

European Red List of Non-marine Molluscs

Annabelle Cuttelod, Mary Seddon and Eike Neubert



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IUCN Global Species Programme
IUCN Regional Office for Europe
IUCN Species Survival Commission

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Picture credits on cover page: The rare "Hélice catalorzu" *Tacheocampylaea acropachia acropachia* is endemic to the southern half of Corsica and is considered as Endangered. Its populations are very scattered and poor in individuals. This picture was taken in the Forêt de Muracciole in Central Corsica, an occurrence which was known since the end of the 19th century, but was completely destroyed by a heavy man-made forest fire in 2000. Photo © Gerhard Falkner.

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Foreword



Europe is a continent rich in natural and cultural heritage, with a diverse range of habitat conditions from dry Mediterranean maquis in the south to the Arctic tundra of the far north.

Possibly more than anywhere else in the world the European landscapes have been changed by human activities so that now the continent is covered with a mosaic of natural and semi-natural habitats surrounding urbanized areas. Although bringing higher diversity, this modification has obviously also placed great pressures on our wildlife and natural areas. In consequence, biodiversity loss is an enormous challenge in the EU today, with around one in four species currently threatened with extinction and 88% of fish stocks over-exploited or significantly depleted.

In line with global commitments made in Nagoya in October 2010, where world leaders adopted of a package of measures to address global biodiversity loss over the coming decade, the European Commission has adopted in May 2011 an ambitious new strategy to halt the loss of biodiversity and ecosystem services in the EU by 2020. There are six main targets, and 20 actions to help Europe reach its goal.

The six targets cover:

1. full implementation of EU nature legislation to protect biodiversity
2. better protection for ecosystems, and more use of green infrastructure
3. more sustainable agriculture and forestry
4. better management of fish stocks
5. tighter controls on invasive alien species
6. a bigger EU contribution to averting global biodiversity loss

Numerous scientific studies show that biodiversity in Europe has been declining rapidly for some time during periods of expansion and intensification of land use. The reporting process under Article 17 of the EU Habitats Directive underlines this fact as most species and habitats of community interest are still not under a favourable conservation status.

Regional European Red Lists are another important

tool to scientifically assess and communicate the status of species. They usefully complement the reporting under the Habitats Directive as they usually address all species in a specific taxonomic group, not just those protected by EU legislation. They hence give important complementary and comprehensive information about the situation of biodiversity in Europe.

This first regional assessment of all Europe's freshwater molluscs and selected terrestrial molluscs has evaluated the conservation status for more than 2,000 species present in Europe.

Snails and bivalves are found in almost all European freshwater bodies and terrestrial habitats except at high altitudes above 3,000 m. They are an important part of Europe's natural heritage and provide crucial services for the ecosystem as they recycle nutrients and form an essential part of the food chain. Furthermore, bivalves such as mussels are responsible for cleaning large quantities of water.

This European Red List highlights that almost half (44%) of the freshwater species and one out of five (20%) of the selected terrestrial molluscs are threatened. This compares with 37% of freshwater fishes, 23% of amphibians, 19% of reptiles, 15% of mammals and dragonflies, 13% of birds, 9% of butterflies and 7% of the aquatic plants, the other groups that have been comprehensively assessed in Europe. Additional European Red Lists assessing a selection from species groups indicate that 12% of the crop wild relatives and 11% of the saproxylic beetles are also threatened.

Furthermore, there are declining populations in 11% of Europe's freshwater molluscs and 6% of selected terrestrial species, but for 82% of freshwater and 53% of terrestrial species the population trend is still unknown and could also be declining.

The main reason for these declines include pollution, dams and water extraction (mainly for agriculture and drinking purposes) for the freshwater mollusc species and urbanisation, agriculture and recreational activities for the terrestrial molluscs.

What can we as Europeans do about this? First and foremost, we need to fully implement the existing European legislation. The EU Habitats and Birds

Directives are the main pieces of legislation ensuring the protection of Europe's nature. The Natura 2000 network of protected sites and the efforts to conserve and restore biodiversity in the wider countryside are helping to guarantee its future conservation. But the challenge is a wider one, as the new EU Biodiversity Strategy shows. Sustainable use of our wider environment and

the maintaining of ecosystem services have come to the centre of our attention.

I hope that this European Red List for Non-marine Molluscs will add another piece of evidence for the fact that efforts aimed at halting the loss of biodiversity need a major boost in the coming years.

Pia Bucella
Director
Directorate B: Nature, Biodiversity & Land Use
European Commission

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The IUCN Red Listing process relies on the willingness of experts to contribute and pool their collective knowledge to make the most reliable estimates of the conservation status of species. Without their enthusiastic commitment to species conservation, these regional overviews would not be possible.

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Expert participants at the Freshwater Molluscs Red List workshop, 23 - 27 November 2009, Budapest, Hungary. Photo © Nieves Garcia.



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Workshop participants reviewing species assessments at the terrestrial molluscs workshop, September 2010, Bern (Switzerland). Photo © Annabelle Cuttelod.



Experts reviewing species assessments in working groups at the Molluscs Red List workshop, 1-5 February 2010, London, UK. Photo © Nadia Richman



Executive summary

Aim

The European Red List is a review of the conservation status of c.6,000 European species (dragonflies, butterflies, freshwater fishes, reptiles, amphibians, mammals and selected groups of beetles, molluscs, and vascular plants) conducted according to IUCN regional Red Listing guidelines. It identifies those species that are threatened with extinction at the regional level – in order that appropriate conservation action can be taken to improve their status. This Red List publication summarises results for a selection of European non-marine molluscs.

Scope

About 2,000 mollusc species (all freshwater mollusc species and terrestrial mollusc species from selected families) native to Europe are included. The geographical scope is continent-wide, extending from Iceland in the west to the Urals in the east, and from Franz Josef Land in the north to the Canary Islands in the south. The Caucasus region is not included. Red List assessments were made at two regional levels: for geographical Europe, and for the 27 current Member States of the European Union.

Status assessment

The conservation status of all species was assessed using the IUCN Red List Criteria (IUCN 2001), which is the world's most widely accepted system for measuring extinction risk. All assessments followed the Guidelines for Application of IUCN Red List Criteria at Regional Levels (IUCN 2003). These assessments were compiled from information from a network of over 75 compilers from almost every European country and reviewed during various evaluation workshops, in Budapest (Hungary), London (UK) and Bern (Switzerland) and through discussions and correspondence with relevant experts. Assessments are available on the European Red List website and data portal: <http://ec.europa.eu/environment/nature/conservation/species/redlist> and <http://www.iucnredlist.org/europe>.

Results

Overall, about 44% (373 species) of freshwater molluscs and 20% (246 species) of the selected terrestrial molluscs are threatened in Europe, while at the EU 27 level, a slightly higher percentage is observed with 50% (273 species) of freshwater molluscs and 21% (235 species) of the selected terrestrial molluscs being threatened. A further 9% of freshwater and 15% of the selected terrestrial molluscs are considered Near Threatened at the European level. However, these figures are minimum estimates, as almost a quarter of all European freshwater molluscs and 10% of the selected European terrestrial molluscs are Data Deficient and many of them might prove to be threatened once enough data becomes available to evaluate their extinction risk.

By comparison, 37% of freshwater fishes, 23% of amphibians, 19% of reptiles, 15% of mammals and dragonflies, 13% of birds, 9% of butterflies and 7% of aquatic plants are threatened, the other groups that have been comprehensively assessed in Europe (Freyhof and Brooks 2011, Temple and Cox 2009, Cox and Temple 2009, Temple and Terry 2007, Kalkman *et al.* 2010, BirdLife International 2004a, van Swaay *et al.* 2010, Bilz *et al.* 2011). Additional European Red Lists assessing a selection from species groups have shown that 12% of the crop wild relatives and 11% of the saproxylic beetles are also threatened (Bilz *et al.* 2011, Nieto and Alexander 2010).

There is a lack of good population trend data and a vast majority of the assessed non-marine mollusc species have unknown population trends (83% for the freshwater molluscs and more than half (53%) for the terrestrial molluscs), whilst in both cases, less than one percent of species are seen to be increasing.

The main centres of diversity, endemism and threats are found in the Mediterranean, from the Iberian Peninsula to the Balkans, around the Alpine Arc and in various island groups, highlighting the richness, but also the vulnerability of these areas. The ancient lakes in the

Balkans, underground karstic systems, the Macaronesian (Azores, Madeira, Canary Islands) and Mediterranean (Greek, Maltese and Balearic islands, Sicily, Sardinia, Corsica) islands deserve special attention in that regard.

The main threat to European molluscs is the loss and degradation of suitable habitat. For the freshwater species, this is due to water pollution (nitrates and other chemicals from agricultural sources and poor domestic sewage management) and over-abstraction of water from springs and groundwater sources, while for terrestrial molluscs, the major problems are related to encroaching urbanisation, agricultural improvements, tourism and recreation activities, wildfires and infrastructure construction.

Assessments are available on the European Red List website and data portal: <http://ec.europa.eu/environment/nature/conservation/species/redlist> and <http://www.iucnredlist.org/europe>.

Conclusions

- With nearly half of all European freshwater molluscs facing extinction (44%), this is by far the most threatened group assessed to date in Europe, highlighting the worrying situation of European freshwater ecosystems.
- Terrestrial molluscs are also in need of protection, as one in five (20%) of the assessed species are considered to be threatened in Europe.
- In Europe, 8 species are already Extinct, with a further 35 species considered Critically Endangered (Possibly Extinct) indicating that actions are needed before 2020, in order to reach the new EU target to halt biodiversity loss.
- More than 90% of the European molluscs are endemic, which means that they don't occur anywhere else in the world and represent Europe's natural heritage.
- To revert the dramatic decline of molluscs in Europe, urgent conservation actions are needed:
 - National and European legislation should be fully implemented and revised to include the threatened species identified during this project.
 - Key sites should be protected and the management of these habitats and of existing protected areas should take into consideration the specific requirement of molluscs.
 - Water management should be improved, especially regarding the over-exploitation of springs and groundwater and the pollution resulting from agriculture and urbanisation.
 - Environmental Impact Assessments (EIA) should be conducted for any major project, such as dams, drainage, waste disposal sites and new industrial estates, to assess the impact and mitigation measures needed for native molluscs.
 - Species Action Plans should be drawn for the most threatened species; however a multi-taxon approach through the use of habitat action plans may be more appropriate for some species. For the most threatened species, captive breeding programmes might need to be set in place.
 - Invasive species should be controlled to reduce their impact on the native fauna.
 - The importance and role of molluscs, and of invertebrates in general, should be promoted through a campaign to raise awareness.
 - Monitoring of the population size, distribution and trend (possibly through the monitoring of the habitat as a proxy) should be undertaken for the threatened and Data Deficient species.
 - Further taxonomic research should be undertaken to clarify the taxonomic status of the European molluscan fauna.
- It should be noted that the current results indicate the main trends from the last 30 years, however in the last two centuries, the distribution and population of many widespread species have been declining since the 1880's, and the greatest losses were seen between 1920 and 1960 due to habitat change and degradation.
- This project contributes to improving the coverage of invertebrates on the global IUCN Red List, thanks to the comprehensive assessment of European freshwater molluscs, and it doubles the number of assessed terrestrial molluscs, through the addition of the selected families.

1. Background

1.1 The European context

Europe is one of the seven traditional continents of the Earth, although physically and geologically it is the westernmost peninsula of Eurasia. Europe is bound to the north by the Arctic Ocean, to the west by the Atlantic Ocean, to the south by the Mediterranean Sea, and to the southeast by the Black Sea and the Caucasus Mountains. In the east, Europe is separated from Asia by the Ural Mountains and the Caspian Sea (see Figure 3 below). It is the world's second-smallest continent in terms of area, covering approximately 10,400,000 square kilometres (4,010,000 square miles) or 2% of the Earth's surface. In terms of human population, Europe is the third-largest continent (after Asia and Africa) with a population of some 731 million – about 11% of the world's population. Europe is the most urbanised and, together with Asia, the most densely populated continent in the world.

The European Union, comprising 27 Member States, is Europe's largest political and economic entity. It is the world's largest economy with an estimated GDP in 2008 of 18.9 trillion US dollars (Central Intelligence Agency 2009). Per-capita GDP in many EU states is among the highest in the world, and rates of resource consumption and waste production are correspondingly high – the EU 27's "ecological footprint" has been estimated to exceed the region's biological capacity (the total area of cropland, pasture, forest, and fishing grounds available to produce food, fibre and timber, and absorb waste) by 2.6 times (WWF 2007).

The EU's Member States stretch from the Arctic Circle in the north to the Mediterranean in the south, and from the Atlantic coast in the west to the Pannonian steppes in the east – an area containing a great diversity of landscapes and habitats and a wealth of flora and fauna. European biodiversity includes 488 species of birds (IUCN 2009), 260 species of mammals (Temple and Terry 2007, 2009), 151 species of reptiles, 85 species of amphibians, 546 species of freshwater fishes (Kottelat and Freyhof 2007), 20-25,000 species of vascular plants¹ and well over 100,000 species of invertebrates (Fauna Europaea 2004). The Mediterranean part of Europe which is particularly rich in plant and animal species, has been recognised as a global "biodiversity hotspot" (Mittermeier *et al.* 2004, Cuttelod *et al.* 2008).

Europe has arguably the most highly fragmented landscape of all continents, and only a tiny fraction of its land surface can be considered as wilderness. For centuries humans have occupied most of Europe's land to produce food, timber and fuel and to provide living space, and currently in western Europe more than 80% of land is under some form of direct management (European Environment Agency 2007). Consequently, European species are to a large extent dependent upon semi-natural habitats created and maintained by human activity, particularly traditional, non-intensive forms of land management. These habitats are under pressure from agricultural intensification, urban sprawl, infrastructure development, land abandonment, acidification, eutrophication and desertification.

Molluscs are present in the seas, rivers and on land. They show a great variety of size, shape, behavior and habitat. They include (from top left to bottom right) snails, slugs, clams, mussels, chitons, squids, cuttlefishes and octopuses. Photos (from top left to bottom right) © António Manuel de Frias Martins, Eike Neubert, Naotake Murayama, Rebecca Wood, Malcolm Carlaw, Dan Hershman, Marc Lehmann, Prilfish.



1 Source: Euro+Med PlantBase, <http://www.emplantbase.org/home.html>

Many species are directly affected by overexploitation, persecution and impacts of alien invasive species, as well as climate change being set to become an increasingly serious threat in the future. Europe is a very diverse continent and the relative importance of different threats varies widely across its biogeographic regions and countries. Even though considerable efforts have been made to protect and conserve European habitats and species (e.g. see Sections 5.1, 5.2, 5.3), biodiversity decline and the associated loss of vital ecosystem services (such as water purification, crop pollination, and carbon sequestration) continues to be a major concern all over Europe.

1.2 European molluscs: diversity and endemism

The Phylum Mollusca (snails, slugs, clams, mussels, chitons, squids, cuttlefishes and octopuses) contains an estimated 81,000 described species (Bouchet 2007), comprising about 55,000 marine molluscs, 6,000 freshwater and 25,000 terrestrial species worldwide. However the numbers are increasing annually, as more research is carried out, especially in regions of the world that are less well known.

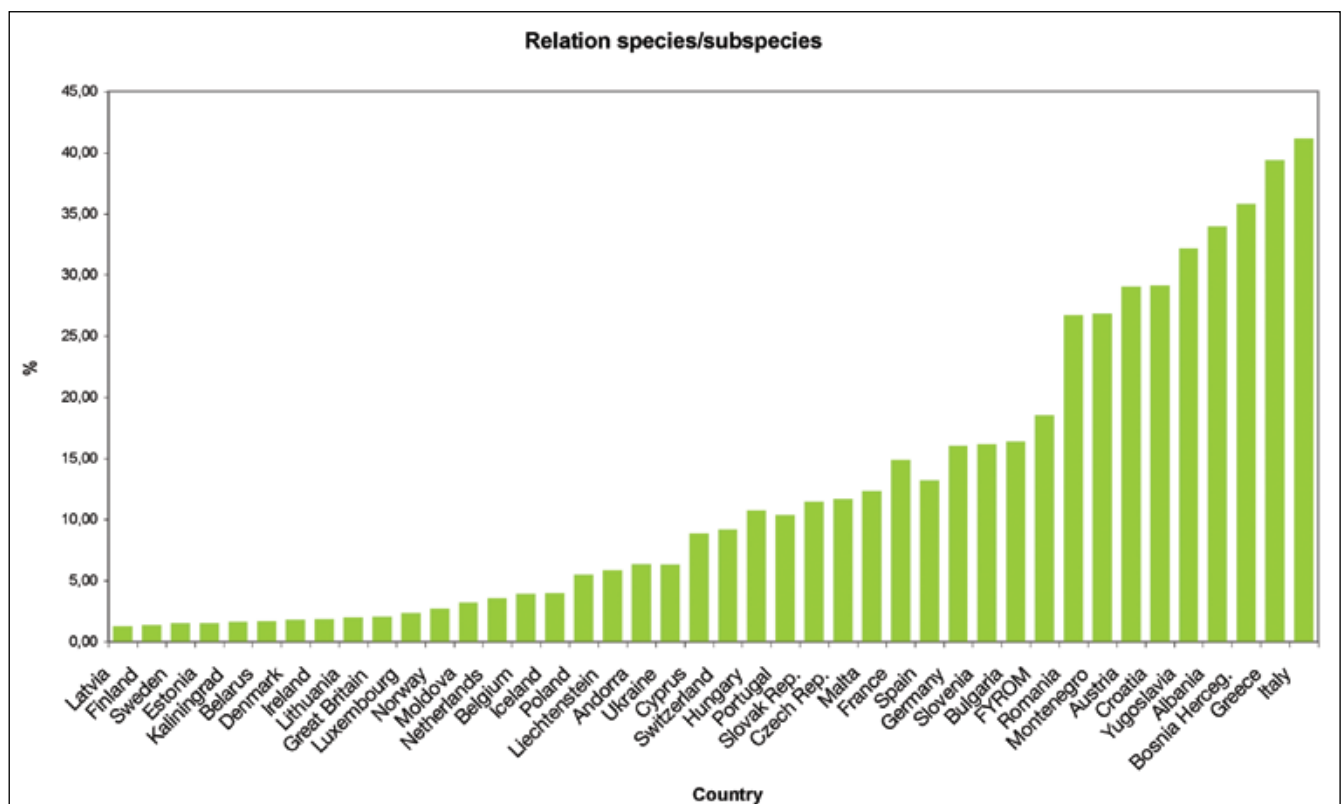
Molluscs can be found in almost all types of habitats, from the bottom of the oceans to mountain tops and

tundra regions. They are very diverse, not only in size and shape, but also in their life-cycle, life-span and habitat. They are an important food source for birds, fish, mammals and other invertebrates, as well as for humans, and play a key role in the recycling of nutrients, soil-generation and water filtration. They are also good indicators of environmental quality, especially for rivers, lakes, marshes, ancient grasslands and ancient woodlands. Terrestrial molluscs are often known as garden pests. However the pest species represent only a minority of the species existing in Europe.

The EU Fauna Europaea project (2004) provided the first compilation of a regional checklist of non-marine molluscs for Europe (excluding Asiatic Turkey) and is available online (www.faunaeur.org). Studies led between 2005 and 2011 have added another c. 500 species to this list, the majority resulting from work on the molecular systematics of selected groups and through fieldwork in regions which had been rarely surveyed previously, with a total of almost 3,400 species for the entire region (Fauna Europaea, Bank *et al.* 2011). This 17% increase in the number of known species over a relatively short period indicates that many additional species might be recognized once they are better studied.

Within Europe, there are major geographic differences in the level of endemism and species diversity of non-marine

Figure 1. Number of subspecies per species for each European country



molluscs. There is an increase in the species diversity from northern to southern Europe, as well as an increase in the number of subspecies currently recognized (see Figure 1) in southern and eastern Europe (Yugoslavia here includes Serbia, Kosovo and the Voivodina, Montenegro is listed as a separate country, and FYROM means the Former Yugoslav Republic of Macedonia). The patterns of radiations are thought to reflect the contribution of particular families to both species and subspecies diversity, which differs deeply between western and eastern Europe. In Eastern Europe, Clausiliidae, Oxychilidae and Enidae contribute the most to the diversity, but these families are not well represented in the Iberian Peninsula, which is dominated by the freshwater snails of the Superfamilia Rissooidea, family Hydrobiidae, the terrestrial family Chondrinidae, as well as radiations within the families Hygromiidae and Trisexodontidae. These patterns may reflect various species radiation waves that occurred within Europe during late Miocene and early Pleistocene following the depletion of the former subtropical European molluscan fauna.

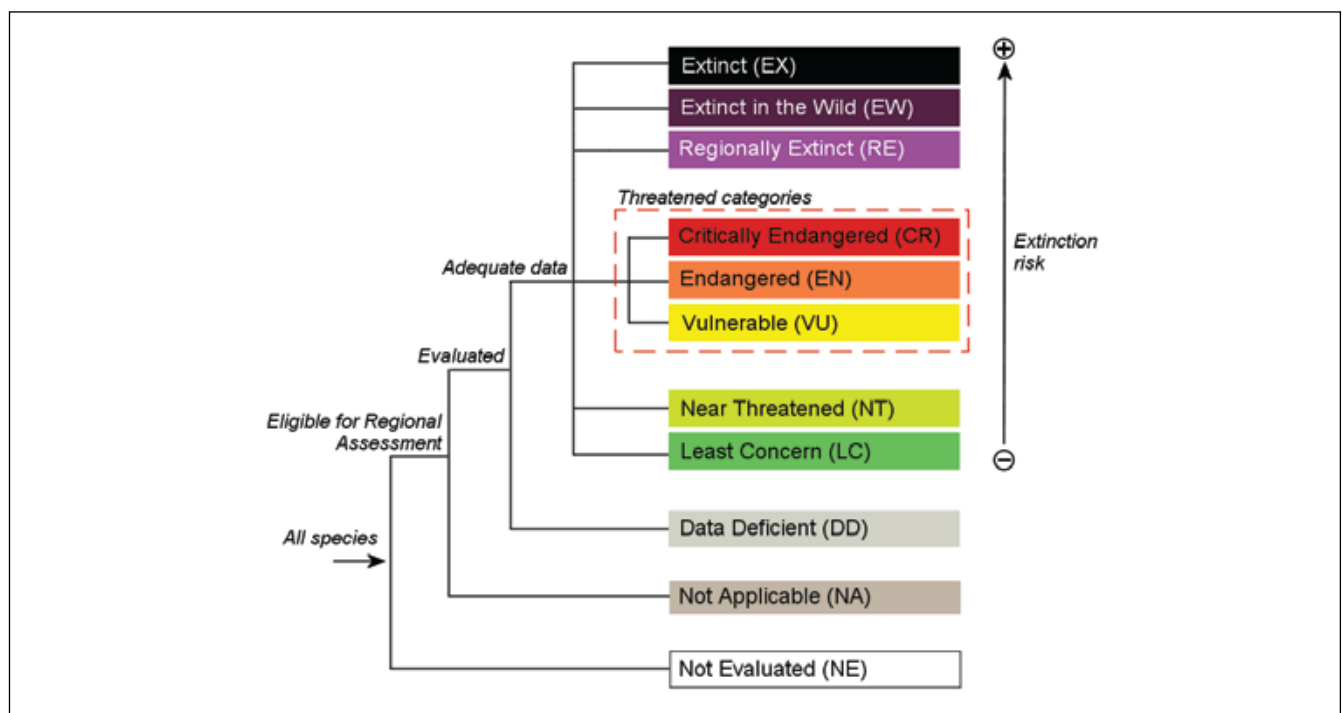
The *Council of Europe report on Invertebrates in need of conservation* (Wells and Chatfield 1992) provided the last major overview on the conservation status of non-marine mollusc species in Europe. This document listed many of the species that were considered at the time as potentially threatened. The 1996 Red List released at the World Conservation Congress in Montreal included

assessments of 1428 species of molluscs, of which 604 were threatened and 237 considered to be extinct (Seddon 1998). Only 145 assessments were for European species, which Bouchet *et al.* (1999) pointed out did not reflect the levels of threat to either narrow range endemics or to the broad-ranging, declining species in Europe. When this project started, a total of 2,213 molluscs species were listed on the IUCN Red List, of which only 335 were European including 174 considered threatened (IUCN 2007).

1.3 Species threat status

The conservation status of plants and animals is one of the most widely used indicators for assessing the condition of ecosystems and their biodiversity. It also provides an important tool in establishing priorities for species conservation. At the global scale, the best source of information on the conservation status of plants and animals is the *IUCN Red List of Threatened Species* (see www.iucnredlist.org; IUCN 2009). The Red List is designed to determine the relative risk of extinction, with the main purpose of cataloguing and highlighting those taxa that are facing a higher risk of extinction. It provides taxonomic, conservation status, and distribution information on taxa that have been evaluated using the *IUCN Red List Categories and Criteria: Version 3.1* (IUCN 2001). There are nine Categories, ranging from Least Concern, for species that are not threatened, through to

Figure 2. IUCN Red List Categories at regional scale



the Extinct category, for species that have disappeared from the planet². The IUCN Red List Categories are based on a set of quantitative criteria linked to changes in either population trends, population size and structure, and/or geographic range. Those species classified as Vulnerable, Endangered and Critically Endangered are considered as ‘threatened’. When conducting regional or national assessments, two additional categories are used (Regionally Extinct and Not Applicable) for non-native species (IUCN 2003) (Figure 2).

1.4 Objectives of the assessment

The European regional assessment has four main objectives:

- To contribute to continental conservation planning through the provision of a baseline dataset describing the conservation status of European non-marine molluscs.
- To identify those geographic areas and habitats that need conservation measures to prevent extinctions and ensure that European non-marine Molluscs reach and maintain a Favourable Conservation Status.
- To identify the major threats and propose mitigating measures and conservation actions to address them.
- To strengthen the network of experts focused on conservation of molluscs in Europe, so that the

assessments can be kept up-to-date, and expertise be targeted to address the highest conservation priorities.

The assessment provides three main outputs:

- This summary report on the status and distribution of European molluscs; their main threats and recommendations for conservation measures, as well as a poster on their status.
- A freely available database holding the baseline data for monitoring the status and distribution of European molluscs;
- A website and data portal (<http://ec.europa.eu/environment/nature/conservation/species/redlist> and <http://www.iucnredlist.org/europe>) showcasing this data in the form of species factsheets for all European molluscs, along with background and other interpretative material;

The data presented in this report provides a snapshot based on the knowledge available at the time of writing. The database will continue to be updated and made freely and widely available. IUCN will ensure a wide dissemination of these data to relevant decision makers, NGOs and scientists to strengthen and support the implementation of conservation actions on the ground.

Cornu asperum, commonly known as the Garden Snail or “Petit Gris”, is widespread in the Mediterranean and western parts of Europe, where it is locally abundant. It is found in Mediterranean shrubland, base-rich grassland, coastal sand dunes, and is also associated with human disturbed environments such as gardens or stone walls. It is consumed for food in some parts of Europe. It has been introduced across the world, including other parts of Europe, North and South America, South Africa and Australasia, where it is often regarded as a pest species. It has a stable population trend, and may even expand its range to suitable habitats made available with climate change.. It is currently considered as Least Concern. © Matthew Hutchinson



2 For a description of each of the global IUCN Red List Categories go to: <http://www.iucnredlist.org/technical-documents/categories-and-criteria/2001-categories-criteria#categories>

2. Assessment methodology

2.1 Global and regional assessments

The extinction risk of a species can be assessed at global, regional or national level. One species can have a different category in the Global Red List and in a Regional Red List. For example, a species that is common worldwide and classed as Least Concern (LC) in the Global Red List could face a high level of threat and fit the Endangered category (EN) in a particular region (see Figure 2). In order to avoid an over- or underestimation of the regional extinction risk of a species, the *Guidelines for the application of IUCN Red List Criteria at Regional Level* should be applied (IUCN 2003). Logically, an endemic species should have the same category at regional and global levels, as it is not present in any other part of the world.

2.2 Geographic scope

The geographical scope of this report is continent-wide, extending from Iceland in the west to the Urals in the east (including European parts of the Russian Federation), and

from Franz Josef Land in the north to the Mediterranean in the south (see Figure 3). The Canary Islands, Madeira and the Azores were also included. In the southeast, where definitions of Europe are most contentious, the Caucasus region was not included.

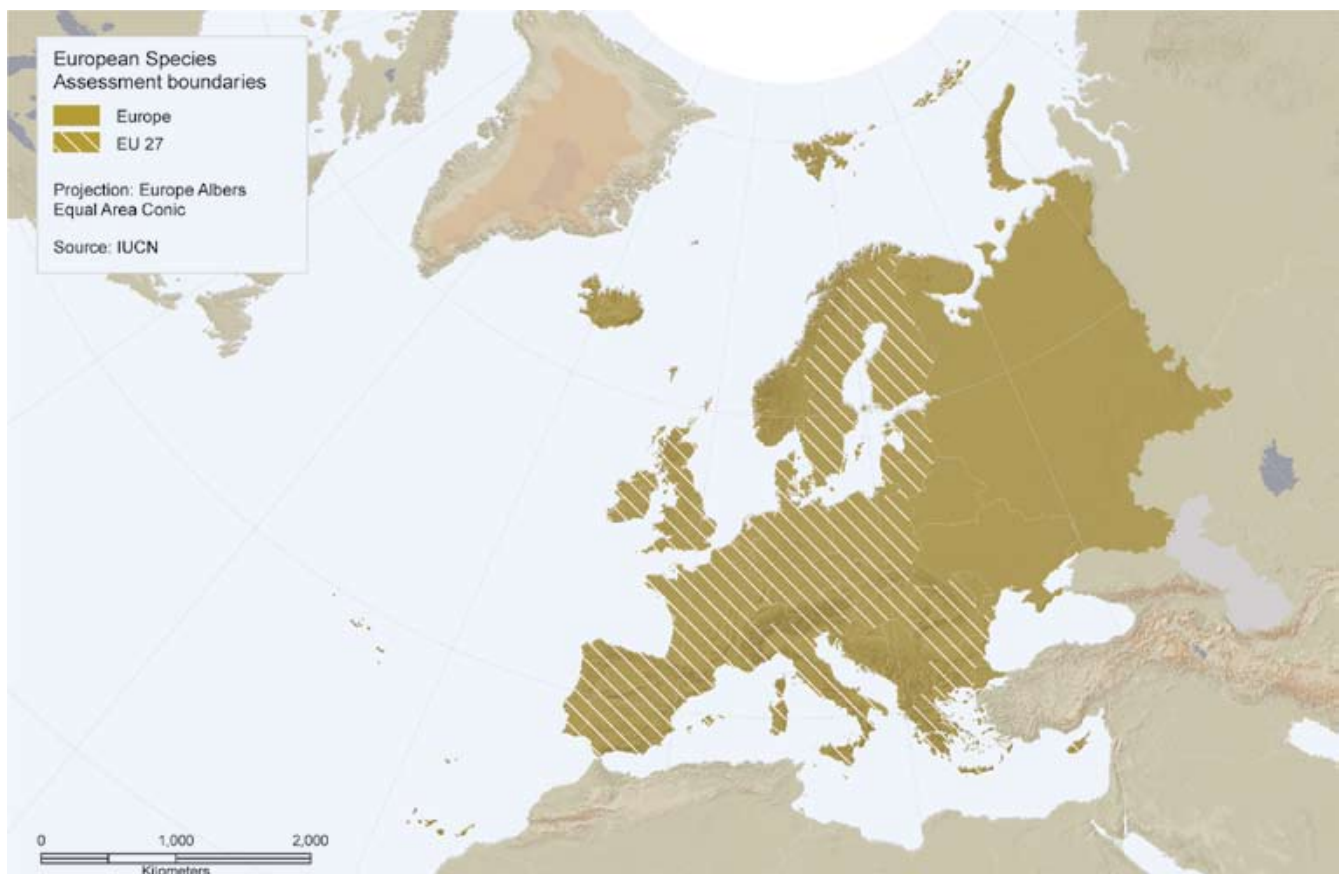
Red List assessments were made at two regional levels:

- 1) for geographical Europe (limits described above); and
- 2) for the area of the 27 Member States of the European Union.

2.3 Taxonomic scope

For this project, more than 2,000 mollusc species (over 1,200 terrestrial molluscs from selected families and 854 freshwater species) have been assessed. According to the latest census available, geographical Europe (excluding Russia) is inhabited by more than 3,373 species, which are currently known to split into another 1352 subspecies (Fauna Europaea, Bank 2011, unpublished, status June 2011). This means that 2/3 of the molluscan fauna of

Figure 3. Regional assessments were made for two areas – geographical Europe and the EU 27.



Europe is covered by the project, which can thus claim to be representative in a statistical sense. The addition of species from European Russia (defined as up to the Ural Mts but not including the Caucasus) is likely to only slightly change this figure.

The nomenclature and checklist for the non-marine molluscs follows Fauna Europaea (Bank *et al.* 2006), with subsequent additions of new species from the period 2005-2011, as well as various nomenclatural changes, which have been through a peer-review process and are largely based on published papers. It should be noted that subspecies were not individually assessed as part of this project, and that these represent a large number of endemic subspecies restricted to separate islands, valleys or mountain ranges, which might prove to be valid species once more research is carried out.

Subspecies currently represent at least 30% of the taxa found in Europe. Molecular analyses of several terrestrial and freshwater mollusc species of Europe have shown that many species are “cryptic”, i.e. that they are biologically valid and distinct species, but their morphology is very similar, if not identical, and they have been overlooked. At present the molecular results are insufficient to understand the potential changes in species limits in all groups, but this is one factor that has led and will probably lead in the future to the increasing number of species that are recognized in Europe.

A small number of species (approximately 1%) are introductions from outside Europe (North American/Asian/African species); these have not been assessed as part of the IUCN Red List.

2.4 Preliminary assessments

More than 75 experts gathered species specific information, obtained from primary literature, museum collection and personal knowledge, and provided a preliminary assessment for all the native European molluscs species included in this project.

The following data were entered into the IUCN database, the Species Information Service (SIS):

- Species’ taxonomic classification
- Geographic range (including a distribution map)
- Red List Category and Criteria
- Population information
- Habitat preferences
- Major threats

Henrigirardia wienini is endemic to a single cave in the Hérault valley in southern France, where it inhabits the subterranean waters. This locality may be threatened by lowering of the groundwater level through the over abstraction of groundwater for domestic water supplies. This species has never been found alive and could already be extinct; therefore it is considered Critically Endangered (Possibly Extinct). Material from museum collections is used to inform species assessments in addition to primary literature and expert knowledge, and in some cases may be the main source of information, due to difficulties in sampling some habitats, for example groundwater. Surveys are required to establish whether this cryptic species is still extant, and thereafter monitoring to establish any decline in habitat quality. This species may benefit from restrictions on drawdown to maintain suitable habitat. ©Vincent Prié / Caracol



- Conservation measures
- Other general information
- Key literature references

A digital distribution map was also created for each species, using ArcGIS software.

2.5 Review workshop and evaluation of assessments

The preliminary assessments were evaluated through review workshops and correspondence with relevant experts. New information was added to the species summaries and maps, and corrections to existing data were made.

Two workshops were organised to cover the freshwater mollusc species: the Balkans and south-east Europe species were reviewed from 23 to 27 November 2009, in Budapest (Hungary), whilst species occurring in northern Europe and the western Mediterranean regions were considered from 1 to 5 February 2010 in London (UK). The remaining freshwater species were dealt with by correspondence and meetings with the relevant experts. Another workshop was dedicated to threatened terrestrial molluscs, from 28 September to 2 October 2010 in Bern (Switzerland). The list of non-threatened terrestrial species was agreed during the latter workshop and these species were only evaluated through correspondence.

Following the review workshops, the data were edited, and outstanding questions were resolved through

communications with the workshop participants. The post-workshop draft categories and criteria were also made available to allow the participating scientists to make any final corrections.

Facilitating staff from the IUCN Red List Unit and the IUCN Regional Office for Europe reviewed the assessments to ensure they complied with the guidelines

for application of the IUCN Red List Categories and Criteria and included the most up-to-date comprehensive information.

The resulting finalized IUCN Red List assessments are a product of scientific consensus concerning species status and are backed by relevant literature and data sources.

Expert participants at the Terrestrial Molluscs Red List workshop, 28 September – 2 October 2010, Bern, Switzerland. Photo © Lisa Schäublin-NMBE.





Spengler's Freshwater Mussel (*Margaritifera auricularia*) was originally widespread throughout Europe, but nowadays it is restricted to France and Spain. It is currently listed as Critically Endangered. In the 1980's it was considered to be nearly extinct. It is difficult to survey, as the species occurs in beds of the slow-flowing channels of large river systems. Survey work in France and Spain, has increased the known sites in the last 10 years, but as a long-lived species that requires unpolluted waters as well as a host fish during part of its life-cycle, it is still highly threatened. The major threats are construction of dams on the rivers, dredging of the river channels for navigation, water pollution and the decline of host fish populations, as well as the loss of migrating fish passing over the mussel beds. The species is one of two, for which a European-level Action Plan was written, and there are active conservation programmes ongoing in Spain and France, with ex-situ conservation breeding, as well as experiments to determine suitable fish hosts and levels of tolerance to pollution.

Photo © Vincent Prié / Caracol.

3. Freshwater Molluscs – Species selection and results

3.1 Introduction

Freshwater molluscs are found in a wide range of freshwater habitats and have varied life-history strategies, with life-spans that vary from three months (pea-clams) to over 120 years (pearl mussels). In general the freshwater molluscs of Europe are much more diverse than some continental faunas such as the one of Africa, with an estimated 856 European species compared to an estimated 560 African species (Seddon *et al.* 2011).

Freshwater molluscs fall into two main groups, the Bivalves and the Gastropods, the latter group having proportionally higher species diversity in Europe than in Africa and North America.

Freshwater bivalves

The freshwater bivalves represent about 6% (48 species) of the total freshwater molluscs in Europe. The term *bivalve* is derived from the Latin *bis*, meaning ‘two’, and *valvae*, meaning *leaves of a door*. They are divided into two globally distributed orders: Unionoida (otherwise known as freshwater mussels) and Veneroida (clams and pea-clams). At present the diversity of European freshwater mussels is relatively low compared to the North American and the Africa fauna (Bogan 2010). It lies largely in the genera *Margaritifera*, *Unio*, *Anodonta*, and *Potomida* that are *Palaeartic*, extending into the Maghreb region of Northern Africa and east into Russia, in some cases to Siberia. The genus *Anodonta* is a widespread Eurasian and North American genus that, in the western Palaeartic, reaches its southern limit in north-west Africa. Similarly, the *Veneroida* (32 species) occupy a wide range of habitats, from brackish estuarine waters to pools, rivers and lakes and many of the pea-clams (Family Sphaeriidae) are more cosmopolitan taxa.

Certain taxa are both morphologically variable and widespread in the western Palaeartic, from the British Isles and Iberia east into Russia and Central Asia (Araujo *et al.* 2009) and some of these taxa have been listed as subspecies in the current list from Fauna Europaea. However, the traditional concepts of Palaeartic genera and species are holdovers from early in the last century and they have only begun to be reevaluated using modern analytical methods and species concepts (Araujo *et al.*

Freshwater molluscs are separated in two groups, the bivalves (with two shells) and the gastropods (with one single shell). Photos © Paul E Aspholm, Zoltan Feher.



2009). More recent work (Van Damme *et al.* 2010, R. Araujo pers comm. 2010) suggests that some of the species originally listed as present in both the Iberian Peninsula and North Africa, are now viewed as distinct range-restricted species found in only North Africa or the Iberian Peninsula. Amongst the 39 bivalve subspecies currently listed as present in Europe, more may be upgraded to the rank of species once more genetic analyses are done. Hence the number of species is likely to increase as this taxonomic research continues.

All of the freshwater bivalves possess a common suite of adaptations to life in fresh water. These include larval brooding, direct development, and, in the case of freshwater mussels, obligate larval parasitism upon freshwater fishes (Araujo *et al.* 2009). This has a major impact on the ability of the species to reproduce, and hence is a factor in the level of endangerment in this group.

Freshwater Gastropods

The freshwater gastropods represent about 94% (808 species) of the total number of freshwater mollusc species in Europe, dividing into two groups, the Prosobranchs (Orders Allogastropoda, Architaenoglossa, Cycloneritimorpha, Littorinomorpha, with the largest family Hydrobiidae) and the Pulmonates (Order Hygrophila, containing the Lymnaeidae, Acroloxidae, Planorbidae), which contain a higher proportion of the widespread, more cosmopolitan species (see Table 1).

3.2 Species selection

All freshwater mollusc species native to Europe or naturalised before AD 1500 were included in the

assessment, except two that only have a marginal occurrence in Europe. This includes both freshwater bivalves (including those that occur in brackish and freshwaters) and freshwater gastropods (some species that occur in brackish waters were included, where their range was predominantly freshwater). In total, 854 species were considered.

The Family Hydrobiidae has undergone a major radiation (i.e. the diversification of a single ancestral type into several forms that are each adaptively specialized to a specific environmental niche) and has high species diversity in Europe. However there is considerable revisionary work ongoing looking at the status of species and the species limits for this challenging group. For example, in the

checklists for Germany, some experts have listed as few as 3 species for the genus *Bythiospeum* (*B. acicula*, *B. quenstedti*, *B. sandbergi*), whereas now, Fauna Europaea (Bank *et al.* 2006) considers there are over 25 valid species in this country. As a consequence, during the initial phase of data gathering, there were considerable discrepancies, with some countries listing all of their taxa as Data Deficient due to taxonomic issues and others classifying the majority of their species as threatened, based on the current data for species that were known to be range restricted.

During an evaluation workshop in London, experts discussed this issue and estimated that the levels of taxonomic uncertainty were similar in many regions,

Table 1. Diversity and endemism in freshwater molluscs families in Europe*.

Class	Order	Family	Europe			EU 27		
			Number of species	Number of endemic species	% of endemic species	Number of species	Number of endemic species	% of endemic species
Bivalvia	Unionoida	Margaritiferidae	2	1	50%	2	1	50%
		Unionidae	14	4	29%	14	3	21%
	Veneroida	Corbiculidae	0	0	0%	0	0	0%
		Dreissenidae	4	3	75%	4	1	25%
		Sphaeriidae	28	3	11%	27	0	0%
Gastropoda	Allogastropoda	Valvatidae	12	6	50%	8	1	13%
	Architaenioglossa	Viviparidae	5	3	60%	5	0	0%
	Cycloneritimorpha	Neritidae	12	7	58%	11	4	36%
	Eupulmonata	Ellobiidae	2	2	100%	2	2	100%
	Hygrophila	Acroloxidae	4	3	75%	2	1	50%
		Lymnaeidae	20	9	45%	17	4	24%
		Physidae	3	0	0%	3	0	0%
		Planorbidae	42	22	52%	28	5	18%
	Littorinimorpha	Amnicolidae	4	4	100%	1	0	0%
		Assimineidae	3	3	100%	3	3	100%
		Bithyniidae	35	33	94%	26	20	77%
		Cochliopidae	14	13	93%	11	10	91%
		Hydrobiidae	586	570	97%	440	378	86%
		Moitessieriidae	54	54	100%	54	54	100%
	Sorbeoconcha	Melanopsidae	11	8	73%	11	6	55%
Thiaridae		1	0	0%	1	0	0%	
Total			856	748	87%	670	493	74%

* This table includes species that are native or naturalized since before AD 1500; species introduced after 1500 are not included. Species of marginal occurrence in Europe and/or the EU are included. For the EU 27 assessment, the Not Evaluated species (species which do not occur in the EU) are excluded.

except where there had been molecular and anatomical work to support the species limits. **Hence a precautionary approach to identification of species limits was adopted, in order to allow conservation assessments to be made, based on the current evidence for species limits, so that the sites containing species of conservation interest can be identified and actions can be taken to establish the status of the species and implement measures to conserve the habitats.** Therefore, between February 2010 and December 2010, over 450 freshwater species were reviewed again, to improve the consistency of their treatment.

