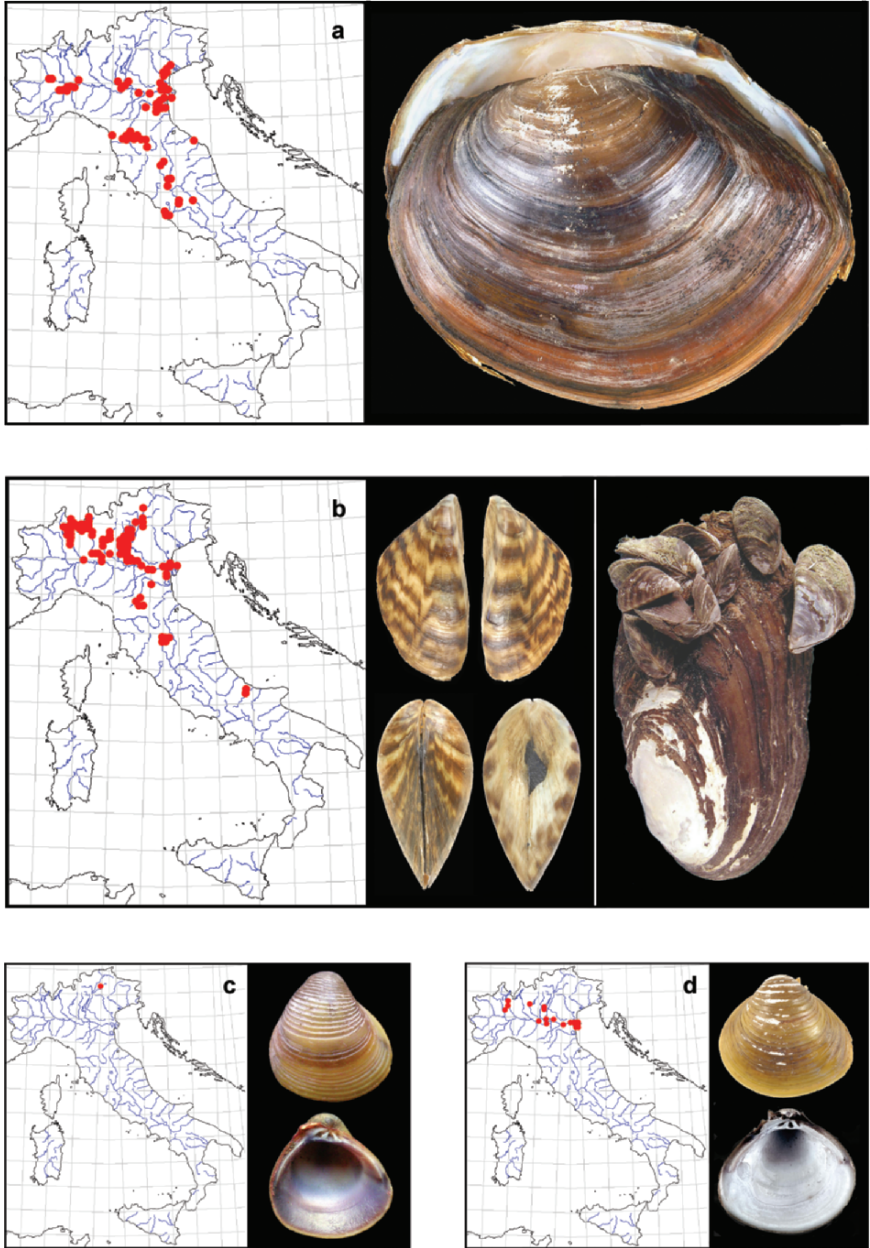
The North American *Helisoma anceps* (Menke), another planorbid (maximum diameter of the shell: about 2 cm) similar to *H. duryi*, has been reported in Italy (Fig. 3f). Considered congeneric with *H. duryi* (both are sometimes attributed to the genus *Planorbella* Haldeman), it was identified in 1963 in a single site in Tuscany, the River Frigido (Henrard 1968) (the snail reported by Zettler and

**Table 1** List of freshwater molluscs introduced into Italy, with the date of the first collection in Italy, references to the published report of their occurrence, and Italian regions where it occurs today.

Freshwater non-indigenous molluscs in Italy	first collection	first published report	Current distribution
<i>Melanooides tuberculata</i> (O.F. Müller)	1984	Bodon <i>et al.</i> 1995	Emilia-Romagna, Tuscany, Latium
<i>Potamopyrgus antipodarum</i> (J.E. Gray)	1961	Berner 1963	Piedmont, Aosta Valley, Lombardy, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Liguria, Tuscany, Umbria, Marches, Latium, Abruzzo, Molise, Campania, Apulia, Calabria, Sicily
<i>Haitia acuta</i> (Draparnaud)	1866 or before	Issel 1866 (as <i>Physa pisana</i> )	Piedmont, Aosta Valley, Lombardy, Trentino-Alto Adige, Veneto, Friuli-Venezia Giulia, Emilia-Romagna, Liguria, Tuscany, Umbria, Marches, Latium, Abruzzo, Molise, Campania, Apulia, Basilicata, Calabria, Sicily, Sardinia, Liguria
<i>Pseudosuccinea columella</i> (Say)	2004	This paper	Piedmont, Lombardy, Veneto, Emilia-Romagna, Liguria, Tuscany, Umbria, Molise, Calabria
<i>Gyraulus (Gyraulus) chinensis</i> (Dunker)	1983 or before	Meter-Brook 1983	Liguria, Tuscany, Latium, Apulia, Sicily
<i>Hellsomia duriji</i> (Wetherby)	1988	Giusti <i>et al.</i> 1995; Manganelli <i>et al.</i> 1995	Piedmont, Lombardy, Veneto, Emilia-Romagna, Liguria, Tuscany, Umbria, Molise, Calabria
<i>Ferrissia wautieri</i> (Mirolli)	1959	Mirolli 1960	Piedmont, Lombardy, Veneto, Emilia-Romagna, Liguria, Tuscany, Umbria, Latium, Campania, Apulia, Sardinia
<i>Anodonta woodiana</i> (Lea)	1996	Manganelli <i>et al.</i> 1998	Piedmont, Lombardy, Veneto, Emilia-Romagna, Tuscany, Umbria, Marches, Latium
<i>Dreissena polymorpha</i> (Pallas)	1970	Giusti and Oppi 1973	Piedmont, Lombardy, Trentino-Alto Adige, Veneto, Emilia-Romagna, Tuscany, Umbria, Molise
<i>Corbicula fluminalis</i> (O.F. Müller)	2004	Lori <i>et al.</i> 2005	Trentino-Alto Adige
<i>Corbicula fluminea</i> (O.F. Müller)	1998	Fabbri and Landi 1999	Piedmont, Lombardy, Veneto, Emilia-Romagna



**Fig. 3** Distribution and shell of: a – *Melanoides tuberculata*, b – *Potamopyrgus antipodarum*, c – *Haitia acuta*, d – *Pseudosuccinea columella*, e – *Gyraulus chinensis*, f – *Helisoma anceps*, g – *Helisoma duryi*, h – *Ferrissia wautieri*.



**Fig. 4** Distribution and shell of: a – *Anodonta woodiana*, b – *Dreissena polymorpha*; the picture with specimens on *Microcondylaea compressa* suggests the damage that *D. polymorpha* can cause when settled on unionids, c – *Corbicula fluminalis*, d – *Corbicula fluminea*.

Richard 2003 from Siracusa was actually *H. duryi*). The fact that its determination has not been verified and its current absence from the site originally reported made it impossible to include this species in the present list. Unlike the congeneric *H. duryi*, which is found in 13 European countries (Austria, Denmark, France including Corsica, Germany, Hungary, Iceland, Italy, Latvia, Malta, Poland, Portugal [only Madeira], Spain including Balearic Islands and Canary Islands, and United Kingdom; Giusti *et al.* 1995, Vimpère 2004, Bank 2005, Greke 2005), *H. anceps* has been reported from natural environments only in Italy and very recently from Lake Prespa (Albania, Greece, Macedonia; Eröss *et al.* 2005).

The pulmonate *Pseudosuccinea columella* (Say) and the bivalve *Corbicula fluminalis* (O. F. Müller) have only recently been reported in Italy, whereas two other bivalves, *Corbicula fluminea* (O.F. Müller) and *Anodonta woodiana* (Lea) (assigned by some authors to the genus *Sinanodonta* Modell), have been known for about 10 years (Fig. 2). To judge by their success in other countries, the latest two seem to be invasive (Malavasi *et al.* 1999, Hubenov 2001, Mienis 2004a). This is confirmed by their rapid spreading in Italy into many degraded environments in the north: if not contained, they are expected to spread further.

*Pseudosuccinea columella* has a fusiform shell of medium size (height up to about 2 cm) and comes from North America (Zilch 1959). It has been introduced into many European countries: Austria, Greece, Hungary, Spain including Balearic and Canary Islands, and Switzerland (Turner *et al.* 1998, Falkner *et al.* 2001, Anderson 2004, Reischütz and Reischütz 2004, Bank 2005). In Italy, it was recorded for the first time in 2004 in a single site in Liguria (Hanbury Botanical Gardens, Ventimiglia; Fig. 3d). Since the site was a botanic garden, introduction was presumably associated to the importation of ornamental aquatic plants. The species has a rather limited distribution in Europe so far, probably due to unfavourable environmental conditions. In fact, in warmer climates it is known to spread rapidly and is now present in many other countries of the new world, as well as in Australia (Smith and Staniscic 2006), Cuba (Gutiérrez *et al.* 2001), and Hawaii (Cowie 1998).

*Corbicula fluminalis* is a medium-sized bivalve (valves up to about 2.5 cm long) from South Asia, reported in Italy for the first and only time in 2004 (Lori *et al.* 2005) in the lake at the Passo di Lavazzè (Cavalese, Trentino) (Fig. 4c). The limited European spread suggests that it is less invasive than the congeneric *C. fluminea*. However, it has also been reported from eight other European countries (Belgium, France, Germany, Hungary, Luxembourg, Netherlands, Portugal, and Switzerland; Swinnen *et al.* 1998, Turner *et al.* 1998, Csányi 1999, Falkner *et al.* 2001, Araujo 2005), though some of these reports are dubious because of the somewhat uncertain identity of the European populations.

*Corbicula fluminea* is similar to the latter in form and size (valves up to about 2 cm long); it is native to the south-eastern Asia and now widespread in many European countries (Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Hungary, Luxembourg, Netherlands, Portugal, Romania, Spain,



Switzerland, and United Kingdom) and in other continents (North, Central and South America, and Hawaii) (Mouthon 1981, Mienis 1991, Swinnen *et al.* 1998, Turner *et al.* 1998, Csányi 1999, Beran 2000, Bij de Vaate and Hulea 2000, Falkner *et al.* 2001, Hubenov 2001, Vanden Bossche 2002, Chevallier 2003, Cadée and Soes 2004, Teodósio *et al.* 2004, Van Peursen 2004, Araujo 2005). First found in Italy in 1998 (Fabbri and Landi 1999), today it is present in various sites in the Po basin, northern Italy (Malavasi *et al.* 1999, Nardi and Braccia 2004, Bodon *et al.* 2005a; Fig. 4d). It is expected to spread further along rivers, since in a few years it has appeared with large established populations in many places where it was previously unknown.

Among the species recently introduced into Italy, *A. woodiana* is the largest freshwater bivalve (valve length of up to about 30 cm) and the fastest spreading. Indeed, since the first report in 1996, it has colonized eight Italian regions, mainly the hydrographic basins of the Po, Adige, Piave, Reno, Arno, and Tiber rivers (Manganelli *et al.* 1998, Bodon *et al.* 2005a, Solustri and Nardi 2006; Fig. 4a). This rapid spread suggests that there will be population explosions in many parts of northern and central Italy. Originally from East Asia, *A. woodiana* is now found in 14 European countries: Austria, Belgium, Bulgaria, Czech Republic, France, Germany, Greece, Hungary, Poland, Romania, Serbia, Slovak Republic, Slovenia, and Ukraine (Petró 1984, Sárkány-Kiss 1986, Girardi and Ledoux 1989, Guelmino 1992, Protasov *et al.* 1994, Košel 1995, Beran 1997, Reischütz and Reischütz 2000, Tappenbeck 2000, Yurishinets and Korniusin 2001, Sablon 2002, Albrecht *et al.* 2006, Hubenov 2006). Indiscriminate introductions of fish seem to be the main causes of its dispersal. The larval forms (glochidia) of this species, like all the unionids, are parasites of fish gills and the mollusc is therefore introduced together with fish restocking. *Anodonta woodiana* could seriously threaten the survival of populations of some indigenous unionids, already threatened by pollution, excessive water intake, and cementification of river banks. Competition with other indigenous species, especially other *Anodonta*, some populations of which are already showing disquieting signs of rarefaction (Fabbri and Landi 1999, Niero 2003), has been observed. Recent reports of other NIS of *Anodonta* in Italy (Cisotto 2003) have to be attributed to *A. woodiana*.

Other NIS with a large distribution in Italy and found in many collecting sites include: *Potamopyrgus antipodarum* (Gray), *Haitia acuta* (Draparnaud), *Gyraulus* (*Gyraulus*) *chinensis* (Dunker), *Ferrissia wautieri* (Mirolli), and *Dreissena polymorpha* (Pallas) (Fig. 2).