Research into the Family Bithyniidae has also revealed an overlooked area of species diversity in the Balkan region, with several cryptic species (i.e. species that are biologically valid and distinct species, but whose morphology is very similar, if not identical) revealed (e.g. Gloer and Pesic 2007, Gloer, Albrecht and Wilke 2009, Gloer and Maasen 2009). Molecular research into the Lymaneidae and Planorbiiidae is also showing cryptic diversity, however, at present the results are insufficient to understand the potential changes in species limits, and as such further research is required on these groups.

Eleven species that were introduced in Europe after AD 1500 and two species that are only of marginal occurrence in Europe were classed as Not Applicable (Table 2).

3.3 Threat status of freshwater molluscs

The status of freshwater molluscs was assessed at two regional levels: geographical Europe and the EU 27. At the European level, at least 43.7% of the species (373 species) are considered as threatened, with at least 12.8% of them being Critically Endangered, 10.5% Endangered and 20.4% Vulnerable (Table 3 and Figure 4 and 5). In addition 23 of the 109 Critically Endangered species are considered Possibly Extinct and five species are listed as already Extinct. A further 8.8% of the species (75 species) are classified as Near Threatened. By contrast, only 22% of the freshwater fauna was assessed as Least Concern, revealing a proportionately high level of threat to these species.

Within the EU 27, the pattern is very similar: at least 40.9% of the freshwater molluscs (273 species) are threatened with extinction, of which at least 11.8% are Critically Endangered, 8.1% Endangered and 21% Vulnerable. In addition, 8.4% of species are considered as Near Threatened.

Table 2. Freshwater molluscs species of marginal occurrence or introduced to Europe after AD 1500.

Family	Genus	Species
CORBICULIDAE	<i>Corbicula</i>	<i>fluminalis</i>
CORBICULIDAE	<i>Corbicula</i>	<i>fluminea</i>
DREISSENIDAE	<i>Dreissena</i>	<i>polymorpha</i>
PLANORBIDAE	<i>Gyraulus</i>	<i>piscinarum</i>
DREISSENIDAE	<i>Mytilopsis</i>	<i>leucophaeata</i>
HYDROBIIDAE	<i>Potamopyrgus</i>	<i>antipodarum</i>
LYMNAEIDAE	<i>Pseudosuccinea</i>	<i>columella</i>
PHYSIDAE	<i>Physella</i>	<i>gyrina</i>
PLANORBIDAE	<i>Helisoma</i>	<i>trivolvis</i>
PLANORBIDAE	<i>Planorbella</i>	<i>duryi</i>
SPHAERIIDAE	<i>Musculium</i>	<i>transversum</i>
UNIONIDAE	<i>Sinanodonta</i>	<i>woodiana</i>
NERITIDAE	<i>Theodoxus</i>	<i>anatolicus</i>

The majority of bivalves, such as this Thick Shelled River Mussel (*Unio crassus*) (Vulnerable at the European level) are filter feeders, using their gills to capture particulate food from the water and purifying large amounts of water. Most of these large river mussels have suffered declines in the last 100 years, with major impacts from water pollution, from industrial sources, poor sewage management and nowadays nitrates from agricultural run-off. These species provide the water cleansing services for our major rivers, and hence are key for the quality of our river systems. Photo © Vincent Prié / Caracol.



However, almost a quarter of the freshwater molluscs (24.7% - 211 species) are assessed as Data Deficient, i.e. there was not enough scientific information to estimate their risk of extinction. This does not mean that they are not threatened, on the contrary, some have not been observed for several decades, which might indicate that they are rare or even already extinct. The main reasons for the Data Deficiency were taxonomic issues, lack of recent observations and the difficulty with sampling some of the species living in groundwater.

Three species are considered Near Threatened at the European level, but Vulnerable at the EU 27 level (*Dreissena presbensis*, *Istriana mirnae* and *Pisidium hinzi*), as their EU 27 population is smaller and facing comparatively greater threats.

Thirteen species were considered as Not Applicable, two due to their marginal occurrence in Europe and 11 because they were introduced to Europe after 1500 AD.

Amongst all taxonomic groups assessed so far at the European level, freshwater molluscs are the most threatened group, as 37% of freshwater fishes, 23% of amphibians, 19% of reptiles, 15% of mammals and dragonflies, 13% of birds, 9% of butterflies and 7% of the aquatic plants, the other groups that have been comprehensively assessed in Europe, are threatened with extinction (Freyhof and Brooks 2011, Temple and Cox 2009, Cox and Temple 2009, Temple and Terry 2007, Kalkman *et al.* 2010, BirdLife International 2004a, van Swaay *et al.* 2010, Bilz *et al.* 2011). Additional European Red Lists assessing a selection from species groups

Table 3. Summary of numbers of European freshwater molluscs within each category of threat

IUCN Red List categories		No. species Europe (no. endemic species)	No. species EU 27 (no. endemic species)
Extinct (EX)		5 (5)	4 (3)
Threatened categories	Critically Endangered (CR)	109 (107)	79 (72)
	Endangered (EN)	90 (90)	54 (48)
	Vulnerable (VU)	174 (173)	140 (127)
	Near Threatened (NT)	75 (66)	56 (46)
Least Concern (LC)		190 (109)	172 (65)
Data Deficient (DD)		211 (198)	162 (132)
Total number of species assessed		854 (748)	667 (493)

* This table does not include the Not Applicable species in Europe and/or the EU (species introduced after AD 1500 or species of marginal occurrence). For the EU 27 assessment the Not Evaluated species (species which do not occur in the EU) are also excluded.

Figure 4. Red List status of freshwater molluscs in Europe

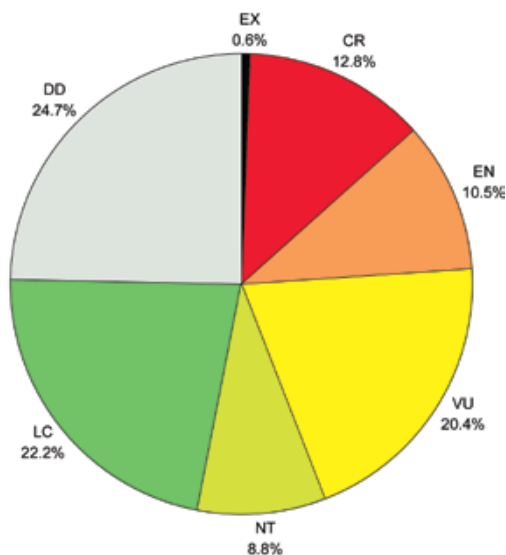
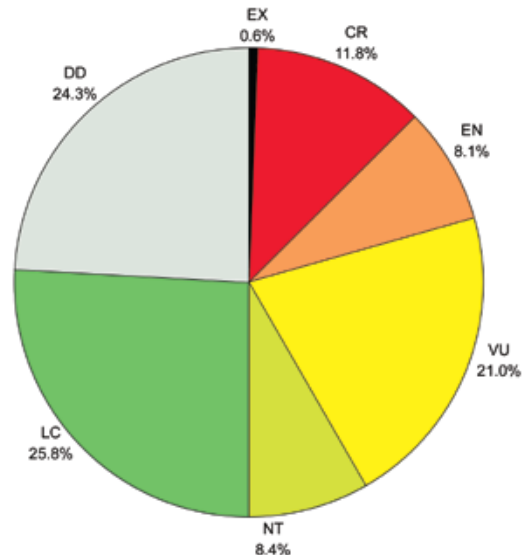


Figure 5. Red List status of freshwater molluscs in the EU 27



indicate that 12% of the crop wild relatives and 11% of the saproxylic beetles are also threatened (Nieto and Alexander 2010, Bilz *et al.* 2011).

All, but three, of the threatened and Extinct species are endemic to Europe (over 99%), highlighting the responsibility that European countries have to protect the entire global populations of these species.

It should be noted that the percentages of threatened freshwater molluscs mentioned earlier represent minimum estimates. If we consider only the species for which sufficient data are available to assess the threat status (i.e. excluding Data Deficient and Extinct species), then 58.5% of European freshwater molluscs and 54.5% of EU 27 species are threatened with extinction.

3.4 Status by taxonomic groups

The European freshwater molluscs belong to a number of different families (see Section 3.1), among which considerable differences exist both in species numbers as well as in threat status (Table 4). Certain families are of particular concern: the Margaritiferidae, Acroloxidae, Hydrobiidae, Dreissenidae and Amnicolidae are the families with the highest percentage of threats, while the Moitessieriidae, Bithyniidae and Hydrobiidae have numerous Data Deficient species and require further studies.

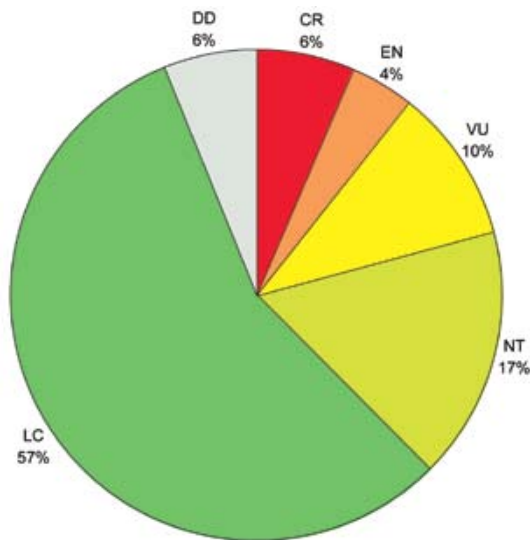
The situation is slightly different for the Bivalves and the Gastropods: the Bivalves are slightly less threatened, with 21% of the species facing extinction. This is mainly due to the fact that the Family Sphaeriidae contains many

Table 4. Red List status (at the European level) of freshwater molluscs by taxonomic family

Family	Total*	EX	CR	EN	VU	NT	LC	DD	% Threatened
Bivalvia									
Dreissenidae	4	0	0	0	2	1	1	0	50.0%
Margaritiferidae	2	0	2	0	0	0	0	0	100.0%
Sphaeriidae	28	0	0	2	0	2	23	1	7.1%
Unionidae	14	0	1	0	3	5	3	2	28.6%
Gastropoda									
Acroloxidae	4	0	1	0	2	0	1	0	75.0%
Amnicolidae	4	0	0	0	2	0	1	1	50.0%
Assimineidae	3	0	0	0	0	0	2	1	0.0%
Bithyniidae	35	0	4	4	6	2	5	14	40.0%
Cochliopidae	14	1	2	1	1	0	1	8	28.6%
Corbiculidae	0	0	0	0	0	0	0	0	0.0%
Ellobiidae	2	0	0	0	0	0	1	0	0.0%
Hydrobiidae	586	4	91	65	139	52	90	145	50.3%
Lymnaeidae	20	0	0	2	0	2	13	3	10.0%
Melanopsidae	11	0	2	1	0	2	4	2	27.3%
Moitessieriidae	54	0	2	2	14	4	7	25	33.3%
Neritidae	11	0	2	3	0	0	5	1	41.7%
Physidae	3	0	0	0	0	0	3	0	0.0%
Planorbidae	41	0	2	8	3	2	19	7	31.7%
Thiaridae	1	0	0	0	0	0	1	0	0.0%
Valvatidae	12	0	0	2	2	3	5	0	33.3%
Viviparidae	5	0	0	0	0	0	4	1	0.0%
Total	854	5	109	90	174	75	190	11	43.6%

* Does not include species classed as Not Applicable (NA).

Figure 6. Red List status of freshwater bivalves in Europe



cosmopolitan, widespread species, with few threats. However, the large freshwater mussels (Unionidae and Margaritiferidae) have been in decline over most of their global range and there are many threatened or declining species of special conservation concern. On the other hand, 45% of the Gastropods are at risk of extinction (see Figures 6 and 7).

3.5 Spatial distribution of species

3.5.1 Species richness of freshwater molluscs

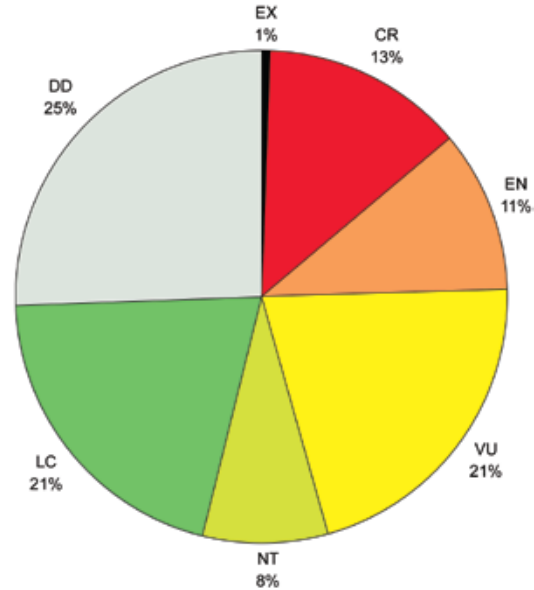
Information on the species richness of freshwater molluscs within families has already been given in Section 3.1 and Table 1. The geographic distribution of species richness in Europe is presented in Figure 8.

Figure 8 highlights areas of particularly high concentrations of freshwater mollusc species. Within Europe, the highest species richness is found within the Mediterranean area, from the Iberian Peninsula to Greece, as there is replacement from catchment to catchment by different range restricted species. In Northern Europe the majority of the freshwater fauna is made up of widespread cosmopolitan species.

Molluscs biodiversity in freshwater springs

The Family Hydrobiidae currently has the highest diversity of species in Europe. These species are frequently restricted to a small number of freshwater springs. The main diversity is found in the Mediterranean regions, with areas of high diversity found in the limestone regions of Iberian Peninsula, French Mediterranean, Italy,

Figure 7. Red List status of freshwater gastropods in Europe



Slovenia, Croatia, Bosnia and Hercegovina, Montenegro, the Former Yugoslav Republic of Macedonia and Greece. There is also high diversity seen in Germany, Austria and Poland.

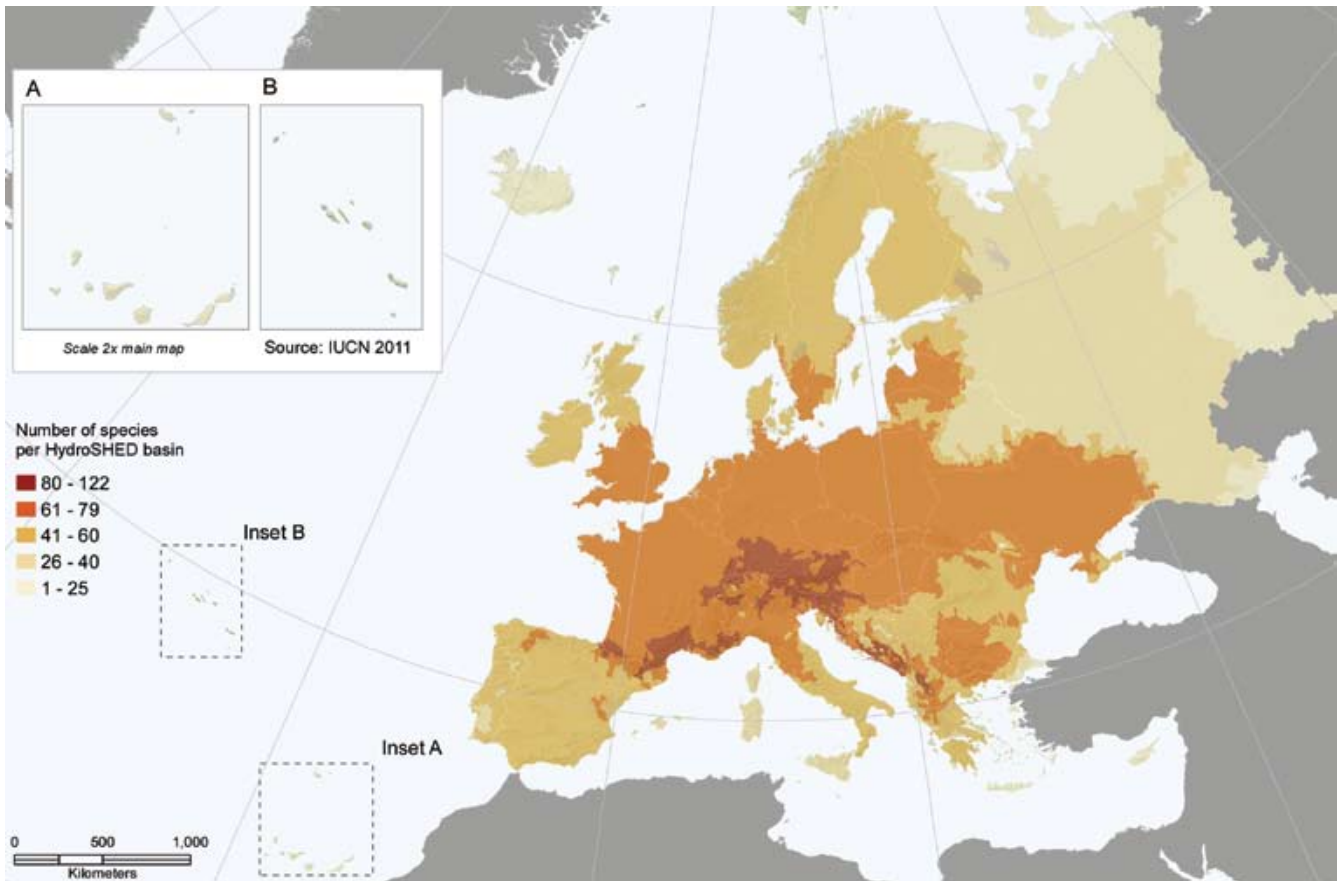
Molluscs biodiversity in freshwater groundwater systems

The Family Hydrobiidae and Moitessieridae are more restricted to underground waters, only being recorded in outflow points (springs, rivers) and rarely been sampled *in situ*. These are also present in key areas, contributing to the regions of highest diversity of species in Europe, especially found in the limestone regions of Mediterranean (e.g. the Iberian Peninsula, French Mediterranean, Italy, Slovenia, Croatia, Bosnia and Hercegovina, Montenegro, FYROM and Greece) and in the areas near the Alps to the Carpathians (Germany, Austria to Bulgaria, Romania, Poland).

Molluscs biodiversity in ancient lakes

Lake Ohrid is a World Heritage Site, spanning three countries and has the largest freshwater molluscs diversity of the Balkan lakes, and the majority of these species are listed as threatened. However there are a considerable number of other ancient lakes (e.g. Prespa, Skadar), in Albania, Greece, Montenegro and Macedonia (Albrecht *et al.* 2009) all containing numerous, often endemic, freshwater species, and increasing numbers of cryptic endemic species have been recognized in these lakes, so their importance is still increasing. The issue is complex, as some lakes are divided between more than one country, making catchment management plans more complicated.

Figure 8. Species richness of European freshwater molluscs



Congeria kusceri is a freshwater bivalve restricted to subterranean waters in the Balkan region, listed in Annex II of the EU Habitats Directive. It was rediscovered in the 1980's, and prior to this, the species was thought to be subfossil only. This species requires unpolluted water, and is currently assessed as Vulnerable. Photo © Helena Biljandra.



Molluscan biodiversity in river systems

Europe contains several major river systems that have endemic species present in their catchment. The Danube (Donau) river is the second longest in Europe, and passes through 14 countries. The Danube delta is a UNESCO World Heritage Site in part for the biological diversity, and some species are restricted to lagoons and channels in the delta. Other notable rivers include the lower Dnieper River in Ukraine, the Sava River in Slovenia, and other tributaries of the Danube River which also have a proportion of endemic species.

The top five EU countries in terms of freshwater mollusc species richness (in descending order) are: France, Spain, Italy, Greece and Germany (Table 5). However, Austria and Slovenia can be highlighted as holding an important number of species within a small area.

Table 5. Number of freshwater mollusc species in the 27 current EU Member States (excluding introduced species).

Country	Total number of species
Austria	118
Belgium	74
Bulgaria	85
Cyprus	5
Czech Republic	76
Denmark	64
Estonia	58
Finland	55
France	215
Germany	124
Greece	132
Hungary	77
Ireland	57
Italy	138
Latvia	70
Lithuania	64
Luxembourg	51
Malta	11
Netherlands	74
Poland	79
Portugal	56
Romania	75
Slovakia	77
Slovenia	96
Spain	157
Sweden	72
United Kingdom	76

The high number of species in some of these countries may reflect high levels of taxonomic research. If more research into freshwater mollusc diversity would be initiated, for example, in Greece, it is not unlikely that the number of freshwater species in this country may substantially increase.

Recent work in Bulgaria has seen an increase in the number of described species, and so as work continues in the more remote parts of some countries, the number of range restricted species may well be found to increase further.

3.5.2 Distribution of threatened species

The majority of the threatened freshwater molluscs are found within the Mediterranean zone, and the patterns follow closely the areas of endemism (see Figure 9). Areas of threat include the Iberian Peninsula, where springs are being converted to off-take water, and the vegetation is removed to improve the “cleanliness” of the offtake area, thus removing habitats (Verdu and Galante 2009). In the French Mediterranean area, threatened species include the groundwater and spring dependant species, for example, in the areas surrounding Marseille and Nice, several species are known to have been declining, and some have not been seen for decades. Similar factors threaten the endemic species in Germany and Austria, albeit to a lesser degree. In Greece, the major threats lie in the continental areas, around the major cities and the ancient lakes.

3.5.3 Distribution of endemic species

Figure 10 shows the distribution of endemic freshwater mollusc species (e.g. those that are unique to Europe and are found nowhere else in the world).

The majority of the freshwater molluscs are endemic to Europe, with the areas of high endemism reflecting the areas of high species and subspecies diversity. Similar patterns of endemism are seen for the Gastropods and the freshwater mussels, with an increase in endemism from north to south, and high levels of endemism throughout the Mediterranean zone.

The majority of the range-restricted species are found in the family Hydrobiidae, and the highest numbers of threatened species also lie in this group. These species are either restricted to a few freshwater springs, lakes or single groundwater catchment system, all of which are easily impacted by off-take of water for domestic and agricultural supplies. The family is amongst the most

Figure 9. Distribution of threatened freshwater molluscs in Europe

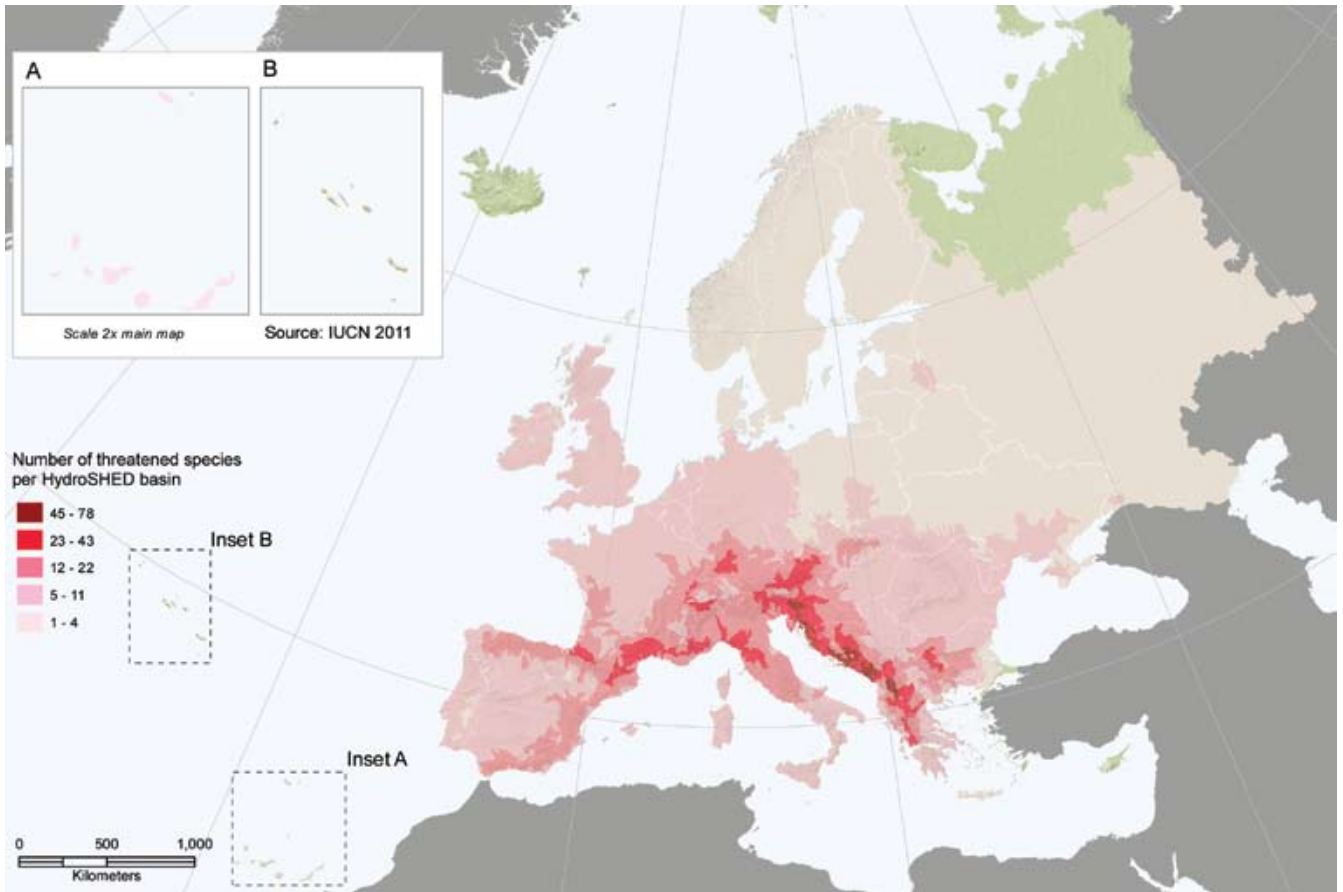
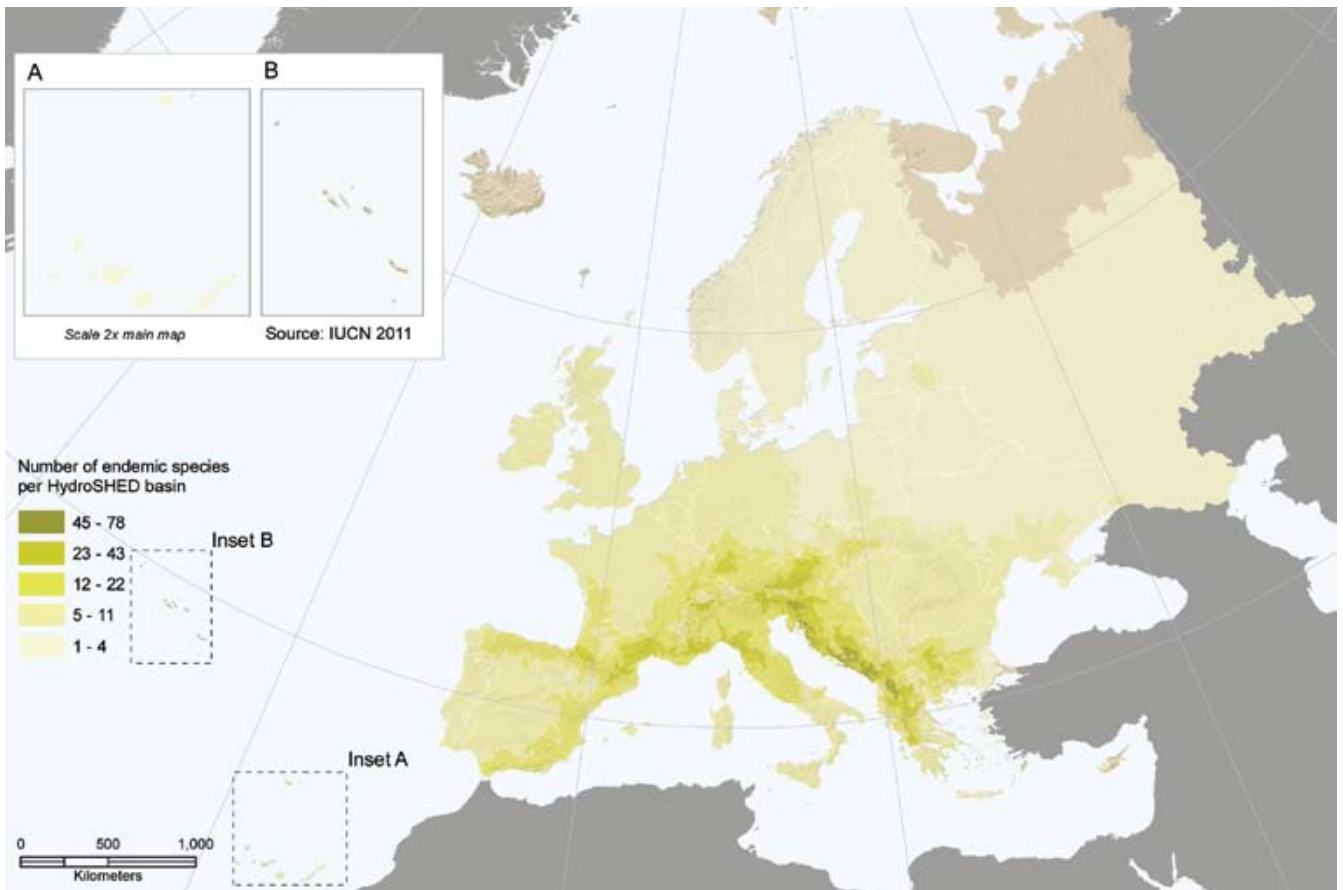


Figure 10. Distribution of endemic freshwater molluscs species in Europe



highly threatened group worldwide, and there are also regions of high species diversity for this family in North America and Australia (Lydeard *et al.* 2004).

Ancient lakes, such as Ohrid and Prespa, deserve special attention, as they have a fascinating radiation of pyrguline Hydrobiidae. Recently, it was discovered that they are also home to a cryptic diversity in the other prosobranch families Valvatidae and Bithyniidae. Most of the narrow-range endemics restricted to these lakes are threatened. Given the rapid deterioration of the quality of some of these lakes, it is now likely that some of their endemic species will go extinct before their scientific description (based on museum material collected in the 1980's) is completed.

3.6 Major threats to freshwater molluscs in Europe

The major threats to each species were coded using the IUCN Threats Classification Scheme. A summary of the relative importance of the different threatening processes is shown in Figure 11.

There are multiple sources of threats to freshwater molluscs in Europe. In the majority of cases there is no single source of threats to each species, but usually a series of threats that combine to lead to declining populations. In general, most threatened species are suffering as a consequence of declining water quality in the freshwater rivers and lakes, throughout Europe. This is mainly due to intensification of agriculture (affecting 36% of the species)

and urbanisation (poor sewage control, impacting 29% of the species). The other major threat is the over-utilization of water which impacts 33% of freshwater species.

By contrast, although invasive species are now widely present, and have had an impact on some species, in general their presence is not a significant factor and impacts less than 5% of the threatened species.

Based on current climate change scenarios, the increased frequency and intensity of droughts may become another major threat. In certain areas of Europe, springs are already seeing declines in recharge during summer drought events.

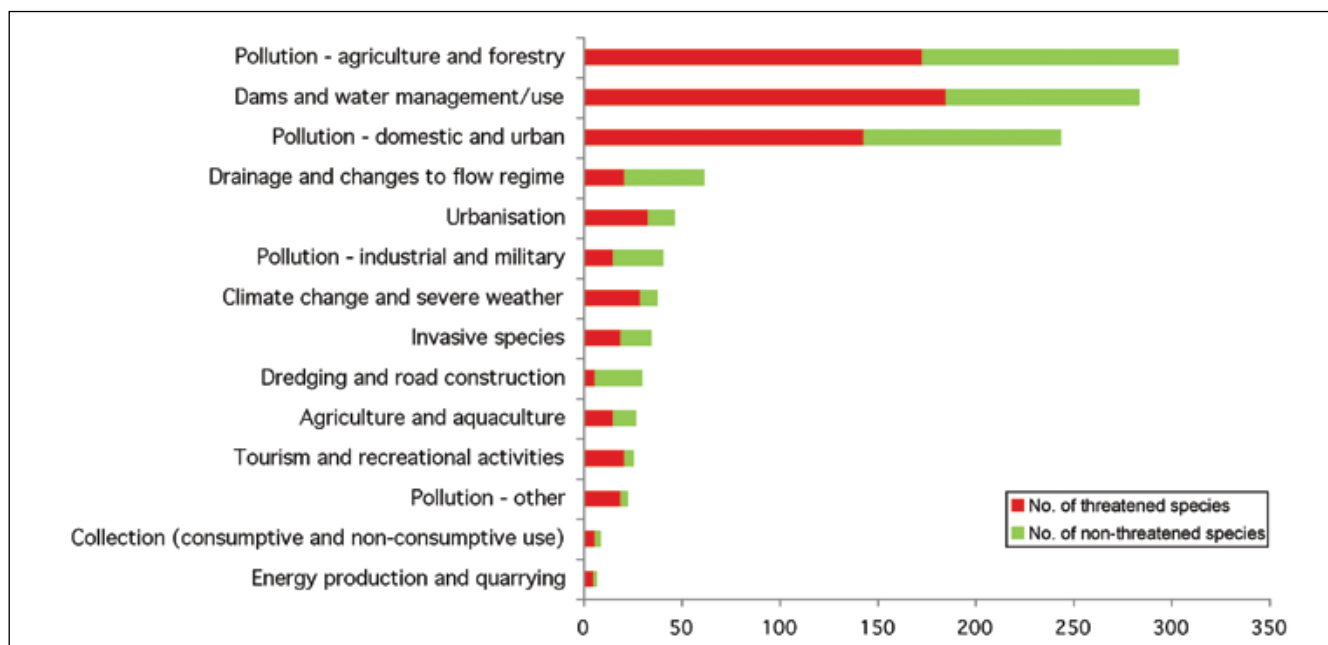
Pollution and water quality decline

Freshwater molluscs are very sensitive to the changes in water quality. The decline in habitat quality in the freshwater rivers and lakes is a problem throughout Europe, however the cause of habitat decline is quite variable from region to region.

Raw sewage: This is still an important problem in certain parts of Southern and Eastern Europe, where sewage management has yet to meet the standards required by the EU Water Directive. Even in Western Europe, poor control can sometimes lead to sudden discharges during storm events, leading to contamination of rivers and groundwaters that would otherwise be in a good state.

Fertilizers and Pesticides: The strong intensification of agriculture throughout Europe in the last 50 years

Figure 11. Major threats to freshwater molluscs in Europe



has led to an increased use of chemical fertilizers and pesticides. This has led to increased levels of phosphates and nitrates in both surface water and groundwater. Even in regions that are sparsely populated, the impact can be seen in the loss of the spring-snails that are sensitive to changes in water quality (van Damme *et al.* 2010). Consequently species are rapidly disappearing in particular in the lowlands where urban expansions and agricultural exploitation are highest.

Mining waste: There are relatively few areas in Europe where the habitats in rivers are declining as run-off from mining. The most widely publicised case was the impact on the Danube from a waste settlement tank in Hungary which impacted tens of kilometres of river, which affected some restricted range endemic species.

Dam construction

In Europe, there are a high number of dams, with most construction on major rivers for electric generation for industrial and domestic supplies. In upland areas, damming to create water storage reservoirs impacts the upper reaches of the rivers. In general, data from Europe and North America, indicate biodiversity loss, whereas gains in widespread cosmopolitan species appear to be the result of dam construction (Seddon 2000).

Freshwater pearl mussels *Margaritifera margaritifera* (Critically Endangered) require a salmonid fish host for completing the larval stage of their life cycle. If dams are preventing fishes to swim up the rivers to their breeding grounds, the lack of young fish in headwater streams will reduce the survival rate of the mussel larvae. Photo © L. Miles, Freshwater Biological Association.



Decline in the water quality is the main threat to freshwater molluscs. Waterfall in karstic limestone area, Korakos Mts (Greece). Photo © Eike Neubert.



Dam construction can impact freshwater molluscs in different ways, depending on the life-history strategy of the animal and the impact of the construction of dams is not uniformly negative or positive (Seddon 2000). Dams, and their reservoirs, hence do form insurmountable barriers that will:

- cut off upstream populations of molluscs from downstream populations,
- lead to a loss of the underlying riverine habitats and their fauna,
- cause changes downstream of the dam, where part of the river is impacted by fluctuations in water level and changing water-chemistry and water temperatures, potentially impacting life-cycles through changing reproductive patterns and reproductive success
- loss of fish-host movement potentially changing freshwater mussel reproductive success

Modification of water sources and changes to flow regime

Europe has witnessed an extensive modification of aquatic habitats for centuries. Reasons include:

- Realigning river channels to control flood events
- Realigning river channels for transportation (road construction, navigation channels)

- Adapting spring-sources to off-take the water to local villages, removing any fringing vegetation, and concreting the base of the pool
- Adapting thermal springs to use the water for bathing, again removing any fringing vegetation, and concreting the base of the pool

Climate change and extreme weather events

The increase of frequency and intensity of droughts pose a problem to freshwater molluscs, especially in the Mediterranean area. Several rivers and springs now have periods where the outflow completely dries up, causing the extinction of the population. Freshwater molluscs are also sensitive to changes in water quality and extreme weather events, such as flooding, can have serious consequences, altering for example the level of sediment, this can either bury the smallest species, destroy their habitat or clog filter feeders.

3.7 Population trends

Documenting population trends is key to assessing species status, and a special effort was made to determine which species are believed to be significantly declining, stable, or increasing. However, the vast majority (82.6%) of European freshwater molluscs have unknown population trends, while 10.6% are decreasing, 6.3% are considered



In April 2010, an unusual amount of rain flooded the river near Kács (Hungary), leaving a 30 to 50 cm thick mud layer, which totally destroyed the habitat of *Theodoxus prevostianus* which lives on the rocks at the bottom of the river. 99% of the population of this freshwater snail was destroyed in this river and it is considered as Endangered. This species is now being reintroduced to several other springs to ensure its survival on the long-term (Feher *et al.* 2011). Photo © Sándor Ötvös and Zoltan Feher.

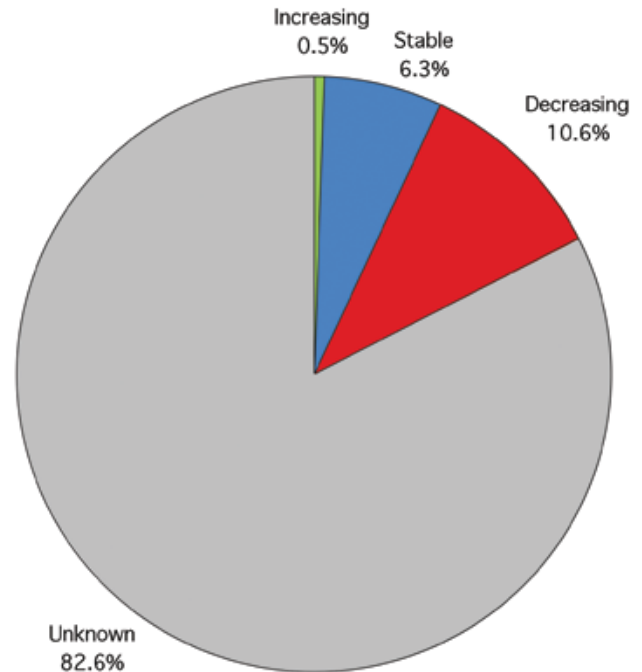
stable and only 0.5% are increasing (see Figure 12). These are likely to be considerable underestimates of the number of species declining due to a lack of good objective trend data.

In comparison, 16% of aquatic plants (Bilz *et al.* 2011), 17% of freshwater fishes (Freyhof and Brooks 2011), 26% of dragonflies (Kalkman *et al.* 2010), 27% of mammal species, 42% of reptile species (Cox and Temple 2009) and 59% of amphibian species (Temple and Cox 2009) are known to have declining populations. Just under a quarter (23%) of all European bird species are decreasing in numbers, based on population trend data between 1990 and 2000 (BirdLife International 2004a). Freshwater species groups have the highest proportions of species with unknown population trends, with 83% of freshwater molluscs and 76% of freshwater fishes falling into this category (Freyhof and Brooks 2011).

Monitoring data is urgently required to review the population trends of European freshwater molluscs, however the levels of threatened species indicate, that the probability is, that a high proportion of the species have been declining over the last 10-30 years. Anecdotal information suggests that in the Balkan region there has been a substantial decline in the quality of habitats since

the 1980's, whereas in western Europe the major decline trends appear to have been between 1920's and 1960's (based on data from national mapping projects).

Figure 12. Population trends of European freshwater molluscs





The "Chapa" *Iberus gualtieranus* is endemic to the south of Spain, where it is greatly appreciated as food. Wildfires, urbanisation and agricultural development led to the loss of important parts of its habitat and it is now considered to be Endangered. Since 2005, a Conservation Plan has been developed within the Programme for Conservation and Sustainable Use of Land Snails of Andalusia and successful captive breeding has been set up. Photo © Antonio Ruiz/ CMA-Junta de Andalusia.

4. Terrestrial molluscs – Species selection and results

4.1 Introduction

All terrestrial molluscs belong to the class of the Gastropods. The majority of the species are pulmonates, i.e. they have a lung and breathe air. Their body size varies from a few millimetres to several centimetres. They secrete mucus to keep their bodies from drying out and to support their locomotion. Terrestrial molluscs are generally hermaphrodites, which means that they have the sexual organs of both sexes, but they still need to meet another individual to reproduce. They will court each other for several hours and then inseminate each other to produce eggs. Terrestrial molluscs are usually herbivorous, eating leaves, stems, soft bark, fruit, vegetables, fungi and algae, thanks to their “radula”, sometimes compared to a tongue, with multiple, almost identical rows of teeth. However there are some species that are predatory carnivores or omnivores.

4.2 Species selection

For this project, it was not considered possible, within the timescale allowed, to assess and evaluate all c. 2,700 species listed at the time, so two superfamilies were

prioritised, which contained many of the European Habitats Directive species, namely Helicoidea (with the Families Helicidae, Hygromidae, Helicodontidae, Trisaxodontidae, Cochlicellidae, Eloniidae) and Pupillioidea (with the Families Pupillidae, Lauridae, Enidae, Orculidae, Vallonidae, Vertiginidae, Speleodontidae, Argniidae, Gastrocoptidae) (see Table 6). These families have a wide European distribution and cover a range of different habitats.

The superfamily Pupillioidea has a range of genera that are found across Europe, on rock crags, marshes, woodland and grassland, with taxa that climb or are ground-dwelling. From this family, 4 species of *Vertigo* and 16 species of *Leiostryla* are listed in the Annexes of the EU Habitats Directive.

The additional families including the semi-slugs (Vitrinidae), are found from montane to coastal areas throughout Europe, and are potentially more susceptible to increased levels of drought.

In contrast, the slug families (e.g. Arioniidae, Limacidae) are currently undergoing taxonomic reviews, and hence

Two Heath Snails *Helicella itala* from the south of France mating. This species is mainly found in southern Europe, but may expand its range in suitable habitats, such as coastal sand-dunes, further north due to climate change. Photo © Gerhard Falkner.



the distributional data were considered to be very variable in quality, although there are distinct areas of endemism, with some species of conservation interest in the montane regions (e.g. Carpathians, Alps) as well as on the Mediterranean islands (e.g. Corisca). Therefore, it was not considered appropriate to review these taxa until the nomenclature and species definition limits become more stable. Other families that were not selected, including the family Clausiliidae, had many species in some regions with limited geographical data and were also undergoing taxonomic review resulting in new species descriptions, so were not included in this assessment process, although, certain species are classified as threatened on national Red Lists or are included on the EU Habitat Directives Annexes, so this family should be one of the next priorities for assessment in Europe.

A few “Prosobranch” families were selected to provide different phyletic range in the selected families; the Family Aciculidae included range-restricted and widespread taxa, found in a variety of habitats, with taxa that were nationally Red Listed and the family Cochlostomidae included ‘hotspot’ species from the Balkans and the Iberian Peninsula, with taxa that have males and females, rather than hermaphrodites like most of the other terrestrial molluscs.

Within the families selected, all the species were included, amounting to 1,233 species (see Table 6 for the selected families and the number of species per family).

Only one species among these families (*Oestophora dorotheae*) was considered to be likely introduced in Europe and was therefore assessed as Not Applicable.

4.3 Threat status of selected terrestrial molluscs

The status of selected terrestrial molluscs was assessed at two regional levels: geographical Europe and the EU 27. Among the species assessed at the European level, at least 20% (246 species) are considered threatened, from which at least 4.3% are Critically Endangered, 4.1% Endangered and 11.5% Vulnerable (Table 7 and Figures 13 and 14). Eleven of the 53 Critically Endangered species are considered Possibly Extinct and three species are listed as already Extinct. A further 14.8% of the species (182 species) are classified as Near Threatened.

Within the EU 27, the pattern is very similar: at least 20.7% of the selected terrestrial molluscs (235 species) are threatened with extinction, of which at least 4.6% are Critically Endangered, 4.3% Endangered and 11.8%

Table 6. Diversity and endemism in the selected terrestrial mollusc families in Europe*.

Class	Order	Family	Europe			EU 27		
			Number of species	Number of endemic species	% of endemic species	Number of species	Number of endemic species	% of endemic species
Gastropoda	Architaenioglossa	Aciculidae	52	51	98%	46	33	72%
		Diplommatinidae	60	60	100%	47	38	81%
	Stylommatophora	Argnidae	30	30	100%	22	15	68%
		Bradybaenidae	1	1	100%	1	0	0%
		Chondrinidae	55	49	89%	55	35	64%
		Cochlicellidae	27	24	89%	27	24	89%
		Enidae	155	149	96%	144	111	77%
		Helicidae	224	215	96%	194	144	74%
		Helicodontidae	16	16	100%	15	7	47%
		Hygromiidae	397	382	96%	379	303	80%
		Lauriidae	37	37	100%	37	37	100%
		Orculidae	43	40	93%	42	27	64%
		Pupillidae	5	3	60%	5	0	0%
		Trissexodontidae	24	20	83%	24	20	83%
		Valloniidae	13	6	46%	13	4	31%
		Vertiginidae	38	25	66%	33	8	24%
		Vitrinidae	56	53	95%	55	40	73%
Total			1233	1161	94%	1140	846	74%

* This table includes species that are native or naturalized since before AD 1500; species introduced after 1500 are not included. Species of marginal occurrence in Europe and/or the EU are included. For the EU 27 assessment, the Not Evaluated species (species which do not occur in the EU) are excluded.

Vulnerable. In addition, 8.4% of species are considered as Near Threatened.

Even though the percentage of Data Deficient species is lower than for the freshwater molluscs, it is still significant, with 10.1% of the species (125 species) for which the level of information is insufficient to determine the risk of extinction at the European level. Here again, once more data is available, some of these species might well prove to be threatened. The main reasons for the Data Deficiency were taxonomic issues, lack of recent observations and the hidden life history of the species.

One species (*Oestophora dorotheae*) was considered as Not Applicable, as it was likely introduced to the Iberian peninsula at Gibraltar from Morocco.

In comparison, 44% of freshwater molluscs, 37% of freshwater fishes, 23% of amphibians, 19% of reptiles, 15% of mammals and dragonflies, 13% of birds, 9% of butterflies and 7% of the aquatic plants, the groups that have been comprehensively assessed in Europe, are threatened with extinction (Freyhof and Brooks 2011, Temple and Cox 2009, Cox and Temple 2009, Temple and Terry 2007, Kalkman *et al.* 2010, BirdLife International 2004a, van Swaay *et al.* 2010, Bilz *et al.* 2011). Additional European Red Lists assessing a selection from species groups indicate that 12% of the crop wild relatives and 11% of the saproxylic beetles are also threatened (Nieto and Alexander 2010, Bilz *et al.* 2011).

If we consider only the species for which sufficient data are available to assess the threat status (i.e. excluding Data

Table 7. Summary of numbers of selected European terrestrial molluscs within each category of threat

IUCN Red List categories		No. species Europe (no. endemic species)	No. species EU 27 (no. endemic species)
Threatened categories	Extinct (EX)	3(3)	2(2)
	Critically Endangered (CR)	53(52)	52(51)
	Endangered (EN)	51(49)	49(45)
	Vulnerable (VU)	142(135)	134(122)
	Near Threatened (NT)	182(176)	156(138)
	Least Concern (LC)	677(622)	625(389)
	Data Deficient (DD)	125(124)	120(99)
Total number of species assessed		1233(1161)	1138(846)

* This table does not include the Not Applicable species in Europe and/or the EU (species introduced after AD 1500 or species of marginal occurrence). For the EU 27 assessment the Not Evaluated species (species which do not occur in the EU) are also excluded.

Figure 13. Red List status of selected terrestrial molluscs in Europe

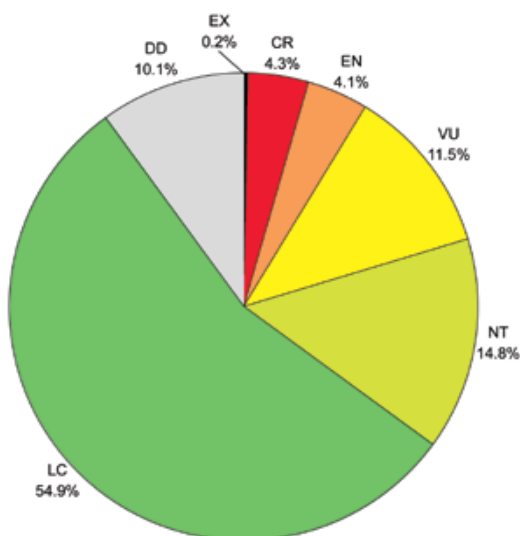
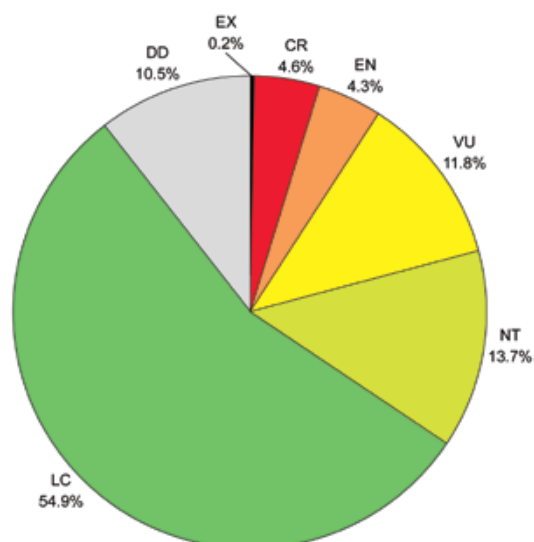


Figure 14. Red List status of selected terrestrial molluscs in the EU 27



Deficient and Extinct species), 22.3% of the European terrestrial molluscs assessed in this project and 23.1% of EU 27 species are threatened with extinction.

Over 90% of the terrestrial molluscs assessed are endemic to Europe.

Two species are considered Least Concern at the European level, but Vulnerable at the EU 27 (*Chondrula wernerii* and *Xerocampylaea zelebori*), as they are known from few sites in the EU 27 which face localized threats.

4.4 Status by taxonomic groups

This project focused on seventeen families, for which all the species native to Europe have been assessed (see section 1.2). As shown in Table 8, there are considerable differences in the number of species and in the threat status, with the Lauriidae and Trissexodontidae being the most threatened, while the Pupillidae, the Bradybaenidae (consisting of only one species), the Orculidae and the

Valloniidae are the least threatened. The bulk of the species are included in three families: the Hygromiidae, Helicidae and Enidae.

Many terrestrial molluscs survive the heat period by aestivation, either in shaded vegetation or by climbing on plants or man-made structures such as fences. They seal the opening of their shell with a membrane of dried mucus, to prevent water loss. Photo © Nat Martel.



Table 8. Red List Status (at the European level) of the selected terrestrial molluscs by taxonomic family*.

Family	Total*	EX	CR	EN	VU	NT	LC	DD	% Threatened
ACICULIDAE	52	0	1	0	12	14	21	4	25.0%
ARGNIDAE	30	0	0	0	4	8	17	1	13.3%
BRADYBAENIDAE	1	0	0	0	0	0	1	0	0.0%
CHONDRINIDAE	55	0	0	0	12	9	31	3	21.8%
COCHLICELLIDAE	27	0	4	1	2	5	12	3	25.9%
DIPLOMMATINIDAE	60	0	0	0	7	7	44	2	11.7%
ENIDAE	155	0	4	3	12	21	93	22	12.3%
HELICIDAE	224	0	14	13	22	35	109	31	21.9%
HELICODONTIDAE	16	0	0	1	1	2	11	1	12.5%
HYGROMIIDAE	397	2	19	26	46	49	218	37	22.9%
LAURIIDAE	37	1	5	2	8	3	13	5	40.5%
ORCULIDAE	43	0	2	0	1	3	33	4	7.0%
PUPILLIDAE	5	0	0	0	0	0	4	1	0.0%
TRISSEXODONTIDAE	24	0	0	1	6	8	9	0	29.2%
VALLONIIDAE	13	0	0	1	0	3	8	1	7.7%
VERTIGINIDAE	38	0	0	2	4	5	21	6	15.8%
VITRINIDAE	56	0	4	1	5	10	32	4	17.9%
Total	1233	3	53	51	142	182	677	125	20.0%

* Does not include species classed as Not Applicable (NA).

4.5 Spatial distribution of species

4.5.1 Species richness of terrestrial molluscs

Information on the species richness of terrestrial molluscs and the families selected for assessment have already been given in Section 4.2 and Table 6 respectively. Figure 15 presents the species richness of the assessed groups. It should be noted that this map is not representative of the distribution of all terrestrial molluscs in Europe, but only of the selected families.

In Europe, the highest levels of species diversity are found in the Mediterranean, but large numbers of species are also found in the following biogeographical regions: Alpine, Continental, Macaronesian, and Pannonian. However in the Macaronesian Islands due to the highly restricted ranges, sometimes only a few square metres, of many species, the species diversity in this region is not clear on Figure 15. Species richness is relatively poor in the remaining areas north of the Alps. The reasons for this diversification are multifold, but the most important are (1) presence of varied small scale habitat structures, which are suitable for molluscs, (2) presence of geological substratum preferred by molluscs (mainly limestone), and (3) the effects of the glaciations and the slow resettlement of the northern territories by

molluscs. The Mediterranean climate is not unsuitable for terrestrial molluscs, as there are typically large amounts of precipitation during the winter season, and a dry summer period, which many species survive by aestivation.

The European Atlantic islands and Mediterranean islands hold a significant proportion of narrow-range endemic species, some of which are listed as threatened species either at the national or global levels. Given the high number of endemic species identified in these parts of Europe, the current IUCN Red List of Threatened Species certainly under-represents the threat status to the European terrestrial mollusc fauna. To exemplify the contribution of these islands to the degree of endemism in a country, three such systems have been treated separately: Spain with the Balearic and Canary Islands, Portugal with Madeira and the Azores, and Greece with the Aegean, Cycladic and Dodecanese Islands, and Crete (see Figure 16). In all these systems, the contribution of the island faunas to the total degree of endemism is noteworthy. On the Atlantic islands, there is an enormous number of endemic taxa present, exceeding the continental amount by almost 100 %. In contrast, the Greek islands hold less endemic taxa if compared to the mainland, which may be explained by the extraordinarily varied geography of the continental part of Greece.

Figure 15. Species richness of selected families of European terrestrial molluscs

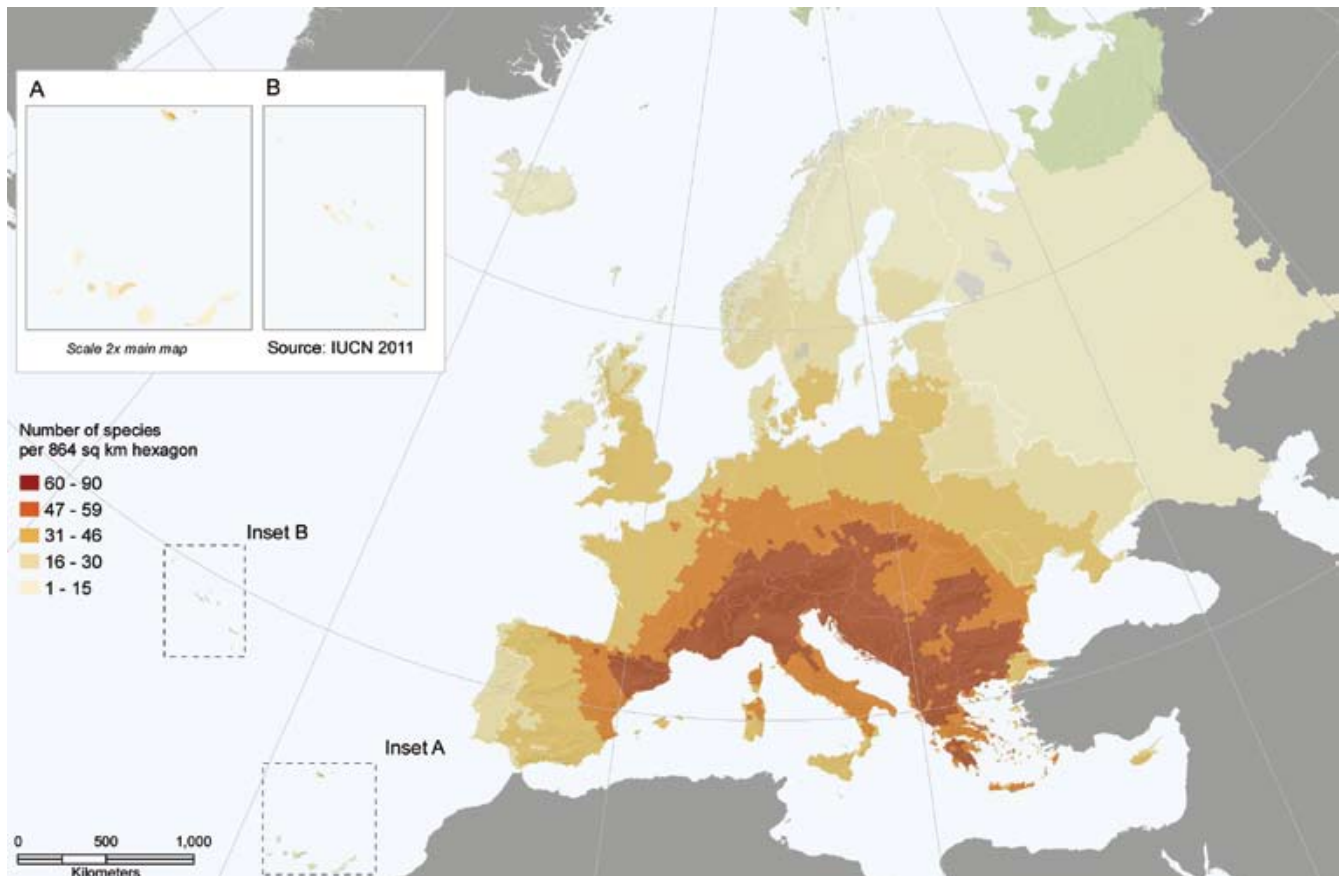


Figure 16. Number of species per island in comparison to continental country

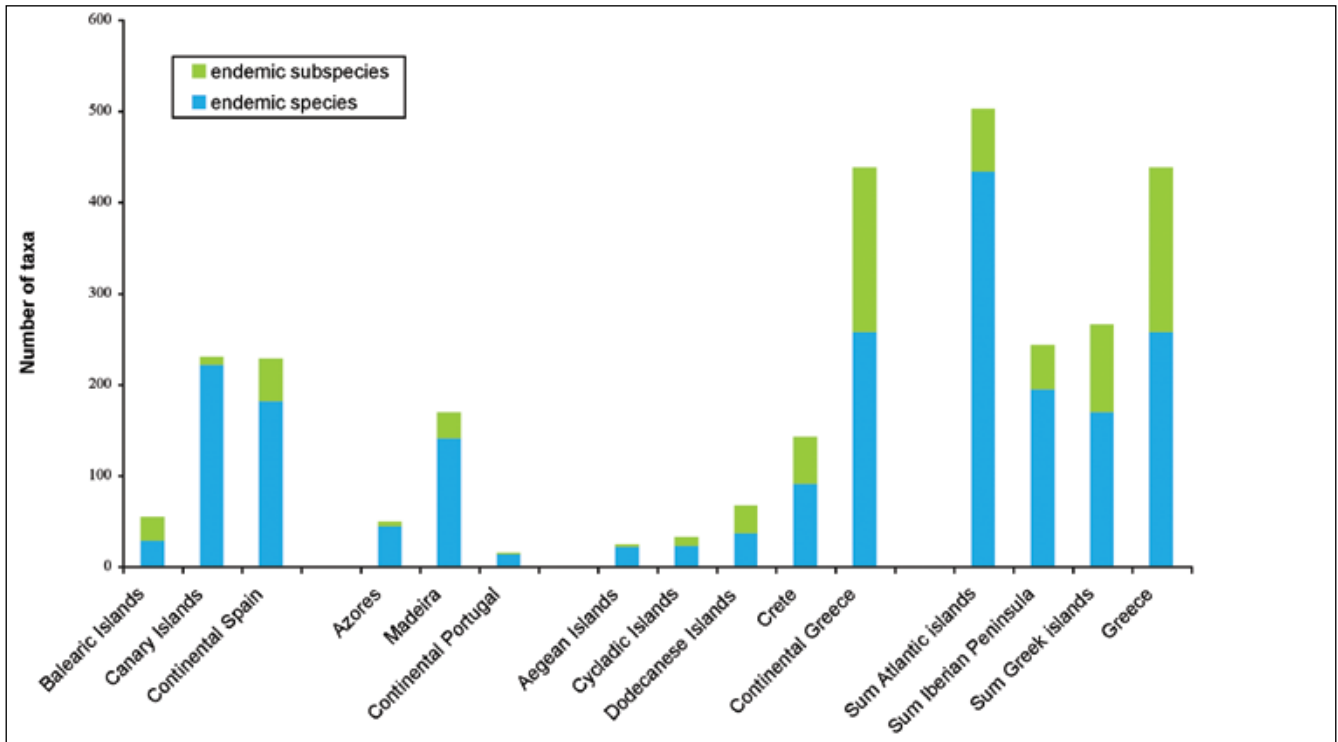
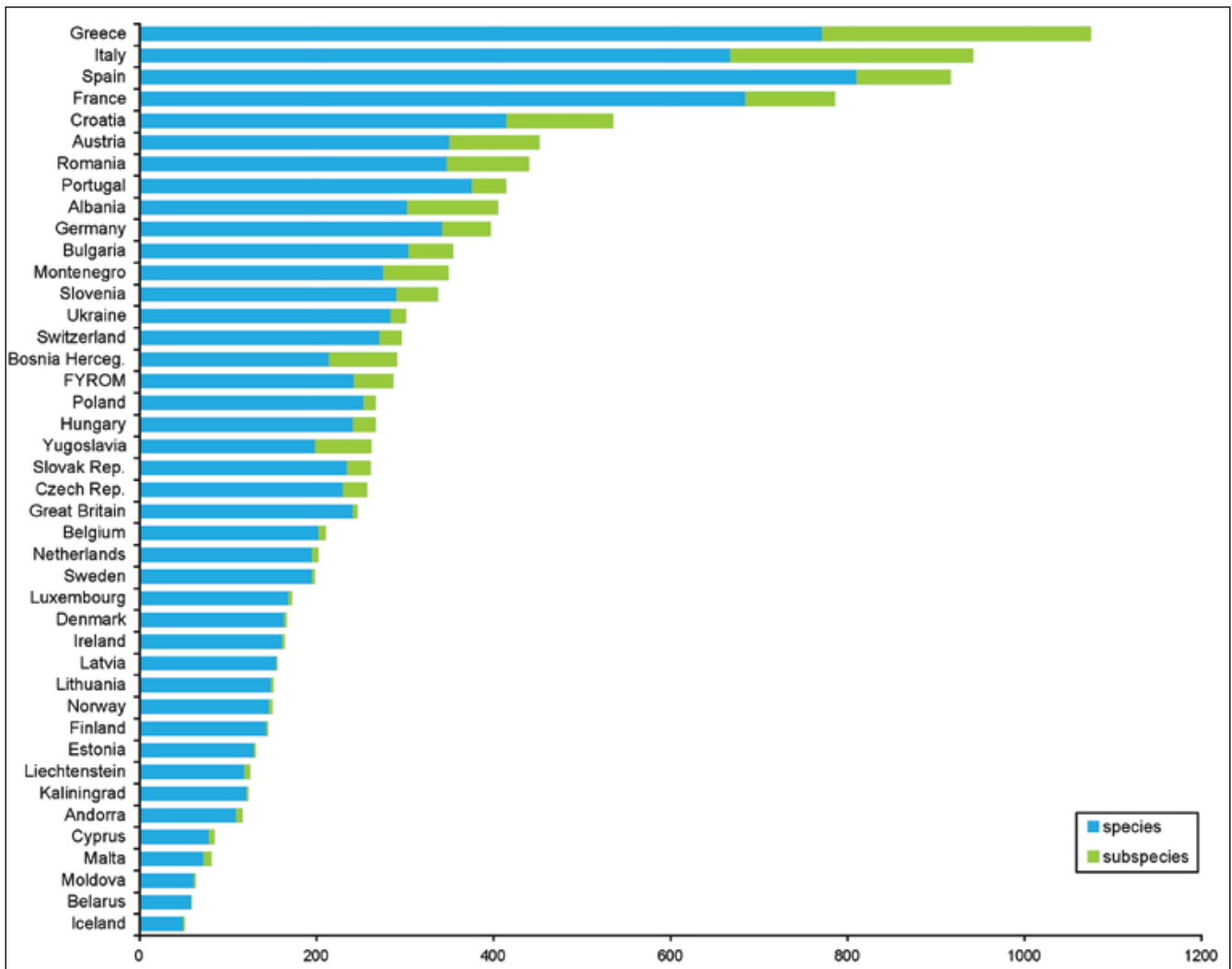


Figure 17. Number of species and subspecies per country



Looking at the total species richness of species of terrestrial mollusc per country, Greece with more than 1,000 species is the country with the highest species richness in Europe followed by Italy, Spain, and France (see Figure 17). Yugoslavia here includes Serbia, Kosovo and the Voivodina, Montenegro is listed as a separate country, and FYROM means the Former Yugoslav Republic of Macedonia.

However, for the families considered in this project, the top five EU countries in terms of terrestrial molluscs species richness are (in descending order): Spain, Greece, Italy, France and Portugal (Table 9). Austria and Slovenia can be highlighted as holding an important number of species within a small area.

Table 9. Number of terrestrial mollusc species in the selected families in the 27 current EU Member States (excluding introduced species).

Country	Total number of species
Austria	123
Belgium	50
Bulgaria	99
Cyprus	39
Czech Republic	69
Denmark	38
Estonia	30
Finland	33
France	219
Germany	103
Greece	274
Hungary	68
Ireland	36
Italy	265
Latvia	35
Lithuania	35
Luxembourg	46
Malta	21
Netherlands	46
Poland	76
Portugal	187
Romania	115
Slovakia	74
Slovenia	103
Spain	416
Sweden	51
United Kingdom	53

4.5.2 Distribution of threatened species

Figure 18 shows the areas where most of the threatened terrestrial molluscs assessed in this project are found.

The majority of threatened terrestrial molluscs in Europe occur on the Macronesian Islands, i.e. the Canary Islands, the Azores and Madeira. If compared with the continents, these islands are showing a trend up to tenfold the numbers of threatened species.

There are several reasons for this remarkable result:

- due to an extremely structured environment with large mountains, deep ravines (“barrancos”) and a rich vegetation, these islands are also very rich in species,
- distribution ranges are usually very small in the islands, and many species are only known from a single site or very few places,
- there is a massive pressure due to the increasing urbanisation in these islands, in relation to the growing human population and the ongoing expansion of the tourist infrastructure,
- even small-scaled disturbances, such as a single road, can destroy the habitat of these narrow-range endemic species, and there is little chance of recovery from neighbouring areas.

For the continent, the situation is different. Here, threatened species are mainly in the lower categories like Vulnerable or Near Threatened. One of the reasons is the fact that in many cases, there is not enough information on the actual distribution of a species and there is a high uncertainty as to whether or not there are unknown populations hidden in areas that have not been surveyed yet. It has to be taken into account that the ratio of malacologists (experts studying molluscs) vs. the area to investigate is drastically dropping when investigating larger land masses. Relatively small islands are much easier to survey than continents, where investigations in litter-dwelling invertebrates usually have only the character of random examinations. For this reason, there is probably a general underestimate concerning the conservation status of terrestrial mollusc species living on the continent.

Another aspect has to be considered: due to its restriction to selected families and the rigid application of the species approach, there is a certain bias in this investigation as it ignores a considerable part of the continent’s molluscs diversity. Families with high number of species in the Central and Eastern Mediterranean basin like the Clausiliidae, Oxychilidae, Pristilomatidae etc. are known to also include threatened narrow-range species and

Figure 18. Distribution of threatened terrestrial mollusc species of the selected families in Europe

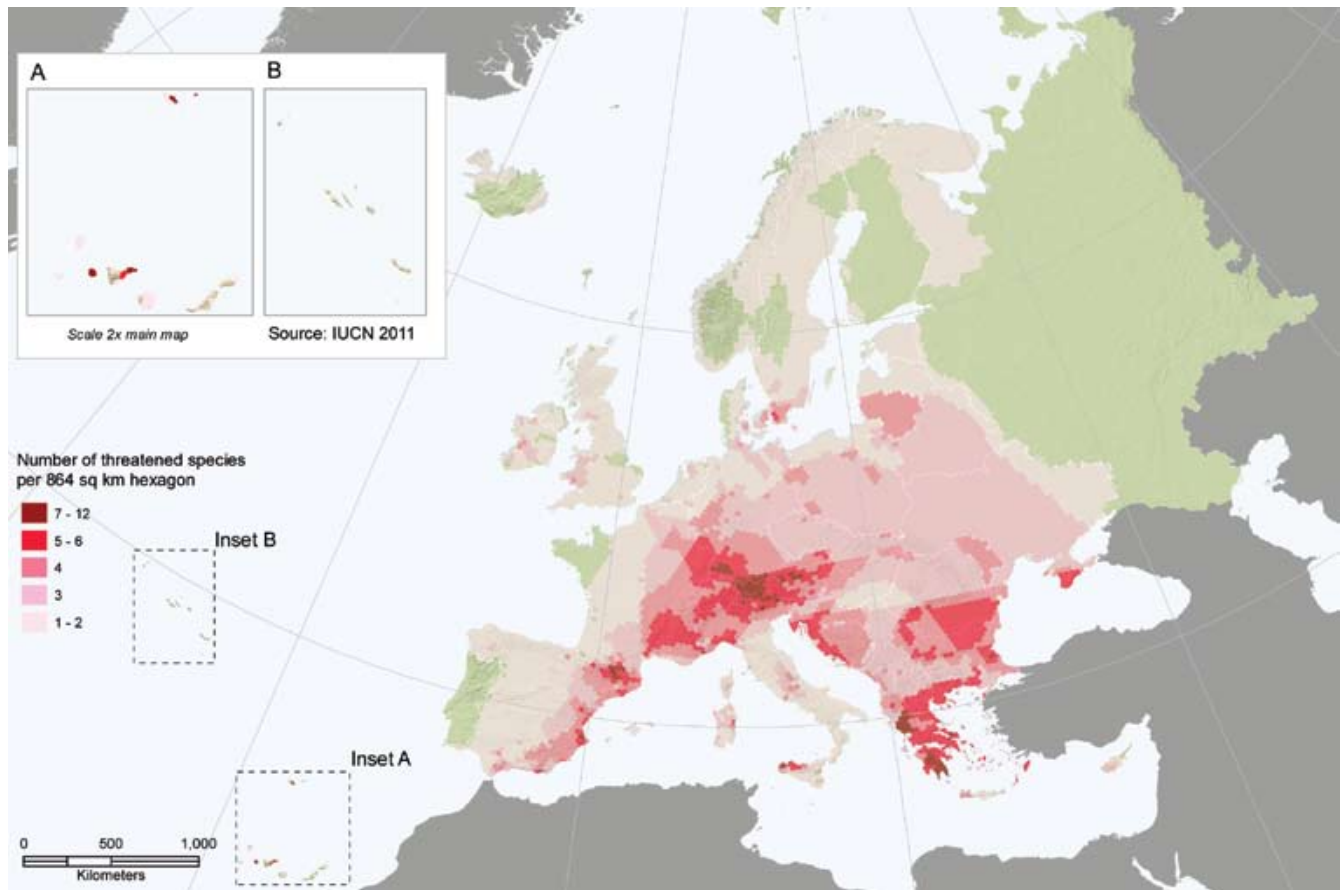
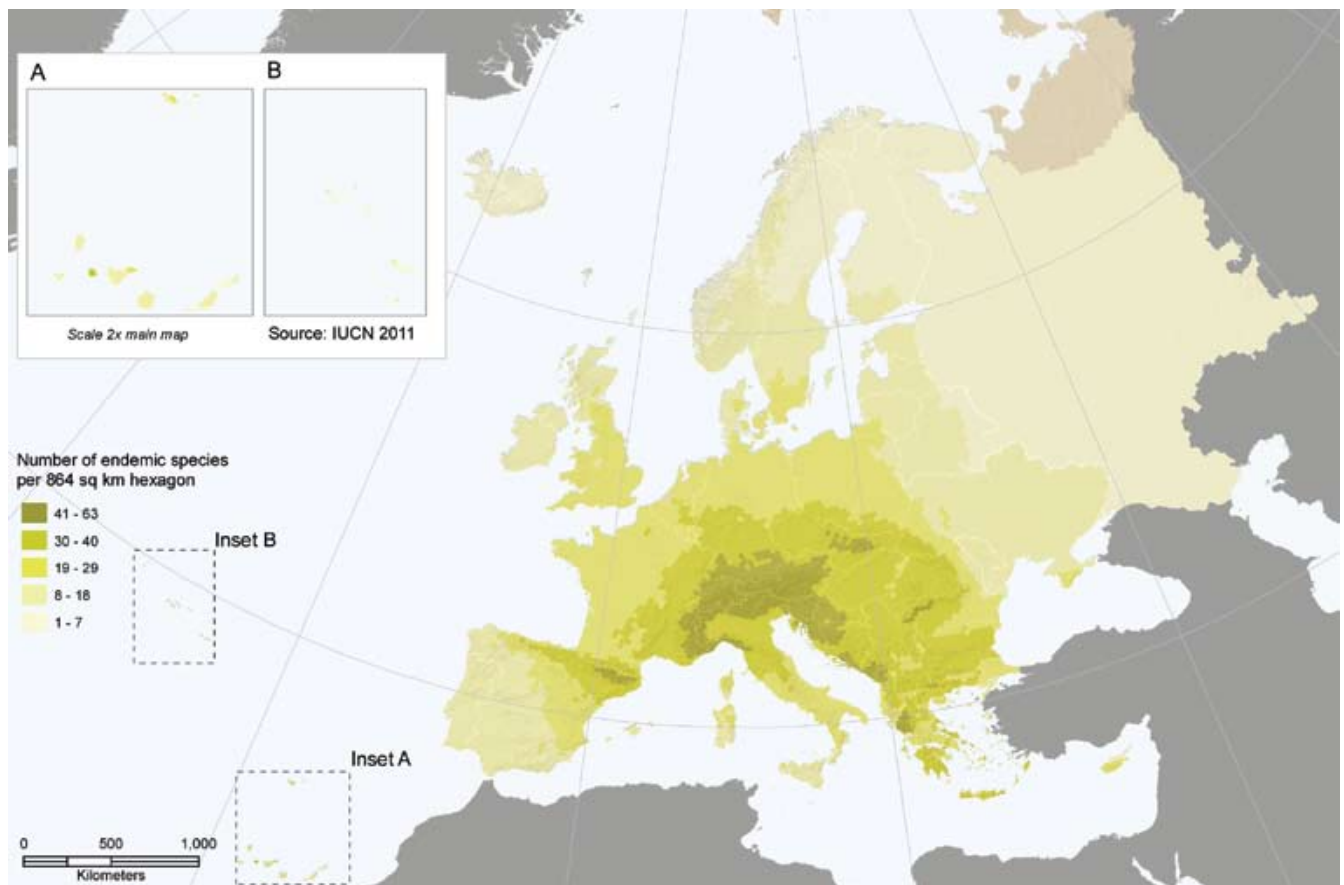


Figure 19. Distribution of endemic terrestrial mollusc species of the selected families in Europe



subspecies. In particular, the phenomenon of geographical subspecies, which contribute an enormous proportion to the overall genetic diversity are not considered and therefore lost. Thus it is well possible that a more comprehensive treatment of the European terrestrial snail fauna will result in a more balanced result.

4.5.3 Distribution of endemic species

Figure 19 shows the distribution of endemic terrestrial mollusc species (e.g. those that are unique to Europe and are found nowhere else in the world).

Similar to the increase of species and subspecies numbers from north to south (see figure 15), there is clinal increase of narrow-range endemism towards the Mediterranean countries (Wells and Chatfield 1992). Several hot spots can be identified here: (1) the Macaronesian Islands comprising the Canary Islands, the Azores, and Madeira; (2) Italy with a particular focus on Sicily; (3) the Balkan radiation culminating in mainland Greece with a considerable contribution from Crete; and (4) the Alpine arc ranging from the Pyrenees to the Carpathian Mountains.

Macaronesian Islands

A comprehensive and annotated compilation of all taxa described from these islands has been published by Bank *et al.* (2002). Currently, there are 230 taxa known to be endemic to the Canary Islands (i.e. 82 % endemism),

169 for Madeira (i.e 68 % endemism), and 49 to the Azores (i.e. 42 % endemism).

The main radiating group on the Canary Islands are the Enidae (the genus *Napaeus* with 57 species), Vitrinidae (21 species), Hygromiidae (*Monilearia* with 17 species, *Canariella* with 23 species), and Helicidae (*Hemicycla* with 39 species, *Theba* with 5 species). It has to be noted that in other families like the Discidae and Ferrusaciidae, a comparatively high number of species can be found. This fauna shows some relationship to that of northwestern Africa and, less prominently, to the Iberian Peninsula.

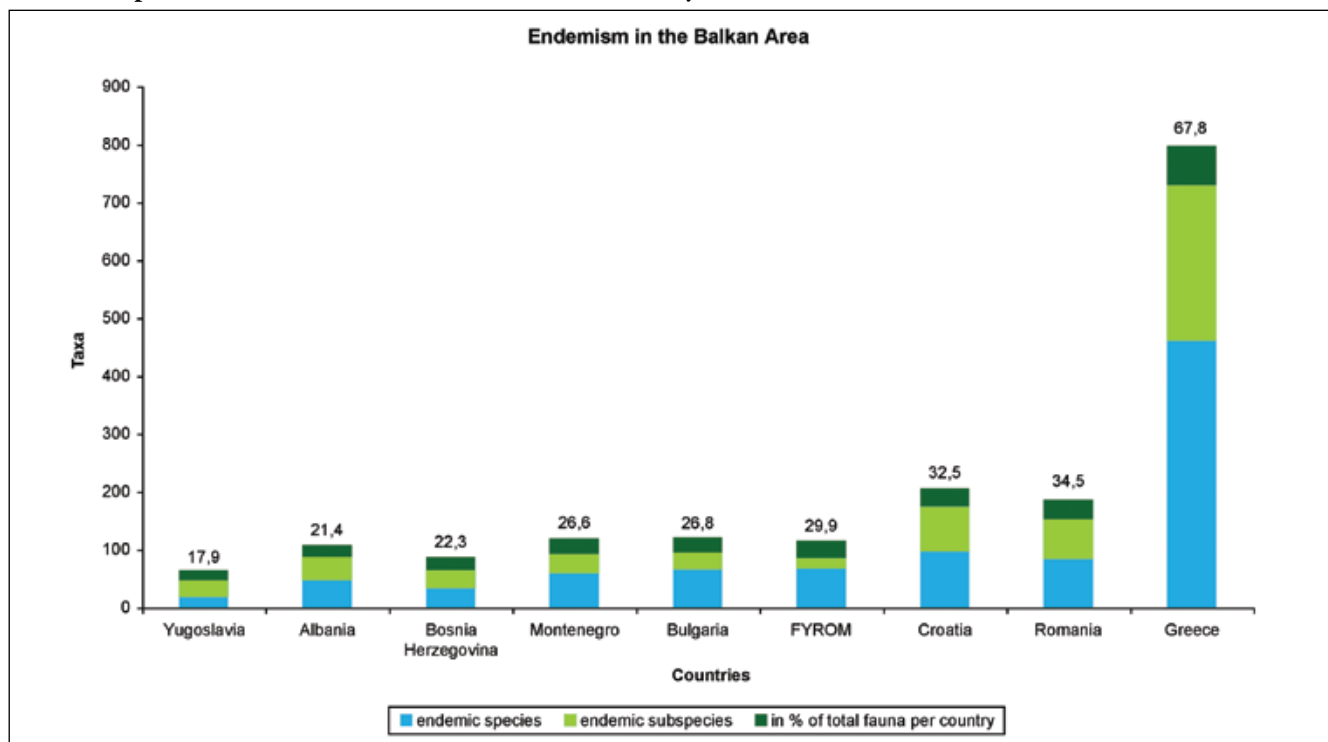
The molluscan fauna of Madeira with its satellite islands Porto Santo and Las Desertas has been revised by Seddon (2008). Here, the dominant families are the Lauriidae with an enormous radiation of *Leiostylia* (34 species), and the Hygromiidae with 65 endemic species from several also endemic genera.

Finally, the Azores show a radiation in Oxychilidae, particularly in the *Oxychilus* subgenera *Ortizius* and *Drouetia*.

Italy

The Sicilian area is particularly rich in endemic species. Here, 52 % of the taxa are endemic, which is much higher compared to the Italian mainland with 37 % endemism. In Sicily, this considerably high rate is due to a small

Figure 20. Number of molluscs species and subspecies endemic to various Balkan countries, with the % of the endemic taxa in comparison with the total molluscs fauna of the country.



radiation of the clausiliid genus *Charpenteria* (Siciliaria), and the polytypic species of *Rupestrella* (Chondrinidae) and *Murella* (Helicidae). This is in contrast to mainland Italy, where the highest degree in endemism on species level can be found in the freshwater snails Hydrobiidae.

Balkans

One of the richest areas in Europe in terms of endemism of continental molluscs is the Balkan region. In Figure 20, the current number of species and subspecies is shown for various Balkans countries, which cover this ill defined area more or less completely. Again, there is an enormous disproportion in the number of endemic taxa found in Greece. Interestingly, this trend continues to the eastern Mediterranean area, the degree of endemism for Turkey has quite recently been calculated as being 65 %, based on a data stock of 730 species level taxa (Gümüş and Neubert 2009). Obviously, this area is particularly rich in molluscs, while for example both, continental Spain and Italy reach a value of 37 % endemism. The Balkan fauna is a radiation centre for several families of terrestrial molluscs (such as the Clausiliidae, Oxylchilidae, Pristilomatidae and others).

Yugoslavia here includes Serbia, Kosovo and the Voivodina, Montenegro is listed as a separate country, and FYROM means the Former Yugoslav Republic of Macedonia.

Alpine Arc

The alpine arc is well known as a reservoir of endemic plants and animals (Nagy *et al.* 2003). In terms of

continental molluscs, the most obvious radiation here is that of the large rock-dwelling species from the Ariantinae (family Helicidae) of the genera *Arianta* and *Chilostoma* or the small prosobranch snails of the subfamily Cochlostomatinae (Diplommatinidae). Still, many problems of the subspecific classification in these groups remain to be resolved, but their study may also reveal intriguing insights into speciation processes during and after the last glaciation periods (Gittenberger *et al.* 2004). The large mountain systems also functioned as a refuge area, and harbored glacial relict species, for example *Cylindrus obtusus* (Draparnaud 1801).

4.6 Major threats to terrestrial molluscs in Europe

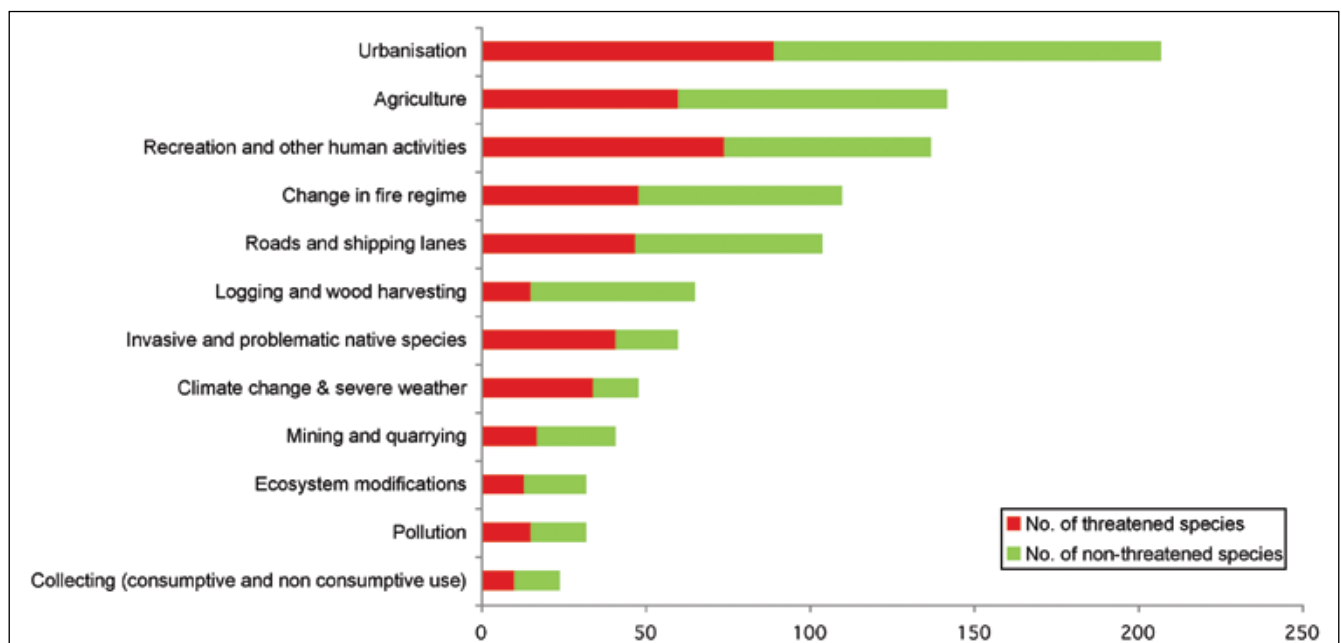
The major threats to each species were coded using the IUCN Threats Classification Scheme. A summary of the relative importance of the different threatening processes is shown in Figure 21.

According to their habitat, terrestrial molluscs show a differing threat profile when compared to the freshwater molluscs.