*Potamopyrgus antipodarum* is a prosobranch gastropod with small conical shell (height of up to about 7 mm), introduced into Europe from New Zealand at the end of the 19th century. It was first reported in Italy in 1961 (Berner 1963) and in about 40 years it has colonized all regions except Sardinia (Favilli *et al.* 1998, Bodon *et al.* 2005b; Fig. 3b). Various factors, such as euryoeciousness, parthenogenetic reproduction, dispersal with fish restocking, and transport during monitoring of water courses, have facilitated its fast spread. Population densities of up to 800,000 m<sup>-2</sup> have been reported (Adam 1942, Lucas 1959,

Réal 1973, Falniowski 1987). It may cause the disappearance of other freshwater molluscs (Doby *et al.* 1966, Berner 1971, Albaret *et al.* 1981, Hershler *et al.* 1994). In Europe, it is the most widespread non-indigenous prosobranch species; only Iceland and some eastern countries (Albania, Bulgaria, and Former Yugoslavia; Grossu 1986, Fischer 1994, Falkner *et al.* 2001, Bank 2005) have escaped invasion. However, in the latter countries, presumed absence could be due to a lack of recent field observations.

*Haitia acuta*, a basommatophoran pulmonate with medium-sized, sinistral, ovate shell (height of up to about 17 mm), is common and abundant in lotic and lentic environments. It was introduced into Europe from North America (Taylor 2003); its first report in Italy dates back to Issel (1866), who described it as *Physa pisana*. Perusal of historical malacological collections demonstrates that its introduction was one of the causes of the gradual rarefaction of the indigenous basommatophore *Physa fontinalis* (Linnaeus) (Manganelli *et al.* 2000). For example, the malacological collection of the Museum of Natural History of Florence includes many shells of *P. fontinalis* collected since 1857 from areas where the species now no longer exists; after 1868, the first shells of *H. acuta* appeared, becoming increasingly numerous and from many parts of Italy. *Haitia acuta* is currently present in all 20 Italian regions, including highly polluted water bodies, often forming large populations (Feliksiak 1939, Saraceni 1971, Moretti *et al.* 1979, Melone 1981; Fig. 3c). In Europe, it is found almost everywhere, except in Bosnia-Herzegovina, Finland, Iceland, Norway, Yugoslavia, and Baltic countries except Lithuania (Feliksiak 1939, Falkner *et al.* 2001, Velkovrh 2001, Anderson 2003, 2005, Lobato Paraense and Pointier 2003, Bank 2005, Kantor and Sysoev 2005, Zettler *et al.* 2005). Absence from certain countries may be due to lack of recent data and lack of careful field observations.

*Gyraulus chinensis* is a basommatophoran pulmonate with small planospiral shell (max. diameter: about 5 mm) native to Asia. First reported in Italy by Meier-Brook (1983), it has found a congenial environment in rice fields. It has colonized north-western Italy where rice is cultivated intensively (Fig. 3e). Its spread could be however underestimated because of its small size and its similarity with some congeners. In Europe, it has also been reported in Austria, France, Germany, Netherlands, Portugal, and Spain (Falkner *et al.* 2001, Albuquerque de Matos 2004, Bank 2005).

*Ferrissia wautieri* is a small basommatophoran pulmonate with limpet-like shell (length of up to about 4 mm), now widespread in much of Italy, with populations that apparently do not cause impact to the environment. Its distribution could be underestimated because its small size and mimesis make it elusive. Hubendick (1972) suspects it to be a NIS accidentally introduced into Italy, whereas Falkner *et al.* (2002) consider it cryptogenic. *Ferrissia wautieri* is nevertheless an entity that has not yet been classified definitively. Some authors proposed *Ferrissia clessiniana* (Jickeli) as a senior synonym of *F. wautieri* (Hubendick 1970, Falkner *et al.* 2002), while others used the synonym *F. fragilis* (Tryon) for some East European populations (Walther *et al.* 2006). We prefer

conserving the name given by Mirolli, due to persisting doubts about the identity of southern European populations. Identified for the first time in Italy in 1959 from the lake of Mergozzo and in an aquarium supplied with water from Lake Maggiore (Mirolli 1960), its distribution includes 10 continental regions of Italy and Sardinia (Girod *et al.* 1974, Castagnolo *et al.* 1982, Talenti and Cianfanelli 1989, Baldaccini and Papasogli 1990, Ferreri 1995, Manganelli *et al.* 1995; Fig. 3h). It is frequent in lentic waters, often in contaminated, dystrophic conditions. Its distribution includes other 20 European countries (Albania, Austria, Belgium, Bulgaria, Czech Republic, France including Corsica, Germany, Greece, Hungary, Latvia, Luxembourg, Netherlands, Poland, Romania, Slovak Republic, Slovenia, Spain including Balearic Islands, Switzerland, Ukraine, and United Kingdom; Grossu 1987, Dhora and Welter-Schultes 1996, Falkner and Proschwitz 1998, Hubenov 1998, Falkner *et al.* 2001, Anderson 2004, Bank 2005).

*Dreissena polymorpha* is a medium-sized bivalve with mytiloid shell (valve length of up to about 4 cm) and with free larvae (veliger), of Ponto-Caspian origin. It was first reported in Italy in 1970 in Lake Garda (Franchini 1976), where it was almost certainly transported attached to the hulls of boats from Germany (Giusti and Oppi 1973). It has so far been reported from 8 Italian regions in 14 natural lakes, 6 artificial lakes, and 2 coastal wetlands (marshes of Comacchio and Sacca del Canarin), where its colonization is only marginal (Bodon *et al.* 2005a, Cianfanelli *et al.* 2007; Fig. 4b). It has already been monitored in 21 natural and artificial riverine water courses, almost always downstream of lentic environments. Most of the collection sites are in the north (42 water bodies) and those in central Italy (5 water bodies) are limited to Tuscany (Florence and Pistoia; Lori and Cianfanelli 2006), Umbria (Perugia), and Molise (Campobasso). It is present in four northern hydrographic basins (Po, Adige, Brenta, and Reno) and three in central Italy (Arno, Tiber, and Biferno), but occupies vast areas only in the Po basin. The altitude of collecting sites is between sea level and 842 m; sites above 500 m are almost all artificial or artificially regulated lakes. Because of its invasiveness, the high economic costs inflicted to several European countries and to the USA, and its property of bioindicator (it accumulates and transfers micro-contaminants such as DDT, heavy metals, PCBs, and other xenobiotics; Camusso *et al.* 2001, Binelli *et al.* 2004, Ricciardi *et al.* 2004), *D. polymorpha* is the most widely studied and monitored non-indigenous mollusc. The chronology of its colonization of Italy has been reconstructed from a number of reports (Cianfanelli *et al.* 2007): it took 7 years for this species to conquer the hydrological network from Lake Garda to the mouth of the Po and 30 years to populate nearly all of the lower Po plain. In a few years, *D. polymorpha* will certainly spread to the Venetian part of the same plain, especially the basins of the Adige and Brenta rivers. As in the case of other particularly invasive species, future measures can only hope to control and contain this expansion. The situation for central and southern Italy is different, because there seems to be still time to act with success. The spread of

*Dreissena* in the rest of Italy could be prevented if correct plans of intervention are adopted, and measures to avoid new introductions and possibly to eradicate small populations are implemented. The species is found everywhere in Europe except Cyprus, Iceland, Norway, Portugal, and Former Yugoslavia except Macedonia (Zhadin 1952, Ghenciu *et al.* 1980, Maassen 1980, Milkov 1983, Lyakhnovich *et al.* 1982, Brezeanu *et al.* 1986, Dhora and Welter-Schultes 1996, Hubenov 1998, Falkner *et al.* 2001, Korniushev *et al.* 2002, Araujo 2005, Kantor and Sysoev 2005).