Urbanisation

Here, the major threat is the continuing destruction of suitable habitats by increasing overflow of settlements into the countryside. This is a particular problem in islands with only limited space available. Endemic species with usually quite small distribution areas have to compete against strong recreational and land-use pressures from

Figure 21. Major threats to terrestrial molluscs in Europe



Theba subdentata occurs in Morocco and in Spain, where it is only found in two locations near Almeria. As the city expands and the pressure from tourism activities increase, the extent and the quality of the habitat of this beautiful species is declining. It is therefore listed as Vulnerable. Photo © Antonio Ruiz/CMA-Junta de Andalusia.



the tourism industry. For example, specialized and vulnerable habitats like sand dunes are the target of recreational activities. Another side effect of increasing urbanisation is the expansion of agriculture, and over-use of freshwater resources. The influence of urbanisation is probably less important in continental areas, where species usually inhabit larger habitats and thus can retreat to less impacted subregions. However, this needs to be examined on a species by species basis, as in some cases, habitat specialists might be affected.

Agriculture

Agriculture as well as wood cutting and harvesting are activities that have deeply influenced and changed European environments for millenia. It is almost impossible to evaluate the man-made changes in the composition of the European molluscan fauna. Agriculture radically changes basic environmental factors, and modern farming techniques are treating huge fields with manure and biocides surely raising its impact level in the last decades. Next to the decrease in habitat quality, agriculture also leads to isolation of the remaining non-arable land patches and thus contributes to reductions in species richness and abundance of large areas.

Recreational activities

Coastal habitats are transformed or over-used due to recreational activities, but currently the influence of this type of human activity on terrestrial molluscs is not well studied, particularly in the Mediterranean coastal region. The alpine areas of all larger mountain systems in Europe are also transformed for recreation. Persisting snow cover almost automatically leads to the development of large skiing resorts with their associated negative impacts to the environment. Very often, alpine summits are refuge areas or habitats of endemic species and thus threatened by the

effects of ski slope preparations like soil compaction as well as soil erosion, trampling, removal or movement of sheltering boulders, and destruction of vegetation.

Fire

Wildfires have significant effects on Mediterranean landscapes. Sometimes, fires may be started unintentionally by people camping and/or barbecuing outside, but burning is also traditionally used to clear fields, field margins and scrub. In many cases, wildfires are also used to clear ground for construction, which is supported or tolerated by legislation in some countries. From the point of view of terrestrial molluscs, fires have mostly negative impacts. This is notably true for those species that survive the dry season by aestivating on the upper parts of vegetation or hiding in the leaf litter.

However, although the current populations are killed completely by fire, it has been demonstrated that burned areas usually recover quite well. This holds true when the fire is of mosaic occurrence, and when there are enough less or non-affected refuge spots left in the burned area (Kiss and Magnin 2003). Species richness and community diversity are preserved on the long run provided that the time lapse between two successive fires is longer than the time required for recovery, which has been calculated as 5 years (Kiss and Magnin 2006). In contrast, studies of the impact of fire on grassland species in North America saw a significant reduction of species richness and abundance in fire-managed sites (Nekola 2002).

The effect of wildfires may be less important in general, but may have disastrous effect for species with small ranges: the number of remaining populations or specimens may be too small to guarantee recovery. Animal size and population density may also play a role: for example in the case of the large and rare *Tachaeocamplyaea* species from Corsica, large rock crevices are needed to support enough surviving specimens for a successfully reproducing population.

Road construction

Road construction is another cause for loss of habitat, especially in regions with steep-sided valleys, for example in Greece. In order to create the road along the valley sides, blasting of the rock crags takes place, changing the character of these rocky faces, such that they become unsuitable for decades as habitats for endemic species.

Mining and quarrying

Limestone is frequently used to provide stones for road construction, as well as for cement production. In Europe

there are numerous small quarries in operation affecting key habitats for terrestrial molluscs, such as rocky outcrops and their deep crevices. Not only is the loss of habitat due to quarry activities impacting the molluscs, but also the dust from the excavation and the roads leading to the mines can adversely affect the animals. For example, close to the Grotte de Sare in France, extensive quarrying now surrounds the prehistoric site, which was once habitat to various rare species including *Neniatlantia pauli* and *Trissexodon constrictus* in 1980's, however the area of suitable habitat is much reduced and the quality of woodland further declined though limestone dust scattered through the forest (M. Seddon pers. comm 2010).

Ecosystem modification

Grazing is considered another major threat to terrestrial molluscs. The effect of livestock grazing on terrestrial mollusc communities can be multifold; the most important are long-lasting shifts in vegetation structure, loss of shading through the destruction of shrubs, killing of molluscs by trampling and moving of sheltering stones, and soil compaction and erosion. Ausden *et al.* (2005) showed that cattle grazing in a fen resulted in a substantial decrease of populations of *Vertigo moulinsiana*, which is a widespread but rare species assessed as Vulnerable (VU). For the Swiss Jura, Boschi

and Baur (2006) studied the effect of different livestock species like horses, cattle, and sheep and concluded that the grazing species had no effect on the composition of the terrestrial mollusc communities. However, species richness and abundance decreased significantly with increasing grazing intensity. A similar investigation in the Bucegi Mts. (Romania) showed that intensified sheep grazing in alpine slopes lowered gastropod species richness (Baur *et al.* 2007). Unfortunately, this type of study is missing for Mediterranean areas, which are under enormous pasturing pressure by sheep and goats. Their negative influence on the terrestrial mollusc communities can only be estimated, but it is very likely that the impact is enormous. Restoration of semi-arid grassland can be achieved by protection against grazing, but the complete loss of large grazing vertebrates would have a negative effect as well, because then, woodland structures would take over. As demonstrated by Karatssiou and Koukoura (2009), short-term protection of selected areas could provide enough time for a reasonable restoration of vegetation, which might also protect species richness and abundance in terrestrial mollusc communities.

Quite interestingly, lack of grazing can also be a threat, For example *Vertigo angustior* is sensitive to changes in habitat, and the ideal habitat needs to be grazed by horses (not cattle or sheep) in order to maintain the correct

Fires impact this forest species (*Cyrtortheba corsica*) as it reduces the leaf litter available and affects the humidity conditions. However, this snail is relatively widespread in Corsica (France) and is Least Concern at the moment. Photo © Gerhard Falkner.



vegetation profile for the site. Without any grazing, the site becomes overgrown, and hence unsuitable for the presence of *Vertigo angustior*. Similar pressures exist for *Vertigo genesii* and *Vertigo geyeri* where some grazing keeps the vegetation in check, and hence conditions remain suitable for the species.

In the UK, on the South Downs, there was a decline in some of the Mediterranean grassland species that reach their northern limit, when the rabbit populations were wiped out by the disease Myxomatosis, leading to grasslands becoming overgrown by weeds, and causing species such as *Monacha cartusiana* to decline.

Consumption

In the European cuisine, and especially in the Mediterranean one, many species of terrestrial snails are used as food. *Cornu aspersum* and *Helix pomatia* are terrestrial molluscs used throughout Europe. It is almost impossible to get reliable consumption numbers. Estimates for France, the main consumer, range between 20-40,000 tons of snail meat being sold per year. Meanwhile, snail farms developed to be a remunerative business, and captures from the wild are probably decreasing. *Cornu aspersum* is widespread in southern Europe, and is almost a pest species in some regions. *Helix pomatia* is also not really a concern; its populations

are usually relatively rich in specimens. Other species that are used as food are *Eobania vermiculata*, *Ceriuella virgata*, *Theba pisana*, *Otala lactea* and *Otala punctata*, and species from the continental Spanish *Iberus* group. Particularly in Spain, many species are wild-collected for the traditional paella. Unfortunately, collectors usually do not distinguish between the species, and larger specimens (and species) are more attractive than smaller ones. This is obviously no problem for extremely abundant species like *Otala punctata* or *Eobania vermiculata*, where consumption has no long-lasting effect on the population density. However, in groups like the *Iberus*-complex, collections from the wild may pose a major problem. This group consists of a number of closely related, polytypic species, which for the laymen's eye may look quite similar to each other or even to *Eobania vermiculata*. More specialised users systematically collect spectacular taxa like the enigmatic strongly keeled *Iberus gualterianus gualterianus*, which is sold for high prices per specimen. Five of the eight species comprising this group have been assigned a threatened or Near Threatened status, i.e. *Iberus alonensis* (NT), *Iberus campesinus* (VU), *Iberus carthaginensis* (NT), *Iberus gualtieranus* (EN), and *Iberus ortizi* (VU). Uncontrolled sampling of these species may drive populations towards extinction, and measures have to be taken to protect this endemic snail group for the future.

Terrestrial snails are considered as a delicacy in several Mediterranean countries. Photo © Craig Hatfield.

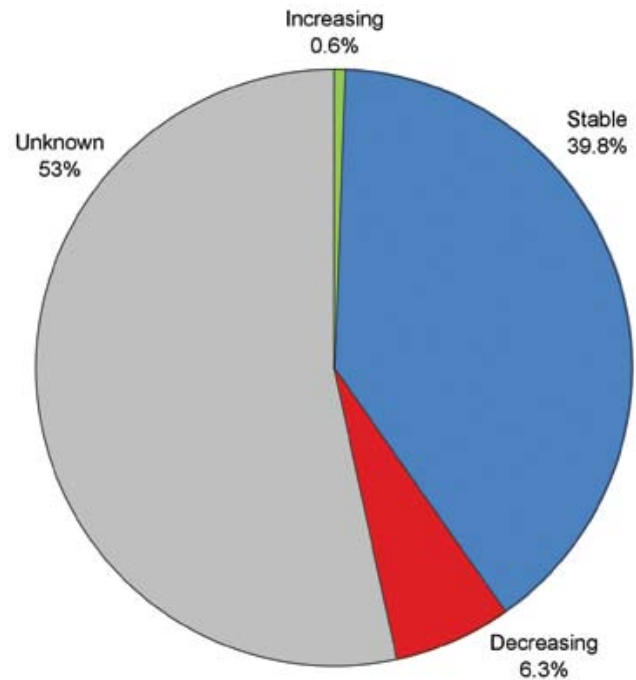


4.7 Population trends

As for the freshwater molluscs, a special effort was made to document the population trends of the terrestrial molluscs assessed. However, more than half the species are too poorly known to be able to define any population trend. A reasonable number of species have a stable population trend (about 40%), while 6% are declining and only 0.6% of the species display an increasing population trend (see Figure 22).

In comparison, 11% of the freshwater molluscs, 16% of aquatic plants (Bilz *et al.* 2011), 17% of freshwater fishes (Freyhof and Brooks 2011), 26% of dragonflies (Kalkman *et al.* 2010), 27% of mammal species, 42% of reptile species (Cox and Temple 2009) and 59% of amphibian species (Temple and Cox 2009) have declining populations. Just under a quarter (23%) of all European bird species are decreasing in number, based on population trends between 1990 and 2000 (BirdLife International 2004a). Freshwater species have the highest proportions of unknown population trends, with 83% of freshwater molluscs and 76% of freshwater fishes falling into this category (Freyhof and Brooks 2011).

Figure 22. Population trends of selected European terrestrial molluscs



Soosia diodonta is a forest species living in the Carpathians Mountains. It lives on the ground among leaf-litter, or on decaying dead wood. Due to its specific habitat requirement, and the diminution of forest cover across Europe, its population is fragmented and its population trend is unknown. It is assessed as Near Threatened. Photo © Zoltan Feher.



5. Conservation measures

5.1 Protection of habitats and species in Europe

European countries and EU Member States are signatories to a number of important conventions aimed at conserving biodiversity that are particularly relevant to molluscs, including the 1979 Bern Convention on the Conservation of European Wildlife and Natural Habitats, and most importantly, the 1992 Convention on Biological Diversity. Many European countries and other administrative units (states, provinces, etc.) also afford molluscs some form of protective species legislation.

The Bern Convention is a binding international legal instrument that aims to conserve wild flora and fauna and their natural habitats and to promote European co-operation towards that objective. It covers all European countries and some African states. Thirty-nine species of molluscs are listed in the various Annexes of the Bern Convention. Not all of them have been assessed, especially as some are marine species, but at least 16 are considered as threatened, one (*Leiostryla lamellosa*) is Extinct, and three (*Leiostryla abbreviata*, *Leiostryla cassida* and *Leiostryla gibba*) are Critically Endangered, Possibly Extinct (see Annex 3). European countries and the EU have made the commitment to reduce (or halt) the loss of biodiversity within Europe. This means that not only should extinctions be prevented, but population declines should also be reversed. The result of this Red List shows that a large number of non-marine molluscs are threatened and few have a stable or increasing population trend. Furthermore, the majority of the 623 species of threatened non-marine molluscs are not currently covered by international legislation for their protection. The CBD targets for 2010 were not met, but this baseline data will aid efforts to meet the new targets for 2020.

5.2 Protection of habitats and species in the EU

EU nature conservation policy is based on two main pieces of legislation - the EU Birds Directive⁴ of 1979 and the EU Habitats Directive⁵ of 1992. The main objective of these two directives is to ensure the favourable

conservation status (see Box 1) of habitats and species found in the EU.

The Habitats Directive, which aims to protect natural habitats and wild species other than birds, equally applies to the EU's freshwater, terrestrial and marine regions. It contains a series of Annexes that identify habitats and species of European Union concern. Each Member State is required to identify sites of European importance and to put in place measures for their protection and for their management, combining long-term conservation needs with economic and social activities as part of a sustainable development strategy. These sites, together with those of the Birds Directive, make up the Natura 2000 network - the cornerstone of EU nature conservation policy. The Natura 2000 network has grown over the last 25 years and now includes more than 26,000 protected areas in all Member States combined, with a total area of around 850,000 km² - more than 17.5% of the total EU territory.

In addition, species listed in Annex IV of the EU Habitats Directive are subject to a strict species protection requirements. Annex 3 of this report shows the species included in the protected species Annexes of the Habitat Directive and Appendix II and III of the Bern Convention and their European Red List status.

This small snail (*Lozekia transilvanica*) lives mainly in the forests of Hungary and Romania, and is threatened by deforestation. However, several populations occur in protected areas and in Natura 2000 sites and therefore no further conservation is currently needed. It is Least Concern. Photo © Tamas Deli.



4 Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds.

5 Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna.

In particular there are 39 molluscs species listed on the Annex II and IV of the Habitats Directive, of which 21 are listed as threatened, one is Near Threatened, one Extinct, one Data Deficient and 8 considered Least Concern. The 7 remaining species have not yet been assessed according to the IUCN Red List methodology. This means that the majority of the species listed in the Habitats Directive Annexes are in need of urgent conservation action. Even the species listed as Least Concern or Near Threatened may still merit conservation actions, as many of them originally listed as widespread now show a tendency to decline, even in habitats of conservation interest. The 7 species that were not assessed by the current Red List show signs of decline in parts of their range, or have suffered historical declines and are still in need of conservation effort. Therefore major conservation actions need to be directed towards molluscs in order to save them from extinction. This is clearly highlighted by the fact that, as mentioned above, 623 European freshwater and terrestrial molluscs are threatened either at the European or EU 27 level, only a fraction of them being already protected.

5.3 Conservation management of molluscs in the EU

Since 1992, the EU LIFE and LIFE+ programme have been offering financial support for species and habitat conservation projects throughout the EU. In particular, the current LIFE+ programme primarily supports the implementation of the Birds and Habitats Directives and the establishment of the Natura 2000 network. Projects involve a variety of actions including habitat restoration, site purchases, communication and awareness-raising, protected area infrastructure and conservation planning.

Over the last 20 years, LIFE has co-financed over 3,115 projects with a total budget of over €2 billion. However, according to the LIFE project database, only 42 LIFE Nature projects have implemented concrete conservation actions that were directly targeting molluscs in the EU. Table 10 shows the taxonomic breakdown of these projects. Examples of actions taken within these projects include habitat restoration, habitat conservation and action for sustaining molluscs populations. However, projects aimed at restoring natural habitat and targeting other invertebrate species might be beneficial to molluscs as well.

At the national level, the majority of the conservation actions in western Europe have been directed at six of the species listed in Annex II of the EU Habitats Directive, namely the freshwater pearl mussel *Margaritifera*

Box 1. Selected provisions of the EU Habitats Directive (92/43/EEC)

Article 1(i) defines the conservation status of a species as “the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations in the European territory of the Member States”. It states that a species’ conservation status will be taken as Favourable when:

- Population dynamics data on the species concerned suggests that it is maintaining itself on a long-term basis as a viable component of its natural habitats; and
- The natural range of the species is neither being reduced nor is likely to be reduced for the considerable future; and
- There is, and probably will continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

Table 10. The number of LIFE projects targeted towards mollusc species. This review is based on a search for mollusc species on the LIFE database <http://ec.europa.eu/environment/life/project/Projects/index.cfm>. Some projects target more than one species

Binomial	Number of LIFE projects
<i>Caseolus calculus</i>	1
<i>Caseolus commixta</i>	2
<i>Caseolus sphaerula</i>	1
<i>Discula turricula</i>	1
<i>Idiomela subplicata</i>	2
<i>Margaritifera auricularia</i>	2
<i>Margaritifera margaritifera</i>	20
<i>Unio crassus</i>	10
<i>Vertigo angustior</i>	6
<i>Vertigo genesii</i>	1
<i>Vertigo geyeri</i>	2
<i>Vertigo moulinsiana</i>	7

margaritifera, *Unio crassus*, *Vertigo moulinsiana*, *Vertigo angustior*, *Vertigo geyeri*, *Vertigo genesii*, with many countries establishing monitoring schemes and designating potential Special Areas of Conservation (pSAC) as required by EU legislation (Cameron *et al.* 2003). More recently efforts have been extended to *Anisus vorticulus*, however the designation of SAC's is still lagging behind for this species. However, as Moorkens (pers. comm. 2011) notes, many countries have not reported a favourable conservation status for 4 of the 6 species, and as such these still remain listed as threatened species on the European Red List.

These projects are either directed towards an improvement of the habitat quality (removing dams and barriers, restoring gravel banks free of silt or clay, removing local sources of pollution, restoring natural riverbanks, preventing cattle entering the river, etc.) or directly towards the species (increase knowledge of the biology and life ecology, captive breeding and reintroduction of young mussels). Several are also concerned with the conservation of the host fish species, as it has proven to be the main limiting factor for the successful reproduction of some species. Finally awareness-raising campaigns are also conducted locally.

5.4 Extinction risk versus conservation status

The IUCN Red List Criteria classify species solely on the basis of their relative extinction risk (IUCN 2001). However, Unfavourable Conservation Status according to the EU Habitats Directive has a much broader definition. This is identified clearly in Article 1 of the Directive (see Box 1). No species meeting the IUCN Red List Criteria for one of the threatened categories at a regional level can be considered to have a Favourable Conservation Status in the EU. To be classified as Vulnerable (the lowest of the three IUCN threatened categories) a species must undergo a reduction in population size of at least 30% over ten years or three generations (or have a very small or small and declining population or geographic range; see the 2001 IUCN Red List Categories and Criteria version 3.1 <http://www.iucnredlist.org/technical-documents/categories-and-criteria>). It is difficult to claim that a species experiencing a decline of this magnitude is maintaining its population, that its range is stable, and that it remains a viable component of its habitat. Crucially, however, this does not mean that the opposite is true: species that are not threatened as defined by IUCN Red List Criteria do not necessarily have a Favourable Conservation

Status (BirdLife International 2004a). Guidelines issued by the European Commission on the protection of animal species under the Habitats Directive reinforce this message that 'the fact that a habitat or species is not threatened (i.e. not faced by any direct extinction risk) does not necessarily mean that it has a favourable conservation status' (Anon. 2007).

The European Red List has highlighted the fact that about 11% of freshwater molluscs and 6% of the selected terrestrial molluscs have declining populations, while 83% of freshwater species and 53% of terrestrial molluscs have an unknown population trend (see Figures 12 and 22). It should however be noted that both the distribution and population size of numerous species have declined severely during the 20th century (but not in the timeframe of 10 years taken into consideration by IUCN methodology) or at a rate that does not exceed 30%, and thus does not satisfy IUCN Red List Criteria. Therefore, although many of these species would be categorized as Near Threatened or Least Concern, they could not be regarded as having Favourable Conservation Status.

5.5 Red List versus priority for conservation action

Assessment of extinction risk and setting conservation priorities are two related but different processes. Assessment of extinction risk, such as the assignment of IUCN Red List Categories, generally precedes the setting of conservation priorities. The purpose of the Red List categorization is to produce a relative estimate of the likelihood of extinction of a taxon. Setting conservation priorities, on the other hand, normally includes the assessment of extinction risk, but also takes into account other factors such as ecological, phylogenetic, historical, economical, or cultural preferences for some taxa over others, as well as the probability of success of conservation actions, availability of funds or personnel, cost-effectiveness, and legal frameworks for conservation of threatened taxa. In the context of regional risk assessments, a number of additional pieces of information are valuable for setting conservation priorities. For example, it is important to consider not only conditions within the region but also the status of the taxon from a global perspective and the proportion of the global population that occurs within the region. A decision on how these three variables, as well as other factors, are used for establishing conservation priorities is a matter for the regional authorities to determine.

5.6 Recommendations for conservation actions

At present, despite the omission of several families of terrestrial molluscs, present especially in some of the islands and in eastern Europe, and the underestimates due to the numbers of species yet to be described, the data compiled in this report cover about 2/3 of the molluscan fauna of Europe, and thus can claim to be reasonably representative of the status of European molluscs biodiversity and the threats to these species, and as such the conclusions and suggested actions would apply, even if new data is included.

Facing the possible loss of almost half of the freshwater molluscs and 20% of the terrestrial molluscs in Europe, urgent conservation action should be directed towards this under-protected group.

Legislation

Existing national and EU legislation should be fully implemented (including the EU Water Framework Directive, the EU Habitats Directive and the EU Common Agricultural Policy), and revised when appropriate to include the threatened species identified in this project, especially where cross-boundary management strategies would be beneficial for species-specific conservation actions. This should provide a suitable legislative tool to improve the status of many European molluscs.

Site conservation

The main conservation action is to protect key habitats, such as the ancient lakes in the Balkans, underground systems and regions displaying either high diversity or high threat levels. Including the threatened species identified in this project in the Annex II of the EU Habitat Directive would allow the designation of relevant special areas of conservation. Many species have very restricted distributions and threats such as urbanisation, agriculture and tourism are encroaching on and destroying the habitat of these narrow-range species. Whilst some threatened species already occur within nature reserves or protected sites, the vast majority are currently unprotected. Most non-marine molluscs would benefit from the identification of additional sites for conservation through the intensification of studies of molluscan population trends. Within these areas, it maybe that only small micro-habitats need protection (rock crags, waterfalls, springs, caves). Some species would benefit from a landscape or catchment level approach with multi-taxon species conservation plans, for example

ancient forest faunas, marshlands, limestone pavement, ancient lakes and large rivers.

Water management

Water pollution and over-abstraction of water are two of the major threats to both freshwater and terrestrial molluscs. The loss and degradation of suitable habitat due to water pollution (nitrates and other chemicals from agricultural sources and poor domestic sewage management) and over-abstraction of water from springs and groundwater sources is particularly evident in some of the most diverse and threatened areas, such as the Iberian Peninsula and the Balkans. Better knowledge on presence of spring-snails and communication on how to improve water off-take from sites without impacting species is needed. Urgent attention also needs to be placed on implementation of the various EU directives either currently in place, or planned to improve water quality. These include:

- Over 270 species of freshwater molluscs, are restricted to groundwaters and will benefit from the implementation of the EU Groundwater Directive requiring prevention/limiting input of pollutants by 2015 and compliance with good chemical status.
- Over 244 species will benefit from implementation of the Waste Framework Directive (2006/12/EC) which requires waste to be recovered or disposed of without endangering the environment and groundwater. There are several important cave sites, with high biodiversity value lying immediately below (or closely adjacent) to waste disposal site, with the highest threats to their survival being contamination of groundwater through seepage from waste disposal sites. Similarly in Europe, in the non EU 27 countries, this is a higher threat, and effective management of seepage from waste sites must be controlled to minimise the impact on these species and their habitats.
- The Water Framework Directive has put forward a challenging legislative framework, establishing "good status" environmental objectives for all waters – surface, coastal, transitional, and ground waters – to be achieved by the end of 2015. This legislation should benefit all 854 freshwater mollusc species in Europe.

Dam/drainage projects should be engineered in such a way that they mitigate their impact on the native mollusc species. The protection of freshwater biodiversity is one of the ultimate conservation challenges as one needs to incorporate the influences of the upstream drainage network, the surrounding land to springs, rivers and

Paladilbia pleurotoma lives in subterranean waters, in the Rhône and Hérault valleys (France). It is currently Least Concern, but could decline locally in the future as a result of poor water management (water abstraction and pollution from domestic -sewage and run-off- or agricultural -nutrient loads, herbicide and pesticides- sources.). Photo © Vincent Prié / Caracol.



lakes, the riparian zone of the habitats, and in the case of aquatic molluscs that are dependant on migratory species– the influences of the downstream reaches as well. Such catchment management approaches are rarely met and yet action is needed where opportunities exist to set aside intact lake and river ecosystems within large managed areas, even better protected areas, where large number of endemic species co-exist.

Species management

Species/Habitat Action Plans should be drawn for the most threatened species and land management policies should be improved to include specific guidance on the management of habitat for molluscs in order to take into consideration their specific requirements.

Captive breeding programmes (and sometimes farming) should also be set up when relevant to ensure the continuing presence of viable populations of highly threatened species (e.g. to restock rivers with freshwater bivalves or strengthen terrestrial snail populations targeted for human consumption, such as *Iberus gualtieranus*)

Raising awareness

Governments and local communities only rarely appreciate the role, and the value of mollusc biodiversity and the ecosystem services they provide. Even though a major requirement to facilitate the provision of this information is met through the delivery of this report, a communication strategy is required to raise awareness and facilitate monitoring of local populations of gastropods and bivalves. This could be met through collaboration between local wildlife associations with the expertise to monitor species combining with energy and water departments as well as relevant governments that require

the habitats to be monitored in order to report on the impact of their activities.

Monitoring of species or habitats

Except for the species monitoring requirements under the EU Habitats Directive, monitoring programmes for molluscs only exist in a small number of European countries. Programmes need to be established for threatened and Data Deficient species in all countries in order to determine actual population size, distribution and trends. They may be best implemented through regular habitat monitoring (as a proxy for species status) and occasional species surveys, in order to assist in the management plans for the threatened species. Such monitoring programmes would also help evaluate the impact of conservation measures on this important indicator group of invertebrates and improve the accuracy of red listing in future years. Within the groundwater habitats, it is more difficult to adequately sample their contained fauna, so monitoring levels of pollution as well as outflow points during storm events could provide suitable information on the likely population status.

Taxonomy research

Due to the small scaled habitats present in Europe, European molluscs show a considerable number of geographical subspecies. In these rather immobile animals, even small geographic features like a mountain ridge can genetically separate populations for a time span long enough to start speciation. Often they turn out to represent cryptic species (i.e. species that are biologically distinct, but that have very similar, if not identical, morphology). The exact number of valid species might increase considerably once adequate research is carried out for all the groups and the regions in Europe.

Furthermore, in the past, missing scientific concepts lead to description of a plethora of valid scientific species names, as each small morphological deviation from the “typical” specimen was considered a new species, and after 250 years of scientific malacology we still face several million names representing only a hundred thousand biological species, at least. Evaluation of these names, whether they represent an existing biological unit or fall into the concept of an already existing one (and thus are a synonym), is an extremely important and responsible step in this cathartic process. Still, there are groups in Europe (particularly in terrestrial molluscs), where revisions are pending, and where their polytypic structure remains insufficiently clarified,

which also hinders an assessment of the species itself. So it is one of the major tasks of recent research on molluscs to come to a reasonable, hypothesis-driven phylogenetic classification of the group. For nature conservation, poorly defined species limits, can be a major problem, as if species limits are not clear, then a conservation assessment cannot be done, and a species (and even entire groups of species) may be at risk of extinction without us being aware of this.

The genus *Bythinella*, comprising numerous freshwater snail species, such as this transparent species, is a typical example of group where the taxonomy can only be unravelled by an integrative approach combining morphology, anatomy, biogeography, and genetics. Photo © Vincent Prié / Caracol.



6. Conclusions

6.1 Overview and recommendations for conservation measures

With almost half (44%) of all species assessed as threatened with extinction, European freshwater molluscs are by far the most threatened group assessed to date in Europe, highlighting the worrying situation of European freshwater ecosystems. Furthermore, one out of five species (20%) of the assessed terrestrial molluscs are also confronted with a high level of threat. In some cases, the point of no return has been reached: at least eight species are already Extinct and an additional 35 are Critically Endangered, Possibly Extinct.

More than 90% of the European molluscs are endemic, which means that they don't occur anywhere else in the world and represent Europe's natural heritage. The highest diversity, endemism and threat level are found in the Mediterranean, from the Iberian Peninsula to the Balkans and in the various island groups, highlighting the richness, but also the vulnerability of these areas. The ancient lakes in the Balkans and the Atlantic and Greek island groups deserve a special mention in that regard.

The main threat to European non-marine molluscs is the loss and degradation of suitable habitat. For the freshwater species, this is due to water pollution (nitrates and other chemicals from agricultural sources and poor domestic sewage management) and the over-abstraction of water from springs and groundwater sources, while for terrestrial molluscs, the major problems are related to agricultural improvements, encroaching urbanisation, deforestation, tourism and recreation activities.

Apart from their value as Europe's natural heritage, non-marine molluscs provide important ecosystems services that are often underestimated, such as nutrient recycling, water cleaning, food sources, environmental indicators, etc.

To revert their dramatic situation, urgent conservation measures are needed:

- National and European legislation (including the EU Habitat Directive, the EU Water Framework directive and the EU Common Agricultural Policy) should be fully implemented and revised to include

the threatened species identified during this project, especially where cross-boundary management strategies would be beneficial for species-specific conservation actions.

- Key sites, such as the ancient lakes in the Balkans, underground systems and areas of high threatened diversity should be protected and the management of these habitats and of existing protected areas should take into consideration the specific requirement of molluscs.
- Water management should be improved, especially regarding the over-exploitation of springs and groundwater and the pollution resulting from agriculture and urbanization.
- Environmental Impact Assessments (EIA) should be conducted for any dam/drainage projects to assess the impact and mitigation measures needed for native mollusc species.
- Species/Habitat Action Plans should be drawn for the most threatened species, and for the most threatened ones captive breeding programmes might need to be set in place.
- Invasive species should be controlled to reduce their impact on the native fauna.
- The importance and role of molluscs, and of invertebrates in general, should be promoted through awareness raising campaign.
- Monitoring of the population size, distribution and trend (possibly through the monitoring of the habitat as a proxy) should be undertaken for the threatened and Data Deficient species
- Further taxonomic research is needed to clarify the exact taxonomic status of the European molluscan fauna

6.2 Application of project outputs

This Red List of Non-marine Molluscs is part of a wider project aimed at comprehensively assessing several taxonomic groups (mammals, amphibians, reptiles, freshwater fishes, dragonflies), and selected butterflies, beetles and plants. It has gathered large amounts of data on the population, ecology, habitats, threats and recommended conservation measures for each species assessed. These data are freely available on the European Commission website (<http://ec.europa.eu/environment/nature/conservation/species/redlist>), on the IUCN Red

List website (www.iucnredlist.org), and through paper publications (see the list of European Red List published at the end of this report).

In conjunction with the data on European birds published by BirdLife International (BirdLife International 2004a,b), it provides key resources for decision-makers, policy-makers, resources managers, environmental planners and NGOs. This Red List is a dynamic tool that will evolve with time, as species are reassessed according to new information or situations. It is aimed at stimulating and supporting research, monitoring and conservation action at local, regional and international levels, especially for threatened, Near Threatened and Data Deficient species. The outputs of this project can be applied to inform policy, to identify priority sites and species to include in research and monitoring programmes and to identify internationally important areas for biodiversity. It also contributes to broaden the coverage of invertebrates on the global IUCN Red List, thanks to the assessment of endemic European molluscs.

6.3 Future work

Through the process of gathering and compiling mollusc data across Europe, several knowledge gaps have been identified. There are in particular significant geographical

and taxonomical biases in the quality and quantity of data available on the distribution and status of species.

Additional resources should be provided to complete the assessment of the remaining terrestrial mollusc families. Especially as some of these families that still need to be assessed (e.g. Clausillidae, Oxychilidae, Zonitidae) have large numbers of endemic species in the Atlantic Islands and Eastern Europe, which are two of the areas displaying the highest level of pressures, indicating that the real level of threat to the European terrestrial molluscs might be higher than stated in this report. This would allow a complete overview of all terrestrial and freshwater molluscs in Europe.

In addition, if the molluscs' assessments are periodically updated, it will enable the changing status of these species to be tracked through time allowing the production of a Red List Index (Butchart *et al.* 2004, 2005, 2006, 2007). To date, this indicator has been produced for birds, mammals, amphibians and reptiles at the European regional level and was adopted as one of the headline biodiversity indicators to monitor progress towards halting biodiversity loss in Europe by 2010 (European Environment Agency 2007). By regularly updating the data presented here we will be able to track the changing fate of European non-marine molluscs to 2020.

Arianta arbustorum, is commonly known as the Copse Snail and is one of the most widespread species in central Europe. As its name suggests, it is mainly found in woodland. It also favours rich, fenny, unimproved pasture, scrub, woods and rocks in limestone or chalk areas. It lives from the lowlands up to beyond the tree limit in the Alps above 2,000 m asl. Its population is currently stable on mainland Europe but is fragmented and declining in Ireland. There are no major threats to this species and it easily re-colonises disturbed habitats, therefore it is considered Least Concern. ©Mikael Miettinen



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Appendix 1. Red List status of European freshwater Molluscs

Due to the evolving taxonomy, the species are listed alphabetically by species name and not by genus name.

Threatened species (either at the European or at the EU 27 level) are highlighted in colour. If the IUCN Red List Category is different at the European and

at the EU 27 level, the highest category has been highlighted.

Key: black = Extinct (EX), red= Critically Endangered (CR) or Critically Endangered, Possibly Extinct (CR/PE), orange = Endangered (EN), yellow = Vulnerable (VU).

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
BIVALVIA								
SPHAERIIDAE	amicum	Pisidium	LC		LC			
UNIONIDAE	anatina	Anodonta	LC		LC			
SPHAERIIDAE	annandalei	Pisidium	DD		DD			
MARGARITIFERIDAE	auricularia	Margaritifera	CR	A2ac	CR	A2ac	Yes	Yes
DREISSENIDAE	blanci	Dreissena	VU	D2	VU	D2	Yes	Yes
UNIONIDAE	bonellii	Microcondylaea	VU	A2c	VU	A2c	Yes	
DREISSENIDAE	bugensis	Dreissena	LC		LC			
SPHAERIIDAE	casertanum	Pisidium	LC		LC			
UNIONIDAE	complanata	Pseudanodonta	NT		NT			
SPHAERIIDAE	conventus	Pisidium	LC		LC			
SPHAERIIDAE	corneum	Sphaerium	LC		LC			
UNIONIDAE	crassus	Unio	VU	A2ac+3ce	VU	A2ac+3ce		
UNIONIDAE	cygnea	Anodonta	NT		NT			
UNIONIDAE	delphinus	Unio	NT		NT		Yes	Yes
SPHAERIIDAE	edlaueri	Pisidium	EN	B1ab(iii)+2ab(iii)	NE		Yes	
UNIONIDAE	elongata	Pseudanodonta	DD		DD		Yes	Yes
CORBICULIDAE	fluminalis	Corbicula	NA		NA			
CORBICULIDAE	fluminea	Corbicula	NA		NA			
UNIONIDAE	gibbus	Unio	CR	B1ab(iii)	CR	B1ab(iii)		
SPHAERIIDAE	globulare	Pisidium	LC		LC			
SPHAERIIDAE	henslowanum	Pisidium	LC		LC			
SPHAERIIDAE	hibernicum	Pisidium	LC		LC			
SPHAERIIDAE	hinzi	Pisidium	NT		VU	D2		
DREISSENIDAE	kusceri	Congeria	VU	A2ac	DD		Yes	
SPHAERIIDAE	lacustre	Musculium	LC		LC			
DREISSENIDAE	leucophaeata	Mytilopsis	NA		NA			
SPHAERIIDAE	lilljeborgii	Pisidium	LC		LC			
UNIONIDAE	littoralis	Potomida	NT		NT			
SPHAERIIDAE	maasseni	Pisidium	EN	B1ab(iii)	CR	B1ab(iii)	Yes	
UNIONIDAE	mancus	Unio	NT		NT			
MARGARITIFERIDAE	margaritifera	Margaritifera	CR	A2b	CR	A2b		
UNIONIDAE	middendorffi	Pseudanodonta	DD		DD			
SPHAERIIDAE	milium	Pisidium	LC		LC			
SPHAERIIDAE	moitessierianum	Pisidium	LC		LC			
SPHAERIIDAE	nitidum	Pisidium	LC		LC			
SPHAERIIDAE	nucleus	Sphaerium	LC		LC			
SPHAERIIDAE	obtusale	Pisidium	LC		LC			

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
SPHAERIIDAE	ovale	Sphaerium	LC		LC			
SPHAERIIDAE	personatum	Pisidium	LC		LC			
UNIONIDAE	pictorum	Unio	LC		LC			
DREISSENIDAE	polymorpha	Dreissena	NA		NA			
DREISSENIDAE	presbensis	Dreissena	NT		VU	D2	Yes	
SPHAERIIDAE	pseudosphaerium	Pisidium	LC		LC		Yes	
SPHAERIIDAE	pulchellum	Pisidium	LC		LC			
SPHAERIIDAE	rivicola	Sphaerium	LC		LC			
SPHAERIIDAE	solidum	Sphaerium	NT		NT			
SPHAERIIDAE	subtruncatum	Pisidium	LC		LC			
SPHAERIIDAE	supinum	Pisidium	LC		LC			
SPHAERIIDAE	tenuilineatum	Pisidium	LC		LC			
SPHAERIIDAE	transversum	Musculium	NA		NA			
UNIONIDAE	tumidiformis	Unio	VU	A2ace	VU	A2ace	Yes	Yes
UNIONIDAE	tumidus	Unio	LC		LC			
SPHAERIIDAE	waldeni	Pisidium	LC		LC			
UNIONIDAE	woodiana	Sinanodonta	NA		NA			
GASTROPODA								
HYDROBIIDAE	abbreviata	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	absoloni	Iglica	LC		NE		Yes	
VIVIPARIDAE	acerosus	Viviparus	LC		LC		Yes	
COCHLIOPIIDAE	achaja	Heleobia	DD		DD		Yes	Yes
HYDROBIIDAE	acicula	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	acicula	Pyrgula	DD		DD		Yes	Yes
HYDROBIIDAE	acicularis	Iglica	VU	D2	VU	D2	Yes	Yes
PLANORBIDAE	acronicus	Gyraulus	DD		DD			
PHYSIDAE	acuta	Haitia	LC		LC			
HYDROBIIDAE	acuta	Hydrobia	LC		LC			
HYDROBIIDAE	adlitzensis	Graziana	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
PLANORBIDAE	aduncus	Ancylus	DD		DD		Yes	Yes
MOITESSIERIIDAE	affinitatis	Spiralix	DD		DD		Yes	Yes
HYDROBIIDAE	aitanica	Josefus	LC		LC		Yes	Yes
HYDROBIIDAE	albanica	Malaprespia	CR	B1ab(ii,iii)+2ab(ii,iii)	NE		Yes	
HYDROBIIDAE	albanica	Radomaniola	LC		DD		Yes	
HYDROBIIDAE	albida	Narentiana	NT		NE		Yes	
PLANORBIDAE	albidus	Gyraulus	VU	D2	NE		Yes	
PLANORBIDAE	albus	Gyraulus	LC		LC			
HYDROBIIDAE	alcoaensis	Belgrandia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	alpestris	Graziana	LC		LC		Yes	Yes
HYDROBIIDAE	alpeus	Iglica	DD		DD		Yes	Yes
HYDROBIIDAE	alpinum	Bythiospeum	NT		NE		Yes	
HYDROBIIDAE	alzense	Bythiospeum	DD		DD		Yes	Yes
BITHYNIIDAE	ambrakis	Pseudobithynia	VU	D2	VU	D2	Yes	Yes
LYMNAEIDAE	ampla	Radix	LC		LC			
HYDROBIIDAE	anatina	Mercuria	LC		LC		Yes	Yes
NERITIDAE	anatolicus	Theodoxus	NA		NA			
HYDROBIIDAE	andalucesis	Guadiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	angelitae	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	angelovi	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	angeltsekovi	Grossuana	LC		LC		Yes	Yes
HYDROBIIDAE	annulata	Pyrgula	LC		LC		Yes	
HYDROBIIDAE	anti	Hadziella	LC		LC		Yes	

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HYDROBIIDAE	antipodarum	Potamopyrgus	NA		NA			
HYDROBIIDAE	apertus	Lithoglyphus	DD		DD			Yes
HYDROBIIDAE	apfelbecki	Sarajana	DD		NE		Yes	
COCHLIOPIDAE	aponensis	Heleobia	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYDROBIIDAE	archeducis	Islamia	DD		DD		Yes	Yes
HYDROBIIDAE	arconadae	Guadiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	armoricana	Marstoniopsis	CR	B2ab(i,iv)	CR	B2ab(i,iv)	Yes	Yes
HYDROBIIDAE	articense	Bythiospeum	LC		LC		Yes	Yes
HYDROBIIDAE	astierii	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	asturica	Alzoniella	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	ateni	Islamia	EX		EX		Yes	Yes
VIVIPARIDAE	ater	Viviparus	LC		LC		Yes	
PLANORBIDAE	atticus	Planorbis	LC		LC		Yes	Yes
HYDROBIIDAE	atuca	Hydrobia	DD		DD		Yes	Yes
HYDROBIIDAE	aulaei	Belgrandiella	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
LYMNAEIDAE	auricularia	Radix	LC		LC			
HYDROBIIDAE	aurorae	Iberhoratia	DD		DD		Yes	Yes
HYDROBIIDAE	austriaca	Bythinella	LC		LC		Yes	
HYDROBIIDAE	austriana	Belgrandiella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	azarum	Islamia	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
HYDROBIIDAE	bacescui	Pseudamnicola	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	bachkovoensis	Belgrandiella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	badensis	Bythinella	NT		NT		Yes	Yes
NERITIDAE	baeticus	Theodoxus	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	bagliviaeformis	Iglica	EN	B1ab(iii)	NE		Yes	
HYDROBIIDAE	baicaliiformis	Stankovicia	CR	B2ab(iii)	NE		Yes	
HYDROBIIDAE	baidashnikovi	Terrestribythinella	DD		DD		Yes	
HYDROBIIDAE	balcanica	Pseudoislamia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	balearica	Mercuria	DD		DD			
LYMNAEIDAE	balthica	Radix	LC		LC			
MOITESSIERIIDAE	barrinae	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	bataleri	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	baudoni	Bythinella	LC		LC		Yes	
HYDROBIIDAE	baudoniana	Mercuria	DD		DD		Yes	Yes
HYDROBIIDAE	bavarica	Bythinella	EN	B2ab(v)	EN	B2ab(v)	Yes	Yes
HYDROBIIDAE	bavarica	Sadleriana	DD		DD		Yes	Yes
HYDROBIIDAE	bayonnensis	Mercuria	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	beckmanni	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	bendidis	Islamia	CR/PE	A2c	CR/PE	A2c	Yes	Yes
HYDROBIIDAE	berenguieri	Avenionia	NT	B1a+2b(iii)	NT		Yes	Yes
HYDROBIIDAE	bertrandi	Bythinella	DD		DD		Yes	Yes
MOITESSIERIIDAE	bessoni	Palaospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	bicarinata	Bythinella	LC		LC		Yes	Yes
ELLOBIIDAE	bidentata	Leucophytia	LC		LC		Yes	Yes
HYDROBIIDAE	bigorrensis	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	blanci	Paladilhopsia	DD		DD		Yes	Yes
HYDROBIIDAE	boetersi	Belgrandiella	CR/PE	B1ab(iii)+2ab(iii)	CR/PE	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	bogensis	Turricaspia	DD		NE			
BITHYNIIDAE	boissieri	Bithynia	DD		DD		Yes	Yes
HYDROBIIDAE	bolei	Phreatica	NT		NT		Yes	Yes
HYDROBIIDAE	bomangiana	Islamia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	bonelliana	Belgrandia	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	bormanni	Bythiospeum	EN	B2ab(iii,v)	EN	B2ab(iii,v)	Yes	Yes