## CONCLUSIONS

In most cases, introductions of NIS are caused by man. They are nearly always accidental, though there are some significant examples of introductions related to commercial activity. This is the case of *A. woodiana*, introduced into Tuscany not only unintentionally but also specifically for the production of artificial pearls (Berni *et al.* 2004).

Measures to prevent deliberate introduction would be easy to develop case by case, though local entrepreneurs and maximization of profits may be at odds with correct management of the fauna. Measures to prevent accidental introductions seem, on the contrary, more difficult to be taken. Molluscs are largely introduced through practices related to fish management and aquaria. First, molluscs are introduced as temporary parasites of fish or as occasional guests of containers for fish transport. It is therefore necessary to avoid introducing fish from infested environments and prudentially also those from different hydrographic basins. Second, molluscs are introduced into the natural environment when aquaria are emptied. In aquaria, they are often raised as living filters (e.g. bivalves such as *Anodonta* spp.) or as cleaners of algae growing on the aquarium walls that gastropods, such as *M. tuberculata* and *Helisoma* spp., scrape with their radula. Their spread into nearby environments may be rapid and may be aided by natural factors. For example, it seems that specimens of *P. antipodarum* and *D. polymorpha* ingested by birds or fish may go through the digestive tract unharmed and are excreted elsewhere, or they may be transported in mud on the feet or feathers of migratory birds (Haynes *et al.* 1985). Prevention is also difficult in the case of introductions related to plant nurseries (*P. columella*) and farming (*G. chinensis*), and dispersal may be rapid.

Another means of mollusc species dispersal is the lack of precise criteria for the analysis of water. In order to limit further damage to the aquatic ecosystems it is important to take all precautions to limit the spread of any NIS to other hydrographic basins. Water body management should involve all possible measures to avoid accidental introductions into uncolonized environments. It is therefore necessary to avoid simultaneous monitoring of networks that include infested and uninfested waters. Alternatively, measures should be taken to prevent contamination, such as disinfection of equipment and personal

articles that come into contact with the waters or with the substrate (nets, sampling instruments, boots), before entering other waters for monitoring purposes. With regard to species considered good bioindicators or useful indicators for monitoring water quality, such as *D. polymorpha*, all types of introduction into adjacent environments should be avoided, including those for study purposes. The only exception would be for environments already infested with populations coming from the same water body. Transport of specimens of NIS from a colonized basin may also be due to vectors such as recreational boats. The practice of checking equipment and hulls is a rule that may lead to positive effects (Minchin *et al.* 2002).

Protection of the biodiversity of indigenous species thus depends primarily on careful precautions to prevent introduction of NIS and secondarily on efforts to block their spread. Specific laws, kept up to date, are therefore necessary to ensure and regulate conservation and detailed control. Most of all, an information campaign should be directed to those who manage and enjoy water, at all levels.

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#### REFERENCES

- Adam, W. 1942. Note sur les Gastéropodes. 11. Sur la répartition et la biologie de *Hydrobia jenkinsi* Smith en Belgique. Bulletin du Musée Royal d'Histoire Naturelle de Belgique **18**, 1–18.
- Albaret, J. L., P. Orecchia, P. Lanfranchi, H. Picot, and Ch. Bayssade-Dufour. 1981. *Potamopyrgus* et *Bulins* en Corse (Octobre 1980). Annales de Parasitologie Humaine et Comparée **56**, 559–562.
- Albrecht, C., D. Lohfink, and R. Schultheiß. 2006. Dramatic decline and loss of mollusc diversity in long-lived lakes in Greece. Tentacle **14**, 11–13.
- Albuquerque de Matos, R. M. 2004. Non-marine testaceous Gastropoda of continental Portugal and Berlengas Islands. I. Catalogue and bibliography. Arquivos do Museu Bocage, Nova Série **4**, 1–158.
- Alexandrowicz, S. W. 2003. *Planorbella duryi* (Wetherby, 1879) from the crater-lake Albano (Central Italy). Folia Malacologica **11**, 89–93.
- Anderson, R. 2003. *Physella* (*Costatella*) *acuta* Draparnaud in Britain and Ireland – Its taxonomy, origins and relationships to other introduced Physidae. Journal of Conchology **38**, 7–21.

- Anderson, R. 2004. *Pseudosuccinea columella* (Say) and other additions to the fauna of Menorca. *Journal of Conchology* **38**, 323.
- Anderson, R. 2005. An annotated list of the non-marine mollusca of Britain and Ireland. *Journal of Conchology* **38**, 607–637.
- Araujo, R., editor. 2005. Mollusca: Bivalvia. Fauna Europaea version 1.2 (7 March 2005). 07/10/2006. <http://www.faunaeur.org/>
- Baldaccini, G. N. and G. L. Papasogli. 1990. Note sulla malacofauna del territorio versiliese (Toscana). – *Ferrissia wautieri* “complex” (Mirolli) (Mollusca, Pulmonata) nella Macchia Lucchese. *Bollettino Malacologico* **25**, 355–359.
- Bank, R. A., editor. 2005. Mollusca: Gastropoda. Fauna Europaea version 1.2 (7 March 2005). 07/10/2006. <http://www.faunaeur.org/>
- Beran, L. 1997. First record of *Sinanodonta woodiana* (Mollusca: Bivalvia) in the Czech Republic. *Acta Societatis Zoologicae Bohemicae* **61**, 1–2.
- Beran, L. 2000. First record of *Corbicula fluminea* (Mollusca: Bivalvia) in the Czech Republic. *Acta Societatis Zoologicae Bohemicae* **64**, 1–2.
- Berner, L. 1963. Sur l’invasion de la France par *Potamopyrgus jenkinsi* (Smith). *Archiv für Molluskenkunde* **92**, 19–29.
- Berner, L. 1971. La régulation des naissances chez *Potamopyrgus jenkinsi* (Smith) en fonction des ressources alimentaires. 93<sup>o</sup> Congrès national des Sociétés savantes, Tours, 1968, *Sciences* **2**, 391–397.
- Berni, P., S. Bitossi, M. Salvato, M. Orlandi, J. Salviati, M. Silvestri, P. Megale, P. Orlandi, and R. Billiard. 2004. Valorizzazione del territorio attraverso produzioni alternative di perle di acqua dolce di elevata qualità. Con tecniche di policoltura eco-sostenibile. International Workshop “Tinca e acquacoltura nelle acque interne”, Ceresole d’Alba, Italy, 179–185.
- Binelli, A., F. Ricciardi, and A. Provini 2004. Present status of POP contamination in Lake Maggiore (Italy). *Chemosphere* **57**, 27–34.
- Bij de Vaate, A. and O. Hulea. 2000. Range extension of the Asiatic clam *Corbicula fluminea* (Müller 1774) in the River Danube: first record from Romania. *Lauterbornia* **38**, 23–26.
- Bodon, M., S. Cianfanelli, G. Manganelli, L. Castagnolo, E. Pezzoli, and F. Giusti. 2005a. Mollusca Bivalvia. Pages 83–84 in S. Ruffo and F. Stoch, editors. Checklist e distribuzione della fauna italiana. Memorie del Museo Civico di Storia Naturale di Verona, 2. serie, Sezione Scienze della Vita 16, Verona, Italy.
- Bodon, M., S. Cianfanelli, G. Manganelli, E. Pezzoli, and F. Giusti. 2005b. Gastropoda Prosobranchia ed Heterobranchia Heterostropha. Pages 79–81 in S. Ruffo and F. Stoch, editors. Checklist e distribuzione della fauna italiana. Memorie del Museo Civico di Storia Naturale di Verona, 2. serie, Sezione Scienze della Vita 16, Verona, Italy.
- Bodon, M., G. Manganelli, L. Favilli, and F. Giusti. 1995. 14. Prosobranchia Archaeogastropoda Neritimorpha (generi 013–014); Prosobranchia Caenogastropoda Architaenioglossa (generi 060–065); Prosobranchia Caenogastropoda Neotaenioglossa p.p. (generi 070–071, 077, 095–126); Heterobranchia Heterostropha p.p. (genere 294). Pages 1–60 in A. Minelli, S. Ruffo and S. La Posta, editors. Checklist delle specie della fauna italiana. Calderini, Bologna, Italy.
- Brezeanu, G. H., L. Gruia, and A. Petgu. 1986. Die Strukturodynamik einer population von *Dreissena polymorpha* Pallas unter den Bedingungen gesteuerten Wachstums im Stausee “Eisernes Tor”. *Revue Roumaine de Biologie, Série de Biologie Animale* **31**, 145–148.

- Cadée, G. C. and D. M. Soes. 2004. *Corbicula fluminea* (Müller, 1774) (Bivalvia, Corbiculidae) eaten by oystercatchers. *Basteria* **68**, 87–90.
- Camusso, M., R. Balestrino, and A. Binelli. 2001. Use of zebra mussel (*Dreissena polymorpha*) to assess trace metal contamination in the largest Italian subalpine lakes. *Chemosphere* **44**, 263–270.
- Castagnolo, L. 1995. 17. Bivalvia (specie d'acqua dolce generi 063–065, 128, 132–134). Pages 1–21 in A. Minelli, S. Ruffo and S. La Posta, editors. Checklist delle specie della fauna italiana. Calderini, Bologna, Italy.
- Castagnolo, L., G. Manganelli, and F. Giusti. 1982. *Ferrissia wautieri* (Miroli) (Mollusca, Pulmonata) nella Val di Farma (Siena – Grosseto: Italia centrale). *Bollettino Malacologico* **18**, 267–284.
- Chevallier, H. 2003. Nouvelles données sur la propagation en France des *Corbicula Mergerl von Mühlfeld, 1811* (Bivalvia: Corbiculidae). *Documents Malacologiques* **4**, 11–14.
- Cianfanelli, S., E. Lori, and M. Bodon. 2007. *Dreissena polymorpha*: current status of knowledge about the distribution in Italy (Bivalvia: Dreissenidae). In G. Van der Velde, S. Rajagopal and A. Bij de Vaate, editors. *The Zebra Mussels in Europe*. Backhuys Publishers, Leiden, The Netherlands, in press.
- Cianfanelli, S., E. Talenti, and M. Calcagno. 1991. Le stazioni di *Melanopsis dufouri* Férussac, 1823 (Gastropoda, Prosobranchia) in Italia. *Quaderni del Museo di Storia Naturale di Livorno* **10**, 59–76.
- Cisotto, P. 2003. Primo rinvenimento in Italia di *Anodonta suborbiculata* Say, 1831 e di *Anodonta grandis* Say, 1829. *Lavori della Società Veneta di Scienze Naturali* **28**, 11–15.
- Cowie, R. H. 1998. Patterns of introduction of non-indigenous non-marine snails and slugs in the Hawaiian Islands. *Biodiversity and Conservation* **7**, 349–368.
- Csányi, B. 1999. Spreading invaders along the Danubian highway: first record *Corbicula fluminea* (O. F. Müller, 1774) and *C. fluminalis* (O. F. Müller, 1774) in Hungary (Mollusca: Bivalvia). *Folia Historico Naturalia Musei Matraensis* **23**, 343–345.
- Dhora, D. and F. W. Welter-Schultes. 1996. List of species and atlas of the non-marine molluscs of Albania. *Schriften zur Malakozoologie* **9**, 90–197.
- Doby, J. M., A. Chabaud, G. Mandahl-Barth, B. Rault, and H. Chevallier. 1966. Extension en Corse du mollusque gastropode *Potamopyrgus jenkinsi* (Smith, 1889) (Hydrobiidae). *Bulletin du Muséum National d'Histoire Naturelle*, 2 Série **37**, 833–843.
- Domagała, J., A. M. Łabecka, M. Pilecka-Rapacz, and B. Migdalska. 2004. *Corbicula fluminea* (O. F. Müller, 1774) (Bivalvia: Corbiculidae) – a species new to the Polish malacofauna. *Folia Malacologica* **12**, 145–148.
- Eröss, Z. P., Z. Fehér, and A. Hunyadi. 2005. Invasion of a North American alien. *Planorbella anceps* (Menke, 1830) (Mollusca: Gastropoda: Planorbidae), in the ancient Lake Prespa. *Tentacle* **13**, 6–7.
- Fabbri, R. and L. Landi. 1999. Nuove segnalazioni di molluschi, crostacei e pesci esotici in Emilia-Romagna e prima segnalazione di *Corbicula fluminea* (O. F. Müller, 1774) in Italia (Mollusca Bivalvia, Crustacea Decapoda, Osteichthyes Cypriniformes). *Quaderno di Studi e Notizie di Storia Naturale della Romagna* **12**, 9–20.
- Falkner, G., R. A. Bank, and T. Proschwitz. 2001. Clecom-project Check-list of the non-marine Molluscan Species-group taxa of the States of Northern, Atlantic and Central Europe (CLECOM I). *Heldia* **4**, 1–76.