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HYDROBIIDAE	boscae	Belgrandia	NT		NT		Yes	Yes
HYDROBIIDAE	bosniaca	Dabriana	NT		NE		Yes	
HYDROBIIDAE	bosniaca	Islamia	VU	D2	NE		Yes	
HYDROBIIDAE	bosniaca	Paladilhopsi	DD		NE		Yes	
HYDROBIIDAE	bosniaca	Radomaniola	DD		NE		Yes	
HYDROBIIDAE	bosnica	Iglica	DD		NE		Yes	
HYDROBIIDAE	bosnica	Lanzaia	DD		NE		Yes	
HYDROBIIDAE	boui	Fissuria	NT		NT		Yes	Yes
HYDROBIIDAE	bouleti	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	bourguignati	Avenionia	DD		DD		Yes	Yes
HYDROBIIDAE	bourguignati	Bythiospeum	LC		LC		Yes	Yes
HYDROBIIDAE	bourguignati	Islamia	DD		DD		Yes	Yes
MOITESSIERIIDAE	bourguignati	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	braccoensis	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	brachia	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	brandisi	Paladilhopsi	DD		NE		Yes	
HYDROBIIDAE	brandti	Saxurinator	VU	D2	NE		Yes	
HYDROBIIDAE	bressanum	Bythiospeum	LC		LC		Yes	Yes
HYDROBIIDAE	brevis	Avenionia	LC		LC		Yes	Yes
HYDROBIIDAE	brezicensis	Kerkia	VU	D2	VU	D2	Yes	Yes
MOITESSIERIIDAE	brooki	Clameia	DD		DD		Yes	Yes
HYDROBIIDAE	brusinae	Pseudohoratia	VU	D2	NE		Yes	
MOITESSIERIIDAE	buccina	Sardopaladilhia	DD		DD		Yes	Yes
MELANOPSIDAE	buccinoidea	Melanopsis	DD		DD			
HYDROBIIDAE	bulgarica	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	bulgarica	Sadleriana	DD		DD		Yes	Yes
HYDROBIIDAE	bumasta	Belgrandiella	DD		NE		Yes	
HYDROBIIDAE	buresschi	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	buresschi	Paladilhopsi	VU	D2	VU	D2	Yes	Yes
MOITESSIERIIDAE	burgensis	Spiralix	DD		DD		Yes	Yes
MOITESSIERIIDAE	burgundina	Spiralix	DD		DD		Yes	Yes
PLANORBIDAE	calculiformis	Anisus	LC		LC			
HYDROBIIDAE	callosa	Radomaniola	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
MOITESSIERIIDAE	calloti	Moitessieria	VU	D2	VU	D2	Yes	Yes
COCHLIOPIDAE	canariensis	Heleobia	DD		DD		Yes	Yes
BITHYNIIDAE	candiota	Bithynia	NT		NT		Yes	Yes
HYDROBIIDAE	cantabrica	Alzoniella	LC		LC		Yes	Yes
ASSIMINEIDAE	cardonae	Assimineia	DD		DD		Yes	Yes
HYDROBIIDAE	carinata	Ohridohoratia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
PLANORBIDAE	carinatus	Planorbis	LC		LC			
HYDROBIIDAE	carinulata	Bythinella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
MELANOPSIDAE	cariosa	Melanopsis	NT		NT			
HYDROBIIDAE	carpathica	Bythiospeum	DD		DD		Yes	
HYDROBIIDAE	cattaroensis	Hydrobia	DD		NE		Yes	
HYDROBIIDAE	cavernosa	Sadleriana	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	cazioti	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	cebennensis	Bythinella	VU	D2	VU	D2	Yes	Yes
BITHYNIIDAE	cettinensis	Bithynia	VU	B1ab(iii)	NE		Yes	
HYDROBIIDAE	cezairiensis	Graziana	EN	B2ab(iii,iv)	EN	B2ab(iii,iv)	Yes	Yes
HYDROBIIDAE	charpentieri	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	charpyi	Bythiospeum	LC		LC		Yes	
HYDROBIIDAE	chersonica	Turricaspia	DD		NE		Yes	
HYDROBIIDAE	chia	Pseudamnicola	VU	D2	DD		Yes	Yes

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HYDROBIIDAE	chilodia	Litthabitella	LC		LC		Yes	
HYDROBIIDAE	cianensis	Islamia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	cisterciensorum	Bythiospeum	CR	B1ab(iii,v)	CR	B1ab(iii,v)	Yes	Yes
HYDROBIIDAE	clessini	Bythiospeum	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
PLANORBIDAE	clessiniana	Ferrissia	DD		DD			
PLANORBIDAE	clymene	Gyraulus	DD		DD		Yes	Yes
MOITESSIERIIDAE	cocheti	Moitessieria	DD		DD		Yes	Yes
MOITESSIERIIDAE	collellensis	Moitessieria	DD		DD		Yes	Yes
MOITESSIERIIDAE	collieri	Spiralix	DD		DD		Yes	Yes
LYMNAEIDAE	columella	Pseudosuccinea	NA		NA			
PLANORBIDAE	complanatus	Hippeutis	LC		LC			
HYDROBIIDAE	compressa	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	concii	Iglica	LC		LC		Yes	Yes
HYDROBIIDAE	confinis	Pseudamnicola	DD		NE		Yes	
MOITESSIERIIDAE	conica	Paladilhia	LC		LC		Yes	Yes
HYDROBIIDAE	conoidea	Belgrandia	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	conovula	Pseudamnicola	VU	D2	NE		Yes	
VIVIPARIDAE	contectus	Viviparus	LC		LC			
PLANORBIDAE	contortus	Bathynomphalus	LC		LC			
PLANORBIDAE	corneus	Planorbarius	LC		LC			
HYDROBIIDAE	cornucopia	Alzoniella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	coronadoi	Islamia	DD		DD		Yes	Yes
MOITESSIERIIDAE	corsica	Spiralix	CR/PE	B1ab(iii,v)	CR/PE	B1ab(iii,v)	Yes	Yes
LYMNAEIDAE	corvus	Stagnicola	LC		LC			
HYDROBIIDAE	coutagnei	Belgrandia	DD		DD		Yes	Yes
PLANORBIDAE	crenophilus	Gyraulus	EN	B1ab(iii)	NE		Yes	
HYDROBIIDAE	cretensis	Bythinella	DD		DD		Yes	Yes
PLANORBIDAE	crista	Gyraulus	LC		LC			
VALVATIDAE	cristata	Valvata	LC		LC			
HYDROBIIDAE	croatica	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	croatica	Marstoniopsis	VU	D2	VU	D2	Yes	
HYDROBIIDAE	crucis	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	curta	Radomaniola	LC		LC		Yes	
HYDROBIIDAE	cylindracea	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	cylindrica	Bythinella	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	dabriana	Belgrandiella	NT		NE		Yes	
HYDROBIIDAE	dacica	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	dalmatica	Cilgia	DD		NE		Yes	
COCHLIOPIDAE	dalmatica	Heleobia	DD		NE		Yes	
HYDROBIIDAE	danubialis	Hauffenia	VU	B2ab(iii); D2	VU	B2ab(iii); D2	Yes	Yes
NERITIDAE	danubialis	Theodoxus	LC		LC			
HYDROBIIDAE	darrieuxii	Bythinella	DD		DD		Yes	Yes
MELANOPSIDAE	daubebartii	Fagotia	LC		LC		Yes	
HYDROBIIDAE	davisi	Boetersiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	declinata	Hydrobia	DD		NE		Yes	
HYDROBIIDAE	deformata	Plagigeyeria	EN	B1ab(ii,iii)+2ab(ii,iii)	EN	B1ab(ii,iii)+2ab(ii,iii)	Yes	Yes
HYDROBIIDAE	delmastroi	Alzoniella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	deminuta	Hadziella	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
ELLOBIIDAE	denticulata	Myosotella	LC		LC		Yes	Yes
HYDROBIIDAE	depressa	Ohridohauffenia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	diaphanoides	Bythiospeum	NT		NT		Yes	Yes
HYDROBIIDAE	diaphanum	Bythiospeum	NT		NT		Yes	Yes
HYDROBIIDAE	dimidiata	Turricaspia	DD		DD			

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MOITESSIERIIDAE	distorta	Sardopaladilhia	DD		DD		Yes	Yes
COCHLIOPIDAE	dobrogica	Heleobia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	dobrogica	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	dobrostanica	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	dorvani	Bythiospeum	LC		LC		Yes	Yes
HYDROBIIDAE	drimica	Bythinella	LC		NE		Yes	
HYDROBIIDAE	drimica	Ohridohauffenia	EX		NE		Yes	
HYDROBIIDAE	drouetianum	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	dubium	Bythiospeum	CR/PE	B1ab(i,ii,iv)+2ab(i,ii,iv)	CR/PE	B1ab(i,ii,iv)+2ab(i,ii,iv)	Yes	Yes
HYDROBIIDAE	dunalina	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	dunkeri	Bythinella	DD		DD		Yes	Yes
PLANORBIDAE	duryi	Planorbella	NA		NA			
HYDROBIIDAE	dybowski	Xestopyrgula	VU	D2	NE		Yes	
HYDROBIIDAE	edlaueri	Hauffenia	DD		NE		Yes	
HYDROBIIDAE	edlaueri	Lanzaia	DD		NE		Yes	
HYDROBIIDAE	edlaueri	Plagigeyeria	DD		NE		Yes	
HYDROBIIDAE	edlingeri	Hauffenia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	edmundi	Alzoniella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	edmundi	Mercuria	DD		DD		Yes	Yes
HYDROBIIDAE	elephantotus	Lanzaia	DD		NE		Yes	
ASSIMINEIDAE	eliae	Assimineia	LC		LC		Yes	Yes
HYDROBIIDAE	elliptica	Alzoniella	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	elongata	Iglica	VU	D2	NE		Yes	
HYDROBIIDAE	elongata	Radomaniola	CR	B2ab(iii)	NE		Yes	
HYDROBIIDAE	elseri	Bythiospeum	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	emiliana	Mercuria	DD		DD		Yes	Yes
HYDROBIIDAE	ephippiostoma	Hadziella	LC		LC		Yes	Yes
HYDROBIIDAE	epirana	Islamia	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYDROBIIDAE	erythropomatia	Hauffenia	DD		DD		Yes	Yes
MELANOPSIDAE	espero	Fagotia	LC		LC		Yes	
MELANOPSIDAE	etrusca	Melanopsis	EN	B2ab(ii,iii)	EN	B2ab(ii,iii)	Yes	Yes
BITHYNIIDAE	euboeensis	Pseudobithynia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	eurystoma	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	eutrepha	Bythinella	CR/PE	B1ab(ii,iii)	CR/PE	B1ab(ii,iii)	Yes	Yes
HYDROBIIDAE	euxina	Grossuana	LC		LC			
NERITIDAE	euxinus	Theodoxus	LC		DD			
HYDROBIIDAE	excelsior	Bythiospeum	DD		DD		Yes	Yes
HYDROBIIDAE	excessum	Bythiospeum	DD		DD		Yes	Yes
HYDROBIIDAE	exigua	Daphniola	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	exiguum	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	exilis	Heraultiella	VU	B1ab(i,ii,iii)	VU	B1ab(i,ii,iii)	Yes	Yes
HYDROBIIDAE	exilis	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	eximia	Iglica	DD		DD		Yes	Yes
AMNICOLIDAE	expansilabris	Emmericia	VU	D2	NE		Yes	
HYDROBIIDAE	fabrianensis	Alzoniella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	falkneri	Istriana	DD		DD		Yes	Yes
HYDROBIIDAE	falkneri	Pseudamnicola	NT		NT		Yes	Yes
HYDROBIIDAE	falkneri	Pyrgula	DD		DD		Yes	Yes
BITHYNIIDAE	falniowski	Pseudobithynia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	fenieriensis	Alzoniella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	ferrerii	Salenthydrobia	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
HYDROBIIDAE	ferussina	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	fezi	Spathogyna	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes

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HYDROBIIDAE	filocincta	Trachyochridia	CR	B2ab(iii)	NE		Yes	
HYDROBIIDAE	finalina	Alzoniella	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
HYDROBIIDAE	fiumana	Vinodolia	EN	B2ab(ii,iii)	NE		Yes	
HYDROBIIDAE	fluminensis	Sadleriana	LC		LC		Yes	
PLANORBIDAE	fluviatilis	Ancylus	LC		LC			
NERITIDAE	fluviatilis	Theodoxus	LC		LC			
HYDROBIIDAE	fluviatilis	Vinodolia	EN	B2ab(iii)	NE		Yes	
HYDROBIIDAE	fontinalis	Belgrandiella	LC		LC		Yes	
PLANORBIDAE	fontinalis	Gyraulus	EN	B1ab(iii)+2ab(iii)	NE		Yes	
PHYSIDAE	fontinalis	Physa	LC		LC			
MOITESSIERIIDAE	fontsainte	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	forumjuliana	Iglica	LC		LC		Yes	Yes
MOITESSIERIIDAE	foui	Moitessieria	VU	D2	VU	D2	Yes	Yes
COCHLIOPIIDAE	foxianensis	Heleobia	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	francomontanum	Bythiospeum	LC		LC		Yes	
HYDROBIIDAE	fuchsi	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	fuscus	Lithoglyphus	LC		LC		Yes	
LYMNAEIDAE	fuscus	Stagnicola	LC		LC		Yes	
HYDROBIIDAE	gagatinella	Adriohydrobia	LC		NE		Yes	
HYDROBIIDAE	gaiteri	Islamia	NT		NT		Yes	Yes
HYDROBIIDAE	galaica	Alzoniella	CR/PE	B1ab(ii)+2ab(ii)	CR/PE	B1ab(ii)+2ab(ii)	Yes	Yes
HYDROBIIDAE	galerae	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	ganslmayri	Belgrandiella	CR	B1ab(iii,v)+2ab(iii,v)	CR	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
HYDROBIIDAE	garnieri	Bythiospeum	LC		LC		Yes	Yes
HYDROBIIDAE	gasulli	Pseudamnicola	VU	B2ab(iii,iv,v)	VU	B2ab(iii,iv,v)	Yes	Yes
HYDROBIIDAE	gasulli	Tarraconia	CR	B1ab(i,ii,iii,iv,v) c(iv)+2ab(i,ii,iii,iv,v)c(iv)	CR	B1ab(i,ii,iii,iv,v) c(iv)+2ab(i,ii,iii,iv,v)c(iv)	Yes	Yes
HYDROBIIDAE	gatoa	Iberhoratia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	geisserti	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	germaini	Islamia	DD		DD		Yes	Yes
HYDROBIIDAE	geyeri	Bythiospeum	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYDROBIIDAE	gfrast	Belgrandia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	gibba	Belgrandia	NT		NT		Yes	Yes
HYDROBIIDAE	gibberula	Belgrandia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	gibbosa	Bythinella	EX		EX		Yes	Yes
HYDROBIIDAE	ginolensis	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	gittenbergeri	Iglica	DD		NE		Yes	
BITHYNIIDAE	gittenbergeri	Pseudobithynia	DD		DD		Yes	Yes
HYDROBIIDAE	giustii	Iglica	NT		NT		Yes	Yes
HYDROBIIDAE	gjorgjevici	Lyhnidia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
LYMNAEIDAE	glabra	Omphiscola	NT		NT		Yes	Yes
HYDROBIIDAE	gladilini	Plagigeyeria	VU	D2	VU	D2	Yes	
HYDROBIIDAE	globulosa	Belgrandiella	VU	B2ab(iii);D2	VU	B2ab(iii);D2	Yes	Yes
HYDROBIIDAE	globulus	Islamia	NT		NT		Yes	Yes
HYDROBIIDAE	gloeeri	Bythinella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
MOITESSIERIIDAE	gloeeri	Paladilhia	EN	B1ab(iii,iv)	EN	B1ab(iii,iv)	Yes	Yes
MOITESSIERIIDAE	gloriae	Spiralix	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	gluhodolica	Vinodolia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
LYMNAEIDAE	glutinosa	Myxas	LC		LC			
HYDROBIIDAE	glyca	Hydrobia	LC		LC			
HYDROBIIDAE	gmelinii	Caspia	DD		DD		Yes	
HYDROBIIDAE	gonostoma	Bythiospeum	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
HYDROBIIDAE	gracilis	Iglica	VU	B1ab(iii); D2	VU	B1ab(iii); D2	Yes	Yes

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BITHYNIIDAE	graeca	Bithynia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	graeca	Islamia	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
HYDROBIIDAE	graeca	Parabythinella	CR	B1ab(i,iii)	CR	B1ab(i,iii)	Yes	Yes
HYDROBIIDAE	granjaensis	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	gratulabunda	Iglica	CR/PE	B2ab(iii)	CR/PE	B2ab(iii)	Yes	Yes
ASSIMINEIDAE	grayana	Assimineae	LC		LC		Yes	Yes
HYDROBIIDAE	grobbeni	Paladilhopsia	VU	D2	VU	D2	Yes	
HYDROBIIDAE	grochmalickii	Pyrgohydrobia	VU	D2	NE		Yes	
MOITESSIERIIDAE	guadelopensis	Moitessieria	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	guipuzcoa	Plesiella	DD		DD		Yes	Yes
PHYSIDAE	gyrina	Physella	NA		NA			
HYDROBIIDAE	hadei	Islamia	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
HYDROBIIDAE	hadouphylax	Vinodolia	CR	B1ab(iii)	NE		Yes	
HYDROBIIDAE	hadzii	Lyhndia	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	hadzii	Saxurinator	DD		NE		Yes	
HYDROBIIDAE	haesitans	Belgrandiella	LC		LC		Yes	Yes
HYDROBIIDAE	haessleini	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	haicabia	Alzoniella	VU	D2	VU	D2	Yes	Yes
BITHYNIIDAE	hambergerae	Bithynia	DD		NE		Yes	
HYDROBIIDAE	hansboetersi	Bythinella	NT		NT		Yes	Yes
HYDROBIIDAE	hartwigschueti	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	hauffeni	Iglica	NT		NT		Yes	Yes
MOITESSIERIIDAE	heideae	Moitessieria	NT		NT		Yes	Yes
HYDROBIIDAE	heldii	Bythiospeum	VU	D2	VU	D2	Yes	Yes
BITHYNIIDAE	hellenica	Bithynia	DD		DD		Yes	Yes
HYDROBIIDAE	helveticum	Bythiospeum	VU	D2	VU	D2	Yes	Yes
BITHYNIIDAE	hemmeni	Pseudobithynia	DD		DD		Yes	Yes
HYDROBIIDAE	henrici	Islamia	EN	B2ab(iii,iv)	EN	B2ab(iii,iv)	Yes	Yes
HYDROBIIDAE	hershleri	Belgrandiella	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	hessei	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	heussi	Belgrandia	NT		NT		Yes	Yes
HYDROBIIDAE	hinzi	Pseudamnicola	DD		DD		Yes	Yes
VALVATIDAE	hirsutecostata	Valvata	VU	D2	NE		Yes	
MOITESSIERIIDAE	hispanicum	Palaospeum	DD		DD		Yes	Yes
MOITESSIERIIDAE	hofmanni	Spiralix	DD		DD		Yes	Yes
HYDROBIIDAE	hohenackeri	Turcorientalia	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
MELANOPSIDAE	holandrii	Amphimelania	LC		LC		Yes	
HYDROBIIDAE	hungarica	Bythinella	NA		NA		Yes	Yes
HYDROBIIDAE	hungaricum	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	husmanni	Bythiospeum	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	hydrobiopsis	Pseudamnicola	VU	D2	VU	D2	Yes	Yes
PHYSIDAE	hypnorum	Aplexa	LC		LC			
HYDROBIIDAE	iberopyrenaica	Alzoniella	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	illyrica	Iglica	DD		DD		Yes	
ACROLOXIDAE	improvisus	Acroloxus	VU	D2	NE		Yes	
HYDROBIIDAE	insubrica	Marstoniopsis	LC		LC			
PLANORBIDAE	ioanis	Gyraulus	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	ionica	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	islamioides	Sardohoratia	EN	B2ab(ii,iii,iv)	EN	B2ab(ii,iii,iv)	Yes	Yes
HYDROBIIDAE	ismailensis	Turricaspia	VU	B1ab(iii)	VU	B1ab(iii)	Yes	
HYDROBIIDAE	isolata	Bythinella	VU	D2	VU	D2	Yes	Yes
BITHYNIIDAE	italica	Bithynia	LC		LC		Yes	Yes
HYDROBIIDAE	jablanicensis	Pyrgohydrobia	CR	B1ab(iii)+2ab(iii)	NE		Yes	

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HYDROBIIDAE	jadertina	Hauffenia	EN	B2ab(iii)	NE		Yes	
MOITESSIERIIDAE	jablussensis	Paladilhia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	janinensis	Paladilhopsia	CR/PE	B1ab(iii)+2ab(iii)	CR/PE	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	jourdei	Bythinella	VU	B1ab(iii,iv)+2ab(iii,iv);D2	VU	B1ab(iii,iv)+2ab(iii,iv);D2	Yes	Yes
HYDROBIIDAE	junqua	Alzoniella	VU	D2	VU	D2	Yes	Yes
MOITESSIERIIDAE	juvenisanguis	Moitessieria	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	kapelana	Bythinella	VU	D2	NE		Yes	
HYDROBIIDAE	karamani	Iglica	DD		NE		Yes	
HYDROBIIDAE	karamani	Lyhndia	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	karevi	Ohrigocea	EN	B1ab(iii)+2ab(iii)	NE		Yes	
BITHYNIIDAE	kastorias	Bithynia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	kerschneri	Hauffenia	EN	B1ab(iii,v)+2ab(iii,v)	EN	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
BITHYNIIDAE	kirka	Pseudobithynia	VU	D2	NE		Yes	
HYDROBIIDAE	kissdalmae	Hauffenia	DD		DD		Yes	Yes
HYDROBIIDAE	klagenfurtensis	Graziana	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	klecakiana	Horatia	LC		NE		Yes	
HYDROBIIDAE	kleinzellensis	Iglica	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	klemmi	Bythiospeum	EN	B1ab(ii,iii,iv)+2ab(ii,iii,iv)	EN	B1ab(ii,iii,iv)+2ab(ii,iii,iv)	Yes	Yes
HYDROBIIDAE	klemmi	Plagigeyeria	DD		NE		Yes	
VALVATIDAE	klemmi	Valvata	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
HYDROBIIDAE	knipowitchi	Caspia	LC		NE		Yes	
BITHYNIIDAE	kobialkai	Bithynia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	koprivnensis	Belgrandiella	DD		NE		Yes	
HYDROBIIDAE	kosensis	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	kosovica	Terranigra	NT		NT		Yes	
HYDROBIIDAE	kotlusae	Lanzaia	VU	D2	NE		Yes	
HYDROBIIDAE	kreisslorum	Belgrandiella	CR/PE	B1ab(iii)+2ab(iii)	CR/PE	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	krkae	Hadziella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	krupensis	Belgrandiella	DD		NE		Yes	
HYDROBIIDAE	kuesteri	Belgrandiella	DD		DD		Yes	
HYDROBIIDAE	kusceri	Belgrandiella	DD		DD		Yes	Yes
HYDROBIIDAE	kusceri	Kerkia	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	kusceri	Zaumia	CR	B1ab(iii)	NE		Yes	
LYMNAEIDAE	labiata	Radix	LC		LC			
HYDROBIIDAE	labiatum	Bythiospeum	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	labiatus	Saxurinator	CR	B1ab(iii)	NE		Yes	
HYDROBIIDAE	lacheineri	Graziana	LC		LC		Yes	
ACROLOXIDAE	lacustris	Acroloxus	LC		LC			
HYDROBIIDAE	lacustris	Pseudohoratia	VU	D2	NE		Yes	
HYDROBIIDAE	lacustris	Radomaniola	CR	B2ab(iii)	NE		Yes	
HYDROBIIDAE	lacustris	Vinodolia	CR	B1ab(iii)	NE		Yes	
PLANORBIDAE	laevis	Gyraulus	LC		LC			
HYDROBIIDAE	lagari	Islamia	VU	D2	VU	D2	Yes	Yes
LYMNAEIDAE	lagotis	Radix	DD		DD		Yes	Yes
HYDROBIIDAE	lamperti	Bythiospeum	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	langhofferi	Iglica	VU	D2	VU	D2	Yes	
PLANORBIDAE	lapidicus	Ancylus	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	latina	Belgrandia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	latina	Islamia	DD		DD		Yes	
BITHYNIIDAE	leachii	Bithynia	LC		LC		Yes	
HYDROBIIDAE	leontina	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	leruthi	Bythiospeum	LC		LC		Yes	Yes
MOITESSIERIIDAE	lescheriae	Moitessieria	LC		LC		Yes	Yes

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PLANORBIDAE	leucostoma	Anisus	LC		LC			
HYDROBIIDAE	levantina	Chondrobasis	NT		NT		Yes	Yes
HYDROBIIDAE	ligurica	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	ligustica	Avenionia	LC		LC		Yes	Yes
LYMNAEIDAE	lilli	Radix	DD		DD		Yes	Yes
HYDROBIIDAE	lincta	Turricaspia	LC		LC		Yes	
HYDROBIIDAE	lindholmiana	Turricaspia	LC		NE			
MOITESSIERIIDAE	lludrigaensis	Moitessieria	VU	D2	VU	D2	Yes	Yes
MOITESSIERIIDAE	locardi	Moitessieria	LC		LC		Yes	Yes
MELANOPSIDAE	lorcana	Melanopsis	NT		NT		Yes	Yes
HYDROBIIDAE	lousi	Daphniola	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	lucensis	Alzoniella	LC		LC		Yes	Yes
HYDROBIIDAE	lucensis	Pseudamnicola	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	lucidulus	Horatia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	luisi	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	lunensis	Alzoniella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	lunzensis	Bythinella	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	lusitanica	Belgrandia	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	luxurians	Iglica	NT		NT		Yes	Yes
PLANORBIDAE	lychnidicus	Gyraulus	NT		NE		Yes	
HYDROBIIDAE	maasseni	Iglica	DD		DD		Yes	Yes
HYDROBIIDAE	mabilli	Peringia	DD		DD			
HYDROBIIDAE	maceana	Mercuria	DD		DD		Yes	Yes
HYDROBIIDAE	macedonica	Graecoanatolica	EX		EX		Yes	
HYDROBIIDAE	macedonica	Horatia	VU	D2	NE		Yes	
HYDROBIIDAE	macedonica	Ochridopyrgula	NT		NE		Yes	
HYDROBIIDAE	macedonica	Parabythinella	EN	B1ab(iii)	CR	B2ab(iii)	Yes	
ACROLOXIDAE	macedonicus	Acroloxus	CR	B1ab(iii)+2ab(iii)	NE		Yes	
PLANORBIDAE	macedonicus	Planorbis	EN	B1ab(iii)+2ab(iii)	NE		Yes	
COCHLIOPIIDAE	macei	Heleobia	DD		DD		Yes	Yes
HYDROBIIDAE	macrostoma	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	macrostoma	Insignia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	macrostoma	Pseudamnicola	DD		DD		Yes	Yes
VALVATIDAE	macrostoma	Valvata	LC		LC			
HYDROBIIDAE	magna	Bythinella	DD		DD		Yes	
BITHYNIIDAE	majewskyi	Bithynia	DD		DD		Yes	
BITHYNIIDAE	majorcina	Bithynia	DD		DD		Yes	Yes
HYDROBIIDAE	makarovi	Caspia	LC		NE		Yes	
HYDROBIIDAE	malaprespensis	Parabythinella	CR	B1ab(iii)	CR	B1ab(iii)	Yes	
HYDROBIIDAE	malaprespensis	Prespolitorea	CR	B1ab(iii)	CR	B1ab(iii)	Yes	
HYDROBIIDAE	malickyi	Pseudamnicola	VU	D2	VU	D2	Yes	Yes
COCHLIOPIIDAE	maltzani	Heleobia	DD		DD		Yes	Yes
VIVIPARIDAE	mamillatus	Viviparus	DD		DD		Yes	
HYDROBIIDAE	manganellii	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	marginata	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	margritae	Palacanthilhiopsis	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	marianae	Alzoniella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
MOITESSIERIIDAE	marianae	Sardopaladilhia	DD		DD		Yes	Yes
HYDROBIIDAE	mariatheresiaie	Belgrandia	LC		LC		Yes	Yes
HYDROBIIDAE	markovi	Bythinella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
MOITESSIERIIDAE	massoti	Moitessieria	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	matjasici	Vinodolia	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	media	Hauffenia	VU	B1ab(iii)	VU	B1ab(iii)	Yes	

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PLANORBIDAE	meditjensis	Planorbarius	LC		LC			
PLANORBIDAE	meierbrooki	Gyraulus	EN	B1ab(iii)	NE		Yes	
MOITESSIERIIDAE	meijersae	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	meridionalis	Mercuria	EN	B1ab(i,iv)+2ab(i,iv)	EN	B1ab(i,iv)+2ab(i,iv)	Yes	Yes
NERITIDAE	meridionalis	Theodoxus	LC		LC			
HYDROBIIDAE	metarubra	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	michaudi	Bythiospeum	DD		DD		Yes	Yes
HYDROBIIDAE	micherdzinskii	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	microbeliscus	Saxurinator	DD		NE		Yes	
HYDROBIIDAE	microstoma	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	miladinovorum	Ohrigocea	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	mimula	Belgrandiella	CR	B1ab(iii,v)+2ab(iii,v)	CR	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
HYDROBIIDAE	minima	Pauluccinella	LC		LC		Yes	Yes
HYDROBIIDAE	minuscula	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	minuta	Islamia	LC		LC		Yes	
HYDROBIIDAE	minuta	Ohridohauffenia	CR/PE	A2abc; B1ab(i,iii)+2ab(i,iii)	NE		Yes	
HYDROBIIDAE	minuta	Plagigeyeria	DD		DD		Yes	
HYDROBIIDAE	mirnae	Istriania	NT		VU	D2	Yes	
HYDROBIIDAE	moitessieri	Belgrandia	CR/PE	B1ab(iii)+2ab(iii)	CR/PE	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	molcsany	Bythinella	VU	B1ab(iii)+2ab(iii); D2	VU	B1ab(iii)+2ab(iii); D2	Yes	Yes
HYDROBIIDAE	montana	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	montana	Radomaniola	LC		NE		Yes	
BITHYNIIDAE	montenegrina	Bithynia	DD		NE		Yes	
HYDROBIIDAE	montenegrina	Hydrobia	DD		NE		Yes	
VALVATIDAE	montenegrina	Valvata	EN	B1ab(iii)	EN	B1ab(iii)	Yes	
HYDROBIIDAE	montenegrinus	Saxurinator	EN	B2ab(iii)	NE		Yes	
LYMNAEIDAE	montenegrinus	Stagnicola	NT		NE		Yes	
HYDROBIIDAE	montenegrina	Plagigeyeria	CR	B1ab(iii)+2ab(iii)	NE		Yes	
PLANORBIDAE	moquini	Planorbis	LC		LC		Yes	Yes
HYDROBIIDAE	moquiniana	Islamia	LC		LC		Yes	Yes
HYDROBIIDAE	morenoi	Iberhoratia	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
BITHYNIIDAE	mostarensis	Bithynia	DD		NE		Yes	
HYDROBIIDAE	mostarensis	Plagigeyeria	DD		NE		Yes	
HYDROBIIDAE	moussonianum	Bythiospeum	DD		DD		Yes	Yes
HYDROBIIDAE	moussonii	Pseudamnicola	LC		LC		Yes	Yes
MOITESSIERIIDAE	mugae	Moitessieria	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	multiformis	Belgrandiella	CR/PE	B1ab(iii)+2ab(iii)	CR/PE	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	munda	Ginaia	VU	D2	NE		Yes	
HYDROBIIDAE	murita	Alzoniella	DD		DD		Yes	Yes
BITHYNIIDAE	nakeae	Bithynia	DD		DD		Yes	Yes
MOITESSIERIIDAE	nanum	Palaospeum	DD		DD		Yes	Yes
AMNICOLIDAE	narentana	Emmericia	DD		NE		Yes	
VALVATIDAE	naticina	Borysthenia	LC		LC			
HYDROBIIDAE	naticoides	Lithoglyphus	LC		LC			
HYDROBIIDAE	navarrensis	Alzoniella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	navarrensis	Plesiella	DD		DD		Yes	Yes
HYDROBIIDAE	navasiana	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	neaugustensis	Paladilhopsis	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	neglectissima	Falniowska	DD		DD		Yes	
HYDROBIIDAE	nesemanni	Hauffenia	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	newtoni	Hydrobia	DD		NE		Yes	
MOITESSIERIIDAE	nezi	Moitessieria	VU	D2	VU	D2	Yes	Yes

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HYDROBIIDAE	nitida	Plagigeyeria	DD		NE		Yes	
HYDROBIIDAE	nitida	Pontobelgrandiella	VU	D2	VU	D2	Yes	Yes
PLANORBIDAE	nitida	Segmentina	LC		LC			
HYDROBIIDAE	nocki	Bythiospeum	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	noricum	Bythiospeum	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
HYDROBIIDAE	notata	Antibaria	LC		NE		Yes	
MOITESSIERIIDAE	notenboomi	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	nothites	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	novoselensis	Belgrandiella	DD		DD		Yes	Yes
HYDROBIIDAE	novoselensis	Horatia	VU	D2	NE		Yes	
HYDROBIIDAE	ochridana	Pseudohoratia	VU	D2	NE		Yes	
HYDROBIIDAE	ohridana	Gocea	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	ohridana	Strugia	VU	D2	NE		Yes	
MOITESSIERIIDAE	olleri	Moitessieria	NT		NT		Yes	Yes
HYDROBIIDAE	onatensis	Alzoniella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	opaca	Bythinella	LC		LC		Yes	
HYDROBIIDAE	ornata	Ohrigocea	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	orsinii	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	orthodoxus	Saxurinator	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	oshanovae	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	ovetensis	Alzoniella	LC		LC		Yes	Yes
HYDROBIIDAE	padana	Bythinella	DD		NE		Yes	
HYDROBIIDAE	padiraci	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	pageti	Belgrandiella	DD		DD		Yes	
HYDROBIIDAE	pallida	Islamia	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
LYMNAEIDAE	palustris	Stagnicola	LC		LC			
HYDROBIIDAE	pambotis	Pyrgula	DD		DD		Yes	Yes
BITHYNIIDAE	panetolis	Pseudobithynia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	pannonica	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	papukensis	Graziana	NT		NE		Yes	
HYDROBIIDAE	parreysii	Belgrandiella	CR	B1ab(iii,v)+2ab(iii,v)	CR	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
MELANOPSIDAE	parreysii	Melanopsis	CR	B1ab(iii,v)+2ab(iii,v)	CR	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
HYDROBIIDAE	parvula	Avenionia	NT		NT		Yes	Yes
AMNICOLIDAE	patula	Emmericia	LC		LC		Yes	
HYDROBIIDAE	pavlovici	Stankovicia	VU	D2	NE		Yes	
HYDROBIIDAE	pedemontana	Pseudavenionia	LC		LC		Yes	Yes
HYDROBIIDAE	pelerei	Belgrandiella	CR	B2ab(ii)	CR	B2ab(ii)	Yes	Yes
HYDROBIIDAE	pellitica	Alzoniella	LC		LC		Yes	Yes
HYDROBIIDAE	pellucidum	Bythiospeum	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
MELANOPSIDAE	penchinati	Melanopsis	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	penchinati	Pseudamnicola	DD		DD		Yes	Yes
MOITESSIERIIDAE	pequenoensis	Spiralix	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	perrisii	Alzoniella	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	pescei	Arganiella	LC		LC		Yes	Yes
HYDROBIIDAE	pezzolii	Iglica	NT		NT		Yes	Yes
HYDROBIIDAE	pfeifferi	Bythiospeum	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	pieperi	Pseudamnicola	VU	D2	VU	D2	Yes	Yes
LYMNAEIDAE	pinteri	Radix	EN	B1ab(iii)	EN	B1ab(iii)	Yes	
HYDROBIIDAE	piristoma	Islamia	LC		LC		Yes	Yes
HYDROBIIDAE	piroti	Plagigeyeria	DD		DD		Yes	
VALVATIDAE	piscinalis	Valvata	LC		LC			
PLANORBIDAE	piscinarum	Gyraulus	NA		NA			
HYDROBIIDAE	pisolinus	Pseudamnicola	VU	D2	VU	D2	Yes	Yes

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MOITESSIERIIDAE	plagigeyeric	Sardopaladilhia	NT		NT		Yes	Yes
HYDROBIIDAE	plagiostoma	Plagigeyeria	DD		NE		Yes	
HYDROBIIDAE	plana	Hauffenia	NT		NE		Yes	
PLANORBIDAE	planorbis	Planorbis	LC		LC			
HYDROBIIDAE	planospira	Fissuria	NT		NT		Yes	Yes
MOITESSIERIIDAE	pleurotoma	Paladilhia	LC		LC		Yes	Yes
HYDROBIIDAE	polinskii	Ohridohoratia	VU	D2	NE		Yes	
HYDROBIIDAE	pontieuxini	Hydrobia	DD		NE		Yes	
MOITESSIERIIDAE	pontmartiniana	Paladilhia	DD		DD		Yes	Yes
MELANOPSIDAE	praemorsa	Melanopsis	DD		DD			Yes
HYDROBIIDAE	prasinus	Lithoglyphus	DD		DD		Yes	
PLANORBIDAE	presbensis	Planorbis	VU	D2	VU		Yes	
HYDROBIIDAE	prespaensis	Pyrgohydrobia	EN	B1ab(iii)	EN	B1ab(iii)	Yes	
BITHYNIIDAE	prespensis	Bithynia	EN	B1ab(iii)	EN	B1ab(iii)	Yes	
HYDROBIIDAE	pretneri	Paladilhopsi	NT		NE		Yes	
NERITIDAE	prevostianus	Theodoxus	EN	B2ab(ii,iii,iv)	EN	B2ab(ii,iii,iv)	Yes	Yes
HYDROBIIDAE	provincialis	Graziana	EN	B2ab(iii,iv)	EN	B2ab(iii,iv)	Yes	Yes
HYDROBIIDAE	puerkhaueri	Bythiospeum	NT		NT		Yes	Yes
HYDROBIIDAE	pupoides	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	pupula	Graziana	LC		LC		Yes	Yes
HYDROBIIDAE	pusilla	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	pusilla	Islamia	LC		LC		Yes	Yes
MOITESSIERIIDAE	puteana	Spiralix	DD		DD		Yes	Yes
HYDROBIIDAE	putei	Bythiospeum	CR	C2a(i,ii)	CR	C2a(i,ii)	Yes	Yes
HYDROBIIDAE	pygmaea	Ohridohoratia	NT		NE		Yes	
HYDROBIIDAE	pygmaeus	Lithoglyphus	DD		DD		Yes	Yes
HYDROBIIDAE	pyrenaica	Alzoniella	DD		DD		Yes	Yes
HYDROBIIDAE	pyrenaica	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	quadrifoglio	Graziana	VU	D2	NE		Yes	
HYDROBIIDAE	quenstedti	Bythiospeum	LC		LC		Yes	Yes
BITHYNIIDAE	quintanai	Bithynia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	racovitzai	Bythiospeum	DD		DD		Yes	Yes
HYDROBIIDAE	radapalladis	Pezzolia	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
BITHYNIIDAE	radomani	Bithynia	LC		NE		Yes	
HYDROBIIDAE	raehlei	Fissuria	NT		NT		Yes	Yes
HYDROBIIDAE	ramosae	Guadiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	rasini	Bythiospeum	VU	D2	VU	D2	Yes	Yes
COCHLIOPIDAE	rausiana	Heleobia	DD		NE		Yes	
MOITESSIERIIDAE	rayi	Spiralix	LC		LC		Yes	Yes
HYDROBIIDAE	razelmiana	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	reisalpense	Bythiospeum	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
HYDROBIIDAE	relicta	Iglica	DD		NE		Yes	
LYMNAEIDAE	relicta	Radix	LC		NE		Yes	
VALVATIDAE	relicta	Valvata	VU	D2	NE		Yes	
BITHYNIIDAE	renei	Pseudobithynia	DD		DD		Yes	Yes
LYMNAEIDAE	reticulata	Omphiscola	DD		DD		Yes	Yes
HYDROBIIDAE	reyniesii	Bythinella	LC		LC		Yes	
VALVATIDAE	rhabdota	Valvata	NT		NE		Yes	
HYDROBIIDAE	rhenanum	Bythiospeum	LC		LC		Yes	
HYDROBIIDAE	rhodopensis	Radomaniola	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	roberti	Avenionia	NT		NT		Yes	Yes
HYDROBIIDAE	robiciana	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	robiciana	Paladilhopsi	LC		LC		Yes	

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MOITESSIERIIDAE	robresia	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	robusta	Belgrandiella	DD		DD		Yes	Yes
HYDROBIIDAE	robusta	Plagigeyeria	DD		NE		Yes	
MOITESSIERIIDAE	rolandiana	Moitessieria	LC		LC		Yes	Yes
HYDROBIIDAE	rolani	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	rolani	Tarraconia	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	rondelaudi	Bythinella	VU	D2	VU	D2	Yes	Yes
MOITESSIERIIDAE	roselloi	Paladilhia	VU	D2	VU	D2	Yes	Yes
PLANORBIDAE	rossmaessleri	Gyraulus	LC		LC		Yes	
HYDROBIIDAE	rotonda	Ohridohauffenia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	roubionensis	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	rubiginosa	Bythinella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	rudnicae	Hadziella	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	rudnicae	Lanzaia	NT		NE		Yes	
HYDROBIIDAE	rufescens	Bythinella	LC		LC		Yes	Yes
HYDROBIIDAE	sadleriana	Sadleriana	LC		LC		Yes	
HYDROBIIDAE	samecana	Bythinella	DD		NE		Yes	
HYDROBIIDAE	samuili	Ohrigocea	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	sanctinaumi	Ohridohauffenia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	sanctinaumi	Pyrgohydrobia	VU	D2	NE		Yes	
HYDROBIIDAE	sanctizaumi	Zaumia	CR/PE	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	sandbergeri	Bythiospeum	DD		DD		Yes	Yes
HYDROBIIDAE	sarahae	Mercuria	CR	B2ab(ii,iii,iv)	CR	B2ab(ii,iii,iv)	Yes	Yes
NERITIDAE	saucyi	Theodoxus	DD		DD		Yes	Yes
VALVATIDAE	saucyi	Valvata	NT		NT			
HYDROBIIDAE	savinica	Lanzaioopsis	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	saxatilis	Belgrandiella	LC		LC		Yes	Yes
HYDROBIIDAE	saxigenum	Bythiospeum	VU	D2	VU	D2	Yes	Yes
PLANORBIDAE	scalariformis	Ancylus	VU	D2	NE		Yes	
HYDROBIIDAE	schleschi	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	schlickumi	Dianella	CR/PE	B1ab(i,iii)	CR/PE	B1ab(i,iii)	Yes	Yes
HYDROBIIDAE	schlickumi	Saxurinator	DD		DD		Yes	
HYDROBIIDAE	schmidtii	Sadleriana	LC		DD		Yes	
HYDROBIIDAE	schuelei	Milesiana	NT		NT		Yes	Yes
BITHYNIIDAE	schwabii	Bithynia	DD		DD		Yes	
HYDROBIIDAE	sciaccaensis	Pseudamnicola	DD		DD		Yes	Yes
HYDROBIIDAE	scutarica	Vinodolia	EN	B1ab(iii)	NE		Yes	
MOITESSIERIIDAE	seminiana	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	seminula	Turcorientalia	LC		LC		Yes	Yes
HYDROBIIDAE	senefelderi	Bythiospeum	DD		DD		Yes	Yes
MOITESSIERIIDAE	septentrionalis	Palaospeum	DD		DD		Yes	Yes
HYDROBIIDAE	serbica	Paladilhiopsis	NT		NE		Yes	
HYDROBIIDAE	serborientalis	Bythinella	DD		NE		Yes	
MOITESSIERIIDAE	servaini	Moitessieria	DD		DD		Yes	Yes
HYDROBIIDAE	servainiana	Bythinella	DD		DD		Yes	Yes
PLANORBIDAE	shasi	Gyraulus	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	sidariensis	Iglica	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	sigestra	Alzoniella	NT		NT		Yes	Yes
HYDROBIIDAE	silviae	Belgrandia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	similis	Mercuria	LC		LC		Yes	Yes
HYDROBIIDAE	simoniana	Bythinella	LC		LC		Yes	Yes
MOITESSIERIIDAE	simoniana	Moitessieria	LC		LC		Yes	Yes
BITHYNIIDAE	skadarskii	Bithynia	EN	B1ab(iii)	NE		Yes	