- Falkner, G. and T. Proschwitz. 1998. A record of *Ferrissia (Pettancylus) clessiniana* (Jickeli) in Sweden, with remarks on the identity and distribution of the European *Ferrissia* species. *Journal of Conchology* **36**, 39–40.
- Falkner, G., T. E. J. Ripken, and M. Falkner. 2002. Mollusques continentaux de France. Liste de Référence annotée et Bibliographie. Publications Scientifiques du M.N.H.N., Paris, France.
- Falniowski, A. 1987. Hydrobioidea of Poland (Prosobranchia: Gastropoda). *Folia Malacologica* **1**, 1–122.
- Favilli, L., G. Manganelli, and M. Bodon. 1998. La distribuzione di *Potamopyrgus antipodarum* (Gray, 1843) in Italia e in Corsica (Prosobranchia: Hydrobiidae). *Atti della Società italiana di Scienze naturali e del Museo Civico di Storia Naturale di Milano* **139**, 23–55.
- Feliksiak, S. 1939. *Physa acuta* Draparnaud in den Fabrikteichen von Łódź und ihre allgemeine Verbreitung. *Fragmenta Faunistica Musei Zoologici Polonici* **4**, 243–259.
- Ferreri, D. 1995. Molluschi. Irudinei e Turbellari Tricladi delle acque dolci della provincia di Lecce. *Thalassia Salentina* **21**, 29–49.
- Fischer, W. 1994. Süßwassermollusken aus Zypern. *Nachrichtenblatt der Estern Voralberger Malakologischen Gesellschaft* **2**, 47–48.
- Franchini, D. A. 1976. Sostituzione degli insediamenti malacologici autoctoni ad opera della *Dreissena polymorpha* (Pallas) in una stazione del Benaco (Torri del Benaco, VR). *Lavori del Simposio sui Molluschi terrestri e dulcicoli dell'Italia Settentrionale, Mantova, 10–11/5/1975, Lavori della Società Malacologica Italiana* **13**, 89–95.
- Genovesi, P. and S. Shine. 2004. European strategy on invasive alien species. *Nature and environment*, No. 137, Council of Europe Publishing, Strasbourg, France.
- Ghenciu, V. A., A. Munteanu-Ghenciu, and I. Balanescu. 1980. Contributions to the knowledge of geographical expansion in Moldavia of the species *Dreissena polymorpha* Pallas. *Studii si Comunicari Muzeul de Stiintele Naturii* **10–12**, 25–26.
- Girardi, H. 2003. Note sur la presence de *Melanoides tuberculatus* (O.F. Müller, 1774) dans une exurgence karstique à Bagnères-de-Bigorre (Hautes-Pyrénées, France). *Documents Malacologiques* **4**, 15–17.
- Girardi, H. and J. C. Ledoux. 1989. Présence d'*Anodonta woodiana* (Lea) en France (Mollusques, Lamellibranches, Unionidae). *Bulletin mensuel de la Société Linnéenne de Lyon* **58**, 286–291.
- Girod, A., E. Bona, and A. Freddi. 1974. Nuovi dati sulla distribuzione di *Ferrissia wautieri* (Mirolli) in Lombardia e nel Canton Ticino. *Atti della Società italiana di Scienze naturali e del Museo Civico di Storia naturale di Milano* **115**, 243–250.
- Giusti, F. and E. Oppi. 1973. *Dreissena polymorpha* (Pallas) nuovamente in Italia. (Bivalvia, Dreissenidae). *Memorie del Museo Civico di Storia Naturale di Verona* **20**, 45–49.
- Giusti, F., G. Manganelli, and P. J. Schembri. 1995. The non-marine molluscs of the Maltese Islands. *Monografie XV Museo Regionale di Scienze Naturali, Torino, Italy*.
- Greke, K. 2005. [Mollusca]. In: NOBANIS North European and Baltic Network on Invasive Alien Species (1 August 2005). 07/10/2006 <http://www.nobanis.org/speciesInfo.asp?taxaID=1606>
- Grossu, A. V. 1986. *Gastropoda Romaniae 1*. Editura Litera, Bucharest, Romania.
- Grossu, A. V. 1987. *Gastropoda Romaniae 2*. Editura Litera, Bucharest, Romania.



- Guelmino, J. 1992. *Anodonta woodiana woodiana* Lea, 1834 (Mollusca: Bivalvia) prvi nalaz u donjem toku Tise. Matica Srpska, Novi Sad, Serbia.
- Gutiérrez, A., G. Perera, M. Yong, and L. Wong. 2001. The effect of isolation on the life-history traits of *Pseudosuccinea columella* (Pulmonata: Lymnaeidae). *Memorias do Instituto Oswaldo Cruz* **96**, 577–581.
- Haynes, A., B. J. R. Taylor, and M. E. Varley. 1985. The influence of the mobility of *Potamopyrgus jenkinsi* (Smith E. A.) (Prosobranchia: Hydrobiidae) on its spread. *Archiv für Hydrobiologie* **103**, 497–508.
- Henrard, J. B. 1968. On the occurrence of *Helisoma anceps* (Menke) in Italy. *Basteria* **32**, 2–3.
- Hershler, R., T. J. Frest, E. J. Johannes, P. A. Bowler, and F. G. Thompson. 1994. Two new genera of hydrobiid snails (Prosobranchia: Rissoidea) from the Northwestern United States. *Veliger* **37**, 221–243.
- Hubendick, B. 1970. Studies on Ancyliidae. The Palearctic and Oriental Species and Formgroups. *Acta regiae Societatis Scientiarum et Litterarum Gothoburgensis Zoologica* **5**, 1–51.
- Hubendick, B. 1972. The European fresh-water limpets (Ancyliidae and Acroloxidae). *Informations de la Société Belge de Malacologie, Série 1* **8–9**, 109–128.
- Hubenov, Z. 1998. Caspian Relict Species of Mollusca. Appendix 9 in C. Meine, editor. *Bulgaria's Biological Diversity: Conservation Status and Needs Assessment Biodiversity Support Program*. World Wildlife Found. 07/10/2006  
<http://www.worldwildlife.org/bsp/publications/europe/bulgaria/bulgaria.html>
- Hubenov, Z. 2001. Corbiculidae – a new family to the Bulgarian recent malacofauna (Mollusca: Bivalvia). *Acta Zoologica Bulgarica* **53**, 61–66.
- Hubenov, Z. 2006. *Anodonta (Sinanodonta) woodiana* (Lea, 1834) (Mollusca: Bivalvia: Unionidae) – a new invasive species for the Bulgarian malacofauna. *Acta Zoologica Bulgarica* **58**, 37–42.
- Issel, A. 1866. *Catalogo dei molluschi raccolti nella Provincia di Pisa*. *Memorie della Società Italiana di Scienze Naturali* **II**, 1–38.
- Kantor, Y. I. and A. V. Sysoev. 2005. *Catalogue of molluscs of Russia and adjacent countries*. KMK Scientific Press, Moscow, Russia.
- Korniushin, A. V., N. J. Janovich, and R. K. Melnichenko. 2002. *Artenliste der Süßwassermuscheln der Ukraine, mit Bemerkungen über taxonomischen Status, Verbreitung und Gefährdungskategorien einiger Arten und Formen*. Pages 463–478 in M. Falkner, K. Groh and M. C. D. Speight, editors. *Collectanea Malacologica*. ConchBooks, Hackenheim, Germany.
- Košel, V. 1995. The first record of *Anodonta woodiana* (Mollusca, Bivalvia) in Slovakia. *Acta Facultatis Rerum Naturalium Universitatis Comenianae* **39**, 3–7.
- Łabęcka, A. M., J. Domagała, and M. Pilecka-Rapacz. 2005. First record of *Corbicula fluminalis* (O. F. Müller, 1774) (Bivalvia: Corbiculidae) in Poland. *Folia Malacologica* **13**, 25–27.
- Lobato Paraense, W. and J. P. Pointier. 2003. *Physa acuta* Draparnaud, 1805 (Gastropoda: Physidae): a study of topotypic specimens. *Memorias do Instituto Oswaldo Cruz* **98**, 513–517.
- Lori, E., M. Bodon, and S. Cianfanelli. 2005. Molluschi continentali alieni in Italia: presenza e distribuzione. *Notiziario S.I.M.* **23**, 71. <http://www.sim-online.it/>

- Lori, E. and S. Cianfanelli. 2006. New records of *Dreissena polymorpha* (Pallas, 1771) (Mollusca: Bivalvia: Dreissenidae) from Central Italy. *Aquatic Invasions* **1**, 281–283. [http://www.aquaticinvasions.ru/2006/AI\\_2006\\_1\\_4\\_Lori\\_Cianfanelli.pdf](http://www.aquaticinvasions.ru/2006/AI_2006_1_4_Lori_Cianfanelli.pdf)
- Lucas, A. 1959. Les *Hydrobia* (Bythinellidae) de l'Ouest de la France. *Journal de Conchyliologie* **99**, 3–14.
- Lyakhnovich, V. P., S. I. Gavrilov, A. Y. Karataev, I. V. Karataeva, and T. I. Nyakhaeva. 1982. Long-term changes in the macrobenthos of Lukoml'skoe Lake. *Vyestsi Akademii Navuk Byelarusi SSR Syeryya Biyalahichnykh Navuk* **1**, 91–93.
- Maassen, W. J. M. 1980. De zoetwatermollusken van het Ohrid – en Prespameer en hun omgeving. *De Kreukel* **16**, 81–98.
- Malavasi, D., R. Fabbri, and A. Bernardoni. 1999. Prima segnalazione nel tratto medio del fiume Po di *Corbicula fluminea* Mueller (Mollusca Bivalvia Corbiculidae). *Pianura* **11**, 183–185.
- Manganelli, G., M. Bodon, S. Cianfanelli, L. Favilli, and F. Giusti. 2000. Conoscenza e conservazione dei molluschi non marini italiani: lo stato delle ricerche. *Bollettino Malacologico* **36**, 5–42.
- Manganelli, G., M. Bodon, L. Favilli, L. Castagnolo, and F. Giusti. 1998. Checklist delle specie della fauna d'Italia, molluschi terrestri e d'acqua dolce. Errata ed addenda, 1. *Bollettino Malacologico* **33**, 151–156.
- Manganelli, G., M. Bodon, L. Favilli, and F. Giusti. 1995. 16. Gastropoda Pulmonata. Pages 1–60 in A. Minelli, S. Ruffo and S. La Posta, editors. Checklist delle specie della fauna italiana. Calderini, Bologna, Italy.
- Meier-Brook, C. 1983. Taxonomic studies on *Gyraulus* (Gastropoda: Planorbidae). *Malacologia* **24**, 1–113.
- Melone, G. 1981. La malacofauna del fiume Po a Caorso Isola Serafini. *Rivista di Idrobiologia* **20**, 255–268.
- Mienis, H. K. 1991. Some remarks concerning Asiatic clams invading Europe with a note on sample of *Corbicula fluminea* (Müller, 1774) from Trapani, Sicily. *Notiziario SIM* **9**, 137–139.
- Mienis, H. K. 2004a. Additional information concerning the conquest of Europe by the invasive Chinese Pond Mussel *Sinanodonta woodiana* 9. News from Belgium, Italy, Romania and Serbia. *Ellipsaria* **6**, 8–9.
- Mienis, H. K. 2004b. A graveyard of *Planorbella duryi* forma *seminole* on the shores of Lake Albano, Italy. *Ellipsaria* **6**, 12–13.
- Milkov, D. L. 1983. Charniere rudimentaire chez les jeunes *Dreissena polymorpha* Pallas et son importance taxonomique. *Acta Zoologica Bulgarica* **22**, 82–85.
- Minchin, D., F. Lucy, and M. Sullivan. 2002. Zebra mussel: impacts and spread. Pages 135–146 in E. Leppäkoski, S. Gollasch and S. Olenin, editors. *Invasive Aquatic Species of Europe. Distribution, impacts and management*, Kluwer Academic Publishers, Dordrecht, The Netherlands.
- Mirolli, M. 1960. Morfologia, biologia e posizione sistematica di *Watsonula wautieri*, n.g., n.s. (Basommatophora, Ancyliidae). *Memorie dell'Istituto Italiano di Idrobiologia* **12**, 121–163.
- Moretti, G. P., F. Cianficconi, and F. Tucciarelli. 1979. Bilancio ecologico e geonemico delle biocenosi alle confluenze del F. Tevere in Umbria. *Lavori della Società Italiana di Biogeografia Nuova Serie* **6** (1976), 525–566.