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HYDROBIIDAE	sketi	Dalmatella	CR	B2ab(iii)	NE		Yes	
HYDROBIIDAE	sketi	Hadziella	VU	D2	NE		Yes	
HYDROBIIDAE	sketi	Saxurinator	EN	B2ab(iii)	NE		Yes	
HYDROBIIDAE	skradinensis	Lanzaia	CR	B1ab(iii)+2ab(iii)	NE		Yes	
LYMNAEIDAE	skutaris	Radix	EN	B1ab(iii)	NE		Yes	
HYDROBIIDAE	slavonica	Graziana	VU	D2	NE		Yes	
HYDROBIIDAE	slovenica	Alzoniella	LC		LC		Yes	Yes
HYDROBIIDAE	solida	Paladilhopsia	DD		NE		Yes	
HYDROBIIDAE	somiedoensis	Alzoniella	VU	D2	VU	D2	Yes	Yes
COCHLIOPIIDAE	spinellii	Heleobia	EX		EX		Yes	Yes
HYDROBIIDAE	spirata	Islamia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	spirata	Pseudamnicola	LC		LC			Yes
HYDROBIIDAE	spiridoni	Bracenicia	EN	B1ab(iii)+2ab(iii)	NE		Yes	
PLANORBIDAE	spirorbis	Anisus	LC		LC			
LYMNAEIDAE	stagnalis	Lymnaea	LC		LC			
COCHLIOPIIDAE	stagnorum	Heleobia	LC		LC			
PLANORBIDAE	stankovici	Gyraulus	EN	B1ab(iii)	EN	B1ab(iii)	Yes	
HYDROBIIDAE	stankovici	Lyhndia	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	stankovici	Micropyrgula	VU	D2	NE		Yes	
HYDROBIIDAE	stankovici	Neofossarulus	VU	D2	NE		Yes	
HYDROBIIDAE	stankovici	Ohrigocea	EN	B1ab(iii)+2ab(iii)	NE		Yes	
COCHLIOPIIDAE	steindachneri	Heleobia	DD		DD		Yes	Yes
VALVATIDAE	stenotrema	Valvata	NT		NE		Yes	
HYDROBIIDAE	sterkianum	Bythiospeum	EN	B2ab(iii,v)	EN	B2ab(iii,v)	Yes	Yes
HYDROBIIDAE	stochi	Plagigeyeria	VU	D2	VU	D2	Yes	Yes
PLANORBIDAE	stossichi	Hippeutis	DD		NE		Yes	
PLANORBIDAE	strauchianus	Anisus	DD		NE		Yes	
COCHLIOPIIDAE	streletzkensis	Heleobia	DD		NE		Yes	
PLANORBIDAE	striatus	Ancylus	DD		DD		Yes	Yes
VALVATIDAE	studerii	Valvata	LC		LC			
HYDROBIIDAE	sturanyi	Chilopyrgula	NT		NE		Yes	
HYDROBIIDAE	sturanyi	Ohridohoratia	NT		NE		Yes	
HYDROBIIDAE	sturmi	Boetersiella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	styriaca	Belgrandiella	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	subcarinata	Hauffenia	NT		NT		Yes	Yes
MOITESSIERIIDAE	subdistorta	Sardopaladilhia	DD		DD		Yes	Yes
HYDROBIIDAE	sublitoralis	Lyhndia	DD		NE		Yes	
HYDROBIIDAE	sublitoralis	Ohridohauffenia	DD		NE		Yes	
HYDROBIIDAE	subpiscinalis	Hauffenia	LC		LC		Yes	Yes
HYDROBIIDAE	substricta	Belgrandiella	VU	D2	VU	D2	Yes	Yes
NERITIDAE	subterrelictus	Theodoxus	EN	B2ab(iii)	NE		Yes	
HYDROBIIDAE	suevicum	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	sulcata	Sardohoratia	CR/PE	B2ab(iii)	CR/PE	B2ab(iii)	Yes	Yes
HYDROBIIDAE	supercarinata	Sadleriana	VU	D2	NE		Yes	
HYDROBIIDAE	superior	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	tachoensis	Mercuria	DD		DD		Yes	Yes
PLANORBIDAE	tapirulus	Ancylus	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	tarae	Paladilhopsia	DD		NE		Yes	
HYDROBIIDAE	targoniana	Belgrandia	DD		DD		Yes	Yes
HYDROBIIDAE	taxisi	Bythiospeum	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYDROBIIDAE	tellinii	Hauffenia	LC		LC		Yes	Yes
HYDROBIIDAE	tellinii	Iglica	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
BITHYNIIDAE	tentaculata	Bithynia	LC		LC			

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LYMNAEIDAE	terebra	Catascopia	LC		NT			
HYDROBIIDAE	terveri	Bythiospeum	DD		DD		Yes	Yes
ACROLOXIDAE	tetensi	Acroloxus	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	thermalis	Belgrandia	LC		LC		Yes	Yes
HYDROBIIDAE	thermalis	Hadziella	DD		DD		Yes	
HYDROBIIDAE	thessalica	Paladilhopsia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	thiesseana	Dianella	CR	B1ab(ii,iii)+2ab(ii,iii)	CR	B1ab(ii,iii)+2ab(ii,iii)	Yes	Yes
HYDROBIIDAE	thracica	Grossuana	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYDROBIIDAE	torifera	Belgrandia	VU	B1ab(iii); D2	VU	B1ab(iii); D2	Yes	
HYDROBIIDAE	tovunica	Hauffenia	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	transsylvanica	Bythiospeum	NT		NT		Yes	Yes
NERITIDAE	transversalis	Theodoxus	EN	B2ab(ii,iii,iv)	EN	B2ab(ii,iii,iv)	Yes	
PLANORBIDAE	trapezoides	Gyraulus	EN	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	tribunicae	Plagigeyeria	CR	B1ab(iii)	NE		Yes	
MELANOPSIDAE	tricarinata	Melanopsis	LC		LC		Yes	Yes
HYDROBIIDAE	trichoniana	Islamia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	trichonica	Trichonia	CR	B2ab(i,iii)	CR	B2ab(i,iii)	Yes	Yes
BITHYNIIDAE	trichonis	Pseudobithynia	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
HYDROBIIDAE	trinitatis	Graziana	EN	B2ab(iii,iv)	EN	B2ab(iii,iv)	Yes	Yes
HYDROBIIDAE	triton	Turricaspia	DD		NE			
COCHLIOPIDAE	tritonum	Heleobia	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
PLANORBIDAE	trivolvus	Helisoma	NA		NA			
HYDROBIIDAE	troglobia	Pseudamnicola	LC		NE		Yes	
BITHYNIIDAE	troscheli	Bithynia	LC		LC			
HYDROBIIDAE	troyana	Bythinella	DD		DD		Yes	Yes
LYMNAEIDAE	truncatula	Galba	LC		LC			
PLANORBIDAE	truncatus	Bulinus	LC		NA			
HYDROBIIDAE	tschapecki	Bythiospeum	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
THIARIDAE	tuberculatus	Melanoides	LC		LC			
LYMNAEIDAE	turricula	Stagnicola	LC		LC			
HYDROBIIDAE	turriculata	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	turrita	Costellina	CR	B1ab(iii)+2ab(iii)	NE		Yes	
HYDROBIIDAE	turritum	Bythiospeum	CR/PE	B2ab(v)	CR/PE	B2ab(v)	Yes	Yes
HYDROBIIDAE	ulvae	Peringia	LC		LC			
HYDROBIIDAE	umbilicata	Boleana	VU	D2	VU	D2	Yes	Yes
MOITESSIERIIDAE	umbilicata	Paladilhia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	utriculus	Bythinella	LC		LC		Yes	Yes
MOITESSIERIIDAE	valenciana	Spiralix	EN	B2ab(i,ii,iii,iv)	EN	B2ab(i,ii,iii,iv)	Yes	Yes
NERITIDAE	valentinus	Theodoxus	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
HYDROBIIDAE	vallei	Bythiospeum	NT		NT		Yes	Yes
HYDROBIIDAE	valvataeformis	Islamia	DD		NE		Yes	
HYDROBIIDAE	valvataeformis	Prespolitorea	CR	B2ab(iii)	CR	B2ab(iii)	Yes	
HYDROBIIDAE	variabilis	Turricaspia	DD		DD			
HYDROBIIDAE	varica	Belgrandia	CR/PE	A2a	CR/PE	A2a	Yes	Yes
NERITIDAE	varius	Theodoxus	LC		LC		Yes	
HYDROBIIDAE	vegorriticola	Graecoanatolica	CR	B1ab(i,iii,iv)c(iv)	CR	B1ab(i,iii,iv)c(iv)	Yes	Yes
HYDROBIIDAE	velkovrhi	Iglica	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
AMNICOLIDAE	ventricosa	Emmericia	VU	D2	NE		Yes	
HYDROBIIDAE	ventrosa	Hydrobia	LC		LC			
HYDROBIIDAE	vervierii	Palacanthilhiopsis	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYDROBIIDAE	vesontiana	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	vidrovani	Vinodolia	LC		NE		Yes	
HYDROBIIDAE	vimperei	Bythinella	VU	B1ab(iii,iv)+2ab(iii,iv)	VU	B1ab(iii,iv)+2ab(iii,iv)	Yes	Yes

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
HYDROBIIDAE	vindilica	Mercuria	EN	B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)	EN	B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)	Yes	Yes
HYDROBIIDAE	virei	Paladilhopsia	LC		LC		Yes	Yes
HYDROBIIDAE	virescens	Pseudamnicola	DD		NE		Yes	
HYDROBIIDAE	viridis	Bythinella	EN	B1ab(iii,iv)+2ab(iii,iv)	EN	B1ab(iii,iv)+2ab(iii,iv)	Yes	Yes
HYDROBIIDAE	vitrea	Hydrobia	LC		LC		Yes	
MOITESSIERIIDAE	vitrea	Spiralix	NT		NT		Yes	Yes
VIVIPARIDAE	viviparus	Viviparus	LC		LC			
HYDROBIIDAE	vjetrenicae	Lanzaia	VU	B2ab(iii); D2	NE		Yes	
HYDROBIIDAE	vjetrenicae	Narentiana	EN	B2ab(iii)	NE		Yes	
HYDROBIIDAE	vobarnensis	Iglica	NT		NT		Yes	Yes
PLANORBIDAE	vortex	Anisus	LC		LC			
PLANORBIDAE	vorticulus	Anisus	NT		NT			
HYDROBIIDAE	vrbasensis	Graziana	DD		NE		Yes	
HYDROBIIDAE	vrvasi	Marstoniopsis	CR	B2ab(iii)	NE		Yes	
HYDROBIIDAE	vriissiana	Graecorientalia	CR	B2ab(iii,iv)	CR	B2ab(iii,iv)	Yes	Yes
HYDROBIIDAE	waegelei	Bythiospeum	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	wagneri	Hauffenia	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	wagneri	Stankovicia	VU	D2	NE		Yes	
BITHYNIIDAE	walderdorffii	Bithynia	DD		NE		Yes	
HYDROBIIDAE	walkeri	Bythinella	DD		DD		Yes	Yes
HYDROBIIDAE	wawrai	Belgrandiella	EN	B2ab(iii)	VU	D2	Yes	Yes
HYDROBIIDAE	wawrzineki	Bythinella	VU	D2	VU	D2	Yes	Yes
BITHYNIIDAE	westerlundii	Pseudobithynia	NT		NT		Yes	Yes
HYDROBIIDAE	wiaaiglica	Bythiospeum	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	wienerwaldensis	Hauffenia	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
MOITESSIERIIDAE	wienini	Henrigiardia	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
HYDROBIIDAE	wolffi	Arganiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	wolfischeri	Iglica	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYDROBIIDAE	zagaraensis	Belgrandiella	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	zaschevi	Cavernisa	VU	D2	VU	D2	Yes	Yes
HYDROBIIDAE	zermanica	Belgrandiella	VU	D2	NE		Yes	
HYDROBIIDAE	zermanica	Islamia	CR/PE	B1ab(iii)	NE		Yes	
BITHYNIIDAE	zeta	Bithynia	EN	B1ab(iii)	NE		Yes	
HYDROBIIDAE	zetaevallis	Vinodolia	DD		NE		Yes	
HYDROBIIDAE	zetaprotogona	Plagigeyeria	EN	B2ab(ii,iii)	NE		Yes	
HYDROBIIDAE	zilchi	Belgrandia	DD		DD		Yes	Yes
BITHYNIIDAE	zogari	Pseudobithynia	DD		DD		Yes	Yes
HYDROBIIDAE	zopissa	Mercuria	NT		NT		Yes	Yes
HYDROBIIDAE	zrmanjae	Tanousia	CR/PE	B1ab(iii)	NE		Yes	
HYDROBIIDAE	zyvionteki	Bythinella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes

* Species were considered to be Not Applicable (NA) if they were judged to be of marginal occurrence in the region. Species were regarded as of marginal occurrence if it was estimated that less than 1% of their global range lies within Europe and if the European populations are not disjunct of the main species range.

Appendix 2. Red List status of European terrestrial Molluscs

Due to the evolving taxonomy, the species are listed alphabetically by species name and not by genus name.

Threatened species (either at the European or at the EU 27 level) are highlighted in colour. If the IUCN Red List Category is different at the European and

at the EU 27 level, the highest category has been highlighted.

Key: black = Extinct (EX), red= Critically Endangered (CR) or Critically Endangered, Possibly Extinct (CR/PE), orange = Endangered (EN), yellow = Vulnerable (VU).

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
LAURIIDAE	abbreviata	Leiostylia	CR/PE	B2ab(iii)	CR/PE	B2ab(iii)	Yes	Yes
HYGROMIIDAE	abjectus	Caseolus	LC		LC		Yes	Yes
ENIDAE	abundans	Mastus	LC		LC		Yes	Yes
DIPLOMMATINIDAE	achaicum	Cochlostoma	LC		LC		Yes	Yes
HELICIDAE	achates	Chilostoma	NT		NT		Yes	Yes
HELICIDAE	acropachia	Tacheocampylaea	EN	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	EN	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	Yes	Yes
HELICIDAE	acrotricha	Chilostoma	NT		NT		Yes	Yes
HYGROMIIDAE	actinophora	Actinella	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
VALLONIIDAE	aculeata	Acanthinula	LC		LC			
COCHLICELLIDAE	acuta	Cochlicella	LC		LC			
DIPLOMMATINIDAE	acutum	Cochlostoma	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	adamii	Cochlostoma	LC		LC		Yes	Yes
HELICIDAE	adelozona	Chilostoma	VU	B1ab(iv)	VU	B1ab(iv)	Yes	
HYGROMIIDAE	adolphi	Xerosecta	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	adoptata	Xerotricha	LC		LC		Yes	Yes
HELICIDAE	aethiops	Arianta	LC		LC		Yes	
DIPLOMMATINIDAE	affine	Cochlostoma	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	aginnica	Cernuella	LC		LC		Yes	Yes
HYGROMIIDAE	akrotirica	Xeropicta	LC		LC		Yes	Yes
ENIDAE	alabastrinus	Napaeus	LC		LC		Yes	Yes
HELICIDAE	albanograeca	Chilostoma	LC		LC		Yes	
HELICIDAE	albescens	Helix	LC		LC		Yes	
VITRINIDAE	albopalliatata	Plutonia	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
DIPLOMMATINIDAE	alleryanum	Cochlostoma	LC		LC		Yes	Yes
HELICIDAE	alonensis	Iberus	NT		NT		Yes	Yes
VERTIGINIDAE	alpestris	Vertigo	LC		LC			
PUPILLIDAE	alpicola	Pupilla	LC		LC		Yes	
HYGROMIIDAE	alpicola	Trochulus	DD		NE		Yes	
ENIDAE	alpicolus	Mastus	LC		LC		Yes	Yes
TRISSEXODONTIDAE	altamirai	Suboestophora	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	alticola	Xeromunda	LC		LC		Yes	Yes
CHONDRINIDAE	altimirai	Chondrina	NT		NT		Yes	Yes
HYGROMIIDAE	amanda	Cernuella	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HELICIDAE	ambrosi	Chilostoma	NT		NT		Yes	Yes
ENIDAE	amenazada	Mastus	VU	D2	VU	D2	Yes	Yes
HELICIDAE	amorgia	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	amphiconus	Xerocrassa	LC		LC		Yes	Yes

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
ENIDAE	anaga	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	anaglyptica	Actinella	NT		NT		Yes	Yes
HELICIDAE	anatolica	Helix	DD		DD		Yes	
HELICIDAE	andalusica	Theba	DD		DD		Yes	Yes
HYGROMIIDAE	andrius	Metafruticicola	LC		LC		Yes	Yes
HELICODONTIDAE	angigyra	Helicodonta	LC		LC		Yes	
VITRINIDAE	angulosa	Plutonia	CR	B1ab(iii,iv)+2ab(iii,iv)	CR	B1ab(iii,iv)+2ab(iii,iv)	Yes	Yes
HELICIDAE	angustus	Iberus	LC		LC		Yes	Yes
VERTIGINIDAE	angustior	Vertigo	VU	A2ac+3c	VU	A2ac+3c		
HYGROMIIDAE	aniliensis	Monacha	LC		LC		Yes	Yes
VITRINIDAE	annularis	Oligolimax	LC		LC			
DIPLOMMATINIDAE	anomphale	Cochlostoma	LC		LC		Yes	Yes
VERTIGINIDAE	antivertigo	Vertigo	LC		LC			
HYGROMIIDAE	antonellae	Nienhuisiella	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
VITRINIDAE	apatelus	Oligolimax	NT		NE		Yes	
HELICIDAE	apertus	Cantareus	LC		LC		Yes	
HELICIDAE	apfelbecki	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	apicina	Xerotricha	LC		LC			
DIPLOMMATINIDAE	apricum	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	aradasii	Cernuella	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
LAURIIDAE	arborea	Leiostyla	VU	D2	VU	D2	Yes	Yes
HELICIDAE	arbustorum	Arianta	LC		LC		Yes	
HELICIDAE	arcadica	Chilostoma	LC		LC		Yes	Yes
CHONDRINIDAE	arcadica	Chondrina	LC		LC			
HYGROMIIDAE	arcta	Actinella	LC		LC		Yes	Yes
VERTIGINIDAE	arctica	Vertigo	NT		NT		Yes	
VERTIGINIDAE	arcyensis	Truncatellina	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HELICIDAE	ardica	Cattania	NT		NT		Yes	Yes
HYGROMIIDAE	arganica	Candidula	LC		LC		Yes	Yes
HELICIDAE	argentellei	Chilostoma	LC		LC		Yes	Yes
COCHLICELLIDAE	argineguinensis	Monilearia	CR	B2ab(ii,iii)	CR	B2ab(ii,iii)	Yes	Yes
CHONDRINIDAE	arigonis	Chondrina	NT		NT		Yes	Yes
HYGROMIIDAE	arigonis	Xerosecta	LC		LC		Yes	
HELICIDAE	arinagae	Theba	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
ARGNIDAE	armata	Agardiella	LC		LC		Yes	
HYGROMIIDAE	armitageana	Actinella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	arridens	Actinella	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
CHONDRINIDAE	ascendens	Chondrina	LC		LC		Yes	Yes
HELICIDAE	asemnis	Helix	LC		LC		Yes	
VERTIGINIDAE	aspera	Columella	LC		LC			
HELICIDAE	aspersum	Cornu	LC		LC			
ORCULIDAE	astirakiensis	Orculella	LC		LC		Yes	Yes
DIPLOMMATINIDAE	asturicum	Cochlostoma	NT		NT		Yes	Yes
HYGROMIIDAE	asturiensis	Cryptosaccus	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	atacis	Monacha	LC		LC		Yes	Yes
HYGROMIIDAE	ataxiacus	Trochulus	NT		NT		Yes	Yes
CHONDRINIDAE	ateni	Abida	VU	D2	VU	D2	Yes	Yes
ENIDAE	athensis	Mastus	LC		LC		Yes	
VITRINIDAE	atlantica	Plutonia	LC		LC		Yes	Yes
ENIDAE	atlanticus	Napaeus	LC		LC		Yes	Yes
VERTIGINIDAE	atomus	Truncatellina	DD		DD		Yes	Yes
CHONDRINIDAE	attenuata	Abida	LC		LC		Yes	Yes

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
HYGROMIIDAE	attrita	Discula	NT		NT		Yes	Yes
DIPLOMMATINIDAE	auritum	Cochlostoma	LC		NE		Yes	
ORCULIDAE	austeniana	Pagodulina	DD		DD		Yes	
ORCULIDAE	austriaca	Orcula	LC		LC		Yes	Yes
HYGROMIIDAE	aturica	Monacha	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
ENIDAE	avaloensis	Napaeus	NT		NT		Yes	Yes
CHONDRINIDAE	avenacea	Chondrina	LC		LC		Yes	
VALLONIIDAE	azorica	Acanthinula	LC		LC		Yes	Yes
HYGROMIIDAE	azorica	Leptaxis	LC		LC		Yes	Yes
VITRINIDAE	baccettii	Vitrinobrachium	NT		NT		Yes	Yes
HELICIDAE	bacchica	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	bacescui	Monachoides	LC		LC		Yes	Yes
ENIDAE	badiusus	Napaeus	LC		LC		Yes	Yes
ENIDAE	baeticatus	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	baixoensis	Caseolus	VU	D2	VU	D2	Yes	Yes
ENIDAE	bajamarensis	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	bakowskii	Petasina	LC		LC		Yes	
ARGNIDAE	banatica	Agardhiella	NT		NT		Yes	Yes
HELICIDAE	banatica	Drobacia	DD		DD		Yes	
ACICULIDAE	banatica	Platyla	LC		LC		Yes	
COCHLICELLIDAE	barbara	Cochlicella	LC		LC			
HELICODONTIDAE	barbata	Lindholmiola	LC		LC		Yes	Yes
TRISSEXODONTIDAE	barbula	Oestophora	LC		LC		Yes	Yes
HYGROMIIDAE	barceloi	Xerocrassa	LC		LC		Yes	Yes
ENIDAE	barquini	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	bathytera	Pseudoxerophila	LC		LC		Yes	Yes
HYGROMIIDAE	becasis	Montserratina	CR/PE	B2ab(iii)	CR/PE	B2ab(iii)	Yes	Yes
ENIDAE	bechi	Napaeus	LC		LC		Yes	Yes
ENIDAE	beguirae	Napaeus	NT		NT		Yes	Yes
VITRINIDAE	behni	Plutonia	LC		LC		Yes	Yes
ENIDAE	beieri	Chondrula	LC		LC		Yes	Yes
HYGROMIIDAE	belemensis	Candidula	LC		LC		Yes	Yes
HELICIDAE	bellardii	Assyriella	DD		DD		Yes	Yes
ACICULIDAE	benecke	Acicula	NT		NT		Yes	Yes
ACICULIDAE	benoitii	Acicula	VU	D2	VU	D2	Yes	Yes
ENIDAE	bergeri	Chondrula	DD		DD		Yes	Yes
CHONDRINIDAE	bergomensis	Chondrina	NT		NT		Yes	Yes
HELICIDAE	berkeleyi	Hemicycla	DD		DD		Yes	Yes
HYGROMIIDAE	berninii	Ichnusotricha	LC		LC		Yes	Yes
ARGNIDAE	beroni	Speleodentorcula	VU	D2	VU	D2	Yes	Yes
ENIDAE	bertheloti	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	berthelotii	Canariella	LC		LC		Yes	Yes
HYGROMIIDAE	berytensis	Metafruticicola	LC		LC		Yes	
HELICIDAE	bethencourtiana	Hemicycla	NT		NT		Yes	Yes
ARGNIDAE	biarmata	Agardhiella	LC		NE		Yes	
ENIDAE	bicallosa	Eubrepululus	LC		LC		Yes	
HYGROMIIDAE	bicarinata	Hystriella	NT		NT		Yes	Yes
HYGROMIIDAE	biconicus	Trochulus	EN	B1ab(ii,iii,iv)	NE		Yes	
DIPLOMMATINIDAE	bicostulatum	Cochlostoma	LC		LC		Yes	Yes
ENIDAE	bidens	Brepulopsis	LC		NE		Yes	
HELICIDAE	bidentalis	Hemicycla	LC		LC		Yes	Yes
HYGROMIIDAE	bidentata	Perforatella	LC		LC		Yes	
ARGNIDAE	bielzi	Argna	LC		LC		Yes	

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
ENIDAE	bielzi	Mastus	LC		LC		Yes	
HYGROMIIDAE	bielzi	Petasina	LC		LC		Yes	
HYGROMIIDAE	bierzona	Xerotricha	VU	D2	VU	D2	Yes	Yes
CHONDRINIDAE	bigerrensis	Abida	LC		LC		Yes	Yes
CHONDRINIDAE	bigorriensis	Chondrina	LC		LC		Yes	Yes
PUPILLIDAE	bigranata	Pupilla	DD		DD		Yes	
HYGROMIIDAE	bimbachensis	Canariella	VU	D2	VU	D2	Yes	Yes
ARGNIDAE	biplicata	Argna	LC		LC		Yes	Yes
VITRINIDAE	blanci	Phenacolimax	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
VITRINIDAE	blaueri	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	bodoni	Schileykiella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	bofilliana	Montserratina	NT		NT		Yes	Yes
HYGROMIIDAE	bolenensis	Helicella	DD		DD		Yes	Yes
VITRINIDAE	bonellii	Semilimacella	LC		LC		Yes	
HELICIDAE	borealis	Helix	DD		DD		Yes	Yes
TRISSEXODONTIDAE	boscae	Suboestophora	LC		LC		Yes	Yes
ENIDAE	boucheti	Napaeus	VU	D2	VU	D2	Yes	Yes
ARGNIDAE	bourguignatiana	Argna	VU	D2	VU	D2	Yes	Yes
ACICULIDAE	bourguignatiana	Renea	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
DIPLOMMATINIDAE	braueri	Cochlostoma	LC		NE		Yes	
CHONDRINIDAE	braunii	Granaria	LC		LC		Yes	
HELICIDAE	brenskai	Chilostoma	LC		LC		Yes	Yes
VITRINIDAE	breve	Vitrinobrachium	LC		LC			
VITRINIDAE	brevispira	Plutonia	LC		LC		Yes	Yes
VITRINIDAE	brumalis	Plutonia	LC		LC		Yes	Yes
ORCULIDAE	bulgarica	Orculella	CR	B2ab(i,ii,iii,iv,v)	CR	B2ab(i,ii,iii,iv,v)		
HYGROMIIDAE	bulverii	Discula	CR	B2ab(iii,v)	CR	B2ab(iii,v)	Yes	Yes
ENIDAE	butoti	Mastus	LC		LC		Yes	Yes
TRISSEXODONTIDAE	buvinierei	Oestophorella	LC		LC		Yes	Yes
HELICIDAE	byshekensis	Chilostoma	LC		LC		Yes	
HYGROMIIDAE	caelatus	Trochulus	NT		NE		Yes	
COCHLICELLIDAE	caementitia	Monilearia	LC		LC		Yes	Yes
ARGNIDAE	caesa	Agardhiella	LC		LC		Yes	Yes
LAURIIDAE	calathiscus	Leiostyla	NT		NT		Yes	Yes
HYGROMIIDAE	calcigena	Discula	LC		LC		Yes	Yes
HYGROMIIDAE	calculus	Caseolus	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	caldeirarum	Leptaxis	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
VERTIGINIDAE	callicratis	Truncatellina	LC		LC			
ACICULIDAE	callostoma	Platyla	LC		LC		Yes	Yes
TRISSEXODONTIDAE	calpeana	Oestophora	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)		
CHONDRINIDAE	calpica	Chondrina	LC		LC			
HYGROMIIDAE	calvus	Caseolus	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HELICODONTIDAE	camerani	Falkneria	VU	D2	VU	D2	Yes	Yes
VERTIGINIDAE	cameroni	Truncatellina	LC		LC		Yes	Yes
HELICIDAE	campesinus	Iberus	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYGROMIIDAE	camporoblensis	Candidula	LC		LC		Yes	Yes
ENIDAE	canaliculata	Meijeriella	LC		LC			
VITRINIDAE	canariensis	Plutonia	NT		NT		Yes	Yes
HYGROMIIDAE	candiota	Xeromunda	LC		LC		Yes	
DIPLOMMATINIDAE	canestrinii	Cochlostoma	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	cantabrica	Pyrenaearia	LC		LC		Yes	Yes
HYGROMIIDAE	cantiana	Monacha	LC		LC		Yes	
HYGROMIIDAE	carascalensis	Pyrenaearia	LC		LC		Yes	

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HYGROMIIDAE	carascaloides	Monacha	LC		LC		Yes	
HYGROMIIDAE	carascalopsis	Pyrenaearia	NT		NT		Yes	Yes
HYGROMIIDAE	cardonae	Xerocrassa	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	carinatoglobosa	Trochoidea	DD		DD		Yes	Yes
HYGROMIIDAE	carinofausta	Actinella	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
VITRINIDAE	carinthiacus	Semilimax	LC		LC		Yes	
ENIDAE	carneolus	Mastus	LC		LC		Yes	
ENIDAE	carneus	Buliminus	LC		LC		Yes	
VITRINIDAE	carniolica	Semilimacella	LC		LC		Yes	
HYGROMIIDAE	caroli	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	caroni	Trochoidea	LC		LC		Yes	Yes
HELICIDAE	carotii	Tacheocampylaea	VU	B1ab(iii,v)+ 2ab(iii,v)	VU	B1ab(iii,v)+ 2ab(iii,v)	Yes	Yes
ENIDAE	carpathia	Turanena	NT		NT		Yes	Yes
HELICIDAE	carthaginiensis	Iberus	NT		NT		Yes	Yes
HYGROMIIDAE	cartusiana	Monacha	LC		LC		Yes	
HYGROMIIDAE	caruanae	Cernuella	LC		LC			
HYGROMIIDAE	carusoi	Helicotricha	LC		LC		Yes	Yes
LAURIIDAE	cassida	Leiostyla	CR/PE	B2ab(iii)	CR/PE	B2ab(iii)	Yes	Yes
LAURIIDAE	cassidula	Leiostyla	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
LAURIIDAE	castanea	Leiostyla	DD		DD		Yes	Yes
HYGROMIIDAE	castriota	Candidula	NT		NE		Yes	
HYGROMIIDAE	cavannae	Candidula	NT		NT		Yes	Yes
ENIDAE	cefalonica	Napaeopsis	LC		LC		Yes	
HYGROMIIDAE	cemenelea	Monacha	LC		LC		Yes	Yes
CHONDRINIDAE	centralis	Chondrina	VU	D2	VU	D2	Yes	Yes
VITRINIDAE	cephalonica	Oligolimax	LC		LC		Yes	Yes
HELICIDAE	ceratina	Tyrrhenaria	CR	B1ab(i,ii,iii)+ 2ab(i,ii,iii)	CR	B1ab(i,ii,iii)+ 2ab(i,ii,iii)	Yes	Yes
HYGROMIIDAE	cereoflava	Helicopsis	LC		LC		Yes	Yes
HYGROMIIDAE	cespitem	Xerosecta	LC		LC		Yes	Yes
HELICIDAE	chamaeleon	Arianta	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
LAURIIDAE	cheilogona	Leiostyla	LC		LC		Yes	Yes
HYGROMIIDAE	cheiranthicola	Discula	NT		NT		Yes	Yes
HELICIDAE	choristochila	Chilostoma	LC		LC		Yes	Yes
VITRINIDAE	christinae	Plutonia	NT		NT		Yes	Yes
ENIDAE	chrysaloides	Napaeus	DD		DD		Yes	Yes
CHONDRINIDAE	cianensis	Solatopupa	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	ciliata	Ciliella	LC		LC		Yes	
HELICIDAE	cincta	Helix	LC		LC		Yes	
HYGROMIIDAE	cinctella	Hygromia	LC		LC		Yes	
DIPLOMMATINIDAE	cinerascens	Cochlostoma	LC		NE		Yes	
HELICIDAE	cingulatum	Chilostoma	DD		DD		Yes	
HELICIDAE	cingulella	Faustina	LC		LC		Yes	Yes
HYGROMIIDAE	cisalpina	Cernuella	LC		LC		Yes	
HYGROMIIDAE	cisternasi	Xerocrassa	NT		NT		Yes	Yes
HYGROMIIDAE	cistorum	Helicella	LC		LC		Yes	Yes
HYGROMIIDAE	clandestinus	Trochulus	LC		LC		Yes	
ENIDAE	claudia	Mastus	VU	B1ab(iii)+2ab(iii); D2	VU	B1ab(iii)+2ab(iii); D2	Yes	Yes
HYGROMIIDAE	claudia	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	claudiconus	Xerocrassa	LC		LC		Yes	Yes
HELICIDAE	clausoinflata	Theba	NT		NT		Yes	Yes

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HYGROMIIDAE	claustralis	Monacha	LC		LC		Yes	
VERTIGINIDAE	claustralis	Truncatellina	LC		LC			
HYGROMIIDAE	coartatus	Metafruticicola	LC		LC		Yes	Yes
TRISSEXODONTIDAE	cobosi	Hatumia	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	cobosi	Xerocrassa	DD		DD		Yes	Yes
HYGROMIIDAE	codia	Candidula	LC		LC		Yes	Yes
HELICIDAE	codringtonii	Codringtonia	EN	B1ab(i,ii,iii,iv)	EN	B1ab(i,ii,iii,iv)	Yes	Yes
HYGROMIIDAE	coelomphala	Trochulus	DD		DD		Yes	Yes
HELICIDAE	coerulans	Vidovicia	VU	A2b	NE		Yes	
VERTIGINIDAE	columella	Columella	LC		LC		Yes	
LAURIIDAE	colvillei	Leiostyla	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	commixtus	Caseolus	LC		LC		Yes	Yes
HYGROMIIDAE	compar	Disculella	NT		NT		Yes	Yes
HELICIDAE	comythophora	Chilostoma	LC		LC		Yes	Yes
LAURIIDAE	concinna	Leiostyla	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
ENIDAE	concolor	Ena	LC		NE		Yes	
HELICIDAE	conemenosi	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	confusa	Pseudoxerophila	LC		LC		Yes	Yes
ORCULIDAE	conica	Orcula	LC		LC		Yes	
DIPLOMMATINIDAE	conicum	Cochlostoma	LC		LC		Yes	Yes
COCHLICELLIDAE	conoidea	Cochlicella	LC		LC			
ENIDAE	consecoanus	Napaeus	NT		NT		Yes	Yes
ENIDAE	consentanea	Chondrula	DD		NE		Yes	
HELICIDAE	consobrina	Hemicycla	LC		LC		Yes	Yes
HYGROMIIDAE	consona	Monacha	NT		NT		Yes	Yes
HYGROMIIDAE	consors	Caseolus	LC		LC		Yes	Yes
HYGROMIIDAE	conspurcata	Xerotricha	LC		LC			
TRISSEXODONTIDAE	constrictus	Trissexodon	LC		LC		Yes	Yes
HYGROMIIDAE	contermina	Polloneria	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
ACICULIDAE	corcyrensis	Acicula	LC		LC		Yes	Yes
HELICODONTIDAE	corcyrensis	Lindholmiola	LC		LC		Yes	
HYGROMIIDAE	corderoi	Xerotricha	LC		LC		Yes	Yes
LAURIIDAE	corneocostata	Leiostyla	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	coronata	Serratorotula	EN	B1ab(ii,iii)+2ab(ii,iii)	EN	B1ab(ii,iii)+2ab(ii,iii)	Yes	Yes
HYGROMIIDAE	corsica	Cyrnotheba	LC		LC		Yes	Yes
ENIDAE	cosensis	Rhabdoena	LC		LC			
VALLONIIDAE	costata	Vallonia	LC		LC			
HYGROMIIDAE	costulata	Semifruticicola	LC		NE		Yes	
VERTIGINIDAE	costulata	Truncatellina	LC		LC			
HYGROMIIDAE	cotiellae	Pyrenaearia	VU	D2	VU	D2	Yes	Yes
ARGNIDAE	crassilabris	Agardhiella	NT		NT		Yes	Yes
ORCULIDAE	creantirudis	Orculella	LC		LC		Yes	Yes
DIPLOMMATINIDAE	cretense	Cochlostoma	LC		LC		Yes	Yes
ENIDAE	cretensis	Mastus	LC		LC		Yes	Yes
HYGROMIIDAE	cretica	Monacha	LC		LC		Yes	Yes
HYGROMIIDAE	cretica	Xerocrassa	LC		LC		Yes	
ORCULIDAE	creticostata	Orculella	LC		LC		Yes	Yes
ORCULIDAE	cretilasithi	Orculella	LC		LC		Yes	Yes
ORCULIDAE	cretimaxima	Orculella	LC		LC		Yes	Yes
ORCULIDAE	cretiminuta	Orculella	LC		LC		Yes	Yes
ORCULIDAE	cretioreina	Orculella	LC		LC		Yes	Yes
HELICIDAE	crinita	Chilostoma	NT		NE		Yes	

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HYGROMIIDAE	crispolanata	Xerotricha	DD		DD		Yes	Yes
ORCULIDAE	critica	Orculella	LC		LC		Yes	
HELICIDAE	crombezi	Chilostoma	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
DIPLOMMATINIDAE	crosseanum	Cochlostoma	LC		LC		Yes	Yes
ACICULIDAE	cryptomena	Platyla	LC		LC		Yes	Yes
HYGROMIIDAE	cumiae	Trochoidea	NT		NT		Yes	Yes
ACICULIDAE	curtii	Platyla	LC		LC		Yes	
VITRINIDAE	cuticula	Plutonia	NT		NT		Yes	Yes
HELICIDAE	cyclolabris	Chilostoma	LC		LC		Yes	Yes
CHONDRINIDAE	cylindrica	Abida	LC		LC		Yes	Yes
ENIDAE	cylindrica	Brephulopsis	LC		NE		Yes	
VERTIGINIDAE	cylindrica	Truncatellina	LC		LC			
HYGROMIIDAE	cypriola	Helicopsis	LC		LC		Yes	Yes
ENIDAE	cyprius	Paramastus	LC		LC		Yes	Yes
HELICIDAE	cyrniaca	Tacheocampylaea	EN	B1ab(i,ii,iii,iv,v)+ 2ab(i,ii,iii,iv,v)	EN	B1ab(i,ii,iii,iv,v)+ 2ab(i,ii,iii,iv,v)	Yes	Yes
HYGROMIIDAE	daanidentata	Pyrenaearia	VU	D2	VU	D2	Yes	Yes
ARGNIDAE	dabovici	Agardhiella	NT		NE		Yes	
DIPLOMMATINIDAE	dalmatinum	Cochlostoma	VU	D2	NE		Yes	
VALLONIIDAE	declivis	Vallonia	NT		NT		Yes	
LAURIIDAE	degenerata	Leiostyla	NT		NT		Yes	Yes
HYGROMIIDAE	dejecta	Helicopsis	DD		DD		Yes	
ENIDAE	delibutus	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	delphinuloides	Geomitra	CR/PE	D	CR/PE	D	Yes	Yes
HELICIDAE	delpretiana	Helix	DD		DD		Yes	Yes
HELICIDAE	denudata	Chilostoma	NT		NE		Yes	
HYGROMIIDAE	depauperata	Spirorbula	LC		LC		Yes	Yes
HYGROMIIDAE	depulsa	Xerolenta	NT		NT		Yes	Yes
HYGROMIIDAE	derbentina	Xeropicta	LC		LC			
HYGROMIIDAE	derogata	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	desertae	Heterostoma	DD		DD		Yes	Yes
HELICIDAE	desmoulinsii	Chilostoma	LC		LC		Yes	
COCHLICELLIDAE	despreauxii	Obelus	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	deubeli	Lozekia	LC		LC		Yes	Yes
ACICULIDAE	dewinteri	Menkia	DD		DD		Yes	Yes
VITRINIDAE	dianae	Plutonia	VU	D2	VU	D2	Yes	Yes
VITRINIDAE	diaphana	Eucobresia	LC		LC		Yes	
HYGROMIIDAE	dibothrion	Perforatella	LC		LC		Yes	
HYGROMIIDAE	dictaeus	Metafruticicola	LC		LC		Yes	Yes
HELICIDAE	diegoi	Hemicycla	NT		NT		Yes	Yes
ORCULIDAE	diensis	Orculella	LC		LC		Yes	Yes
HELICODONTIDAE	diodonta	Soosia	NT		NT		Yes	
HYGROMIIDAE	dirphica	Monacha	DD		DD		Yes	Yes
ENIDAE	dirphicus	Mastus	LC		LC		Yes	Yes
HYGROMIIDAE	discobolus	Canariella	NT		NT		Yes	Yes
COCHLICELLIDAE	discogranulatus	Obelus	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
ACICULIDAE	disjuncta	Acicula	NT		NT		Yes	
HELICIDAE	distensa	Hemicycla	DD		DD		Yes	Yes
ORCULIDAE	dobrogica	Orcula	DD		DD		Yes	Yes
HELICIDAE	dochii	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	dofleini	Monacha	LC		NE		Yes	
HYGROMIIDAE	dohrni	Xerosecta	DD		DD		Yes	Yes
ENIDAE	doliolum	Napaeus	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes

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ORCULIDAE	doliolum	Sphyradium	LC		LC			
ORCULIDAE	dolium	Orcula	LC		LC		Yes	
ARGNIDAE	domokosi	Agardhiella	LC		LC		Yes	Yes
HELICIDAE	dormitoris	Helix	LC		NE		Yes	
TRISSEXODONTIDAE	dorotheae	Oestophora	NA		NA			
ACICULIDAE	douctouyrensis	Acicula	DD		DD		Yes	Yes
HYGROMIIDAE	drouetiana	Leptaxis	LC		LC		Yes	Yes
HELICIDAE	dunjana	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	duplex	Heterostoma	DD		DD		Yes	Yes
CHONDRINIDAE	dupotetii	Rupestrella	VU	D2	VU	D2		
ACICULIDAE	dupuyi	Platyla	LC		LC		Yes	Yes
HYGROMIIDAE	durieui	Xeromunda	NT		NT			
TRISSEXODONTIDAE	ebria	Oestophora	NT		NT		Yes	Yes
HYGROMIIDAE	ebusitana	Xerocrassa	NT		NT		Yes	Yes
VITRINIDAE	eceroensis	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	echinulata	Hystricella	LC		LC		Yes	Yes
VERTIGINIDAE	edentula	Columella	LC		LC		Yes	
HYGROMIIDAE	edentula	Petasina	LC		LC		Yes	
HELICIDAE	edlaueri	Chilostoma	DD		NE		Yes	
HYGROMIIDAE	edmundi	Xerocrassa	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HELICIDAE	efferata	Hemicycla	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
DIPLOMMATINIDAE	elegans	Cochlostoma	LC		NE		Yes	
ENIDAE	elegans	Napaeus	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
HYGROMIIDAE	elegans	Trochoidea	LC		LC		Yes	Yes
ACICULIDAE	elegantissima	Renea	DD		DD		Yes	Yes
HELICIDAE	eliaca	Chilostoma	LC		LC		Yes	Yes
HELICIDAE	elisabethae	Codringtonia	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	Yes	Yes
ACICULIDAE	elisabethae	Platyla	NT		NE		Yes	
ENIDAE	elongata	Ena	DD		DD		Yes	Yes
ENIDAE	emarginatus	Mastus	NT		NT		Yes	Yes
HYGROMIIDAE	emigrata	Monacha	LC		LC		Yes	
VITRINIDAE	emersoni	Plutonia	NT		NT		Yes	Yes
ENIDAE	encaustus	Napaeus	LC		LC		Yes	Yes
VALLONIIDAE	enniensis	Vallonia	NT		NT			
ORCULIDAE	epirotos	Pagodulina	LC		LC		Yes	Yes
DIPLOMMATINIDAE	erika	Cochlostoma	VU	D2	NE		Yes	
HYGROMIIDAE	erjavecii	Trochulus	LC		LC		Yes	
ENIDAE	esbeltus	Napaeus	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
HELICIDAE	ethelema	Hemicycla	DD		DD		Yes	Yes
ENIDAE	etuberculatus	Mastus	LC		LC		Yes	
HELICIDAE	euboeae	Chilostoma	NT		NT		Yes	Yes
HYGROMIIDAE	euboeica	Monacha	DD		DD		Yes	Yes
DIPLOMMATINIDAE	euboicum	Cochlostoma	NT		NT		Yes	Yes
HELICIDAE	eucineta	Codringtonia	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	Yes	Yes
HELICIDAE	eurythra	Hemicycla	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	eutropis	Canariella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
ORCULIDAE	exaggerata	Orculella	LC		LC		Yes	Yes
VALLONIIDAE	excentrica	Vallonia	LC		LC			
ENIDAE	exilis	Napaeus	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYGROMIIDAE	explanata	Xerosecta	EN	B2ab(ii,iii,iv)	EN	B2ab(ii,iii,iv)		
VERTIGINIDAE	extima	Vertigo	DD		DD			

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ARGNIDAE	extravaganta	Agardhiella	DD		NE		Yes	
VITRINIDAE	falcifera	Plutonia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYGROMIIDAE	falkneri	Canariella	LC		LC		Yes	Yes
CHONDRINIDAE	falkneri	Chondrina	NT		NT		Yes	Yes
LAURIIDAE	falknerorum	Leiostyla	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYGROMIIDAE	fallax	Monachoides	VU	D2	NE		Yes	
LAURIIDAE	fanalensis	Lauria	LC		LC		Yes	Yes
CHONDRINIDAE	farinesii	Chondrina	LC		LC		Yes	
LAURIIDAE	fasciolata	Lauria	LC		LC		Yes	Yes
ENIDAE	fasciolata	Zebrina	LC		LC		Yes	
HELICIDAE	faueri	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	fausta	Actinella	LC		LC		Yes	Yes
HELICIDAE	faustina	Faustina	LC		LC		Yes	
ARGNIDAE	ferrari	Argna	LC		LC		Yes	
LAURIIDAE	ferraria	Leiostyla	VU	D2	VU	D2	Yes	Yes
ENIDAE	ferrarii	Thoanteus	LC		NE		Yes	
HYGROMIIDAE	ferreri	Xerocrassa	NT		NT		Yes	Yes
HELICIDAE	figulina	Helix	LC		LC		Yes	
HYGROMIIDAE	filicina	Petasina	LC		LC		Yes	
LAURIIDAE	filicum	Leiostyla	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	filimargo	Helicopsis	LC		NE		Yes	
VITRINIDAE	finitima	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	fiorii	Candidula	VU	D2	VU	D2	Yes	Yes
HELICIDAE	flavistoma	Hemicycla	LC		LC		Yes	Yes
ENIDAE	flavotermatus	Napaeus	DD		DD		Yes	Yes
ORCULIDAE	fodela	Orculella	LC		LC		Yes	Yes
ACICULIDAE	foliniana	Platyla	VU	D2	VU	D2	Yes	Yes
HELICIDAE	fontenillii	Chilostoma	LC		LC		Yes	Yes
ARGNIDAE	formosa	Agardhiella	LC		NE		Yes	
HYGROMIIDAE	fortunata	Canariella	VU	B1ab(ii,iii)+ 2ab(ii,iii)	VU	B1ab(ii,iii)+ 2ab(ii,iii)	Yes	Yes
ORCULIDAE	franciscoi	Orculella	LC		LC		Yes	Yes
HYGROMIIDAE	franciscoi	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	frater	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	frequens	Monacha	LC		LC		Yes	
HELICIDAE	frigidum	Chilostoma	LC		LC		Yes	Yes
HELICIDAE	fritschi	Hemicycla	DD		DD		Yes	Yes
CHONDRINIDAE	frumentum	Granaria	LC		LC		Yes	
HYGROMIIDAE	fruticola	Monacha	LC		NE		Yes	
BRADYBAENIDAE	fruticum	Fruticola	LC		LC		Yes	
HELICIDAE	fuchsi	Chilostoma	NT		NE		Yes	
DIPLOMMATINIDAE	fuchsi	Cochlostoma	VU	D2	NE		Yes	
ORCULIDAE	fuchsi	Orcula	CR	B1ab(iii,v)	CR	B1ab(iii,v)	Yes	Yes
HELICIDAE	fuchsiana	Chilostoma	LC		LC		Yes	Yes
HELICIDAE	fulgida	Hemicycla	LC		LC		Yes	Yes
HYGROMIIDAE	furva	Leptaxis	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
ACICULIDAE	fusca	Acicula	LC		LC		Yes	Yes
LAURIIDAE	fusca	Leiostyla	LC		LC		Yes	Yes
LAURIIDAE	fuscidula	Leiostyla	DD		DD		Yes	Yes
HELICIDAE	fuscolabiata	Marmorana	DD		DD		Yes	Yes
HYGROMIIDAE	gadirana	Ganula	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	galeata	Lemniscia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
CHONDRINIDAE	gasulli	Chondrina	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes

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TRISSEXODONTIDAE	gasulli	Gasullia	NT		NT		Yes	Yes
HYGROMIIDAE	gasulli	Xerotricha	EN	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	EN	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	Yes	Yes
HELICIDAE	gaudryi	Hemicycla	DD		DD		Yes	Yes
HELICIDAE	geminata	Theba	DD		DD		Yes	Yes
CHONDRINIDAE	generosensis	Chondrina	LC		DD		Yes	
VERTIGINIDAE	genesii	Vertigo	LC		LC		Yes	
ACICULIDAE	gentilei	Renea	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	georgi	Cochlostoma	LC		NE		Yes	
CHONDRINIDAE	gerhardi	Chondrina	VU	D2	VU	D2	Yes	Yes
VERTIGINIDAE	geyeri	Vertigo	LC		LC		Yes	
HYGROMIIDAE	geyeri	Xerocrassa	DD		DD		Yes	
HYGROMIIDAE	ghisottii	Cernuellopsis	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
LAURIIDAE	gibba	Leiostyla	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
ENIDAE	gibber	Thoanteus	LC		NE		Yes	
DIPLOMMATINIDAE	gigas	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	gigaxii	Candidula	LC		LC		Yes	Yes
HYGROMIIDAE	giramica	Actinella	VU	D2	VU	D2	Yes	Yes
HELICODONTIDAE	girva	Lindholmiola	LC		LC		Yes	
CHONDRINIDAE	gittenbergeri	Abida	NT		NT		Yes	Yes
HELICIDAE	gittenbergeri	Codringtonia	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	Yes	Yes
HYGROMIIDAE	gittenbergeri	Helicopsis	LC		LC		Yes	Yes
ENIDAE	gittenbergeri	Mastus	LC		LC		Yes	Yes
ENIDAE	giuricus	Mastus	LC		LC		Yes	Yes
HYGROMIIDAE	giustii	Canariella	LC		LC		Yes	Yes
HYGROMIIDAE	giustii	Xerosecta	CR	B1ac(iv)+2ac(iv)	CR	B1ac(iv)+2ac(iv)	Yes	Yes
HYGROMIIDAE	glabellus	Urticicola	LC		LC		Yes	Yes
HELICIDAE	glaciale	Chilostoma	LC		LC		Yes	
VITRINIDAE	glacialis	Eucobresia	DD		DD		Yes	
HELICIDAE	glasiana	Hemicycla	LC		LC		Yes	Yes
HELICIDAE	globularis	Marmorana	LC		LC		Yes	Yes
HELICIDAE	glyceia	Hemicycla	NT		NT		Yes	Yes
HELICIDAE	godetiana	Helix	EN	B2ab(i,ii,iii,iv,v)	EN	B2ab(i,ii,iii,iv,v)	Yes	Yes
HYGROMIIDAE	gomeræ	Canariella	LC		LC		Yes	Yes
HELICIDAE	gomerensis	Hemicycla	DD		DD		Yes	Yes
VITRINIDAE	gomerensis	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	gonzalezi	Xerotricha	LC		LC		Yes	Yes
ACICULIDAE	gormonti	Renea	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	grabhami	Geomitra	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
HYGROMIIDAE	grabusana	Xerocrassa	LC		LC		Yes	Yes
DIPLOMMATINIDAE	gracile	Cochlostoma	LC		LC		Yes	
ACICULIDAE	gracilis	Platyla	LC		LC		Yes	
HELICIDAE	graellsianus	Allognathus	LC		LC		Yes	Yes
HYGROMIIDAE	graminicola	Trochulus	NT		NT		Yes	Yes
CHONDRINIDAE	granatensis	Chondrina	NT		NT		Yes	Yes
ENIDAE	grandis	Mastus	LC		LC		Yes	
TRISSEXODONTIDAE	granesæ	Oestophora	VU	D2	VU	D2	Yes	Yes
HELICIDAE	granomalleata	Hemicycla	DD		DD		Yes	Yes
COCHLICELLIDAE	granostrata	Monilearia	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	granulata	Ashfordia	LC		LC		Yes	Yes
CHONDRINIDAE	granum	Granopupa	LC		LC			

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HELICIDAE	grasseti	Theba	EN	B1ab(ii,iii)+ 2ab(ii,iii)	EN	B1ab(ii,iii)+ 2ab(ii,iii)	Yes	Yes
HYGROMIIDAE	grata	Xerocrassa	DD		DD		Yes	Yes
HYGROMIIDAE	gregaria	Monacha	NT		NT		Yes	Yes
HELICIDAE	grisea	Superba	NT		NE		Yes	
ARGNIDAE	grossui	Agardhiella	NT		NT		Yes	Yes
HYGROMIIDAE	grovesiana	Candidula	EN	B1ab(iii,v)+ 2ab(iii,v)	EN	B1ab(iii,v)+ 2ab(iii,v)	Yes	Yes
HYGROMIIDAE	groviana	Leptaxis	LC		LC		Yes	Yes
ENIDAE	gruereanus	Napaeus	DD		DD		Yes	Yes
HELICIDAE	gualtieranus	Iberus	EN	B1ab(iii,v)+ 2ab(iii,v)	EN	B1ab(iii,v)+ 2ab(iii,v)	Yes	Yes
HELICIDAE	guamartemes	Hemicycla	DD		DD		Yes	Yes
CHONDRINIDAE	guidoni	Solatopupa	DD		DD		Yes	Yes
HELICIDAE	guiraoanus	Iberus	LC		LC		Yes	Yes
ORCULIDAE	gularis	Orcula	LC		LC		Yes	Yes
HELICIDAE	haberhaueri	Cattania	LC		LC		Yes	
HELICIDAE	harpya	Chilostoma	CR	B1ab(ii,iii,v)+ 2ab(ii,iii,v)	NE		Yes	
HYGROMIIDAE	hartungi	Caseolus	LC		LC		Yes	Yes
ENIDAE	hartungi	Napaeus	LC		LC		Yes	Yes
ACICULIDAE	hausdorfi	Acicula	NT		NT		Yes	Yes
ORCULIDAE	hauseri	Pagodulina	LC		LC		Yes	Yes
HYGROMIIDAE	haussknechti	Monacha	LC		LC		Yes	Yes
HELICIDAE	hedybia	Hemicycla	DD		DD		Yes	Yes
VERTIGINIDAE	heldi	Vertigo	EN	B2ab(iii)	EN	B2ab(iii)	Yes	
HELICIDAE	heldreichi	Chilostoma	LC		LC		Yes	Yes
HELICIDAE	helenae	Codringtonia	VU	B1ab(i,ii,iv)+ 2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+ 2ab(i,ii,iv)	Yes	Yes
DIPLOMMATINIDAE	hellenicum	Cochlostoma	LC		LC		Yes	Yes
ENIDAE	helvolus	Napaeus	LC		LC		Yes	Yes
ENIDAE	hemmeni	Mastus	LC		LC		Yes	Yes
ENIDAE	hemmeni	Turanena	NT		NT			
HELICIDAE	hemonica	Chilostoma	LC		LC		Yes	Yes
DIPLOMMATINIDAE	henricae	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	heraklea	Xerocrassa	LC		LC		Yes	Yes
HELICIDAE	hessei	Arianta	NT		NT		Yes	Yes
LAURIIDAE	heterodon	Leiostyla	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	hidalgoi	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	hillyeriana	Xerosecta	DD		DD		Yes	Yes
HELICIDAE	hirta	Chilostoma	LC		NE		Yes	
TRISSEXODONTIDAE	hispanica	Suboestophora	VU	D2	VU	D2	Yes	Yes
HELICIDAE	hispanicus	Allognathus	LC		LC		Yes	Yes
HYGROMIIDAE	hispidula	Canariella	VU	B1ab(i,ii,iii)+ 2ab(i,ii,iii)	VU	B1ab(i,ii,iii)+ 2ab(i,ii,iii)	Yes	Yes
HYGROMIIDAE	hispidus	Trochulus	LC		LC		Yes	
HELICIDAE	hoffmanni	Chilostoma	LC		NE		Yes	
HELICIDAE	holosericea	Causa	LC		LC		Yes	
CHONDRINIDAE	homala	Rupestrella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	homeyeri	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	horripila	Moreletina	LC		LC		Yes	Yes
ACICULIDAE	horsti	Menkia	NT		NT		Yes	Yes
HELICIDAE	hortensis	Cepaea	LC		LC		Yes	

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DIPLOMMATINIDAE	hoyeri	Cochlostoma	LC		NE		Yes	
HYGROMIIDAE	huidobroi	Xerotricha	NT		NT		Yes	Yes
HYGROMIIDAE	huttereri	Canariella	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
ENIDAE	huttereri	Napaeus	NT		NT		Yes	Yes
HYGROMIIDAE	hydrutina	Cernuella	NT		NT		Yes	Yes
HELICIDAE	hymetti	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	iberica	Helicella	LC		LC		Yes	Yes
ENIDAE	ierapetrana	Mastus	LC		LC		Yes	Yes
ORCULIDAE	ignorata	Orculella	LC		LC		Yes	
HELICIDAE	illyrica	Faustina	LC		LC		Yes	
HELICIDAE	impugnata	Theba	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYGROMIIDAE	incarnatus	Monachoides	LC		LC		Yes	
ARGNIDAE	incerta	Agardhiella	LC		LC		Yes	
HYGROMIIDAE	inchoata	Portugala	LC		LC		Yes	Yes
HELICIDAE	incisogranulata	Hemicycla	NT		NT		Yes	Yes
ENIDAE	indifferens	Napaeus	DD		DD		Yes	Yes
ENIDAE	inflatusculus	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	innominatus	Caseolus	LC		LC		Yes	Yes
COCHLICELLIDAE	inops	Monilearia	DD		DD		Yes	Yes
HELICIDAE	insolita	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	instabilis	Helicopsis	LC		LC		Yes	
HELICIDAE	intermedium	Chilostoma	LC		LC		Yes	
DIPLOMMATINIDAE	intermedium	Cochlostoma	DD		DD		Yes	Yes
ENIDAE	interpunctatus	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	intersecta	Candidula	LC		LC		Yes	Yes
HYGROMIIDAE	introducta	Xerosecta	LC		LC		Yes	Yes
HELICIDAE	intusplicata	Codringtonia	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	Yes	Yes
HELICIDAE	inutilis	Hemicycla	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
HELICIDAE	invernica	Hemicycla	LC		LC		Yes	Yes
LAURIIDAE	irrigua	Leiostyla	LC		LC		Yes	Yes
HYGROMIIDAE	isarius	Urticicola	DD		DD		Yes	Yes
ENIDAE	isletae	Napaeus	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HELICIDAE	isognomostomos	Isognomostoma	LC		LC		Yes	
HELICIDAE	istriana	Chilostoma	DD		NE		Yes	
HYGROMIIDAE	itala	Helicella	LC		LC		Yes	
ENIDAE	itanosensis	Mastus	LC		LC		Yes	Yes
CHONDRINIDAE	jaeckeli	Rupestrella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	jamuzensis	Xerotricha	LC		LC		Yes	Yes
HYGROMIIDAE	jandiaensis	Canariella	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
ACICULIDAE	jankowskiana	Platyla	VU	D2	NE		Yes	
TRISSEXODONTIDAE	jeresae	Suboestophora	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	jeschaui	Mengoana	LC		LC		Yes	Yes
ORCULIDAE	jetschini	Orcula	LC		LC		Yes	Yes
HYGROMIIDAE	jimenensis	Xerocrassa	NT		NT		Yes	Yes
HYGROMIIDAE	josephi	Thyrreniellina	NT		NT		Yes	Yes
HYGROMIIDAE	juglans	Helicella	LC		LC		Yes	Yes
CHONDRINIDAE	juliana	Solatopupa	LC		LC		Yes	Yes
ORCULIDAE	kaeufeli	Pagodulina	LC		NE		Yes	
ENIDAE	katerinae	Turanena	NT		NT		Yes	Yes
HELICIDAE	kattingeri	Cattania	LC		LC		Yes	Yes
ENIDAE	kindermanni	Zebrina	LC		LC		Yes	
HELICIDAE	kleciachi	Chilostoma	LC		NE		Yes	

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DIPLOMMATINIDAE	kleciaki	Cochlostoma	DD		DD		Yes	
ORCULIDAE	klemmi	Pagodulina	LC		LC		Yes	Yes
CHONDRINIDAE	kobelti	Chondrina	LC		LC		Yes	Yes
ACICULIDAE	kobelti	Renea	NT		NE		Yes	
CHONDRINIDAE	kobeltoides	Chondrina	LC		LC		Yes	Yes
ORCULIDAE	kokeilii	Odontocyclus	LC		LC		Yes	
HELICIDAE	kollari	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	kosovoensis	Monachoides	NT		NE		Yes	
VITRINIDAE	kotulae	Semilimax	LC		LC		Yes	
HYGROMIIDAE	kovacsi	Kovacsia	LC		LC		Yes	Yes
HELICIDAE	krueperi	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	krynckii	Xeropicta	LC		LC			
HELICIDAE	kulmakana	Superba	NT		NE		Yes	
HYGROMIIDAE	kusmici	Hiltrudia	LC		NE		Yes	
HYGROMIIDAE	kydonia	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	laciniosa	Actinella	VU	D2	VU	D2	Yes	Yes
HELICIDAE	lactea	Otala	LC		LC			
VERTIGINIDAE	laeviuscula	Truncatellina	DD		NE		Yes	
HYGROMIIDAE	lamalouensis	Monacha	DD		DD		Yes	Yes
VITRINIDAE	lamarckii	Plutonia	LC		LC		Yes	Yes
ARGNIDAE	lamellata	Agardhiella	LC		LC		Yes	Yes
VALLONIIDAE	lamellata	Spermodea	NT		NT		Yes	
ENIDAE	lamellifera	Multidentula	LC		LC		Yes	
LAURIIDAE	lamellosa	Leiostyla	EX		EX		Yes	Yes
HYGROMIIDAE	lampedusae	Cernuella	NT		NT		Yes	Yes
HYGROMIIDAE	lancerottensis	Xerotricha	LC		LC		Yes	Yes
ARGNIDAE	langaleta	Agardhiella	NT		NT		Yes	Yes
HELICODONTIDAE	langhofferi	Helicodonta	DD		NE		Yes	
HYGROMIIDAE	lanosa	Canariella	LC		LC		Yes	Yes
HYGROMIIDAE	lanuginosa	Ganula	LC		LC		Yes	Yes
HELICIDAE	lapicida	Helicigona	LC		LC		Yes	
HYGROMIIDAE	lasithiensis	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	latens	Spirorbula	LC		LC		Yes	Yes
HELICIDAE	laurijona	Hemicycla	NT		NT		Yes	Yes
LAURIIDAE	laurinea	Leiostyla	VU	B1ab(iii); D2	VU	B1ab(iii); D2	Yes	Yes
VITRINIDAE	laxata	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	leacockiana	Hystricella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	lectus	Metafruticicola	LC		LC		Yes	Yes
ENIDAE	ledereri	Euchondrus	LC		LC		Yes	
HYGROMIIDAE	ledereri	Xeropicta	LC		LC		Yes	Yes
HELICIDAE	lefeburiana	Chilostoma	LC		LC		Yes	
HELICODONTIDAE	lens	Lindholmiola	LC		LC		Yes	
TRISSEXODONTIDAE	lenticula	Caracollina	LC		LC			
HYGROMIIDAE	lentiginosa	Actinella	LC		LC		Yes	Yes
HYGROMIIDAE	leprosa	Canariella	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
HYGROMIIDAE	leptostictus	Caseolus	VU	B2ab(iii); D2	VU	B2ab(iii); D2	Yes	Yes
HYGROMIIDAE	lernaea	Candidula	LC		LC		Yes	Yes
HYGROMIIDAE	leucozona	Petasina	LC		LC		Yes	Yes
ENIDAE	lichenicola	Napaeus	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	liebegottae	Monacha	LC		LC		Yes	
HYGROMIIDAE	liebetruti	Trochoidea	NT		NT		Yes	Yes
HELICIDAE	ligata	Helix	DD		DD		Yes	Yes
VERTIGINIDAE	lilljeborgi	Vertigo	NT		NT		Yes	

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HYGROMIIDAE	imbata	Hygromia	LC		LC		Yes	
ENIDAE	imbodentatus	Euchondrus	NT		NT		Yes	Yes
LAURIIDAE	limnaeana	Hemilauria	LC		LC		Yes	Yes
VERTIGINIDAE	linearis	Truncatellina	DD		DD		Yes	Yes
ACICULIDAE	lineata	Acicula	LC		LC		Yes	
ACICULIDAE	lineolata	Acicula	LC		LC		Yes	
HYGROMIIDAE	littorinella	Actinella	VU	D2	VU	D2	Yes	Yes
HELICIDAE	litturata	Pseudotachea	NT		NT			
ENIDAE	loewii	Jaminia	LC		LC		Yes	
LAURIIDAE	loweana	Leiostyla	LC		LC		Yes	Yes
COCHLICELLIDAE	loweana	Monilearia	LC		LC		Yes	Yes
HYGROMIIDAE	lowei	Microxeromagna	LC		LC			
ENIDAE	lowei	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	loweii	Pseudocampylaea	EX		EX		Yes	Yes
HYGROMIIDAE	lubomirskii	Trochulus	LC		LC		Yes	
HELICIDAE	lucorum	Helix	LC		LC			
ENIDAE	lugorensis	Chondrula	NT		NE		Yes	
HYGROMIIDAE	lurida	Petasina	LC		LC		Yes	
CHONDRINIDAE	lusitanica	Chondrina	LC		LC		Yes	Yes
TRISSEXODONTIDAE	lusitanica	Oestophora	LC		LC		Yes	Yes
ACICULIDAE	lusitanica	Platyla	VU	D2	VU	D2	Yes	Yes
VERTIGINIDAE	lussinensis	Truncatellina	VU	D2	NE		Yes	
HELICIDAE	lutescens	Helix	LC		LC		Yes	
HYGROMIIDAE	lyelliana	Discula	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
HYGROMIIDAE	maasseni	Monacha	LC		LC		Yes	Yes
ACICULIDAE	maasseni	Platyla	VU	D2	NE		Yes	
ENIDAE	macedonica	Chondrula	LC		LC		Yes	
HYGROMIIDAE	macedonica	Xerolenta	LC		LC		Yes	
DIPLOMMATINIDAE	macei	Cochlostoma	LC		LC		Yes	Yes
VITRINIDAE	machadoi	Plutonia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
LAURIIDAE	macilenta	Leiostyla	VU	B2ab(iii)	VU	B2ab(iii)	Yes	Yes
ARGNIDAE	macrodonta	Agardhiella	LC		LC		Yes	
ENIDAE	maculatus	Napaeus	NT		NT		Yes	Yes
HYGROMIIDAE	madeirensis	Disculella	LC		LC		Yes	Yes
HYGROMIIDAE	madritensis	Xerotricha	LC		LC		Yes	
HELICIDAE	maeotica	Drobacia	DD		DD		Yes	Yes
ENIDAE	maffioteanus	Napaeus	DD		DD		Yes	Yes
CHONDRINIDAE	maginensis	Chondrina	VU	D2	VU	D2	Yes	Yes
VITRINIDAE	major	Phenacolimax	NT		NT		Yes	
HELICIDAE	maranajensis	Cattania	NT		NE		Yes	
VITRINIDAE	marcida	Plutonia	LC		LC		Yes	Yes
TRISSEXODONTIDAE	mariae	Oestophora	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	mariae	Xerotricha	DD		DD		Yes	Yes
HELICIDAE	marmoratus	Iberus	LC		LC		Yes	Yes
HYGROMIIDAE	martigena	Ponentina	LC		LC		Yes	Yes
DIPLOMMATINIDAE	martorelli	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	martorelli	Montserratina	LC		LC		Yes	Yes
HELICIDAE	mascaensis	Hemicycla	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
VITRINIDAE	mascaensis	Plutonia	NT		NT		Yes	Yes
HYGROMIIDAE	mathildae	Hiltrudia	LC		NE		Yes	
HELICIDAE	maugeana	Hemicycla	DD		DD		Yes	Yes
HELICIDAE	mazzullii	Cornu	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HYGROMIIDAE	meda	Xerocrassa	LC		LC		Yes	Yes

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VITRINIDAE	media	Plutonia	LC		LC		Yes	Yes
CHONDRINIDAE	megacheilos	Chondrina	LC		LC		Yes	
HELICIDAE	melchori	Hemicycla	LC		LC		Yes	Yes
HELICIDAE	melpomene	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	membranacea	Leptaxis	LC		LC		Yes	Yes
ENIDAE	mennoi	Napaeopsis	LC		LC		Yes	Yes
ENIDAE	merditanus	Napaeopsis	LC		NE		Yes	
ENIDAE	merduenianum	Peristoma	NT		NE		Yes	
HYGROMIIDAE	mesostena	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	messenica	Monacha	LC		LC		Yes	Yes
HYGROMIIDAE	michaudi	Lemniscia	NT		NT		Yes	Yes
ACICULIDAE	microspira	Platyla	LC		LC		Yes	Yes
VERTIGINIDAE	microspora	Columella	LC		LC		Yes	Yes
ENIDAE	microtragus	Chondrula	LC		LC		Yes	
HYGROMIIDAE	microtricha	Monacha	LC		NE		Yes	
LAURIIDAE	millegrana	Leiostyla	LC		LC		Yes	Yes
HELICIDAE	millieri	Chilostoma	LC		LC		Yes	Yes
ENIDAE	minima	Napaeopsis	LC		LC		Yes	Yes
HYGROMIIDAE	minor	Leptaxis	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
ENIDAE	minuta	Chondrula	DD		DD		Yes	Yes
ACICULIDAE	minutissima	Platyla	NT		NT		Yes	Yes
COCHLICELLIDAE	mirandae	Obelus	LC		LC		Yes	Yes
ENIDAE	mirifica	Rhabdoena	NT		NT		Yes	Yes
COCHLICELLIDAE	moderatus	Obelus	LC		LC		Yes	Yes
HELICIDAE	modesta	Hemicycla	CR/PE	D	CR/PE	D	Yes	Yes
HELICIDAE	moellendorffi	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	molae	Pyrenaearia	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	molinae	Xerocrassa	NT		NT		Yes	Yes
VALLONIIDAE	monas	Spermodea	LC		LC		Yes	Yes
COCHLICELLIDAE	monilifera	Monilearia	LC		LC		Yes	Yes
HYGROMIIDAE	moniziana	Geomitra	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
VERTIGINIDAE	monodon	Truncatellina	LC		LC		Yes	
ENIDAE	montana	Ena	LC		LC		Yes	
DIPLOMMATINIDAE	montanum	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	montanus	Trochulus	DD		DD		Yes	
ENIDAE	monticola	Ena	LC		LC		Yes	Yes
LAURIIDAE	monticola	Leiostyla	LC		LC		Yes	Yes
COCHLICELLIDAE	montigena	Monilearia	NT		NT		Yes	Yes
HYGROMIIDAE	montserratensis	Xerocrassa	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
ENIDAE	moquinianus	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	moraguesi	Xerocrassa	EN	B1ab(iii,v)+2ab(iii,v)	EN	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
COCHLICELLIDAE	moratus	Obelus	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	mostarensis	Cochlostoma	NT		NE		Yes	
VERTIGINIDAE	mouliinsiana	Vertigo	VU	A2ac	VU	A2ac		
HYGROMIIDAE	mounierensis	Urticicola	NT		NT		Yes	Yes
ACICULIDAE	moutonii	Renea	NT		NT		Yes	Yes
HYGROMIIDAE	moutonii	Urticicola	DD		DD		Yes	Yes
CHONDRINIDAE	multidentata	Chondrina	LC		LC		Yes	Yes
HYGROMIIDAE	multigranosa	Canariella	LC		LC		Yes	Yes
ACICULIDAE	multilineata	Acicula	VU	D2	VU	D2	Yes	Yes
COCHLICELLIDAE	multipunctata	Monilearia	NT		NT		Yes	Yes
HELICIDAE	muralis	Marmorana	LC		LC		Yes	Yes

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PUPILLIDAE	muscorum	Pupilla	LC		LC		Yes	
VITRINIDAE	musignani	Oligolimax	VU	D2	VU	D2	Yes	Yes
ENIDAE	myosotis	Napaeus	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	najerensis	Candidula	LC		LC		Yes	Yes
ENIDAE	nanodes	Napaeus	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
DIPLOMMATINIDAE	nanum	Cochlostoma	LC		LC		Yes	
HELICODONTIDAE	nautiliforme	Drepanostoma	NT		DD		Yes	
HYGROMIIDAE	navasi	Pyrenaearia	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	naxianus	Metafruticicola	DD		DD		Yes	Yes
HELICIDAE	nebrodensis	Marmorana	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	neglecta	Cernuella	LC		LC		Yes	
HELICIDAE	nemoralis	Cepaea	LC		LC		Yes	
HELICIDAE	neocrassa	Codringtonia	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+2ab(i,ii,iv)	Yes	
HELICIDAE	niciensis	Macularia	LC		LC		Yes	Yes
HYGROMIIDAE	nicosiana	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	nicosianus	Metafruticicola	DD		DD		Yes	Yes
VITRINIDAE	nitida	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	nitidiuscula	Actinella	LC		LC		Yes	Yes
VITRINIDAE	nivalis	Eucobresia	DD		DD		Yes	
HYGROMIIDAE	nivosa	Leptaxis	LC		LC		Yes	Yes
HYGROMIIDAE	nodosostrata	Xerotricha	DD		DD		Yes	Yes
VITRINIDAE	nogalesi	Plutonia	LC		LC		Yes	Yes
ACICULIDAE	norrisi	Acicula	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	nouleti	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	noverca	Metafruticicola	LC		LC		Yes	Yes
HYGROMIIDAE	nubigena	Helicella	DD		DD		Yes	
HYGROMIIDAE	nubivaga	Xerotricha	LC		LC		Yes	Yes
ENIDAE	nucifragus	Euchondrus	LC		LC		Yes	Yes
HELICIDAE	nucula	Helix	NT		NT			
HYGROMIIDAE	nyeli	Xerocrassa	NT		NT		Yes	Yes
HELICIDAE	nympha	Chilostoma	LC		LC		Yes	Yes
ENIDAE	obesatus	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	obruta	Moreletina	VU	D2	VU	D2	Yes	Yes
ENIDAE	obscura	Merdigera	LC		LC		Yes	
DIPLOMMATINIDAE	obscurum	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	obserata	Actinella	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYGROMIIDAE	obtecta	Spirorbula	LC		LC		Yes	Yes
HELICIDAE	obtusus	Cylindrus	LC		LC		Yes	Yes
HYGROMIIDAE	obvia	Xerolenta	LC		LC			
HELICODONTIDAE	obvoluta	Helicodonta	LC		LC		Yes	
CHONDRINIDAE	occidentalis	Abida	LC		LC		Yes	
HYGROMIIDAE	occidentalis	Metafruticicola	LC		LC		Yes	
CHONDRINIDAE	occulta	Rupestrella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	ocellata	Monacha	LC		LC		Yes	
ENIDAE	ocellatus	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	odeca	Hygromia	VU	B1ab(iii,iv)	VU	B1ab(iii,iv)	Yes	Yes
HYGROMIIDAE	oertzeni	Pseudoxerophila	LC		LC		Yes	Yes
HYGROMIIDAE	oglasae	Ciliellopsis	VU	D2	VU	D2	Yes	Yes
COCHLICELLIDAE	oleacea	Monilearia	LC		LC		Yes	Yes
CHONDRINIDAE	oligodonta	Chondrina	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	olisippensis	Candidula	LC		LC		Yes	Yes
ENIDAE	olivaceus	Mastus	LC		LC		Yes	Yes

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VERTIGINIDAE	opisthodon	Truncatellina	NT		NT		Yes	Yes
HYGROMIIDAE	orbignii	Xerotricha	LC		LC		Yes	Yes
HYGROMIIDAE	ordunensis	Helicella	LC		LC		Yes	Yes
HYGROMIIDAE	oreinos	Trochulus	NT		NT		Yes	Yes
HYGROMIIDAE	organiaca	Pyrenaeaeria	EN	B1ab(iii,v)+ 2ab(iii,v)	EN	B1ab(iii,v)+ 2ab(iii,v)	Yes	Yes
ENIDAE	orientalis	Napaeus	NT		NT		Yes	Yes
ENIDAE	ornamentatus	Napaeus	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
VITRINIDAE	oromii	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	orsinii	Monacha	NT		NT		Yes	Yes
ACICULIDAE	orthostoma	Platyla	NT		NT		Yes	Yes
HELICIDAE	ortizi	Iberus	VU	D2	VU	D2	Yes	Yes
TRISSEXODONTIDAE	ortizi	Oestophora	NT		NT		Yes	Yes
HYGROMIIDAE	orzai	Helicella	NT		NT		Yes	Yes
DIPLOMMATINIDAE	oscitans	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	oshanovae	Monacha	NT		NT		Yes	Yes
ENIDAE	osoriensis	Napaeus	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
ENIDAE	ossica	Napaeopsis	LC		LC		Yes	Yes
HYGROMIIDAE	ovularis	Monacha	NT		NT		Yes	
ENIDAE	ovularis	Multidentula	LC		LC		Yes	
HYGROMIIDAE	oxytropis	Hystricella	NT		NT		Yes	Yes
HELICIDAE	paeteliana	Hemicycla	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
VERTIGINIDAE	paganettii	Spelaeoconcha	LC		NE		Yes	
DIPLOMMATINIDAE	pageti	Cochlostoma	NT		NT		Yes	Yes
ORCULIDAE	pagodula	Pagodulina	LC		LC		Yes	
ACICULIDAE	paillona	Renea	VU	D2	VU	D2	Yes	Yes
HELICIDAE	paivanopsis	Hemicycla	DD		DD		Yes	Yes
DIPLOMMATINIDAE	paladiilhianum	Cochlostoma	VU	D2	VU	D2	Yes	Yes
CHONDRINIDAE	pallida	Solatopupa	DD		DD		Yes	Yes
ENIDAE	palmaensis	Napaeus	DD		DD		Yes	Yes
VERTIGINIDAE	parcedentata	Vertigo	VU	D2	NE		Yes	
ACICULIDAE	parcelineata	Acicula	LC		LC			
HYGROMIIDAE	parlatoris	Schileykiella	NT		NT		Yes	Yes
HELICIDAE	parnassia	Codringtonia	VU	B1ab(i,ii,iv)+ 2ab(i,ii,iv)	VU	B1ab(i,ii,iv)+ 2ab(i,ii,iv)	Yes	Yes
DIPLOMMATINIDAE	parnonis	Cochlostoma	NT		NT		Yes	Yes
ENIDAE	parreyssi	Euchondrus	LC		LC		Yes	Yes
ARGNIDAE	parreyssii	Agardhiella	LC		LC		Yes	Yes
VITRINIDAE	parryi	Plutonia	NT		NT		Yes	Yes
CHONDRINIDAE	partioti	Abida	LC		LC		Yes	Yes
DIPLOMMATINIDAE	partioti	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	parumcincta	Monacha	LC		LC		Yes	
HYGROMIIDAE	parva	Pyrenaeaeria	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	patulum	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	paulhessei	Helicopsis	EX		NE		Yes	
HYGROMIIDAE	pauperculum	Heterostoma	LC		LC		Yes	Yes
HYGROMIIDAE	pavida	Xerotricha	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
VITRINIDAE	pegorarii	Eucobresia	EN	B2ab(iv)	DD		Yes	
VITRINIDAE	pelagica	Plutonia	LC		LC		Yes	Yes
HELICIDAE	pelia	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	pellitus	Metafruticicola	LC		LC		Yes	Yes
VITRINIDAE	pellucida	Vitrina	LC		LC			
HYGROMIIDAE	peloponnesia	Xeromunda	LC		LC		Yes	Yes

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ENIDAE	peloponnesica	Chondrula	LC		LC		Yes	Yes
ACICULIDAE	peloponnesica	Platyla	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	penchinati	Xerocrassa	LC		LC		Yes	
HELICIDAE	pentheri	Chilostoma	NT		NE		Yes	
ACICULIDAE	perpusilla	Platyla	LC		LC		Yes	
HELICIDAE	perraudierei	Hemicycla	LC		LC		Yes	Yes
COCHLICELLIDAE	persimilis	Monilearia	LC		LC		Yes	Yes
COCHLICELLIDAE	petrophila	Ripkeniella	NT		NT		Yes	Yes
HELICIDAE	petrovici	Cattania	NT		NE		Yes	
ACICULIDAE	pezzolii	Platyla	NT		NT		Yes	Yes
COCHLICELLIDAE	phalerata	Monilearia	NT		NT		Yes	Yes
HELICIDAE	philibinensis	Helix	LC		LC		Yes	
DIPLOMMATINIDAE	philippianum	Cochlostoma	LC		LC		Yes	Yes
CHONDRINIDAE	philippii	Rupestrella	LC		LC			
HELICIDAE	phocaea	Chilostoma	LC		LC		Yes	
HYGROMIIDAE	phorochaetia	Trochulus	LC		LC		Yes	Yes
HYGROMIIDAE	piccardi	Trochulus	DD		NE		Yes	
HELICIDAE	pieperi	Chilostoma	LC		LC		Yes	Yes
ENIDAE	pindica	Chondrula	LC		LC		Yes	Yes
DIPLOMMATINIDAE	pinteri	Cochlostoma	NT		NE		Yes	
ACICULIDAE	pinteri	Platyla	LC		LC		Yes	
HELICODONTIDAE	pirinensis	Lindholmiola	LC		LC		Yes	
ARGNIDAE	pirotana	Agardhiella	NT		NE		Yes	
HELICIDAE	pisana	Theba	LC		LC			
VALLONIIDAE	placida	Plagyrona	LC		LC			
HYGROMIIDAE	planaria	Canariella	LC		LC		Yes	Yes
HELICIDAE	planorbella	Hemicycla	DD		DD		Yes	Yes
HELICIDAE	planospira	Chilostoma	DD		DD		Yes	Yes
HELICIDAE	platychela	Marmorana	DD		DD		Yes	Yes
HYGROMIIDAE	plebeius	Trochulus	DD		DD		Yes	
HELICIDAE	plicaria	Hemicycla	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYGROMIIDAE	plutonia	Canariella	LC		LC		Yes	Yes
HYGROMIIDAE	poecilodoma	Xerocrassa	LC		LC		Yes	Yes
HELICIDAE	polinskii	Chilostoma	LC		LC		Yes	Yes
ACICULIDAE	polita	Platyla	LC		LC		Yes	
VITRINIDAE	polloneriana	Sardovitrina	VU	D2	VU	D2	Yes	Yes
HELICIDAE	polyhymnia	Chilostoma	LC		LC		Yes	Yes
HYGROMIIDAE	polymorpha	Discula	LC		LC		Yes	Yes
CHONDRINIDAE	polyodon	Abida	LC		LC		Yes	
HELICIDAE	pomacella	Helix	LC		LC		Yes	
HELICIDAE	pomatia	Helix	LC		LC		Yes	
HYGROMIIDAE	ponentina	Ponentina	LC		LC		Yes	Yes
HYGROMIIDAE	pontelirae	Canariella	VU	D2	VU	D2	Yes	Yes
DIPLOMMATINIDAE	porroi	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	portosanctana	Pseudocampylaea	LC		LC		Yes	Yes
HELICIDAE	posthuma	Chilostoma	LC		LC		Yes	Yes
HELICIDAE	pouchadan	Hemicycla	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HELICIDAE	pouchet	Hemicycla	VU	B2ab(ii)	VU	B2ab(ii)	Yes	Yes
HELICIDAE	pouzolzi	Chilostoma	LC		NE		Yes	
COCHLICELLIDAE	praeposita	Monilearia	DD		DD		Yes	Yes
TRISSEXODONTIDAE	prieto	Oestophora	NT		NT		Yes	Yes
HYGROMIIDAE	prieto	Xerocrassa	NT		NT		Yes	Yes
ENIDAE	procax	Mastus	LC		LC		Yes	Yes