- Mouthon, J. 1981. Sur la présence en France et au Portugal de *Corbicula* (Bivalvia, Corbiculidae) originaire d'Asie. *Basteria* **45**, 109–116.
- Nardi, G. and A. Braccia. 2004. Prima segnalazione di *Corbicula fluminea* (O.F. Müller, 1774) per il Lago di Garda (provincia di Brescia) (Mollusca, Bivalvia, Corbiculidae). *Bollettino Malacologico* **39**, 181–184.
- Niero, I. 2003. Sulla presenza in Veneto e centro Italia di *Anodonta woodiana woodiana* (Lea, 1834) (Mollusca, Bivalvia). *Bollettino del Museo Civico di Storia Naturale di Venezia* **54**, 29–33.
- Petró, E. 1984. The occurrence and presence of *Anodonta woodiana woodiana* (Lea 1834) in Hungary. *Állattani Közlemények* **71**, 189–191.
- Piechocki, A., B. Wawrzyniak-Wydrowska, and B. Zdanowski. 2003. *Melanoides tuberculatus* (O. F. Müller, 1774) (Orthogastropoda: Thiaridae), a gastropod species new for the fauna of Poland. *Folia Malacologica* **11**, 39–41.
- Protasov, A. A., S. A. Afanasjev, and B. Zdanowski. 1993. Natural self-purification systems of Konin lakes. *Komunikaty Rybackie* **6**, 6–9.
- Réal, G. 1973. Répartition en France de *Potamopyrgus jenkinsi* (E. A. Smith, 1889). *Haliotis* **3**, 199–204.
- Reischütz, A. and P. L. Reischütz. 2000. Beiträge zur Kenntnis der Molluskenfauna Niederösterreichs 17. Die Chinesische Teichmuschel *Sinanodonta woodiana* (Lea, 1834) in Österreich. *Nachrichtenblatt der Ersten Vorarlberger Malakologischen Gesellschaft* **8**, 67.
- Reischütz, A. and P. L. Reischütz. 2004. Helleniká pantoía, 10: *Pseudosuccinea columella* (Say 1817) im Nomos Florina (NW-Makedonien, Griechenland). *Nachrichtenblatt der Ersten Vorarlberger Malakologischen Gesellschaft* **12**, 9.
- Ricciardi, F., A. Binelli, and A. Provini. 2004. Utilizzo di biomarker in *Dreissena polymorpha* come sistema di monitoraggio rapido: il caso dei grandi laghi subalpini. Pages 9 in R. Casagrandi and P. Melià, editors. *Atti del XIII Congresso S.It.E. Como, Italy. Ecologia quantitativa: metodi sperimentali, modelli teorici, applicazioni. Atti 27.*
- Sablon, R. 2002. Exotic mussel species invasions in Belgian freshwater systems (Mollusca, Bivalvia). *Bulletin de l'Institut Royal des Sciences Naturelles de Belgique, Biologie*, **72**.
- Saraceni, C. 1971. *Biologia ed ecologia delle comunità macrobentoniche del fiume Bardello. Memorie dell'Istituto Italiano di Idrobiologia* **27**, 61–111.
- Sárkány-Kiss, A. 1986. *Anodonta woodiana* (Lea, 1834) a new species in Romania (Bivalvia, Unionacea). *Travaux du Museum National d'Histoire Naturelle "Grigore Antipa"* **28**, 15–17.
- Smith, B. J. and J. Stanisc. 2006. Mollusca. In CSIRO – Commonwealth Scientific and Industrial Research Organisation – AICN – Australian Insect Common Names – version 1.53 (16 June 2005). 07/10/2006. [http://www.ento.csiro.au/aicn/name\\_s/b\\_3491.htm](http://www.ento.csiro.au/aicn/name_s/b_3491.htm)
- Solustri, C. and G. Nardi. 2006. Una nuova stazione di *Anodonta woodiana woodiana* (Lea, 1834) nell'Italia centrale (Bivalvia, Unionidae). *Quaderno di Studi e Notizie di Storia Naturale della Romagna* **23**, 1–8.
- Swinnen, F., M. Leynen, R. Sablon, L. Duvivier, and R. Vanmaele. 1998. The Asiatic clam *Corbicula* (Bivalvia: Corbiculidae) in Belgium. *Bulletin de l'Institut Royal de Sciences Naturelles de Belgique, Biologie* **68**, 47–53.

- Talenti, E. and S. Cianfanelli. 1989. Due nuove stazioni di *Ferrissia wautieri* (Mirolli, 1960) in Toscana. *Bollettino Malacologico* **25**, 251–254.
- Tappenbeck, L. 2000. *Sinanodonta woodiana*, die 'Chinesische Teichmuschel' – eine neue Großmuschel in Deutschland. *Halophila – Mitteilungsblatt Fachgruppe Faunistik und Ökologie Staßfurt* **41**, 11.
- Taylor, D. W. 2003. Introduction to Physidae (Gastropoda: Hygrophila); biogeography, classification, morphology. *Revista de Biología Tropical* **51** Supplement 1, 1–287.
- Theodósio, J., M. A. Chicaro, and L. Chicaro. 2004. The Asiatic clam *Corbicula fluminea* (Müller) in the Gadiana basin. World Congress of Malacology, Perth, Western Australia 11–16 July 2004, Western Australian Museum, abstracts, 146.
- Turner, H., J. G. J. Kuiper, N. Thew, R. Bernasconi, J. Rüetschi, M. Wüthrich, and M. Gosteli. 1998. Atlas der Mollusken der Schweiz und Liechtensteins. *Fauna Helvetica* 2.CSCF und SEG, Neuchâtel.
- Vanden Bossche, J. P. 2002. First records and fast spread of five new (1995–2000) alien species in the River Meuse in Belgium: *Hypania invalida*, *Corbicula fluminea*, *Hemimysis anomala*, *Dikergammarus villosus* and *Crangonyx pseudogracilis*. *Bulletin de l'Institut Royal de Sciences Naturelles de Belgique* **72**, Supplément 19, 73–78.
- Van Peursen, A. D. P. 2004. Oproep om vindplaatsen van *Corbicula*'s in Nederland te melden. *Spirula* **340**, 96.
- Velkóvrh, F. 2001. Analiza stanja biotske raznovrstnosti za področje kopenskih in Sladkovodnih Mehkušcev. Pages 74–79 in ARSO. Ekspertne študije za Pregled stanja biotske raznovrstnosti in krajinske pestrosti v Sloveniji. Ljubljana, Republika Slovenija.
- Vimpère, J. 2004. Introduction en France continentale d'un gastéropode d'eau douce originaire de Floride: *Planorbella duryi* (Wetherby, 1879), (Mollusca: Gastropoda: Pulmonata). *Le Naturaliste Vendéen* **4**, 127–130.
- Walther A. C., T. Lee, J. B. Burch, and D. Ó Foighil. 2006. Confirmation that the North American ancyliid *Ferrissia fragilis* (Tryon, 1863) is a cryptic invader of European and East Asian freshwater ecosystems. *Journal of Molluscan Studies* **72**, 318–321.
- Yurishinets, V. I. and A. V. Kornishin. 2001. The new species in the fauna of Ukraine *Sinanodonta woodiana* (Bivalvia, Unionidae), its diagnostics and possible ways of introduction. *Vestnik Zoologii* **35**, 79–84.
- Zettler, M. L. and D. Richard. 2003. Kurze Bemerkungen über Süßwassermollusken Siziliens unter besonderer Berücksichtigung von *Theodoxus meridionalis* (Philippi, 1836). *Malakologische Abhandlungen* **21**, 29–38.
- Zettler, M. L., A. Zettler, and D. Daunys. 2005. Bemerkenswerte Süßwassermollusken aus Litauen. *Aufsammlungen vom September 2004. Malakologische Abhandlungen* **23**, 27–40.
- Zhadin, V. I. 1952. Mollusks of Fresh and Brackish Waters of the USSR. Keys to the Fauna of the USSR published by the Zoological Institute of the Academy of Sciences of the USSR, 46. Translated from Russian 1965, Israel Program for Scientific Translations, Jerusalem, Israel.
- Zilch, A. 1959. Euthyneura 2. Pages 1–834 in O. H. Schindewolf, editor. W. Wenz. *Gastropoda. Handbuch der Paläozoologie* 6. Gebrüder Borntraeger, Berlin, Germany.