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ACICULIDAE	procax	Platyla	VU	D2	NE		Yes	
ENIDAE	procerus	Napaeus	NT		NT		Yes	Yes
HYGROMIIDAE	promissa	Xerosecta	LC		LC		Yes	Yes
ENIDAE	propinquus	Napaeus	DD		DD		Yes	Yes
ENIDAE	pruninus	Napaeus	LC		LC		Yes	Yes
CHONDRINIDAE	psarolena	Solatopupa	VU	D2	VU	D2	Yes	Yes
HELICIDAE	psathyra	Hemicycla	DD		DD		Yes	Yes
ORCULIDAE	pseudodolium	Orcula	NT		NT		Yes	Yes
HYGROMIIDAE	pseudorothii	Monacha	LC		LC		Yes	Yes
HYGROMIIDAE	pthonera	Canariella	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
VALLONIIDAE	pulchella	Vallonia	LC		LC			
COCHLICELLIDAE	pulverulenta	Monilearia	CR/PE	B1ab(iii)+2ab(iii)	CR/PE	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	pulvinata	Discula	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HELICIDAE	punctata	Otala	LC		LC			
HYGROMIIDAE	punctulatus	Caseolus	LC		LC		Yes	Yes
ENIDAE	pupa	Mastus	LC		LC			
VERTIGINIDAE	purpuraria	Truncatellina	DD		DD		Yes	Yes
VERTIGINIDAE	pusilla	Vertigo	LC		LC			
ENIDAE	pusio	Mastus	LC		LC		Yes	Yes
VERTIGINIDAE	pygmaea	Vertigo	LC		LC			
ENIDAE	pygmaeus	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	pyramidata	Trochoidea	LC		LC			
CHONDRINIDAE	pyrenaearia	Abida	LC		LC		Yes	Yes
HELICIDAE	pyrenaicus	Allognathus	NT		NT		Yes	Yes
VITRINIDAE	pyrenaicus	Semilimax	LC		LC		Yes	
HELICODONTIDAE	quadrasii	Atenia	LC		LC		Yes	Yes
HELICIDAE	quadricincta	Hemicycla	NT		NT		Yes	Yes
ENIDAE	quadridens	Jamina	LC		LC		Yes	
ENIDAE	quinquedentata	Chondrula	LC		LC		Yes	
TRISSEXODONTIDAE	rangianus	Mastigophallus	NT		NT		Yes	Yes
HELICIDAE	raspailii	Tacheocampylaea	VU	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	VU	B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)	Yes	Yes
HYGROMIIDAE	razlogi	Xerolenta	DD		DD		Yes	Yes
HYGROMIIDAE	reboudiana	Xerosecta	LC		LC			
HELICIDAE	rechingeri	Assyriella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
LAURIIDAE	recta	Leiostyla	LC		LC		Yes	Yes
HYGROMIIDAE	redtenbacheri	Metafruticicola	LC		LC		Yes	Yes
HELICODONTIDAE	regisborisi	Lindholmiola	LC		LC		Yes	Yes
HYGROMIIDAE	reinae	Schileykiella	NT		NT		Yes	Yes
ARGNIDAE	reinhardti	Agardhiella	NT		NT		Yes	Yes
HELICODONTIDAE	reischuetzi	Lindholmiola	LC		LC		Yes	Yes
HELICIDAE	reischuetzi	Superba	NT		NT		Yes	Yes
LAURIIDAE	relevata	Leiostyla	NT		NT		Yes	Yes
HYGROMIIDAE	renei	Xerotricha	DD		DD		Yes	Yes
ORCULIDAE	restituta	Orcula	LC		LC		Yes	Yes
VITRINIDAE	reticulata	Plutonia	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HYGROMIIDAE	retowskii	Helicopsis	LC		NE		Yes	
HYGROMIIDAE	revelata	Ponentina	DD		DD		Yes	Yes
HYGROMIIDAE	rhabdotoides	Candidula	LC		LC		Yes	
CHONDRINIDAE	rhodia	Rupestrella	LC		LC			
HELICIDAE	ridens	Tyrrheniberus	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
ENIDAE	riedeli	Mastus	LC		LC		Yes	Yes
HYGROMIIDAE	ripacurcica	Xerocrassa	LC		LC		Yes	Yes

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CHONDRINIDAE	ripkeni	Chondrina	NT		NT		Yes	Yes
VITRINIDAE	ripkeni	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	rithymna	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	rizzae	Monacha	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	roblesi	Xerocrassa	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	robusta	Actinella	DD		DD		Yes	Yes
HYGROMIIDAE	rocandioi	Candidula	LC		LC		Yes	Yes
ENIDAE	roccelicola	Napaeus	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
ACICULIDAE	rolani	Menkia	DD		DD		Yes	Yes
HELICIDAE	romagnoli	Tacheocampylaea	CR	B1ab(iii,v)+2ab(iii,v)	CR	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
HYGROMIIDAE	ronceroi	Canariella	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
VERTIGINIDAE	ronnebyensis	Vertigo	LC		LC		Yes	
DIPLOMMATINIDAE	roseoli	Cochlostoma	LC		NE		Yes	
ENIDAE	rossmaessleri	Mastus	LC		LC		Yes	
ORCULIDAE	rossmaessleri	Walklea	LC		LC		Yes	Yes
VERTIGINIDAE	rothi	Truncatellina	LC		LC		Yes	
HYGROMIIDAE	rothii	Monacha	LC		LC		Yes	Yes
HYGROMIIDAE	rotula	Discula	LC		LC		Yes	Yes
HYGROMIIDAE	rubiginosa	Pseudotrichia	LC		LC		Yes	
HYGROMIIDAE	ruffoi	Monacha	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
ENIDAE	rufobrunneus	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	rugosa	Cernuella	EN	B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)	EN	B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)	Yes	Yes
LAURIIDAE	rugulosa	Leiostylia	LC		LC		Yes	Yes
VITRINIDAE	ruivensis	Plutonia	LC		LC		Yes	Yes
HELICIDAE	rumelica	Cattania	LC		LC		Yes	
ENIDAE	rupestre	Peristoma	NT		NE		Yes	
CHONDRINIDAE	rupestris	Rupestrella	NT		NT		Yes	Yes
ENIDAE	rupicola	Napaeus	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	sabulivaga	Helicella	DD		DD		Yes	Yes
HYGROMIIDAE	sacchii	Ichnusomunda	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HELICIDAE	saintivesi	Macularia	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	sanctaemariae	Leptaxis	LC		LC		Yes	Yes
HELICIDAE	saponacea	Hemicycla	NT		NT		Yes	Yes
HELICIDAE	sarcostoma	Hemicycla	LC		LC		Yes	Yes
ACICULIDAE	sardoa	Platyla	NT		NT		Yes	Yes
HELICIDAE	sardonius	Tyrrheniberus	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
DIPLOMMATINIDAE	sardoum	Cochlostoma	LC		LC		Yes	Yes
HELICIDAE	saulcyi	Hemicycla	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
ENIDAE	savinosi	Napaeus	DD		DD		Yes	Yes
HELICIDAE	saxetana	Marmorana	NT		NT		Yes	Yes
HELICIDAE	scabruscula	Marmorana	DD		DD		Yes	Yes
DIPLOMMATINIDAE	scalarinum	Cochlostoma	LC		LC		Yes	
ORCULIDAE	scalaris	Orculella	LC		LC		Yes	Yes
HELICIDAE	schmidtii	Arianta	NT		NT		Yes	Yes
ORCULIDAE	schmidtii	Orcula	LC		LC		Yes	
CHONDRINIDAE	secale	Abida	LC		LC		Yes	
HELICIDAE	secernenda	Helix	LC		LC		Yes	
ENIDAE	seductilis	Pseudochondrula	VU	A2b	VU	A2b		
VITRINIDAE	semilimax	Semilimax	LC		LC		Yes	
VERTIGINIDAE	seminulum	Staurodon	LC		LC		Yes	Yes
DIPLOMMATINIDAE	septemspirale	Cochlostoma	LC		LC		Yes	

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
ARGNIDAE	serbica	Agardhiella	NT		NE		Yes	
HELICIDAE	serbica	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	sericeus	Trochulus	LC		LC		Yes	
HELICIDAE	serpentina	Marmorana	LC		LC		Yes	Yes
ENIDAE	servus	Napaeus	DD		DD		Yes	Yes
HELICIDAE	setigera	Chilostoma	LC		NE		Yes	
HELICIDAE	setosa	Chilostoma	LC		NE		Yes	
HYGROMIIDAE	setubalensis	Candidula	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	setulosus	Caseolus	LC		LC		Yes	Yes
ENIDAE	severus	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	siderensis	Xerocrassa	LC		LC		Yes	Yes
HELICIDAE	signata	Marmorana	NT		NT		Yes	Yes
HYGROMIIDAE	silosensis	Xerotricha	LC		LC		Yes	Yes
TRISSEXODONTIDAE	silvae	Oestophora	LC		LC		Yes	Yes
HYGROMIIDAE	simia	Leptaxis	LC		LC		Yes	Yes
ACICULIDAE	similis	Platyla	LC		LC		Yes	
CHONDRINIDAE	similis	Solatopupa	LC		LC		Yes	
TRISSEXODONTIDAE	simplicula	Gasulliella	LC		LC			
DIPLOMMATINIDAE	simrothi	Cochlostoma	LC		LC		Yes	Yes
LAURIIDAE	simulator	Leiostyla	CR/PE	D	CR/PE	D	Yes	Yes
HYGROMIIDAE	siphnica	Xerocrassa	LC		LC		Yes	Yes
ORCULIDAE	sirianocoriensis	Orculella	LC		LC		Yes	
ENIDAE	sitiensis	Mastus	LC		LC		Yes	Yes
ARGNIDAE	skipetarica	Agardhiella	LC		LC		Yes	
HELICIDAE	skipetarica	Superba	LC		NE		Yes	
VITRINIDAE	solemi	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	solidior	Monacha	LC		LC		Yes	
VALLONIIDAE	sororcula	Gittenbergia	LC		LC			
HYGROMIIDAE	spadae	Candidula	VU	B1ab(iii)	VU	B1ab(iii)	Yes	Yes
ORCULIDAE	sparsa	Pagodulina	LC		LC		Yes	
HELICODONTIDAE	spectabilis	Lindholmiola	LC		LC		Yes	Yes
ACICULIDAE	spectabilis	Renea	LC		LC		Yes	
CHONDRINIDAE	spelta	Chondrina	LC		LC		Yes	
HELICIDAE	sphaerostoma	Chilostoma	LC		LC		Yes	Yes
ENIDAE	sphakiota	Mastus	LC		LC		Yes	Yes
LAURIIDAE	sphinctostoma	Leiostyla	LC		LC		Yes	Yes
VALLONIIDAE	spinifera	Acanthinula	DD		DD		Yes	Yes
HELICIDAE	spiriplana	Levantina	LC		LC		Yes	
HYGROMIIDAE	spirulina	Disculella	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	spiruloides	Xerolenta	LC		LC		Yes	Yes
HELICIDAE	splendida	Pseudotachea	LC		LC		Yes	
ORCULIDAE	spoliata	Orcula	DD		DD		Yes	Yes
HYGROMIIDAE	squalida	Spirorbula	VU	D2	VU	D2	Yes	Yes
ENIDAE	squalina	Multidentula	LC		NA		Yes	
HYGROMIIDAE	squamata	Canariella	NT		NT		Yes	Yes
HELICIDAE	squamatinum	Chilostoma	LC		LC		Yes	
CHONDRINIDAE	stabilei	Granaria	LC		LC		Yes	Yes
VITRINIDAE	stabilei	Phenacolimax	DD		DD		Yes	Yes
HELICIDAE	stenomphala	Chilostoma	LC		NE		Yes	
ARGNIDAE	stenostoma	Agardhiella	LC		NE		Yes	
HELICIDAE	stenzii	Arianta	NT		NT		Yes	Yes
PUPILLIDAE	sterrii	Pupilla	LC		LC			
HYGROMIIDAE	stiparum	Helicella	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
ENIDAE	stokesi	Rhabdoena	NT		NT		Yes	Yes
DIPLOMMATINIDAE	stossichi	Cochlostoma	NT		NE		Yes	
HYGROMIIDAE	striata	Helicopsis	LC		LC		Yes	
HYGROMIIDAE	striatitala	Helicella	LC		LC		Yes	Yes
HYGROMIIDAE	strigella	Euomphalia	LC		LC		Yes	
DIPLOMMATINIDAE	striolata	Striolata	LC		LC		Yes	Yes
HYGROMIIDAE	striolatus	Trochulus	LC		LC		Yes	
DIPLOMMATINIDAE	sturanii	Cochlostoma	LC		LC		Yes	
ACICULIDAE	stussineri	Platyla	LC		LC		Yes	Yes
ENIDAE	stylus	Multidentula	LC		LC		Yes	Yes
HELICIDAE	subaii	Chilostoma	LC		LC		Yes	Yes
ENIDAE	subaii	Mastus	LC		LC		Yes	Yes
DIPLOMMATINIDAE	subalpinum	Cochlostoma	LC		LC		Yes	Yes
HYGROMIIDAE	subcalliferus	Caseolus	CR	B2ab(iii)	CR	B2ab(iii)	Yes	Yes
HELICIDAE	subdentata	Theba	VU	D2	VU	D2		
ACICULIDAE	subdiaphana	Platyla	NT		NT		Yes	Yes
ORCULIDAE	subdola	Pagodulina	LC		LC		Yes	
HYGROMIIDAE	suberecta	Trochulus	DD		DD		Yes	
HYGROMIIDAE	suberinus	Urticicola	DD		DD		Yes	Yes
ENIDAE	subgracilior	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	subhispidula	Canariella	LC		LC		Yes	Yes
HELICIDAE	subplicata	Idiomela	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	subrogata	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	subrufescens	Zenobiella	LC		LC		Yes	Yes
ENIDAE	subsimplax	Napaeus	DD		DD		Yes	Yes
VERTIGINIDAE	substriata	Vertigo	LC		LC			
HYGROMIIDAE	subtecta	Petasina	NT		NT		Yes	Yes
ENIDAE	subtilis	Ena	LC		LC		Yes	
ENIDAE	subulata	Brephulopsis	LC		NE		Yes	
HYGROMIIDAE	subvariegata	Xerocrassa	LC		LC		Yes	Yes
HYGROMIIDAE	subvirescens	Ponentina	LC		LC		Yes	Yes
HELICIDAE	subzonata	Chilostoma	LC		LC		Yes	Yes
VALLONIIDAE	suevica	Vallonia	EN	B2ab(iii)	EN	B2ab(iii)	Yes	Yes
HELICIDAE	sylvatica	Cepaea	LC		LC		Yes	
HYGROMIIDAE	syrensis	Candidula	LC		LC		Yes	Yes
HYGROMIIDAE	syriaca	Monacha	LC		LC			
ACICULIDAE	szigethyannae	Acicula	LC		LC		Yes	
HELICIDAE	sztolcmani	Chilostoma	NT		NT		Yes	Yes
HYGROMIIDAE	tabellata	Discula	CR	B1ab(iii)	CR	B1ab(iii)	Yes	Yes
ENIDAE	tabidus	Napaeus	LC		LC		Yes	Yes
VITRINIDAE	taburientensis	Plutonia	LC		LC		Yes	Yes
HELICIDAE	tacheoides	Tacheocampylaea	EN	B1ab(iii,v)+2ab(iii,v)	EN	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
LAURIIDAE	taeniata	Leiostyla	DD		DD		Yes	Yes
ENIDAE	tafadaensis	Napaeus	NT		NT		Yes	Yes
ENIDAE	tagamichensis	Napaeus	VU	D2	VU	D2	Yes	Yes
ENIDAE	taguluchensis	Napaeus	VU	D2	VU	D2	Yes	Yes
ACICULIDAE	talentii	Platyla	NT		NT		Yes	Yes
VITRINIDAE	tamaranensis	Plutonia	LC		LC		Yes	Yes
HYGROMIIDAE	taraensis	Monachoides	LC		NE		Yes	
HYGROMIIDAE	tarentina	Trochoidea	DD		DD		Yes	Yes
TRISSEXODONTIDAE	tarnieri	Oestophora	LC		LC			
TRISSEXODONTIDAE	tarraconensis	Suboestophora	NT		NT		Yes	Yes

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
HYGROMIIDAE	tassyi	Hygromia	VU	D2	VU	D2	Yes	
HYGROMIIDAE	tectiformis	Discula	EN	B1ab(iii)	EN	B1ab(iii)	Yes	Yes
ORCULIDAE	temporum	Orculella	NT		NT		Yes	Yes
ENIDAE	tenoensis	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	tenuicostulata	Canariella	LC		LC		Yes	Yes
CHONDRINIDAE	tenuimarginata	Chondrina	LC		LC		Yes	
ENIDAE	teobaldoi	Napaeus	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	terceirana	Leptaxis	LC		LC		Yes	Yes
DIPLOMMATINIDAE	tergestinum	Cochlostoma	LC		LC		Yes	
HYGROMIIDAE	terverii	Xerosecta	DD		DD		Yes	Yes
LAURIIDAE	tesselata	Leiostyla	DD		DD		Yes	Yes
DIPLOMMATINIDAE	tessellatum	Cochlostoma	LC		LC		Yes	
HYGROMIIDAE	testudinalis	Discula	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	tetrica	Discula	CR/PE	B1ab(iii)	CR/PE	B1ab(iii)	Yes	Yes
ENIDAE	texturatus	Napaeus	DD		DD		Yes	Yes
HYGROMIIDAE	thasia	Xerolenta	LC		LC		Yes	Yes
HYGROMIIDAE	thessalica	Xeromunda	LC		LC		Yes	Yes
ENIDAE	thiesseanus	Jaminia	LC		LC		Yes	Yes
ARGNIDAE	thracica	Argna	LC		LC		Yes	Yes
HYGROMIIDAE	tiarella	Geomitra	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	fillieri	Canariella	NT		NT		Yes	Yes
ORCULIDAE	tolminensis	Orcula	LC		LC		Yes	Yes
ENIDAE	tournefortianus	Chondrus	LC		LC		Yes	
HYGROMIIDAE	transilvanica	Lozekia	LC		LC		Yes	Yes
ENIDAE	transsylvanicus	Mastus	LC		LC		Yes	Yes
ENIDAE	tremulans	Napaeus	LC		LC		Yes	Yes
ENIDAE	tricuspidata	Chondrula	LC		LC		Yes	
ENIDAE	tridens	Chondrula	NT		NT			
VITRINIDAE	tridentinum	Vitrinobrachium	DD		DD		Yes	
PUPILLIDAE	triplicata	Pupilla	LC		LC			
HELICIDAE	trizona	Cattania	LC		LC		Yes	
HYGROMIIDAE	trochoides	Trochoidea	LC		LC			
ARGNIDAE	truncatella	Agardhiella	LC		LC		Yes	
ORCULIDAE	tschapecki	Pagodulina	DD		DD		Yes	Yes
COCHLICELLIDAE	tubaeformis	Monilearia	NT		NT		Yes	Yes
VITRINIDAE	tuberculata	Plutonia	NT		NT		Yes	Yes
COCHLICELLIDAE	tumulorum	Monilearia	CR	B1ab(iii)+2ab(iii)	CR	B1ab(iii)+2ab(iii)	Yes	Yes
ARGNIDAE	tunde	Agardhiella	VU	D2	VU	D2	Yes	Yes
ENIDAE	turgidus	Mastus	LC		LC		Yes	Yes
HYGROMIIDAE	turoloensis	Xerocrassa	NT		NT		Yes	Yes
HYGROMIIDAE	turricula	Hystricella	VU	D2	VU	D2	Yes	Yes
TRISSEXODONTIDAE	turriplana	Gittenbergeria	NT		NT		Yes	Yes
HYGROMIIDAE	ultima	Candidula	NT		NT		Yes	Yes
VERTIGINIDAE	ultimathule	Vertigo	NT		NT		Yes	
COCHLICELLIDAE	umbicula	Monilearia	LC		LC		Yes	Yes
HYGROMIIDAE	umbrosus	Urticicola	LC		LC		Yes	
VERTIGINIDAE	uniarmata	Truncatellina	DD		DD		Yes	
HYGROMIIDAE	unidentata	Petasina	LC		LC		Yes	
HYGROMIIDAE	unifasciata	Candidula	LC		LC		Yes	
HYGROMIIDAE	usticensis	Ichnusomunda	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	valdeona	Helicella	VU	D2	VU	D2	Yes	Yes
HELICIDAE	valentini	Helix	EN	B1ab(i,ii,iii)+2ab(i,ii,iii)	EN	B1ab(i,ii,iii)+2ab(i,ii,iii)	Yes	

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
HELICIDAE	valkanovi	Chilostoma	LC		LC		Yes	Yes
ARGNIDAE	valsabina	Argna	VU	B1ab(iii)+2ab(iii)	VU	B1ab(iii)+2ab(iii)	Yes	Yes
CHONDRINIDAE	variabilis	Granaria	DD		DD		Yes	
ENIDAE	variatus	Napaeus	LC		LC		Yes	Yes
ENIDAE	varnensis	Zebrina	LC		LC		Yes	Yes
CHONDRINIDAE	vasconica	Abida	LC		LC		Yes	Yes
HYGROMIIDAE	vatonniana	Xerotricha	VU	B1ab(iii)+2ab(iii); D2	VU	B1ab(iii)+2ab(iii); D2		
HYGROMIIDAE	velascoi	Pyrenaearia	VU	D2	VU	D2	Yes	Yes
VERTIGINIDAE	velkovrhi	Truncatellina	NT		NE		Yes	
HYGROMIIDAE	vendia	Plentuisa	NT		NT		Yes	Yes
ENIDAE	venerabilis	Mastus	LC		LC		Yes	Yes
ACICULIDAE	veneta	Renea	LC		LC		Yes	Yes
HYGROMIIDAE	venusta	Monacha	NT		NT		Yes	
CHONDRINIDAE	vergniesiana	Abida	NT		NT		Yes	
HELICIDAE	vermiculata	Eobania	LC		LC			
LAURIIDAE	vermiculosa	Leiostyla	DD		DD		Yes	Yes
HELICIDAE	vermiplicata	Hemicycla	DD		DD		Yes	Yes
HYGROMIIDAE	vespertina	Moreletina	LC		LC		Yes	Yes
ACICULIDAE	vezzanii	Acicula	NT		NT		Yes	Yes
HYGROMIIDAE	vicinus	Monachoides	LC		LC		Yes	
HELICIDAE	vikosensis	Superba	DD		DD		Yes	Yes
DIPLOMMATINIDAE	villae	Cochlostoma	LC		LC		Yes	Yes
HELICIDAE	villicus	Tyrheniberus	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	villosulus	Trochulus	LC		LC		Yes	
HYGROMIIDAE	villosus	Trochulus	LC		LC		Yes	
LAURIIDAE	vincta	Leiostyla	LC		LC		Yes	Yes
HELICIDAE	vindobonensis	Cepaea	LC		LC		Yes	
ENIDAE	violacea	Mastus	LC		LC		Yes	Yes
HYGROMIIDAE	virgata	Cernuella	LC		LC			
HELICIDAE	vladica	Helix	LC		NE		Yes	
ENIDAE	voggenreiteri	Napaeus	NT		NT		Yes	Yes
ENIDAE	vulgaris	Napaeus	LC		LC		Yes	Yes
HYGROMIIDAE	vulgarissima	Xeromunda	LC		LC		Yes	
ORCULIDAE	wagneri	Orcula	NT		NT		Yes	
DIPLOMMATINIDAE	waldemari	Cochlostoma	LC		LC		Yes	
HYGROMIIDAE	waldemari	Trochulus	LC		NE		Yes	
HYGROMIIDAE	watsoni	Geomitra	DD		DD		Yes	Yes
COCHLICELLIDAE	watsoniana	Monilearia	DD		DD		Yes	Yes
HELICIDAE	webbiana	Lampadia	EN	B1ab(ii,iii)+2ab(ii,iii)	EN	B1ab(ii,iii)+2ab(ii,iii)	Yes	Yes
ENIDAE	weneri	Chondrula	LC		VU	D2	Yes	
DIPLOMMATINIDAE	westerlundi	Cochlostoma	LC		LC		Yes	Yes
ACICULIDAE	wilhelmi	Platyla	LC		NE		Yes	
HELICODONTIDAE	wilhelminae	Helicodonta	EN	B1ab(iii)+2ab(iii)	EN	B1ab(iii)+2ab(iii)	Yes	Yes
HYGROMIIDAE	wollastoni	Leptaxis	EN	B1ab(iii,v)+2ab(iii,v)	EN	B1ab(iii,v)+2ab(iii,v)	Yes	Yes
COCHLICELLIDAE	woodwardia	Monilearia	LC		LC		Yes	Yes
HELICIDAE	xartatii	Arianta	VU	D2	VU	D2	Yes	Yes
HYGROMIIDAE	zaharensis	Xerocrassa	VU	D2	VU	D2	Yes	Yes
TRISSEXODONTIDAE	zapateri	Hatumia	NT		NT		Yes	Yes
HYGROMIIDAE	zaratei	Xerotricha	NT		NT		Yes	Yes
ENIDAE	zasiensis	Rhabdoena	NT		NT		Yes	Yes

Family	Species	Genus	IUCN Red List Category (Europe)	IUCN Red List Criteria (Europe)	IUCN Red List Category (EU 27)	IUCN Red List Criteria (EU 27)	Endemic to Europe?	Endemic to EU 27?
HELICIDAE	zebiana	Chilostoma	NT		NE		Yes	
ENIDAE	zebra	Chondrus	LC		LC		Yes	
HYGROMIIDAE	zelebori	Xerocampylaea	LC		VU	D2	Yes	
HELICIDAE	ziegleri	Chilostoma	NT		NT		Yes	Yes
ORCULIDAE	zilchi	Orcula	VU	D2	VU	D2		
ARGNIDAE	zoltanorum	Agardhiella	LC		NE		Yes	
HELICIDAE	zonatum	Chilostoma	LC		LC		Yes	
HYGROMIIDAE	zonella	Metafruticicola	LC		LC		Yes	Yes
HYGROMIIDAE	zujarensis	Xerotricha	DD		DD		Yes	Yes

* Species were considered to be Not Applicable (NA) if they were judged to be of marginal occurrence in the region. Species were regarded as of marginal occurrence if it was estimated that less than 1% of their global range lies within Europe and if the European populations are not disjunct of the main species range.

Appendix 3. Bern Convention and Habitats Directive mollusc species

Molluscs listed on either Annexes II and IV of the Habitats Directive or Appendices II or III of the Bern Convention and their European Red List status. An

asterisk (*) indicates that the species is a priority species for the Habitats Directive.

Bern and Habitat Directive name	Red List name	European Red List Category	European Red List Criteria	Habitat Directive Annexes	Bern Convention Appendices	Biome (Terrestrial/Freshwater/Marine)
<i>Anisus vorticulus</i>	<i>Anisus vorticulus</i>	NT		II/IV		Freshwater
<i>Caseolus calculus</i>	<i>Caseolus calculus</i>	VU	D2	II/IV	II	Terrestrial
<i>Caseolus commixta</i>	<i>Caseolus commixta</i>	LC		II/IV	II	Terrestrial
<i>Caseolus sphaerula</i>	Porto Santo populations now under the name <i>Casoeuls subcalliferus</i> , as <i>Caseolus sphaerula</i> was the fossil subspecies on Madeira, and as the nominate race took the name	CR	B2ab(iii)	II/IV	II	Terrestrial
<i>Charonia rubicunda</i> (= <i>C. lampas</i> = <i>C. nodiferum</i>) (Med.)		NE			II	Marine
<i>Charonia tritonis</i> (= <i>C. sequeuziae</i>) (Med.)		NE			II	Marine
<i>Chilostoma banaticum</i>	<i>Drobacia banatica</i>	DD		II/IV		Terrestrial
<i>Congeria kusceri</i>	<i>Congeria kusceri</i>	VU	A2ac	IV		Freshwater
<i>Dendropoma petræum</i> (Med.)		NE			II	Marine
<i>Discula leacockiana</i>	<i>Hystriella leacockiana</i>	VU	D2	II/IV	II	Terrestrial
<i>Discula tabellata</i>	<i>Discula tabellata</i>	CR	B1ab(iii)	II/IV	II	Terrestrial
<i>Discula testudinalis</i>	<i>Discula testudinalis</i>	CR	B1ab(iii)+2ab(iii)	IV	II	Terrestrial
<i>Discula turricula</i>	<i>Hystriella turricula</i>	VU	D2	IV	II	Terrestrial
<i>Discus defloratus</i>		NE		IV	II	Terrestrial
<i>Discus guerinianus</i>	<i>Discus guerinianus</i>	CR	B1ab(iii,v)	II/IV	II	Terrestrial
<i>Elona quimperiana</i>	<i>Elona quimperiana</i>	LC		II/IV	II	Terrestrial
<i>Erosaria spurca</i> (Med.)		NE			II	Marine
<i>Geomalacus maculosus</i>	<i>Geomalacus maculosus</i>	LC		II/IV	II	Terrestrial
<i>Geomitra moniziana</i>	<i>Geomitra moniziana</i>	EN	B1ab(iii)+2ab(iii)	II/IV	II	Terrestrial
<i>Gibbula nivosa</i> (Med.)		NE		II/IV	II	Marine
* <i>Helicopsis striata austriaca</i> (o)	<i>Helicopsis striata</i>	LC		II		Terrestrial
<i>Helix pomatia</i>	<i>Helix pomatia</i>	LC			III	Terrestrial
<i>Hygromia kovacsi</i>	<i>Kovacsia kovacsi</i>	LC		II/IV		Terrestrial
<i>Idiomela (Helix) subplicata</i>	<i>Idiomela (Helix) subplicata</i>	CR	B1ab(iii)+2ab(iii)	II/IV	II	Terrestrial
<i>Lampedusa imitatrix</i>	<i>Lampedusa imitatrix</i>	NE		II/IV		Terrestrial
* <i>Lampedusa melitensis</i>	<i>Lampedusa melitensis</i>	NE		II/IV		Terrestrial
<i>Leiostyla abbreviata</i>	<i>Leiostyla abbreviata</i>	CR	B2ab(iii)	II/IV	II	Terrestrial
<i>Leiostyla cassida</i>	<i>Leiostyla cassida</i>	CR	B2ab(iii)	II/IV	II	Terrestrial
<i>Leiostyla corneocostata</i>	<i>Leiostyla corneocostata</i>	VU	D2	II/IV	II	Terrestrial
<i>Leiostyla gibba</i>	<i>Leiostyla gibba</i>	CR	B1ab(iii)	II/IV	II	Terrestrial
<i>Leiostyla lamellosa</i>	<i>Leiostyla lamellosa</i>	EX		II/IV	II	Terrestrial
<i>Lithophaga lithophaga</i> (Med.)		NE		IV	II	Marine
<i>Luria lurida</i> (= <i>Cypræa lurida</i>) (Med.)		NE			II	Marine
<i>Margaritifera auricularia</i>	<i>Margaritifera auricularia</i>	CR	A2ac	IV	II	Freshwater
<i>Margaritifera margaritifera</i>	<i>Margaritifera margaritifera</i>	CR	A2b	II	III	Freshwater
<i>Microcondymaea compressa</i>	<i>Microcondylaea bonellii</i>	VU	A2c		III	Freshwater
<i>Mitra zonata</i> (Med.)		NE			II	Marine

Bern and Habitat Directive name	Red List name	European Red List Category	European Red List Criteria	Habitat Directive Annexes	Bern Convention Appendices	Biome (Terrestrial/Freshwater/Marine)
*Paladilhia hungarica	Bythiospeum hungaricum	VU	D2	II/IV		Freshwater
Patella ferruginea (Med.)		NE		IV	II	Marine
Patella nigra (Med.)		NE			II	Marine
Pholas dactylus (Med.)		NE			II	Marine
Pinna nobilis		NE		IV		Marine
Pinna pernula (Med.)		NE			II	Marine
Ranella olearia (Med.)		NE			II	Marine
Sadleriana pannonica	Bythiospeum pannonica	LC		II/IV		Freshwater
Schilderia achatidea (Med.)		NE			II	Marine
Theodoxus prevostianus	Theodoxus prevostianus	EN	B2ab(ii,iii,iv)	IV		Freshwater
Theodoxus transversalis	Theodoxus transversalis	EN	B2ab(ii,iii,iv)	II/IV		Freshwater
Tonna galea (Med.)		NE			II	Marine
Unio crassus	Unio crassus	VU	A2ac+3ce	IV		Freshwater
Unio elongatulus	Unio mancus	NT			III	Freshwater
Vertigo angustior (o)	Vertigo angustior (o)	VU	A2ac+3c	II		Terrestrial
Vertigo genesii (o)	Vertigo genesii (o)	LC		II		Terrestrial
Vertigo geyeri (o)	Vertigo geyeri (o)	LC		II		Terrestrial
Vertigo moulinsiana (o)	Vertigo moulinsiana (o)	VU	A2ac	II		Terrestrial
Zonaria pyrum (Med.)		NE			II	Marine

Appendix 4. Methodology for spatial analyses

1. Freshwater molluscs

Data were analysed at the hydrosched level. River basins were selected as the spatial unit for mapping and analysing freshwater species distributions as it is generally accepted that the river/lake basin or catchment is the most appropriate management unit for inland waters. Species distributions have been mapped to include brackish and marine ranges where appropriate, however the spatial analyses only include the inland ranges for the purposes of this report.

Patterns of species richness (Figure 5) were mapped by counting the number of extant species in each hydrosched. Patterns of threatened species richness (Figure 6) were mapped by counting the number of threatened species (categories CR, EN, VU at the European regional level) in each hydrosched. Patterns of endemic species richness were mapped by counting the number of species in each hydrosched that were flagged as being endemic to geographic Europe as defined in this project (Figure 7).

2. Terrestrial molluscs


Data were analysed using a geodesic discrete global grid system, defined on an icosahedron and projected to the sphere using the inverse Icosahedral Snyder Equal Area (ISEA) Projection (S39). This corresponds to a hexagonal grid composed of individual units (cells) that retain their shape and area (~864 km²) throughout the globe. These are more suitable for a range of ecological applications than the most commonly used rectangular grids (S40).

The range of each species was converted to the hexagonal grid for analysis purposes. Coastal cells were clipped to the coastline. Patterns of species richness (Fig. 12) were mapped by counting the number of species in each cell (or cell section, for species with a coastal distribution). Patterns of threatened species richness (Fig. 13) were mapped by counting the number of threatened species (categories CR, EN, VU at the European regional level) in each cell or cell section. Patterns of endemic species richness were mapped by counting the number of species in each cell (or cell section for coastal species) that were flagged as being endemic to geographic Europe as defined in this project (Fig. 14).

Appendix 5. Example of species summary and distribution map

The species summary gives all the information collated (for each species) during this assessment, including a distribution map. You can search for and download all the summaries and distribution maps

from the European Red List website and data portal available online at <http://ec.europa.eu/environment/nature/conservation/species/redlist> and <http://www.iucnredlist.org/europe>.



Codringtonia eucineta - (Bourguignat, 1857)

ANIMALIA - MOLLUSCA - GASTROPODA - STYLOMMATOPHORA - HELICIDAE - Codringtonia - eucineta

Common Names: No Common Names
Synonyms: Codringtonia acarnanica (Kobelt, 1902) ;

Taxonomic Note:

Red List Assessment

Red List Status
VU - Vulnerable, B1ab(i,ii,iv)+2ab(i,ii,iv) (IUCN version 3.1)

Assessment Information

Reviewed?	Date of Evaluation:	Status:	Reasons for Rejection:	Improvements Needed:
True	2011-03-01	Passed	-	-

Assessor(s): Vardinoyannis, K. & Triantis, K.
Reviewer(s): Livingstone, S. & Neubert, E.

Assessment Rationale

The species has a restricted extent of occurrence (4,000 km²), along with a severely fragmented population and a continuous decline in the extent of occurrence, and area of occupancy and the number of locations or subpopulations (inferred by Hadjicharalambous 1996). Also, it seems that there is a continuous decline of the population (Hadjicharalambous 1996). *Codringtonia* has a quite unusual life cycle of or land snails of southern Europe, since it reproduces in spring. This uncommon life-history pattern is in disassociation with the prevailing climatic conditions in southern Greece (Hadjicharalambous 1996). This constitutes an important extinction threat, considering the current trends of climatic conditions and the human impact on vegetation cover in the preferred habitats of the *Codringtonia* species (Giokas *et al.* 2007). This species is listed as Vulnerable (B1a, B1b (i, ii, iv), B2a, B2b(i, ii, iv)).

Distribution

Geographic Range

The species is endemic to Greece, distributed in the central part of south Peloponnese and in Evrytania (central Greece) (Hadjicharalambous 1996, Subai 2005).

Map Status

Map Status: Done

Biogeographic Realms

Biogeographic Realm: Palearctic

Occurrence

Countries of Occurrence

Country	Presence	Origin	Formerly Bred	Seasonality
Greece	Extant	Native	-	Resident
Greece -> Greece (mainland)	Extant	Native	-	Resident

Population

The populations of the species, although their size cannot be accurately estimated appear to be in serious decline (Hadjicharalambous 1996). The species is generally considered as rare.

Habitats and Ecology

Codringtonia species are found at various altitudes, living in crevices on rocky terrain within maquis and coniferous (except pines) or mixed (deciduous–coniferous) forests (Hadjicharalambous 1996).

IUCN Habitats Classification Scheme

Habitat	Suitability	Major Importance?
Forest -> Forest - Temperate	Suitable	Yes
Rocky areas (eg. inland cliffs, mountain peaks)	Suitable	Yes

Systems

System: Terrestrial

Use and Trade

General Use and Trade Information

This species is not used or traded.

Threats

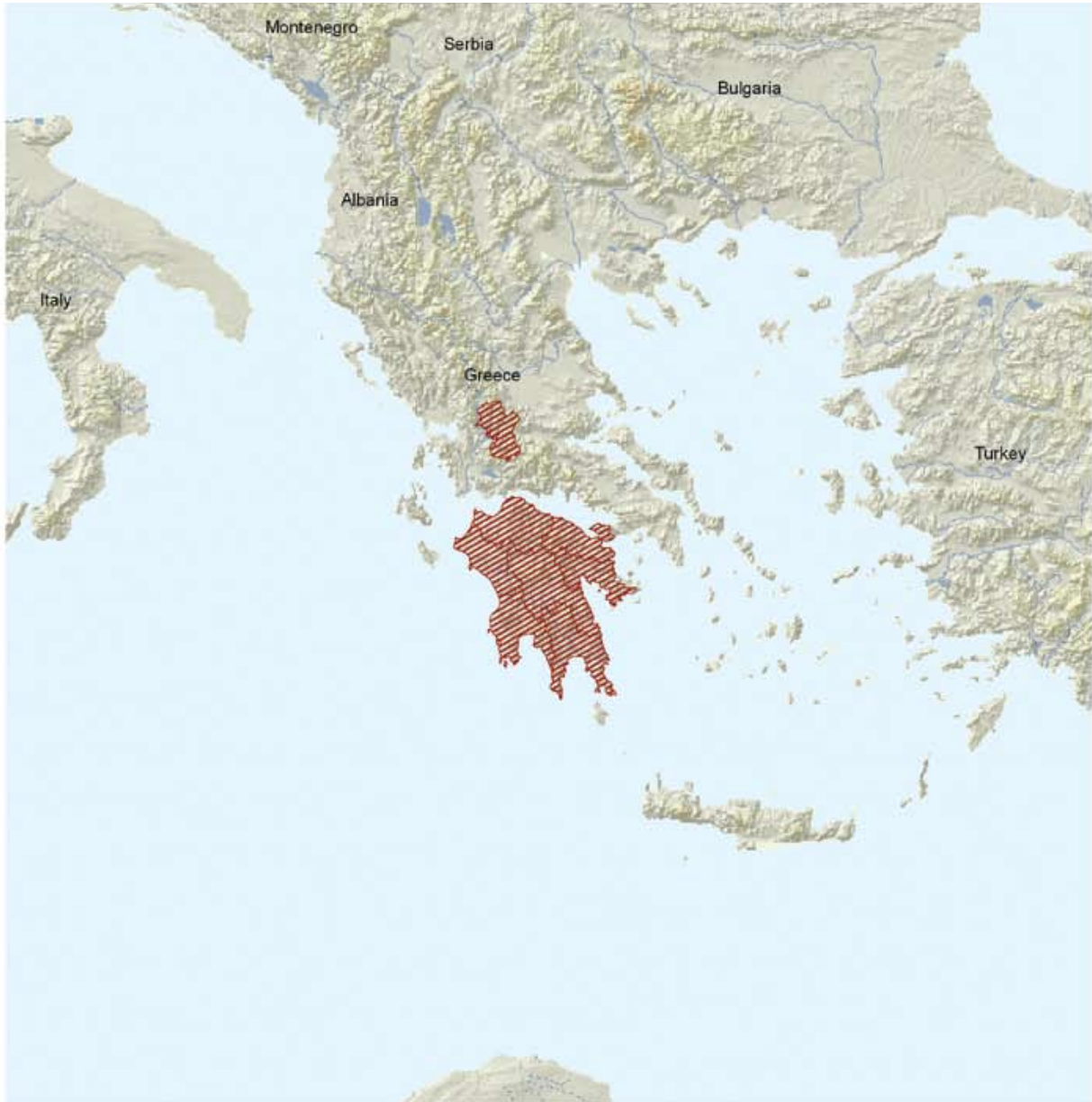
Grazing and fire can potentially restrict the populations of the species but currently there is no evidence for any direct threats for this species. Nevertheless, *Codringtonia* has a quite unusual life cycle of or land snails of southern Europe, since it reproduces in spring. This uncommon life-history pattern is in disassociation with the prevailing climatic conditions in southern Greece (Hadjicharalambous 1996). This constitutes an important extinction threat, considering the current trends of climatic conditions and the human impact on vegetation cover in the preferred habitats of the *Codringtonia* species (Giokas *et al.* 2007).

Conservation

This species is listed in the Greek Red Data Book as Vulnerable (Legakis and Maraghou 2009). Although there are a number of areas included in various protection schemes, in which the species is present, there is no conservation action regarding the species.


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Codringtonia eucineta

range type

 Native (resident)

-  national boundaries
-  subnational boundaries
-  lakes, rivers, canals
-  salt pans, intermittent rivers

data source:
Kostas Triantis



gall stereographic central point: 0°, 0°

Map created 08/05/2011



European Regional Assessment

The boundaries and names shown and the designations used on this map do not imply any official endorsement, acceptance or opinion by IUCN.

IUCN Red List of Threatened Species™ – Regional Assessments

Europe

The Status and Distribution of European Mammals. Compiled by Helen J. Temple and Andrew Terry, 2007

European Red List of Reptiles. Compiled by Neil Cox and Helen J. Temple, 2009

European Red List of Amphibians. Compiled by Helen J. Temple and Neil Cox, 2009

European Red List of Dragonflies. Compiled by Vincent J. Kalkman, Jean-Pierre Boudot, R. Bernard, Klaus-Jürgen Conze, Geert De Knijf, Elena Dyatlova, Sonia Ferreira, Miloš Jović, Jürgen Ott, Elisa Riservato and Göran Sahlén, 2010

European Red List of Saproxyllic Beetles. Compiled by Ana Nieto and Keith Alexander, 2010

European Red List of Butterflies. Compiled by Chris van Swaay, Sue Collins, Annabelle Cuttelod, Dirk Maes, Miguel López Munguira, Martina Šašić, Josef Settele, Theo Verstrael, Rudi Verovnik, Martin Warren, Martin Wiemers and Irma Wynhoff, 2010

European Red List of Freshwater Fishes. Jörg Freyhof and Emma Brooks, 2011

European Red List of Vascular Plants. Melanie Bilz, Shelagh Kell, Nigel Maxted and Richard Lansdown, 2011

Other regions

The Status and Distribution of Freshwater Biodiversity in Eastern Africa. Compiled by William R.T. Darwall, Kevin G. Smith, Thomas Lowe, Jean-Christophe VieÅL, 2005

The Status and Distribution of Freshwater Fish Endemic to the Mediterranean Basin. Compiled by Kevin G. Smith and William R.T. Darwall, 2006

The Status and Distribution of Reptiles and Amphibians of the Mediterranean Basin. Compiled by Neil Cox, Janice Chanson and Simon Stuart, 2006

Overview of the Cartilaginous Fishes (Chondrichthyans) in the Mediterranean Sea. Compiled by Rachel D. Cavanagh and Claudine Gibson, 2007

The Status and Distribution of Dragonflies of the Mediterranean Basin. Compiled by Elisa Riservato, Jean-Pierre Boudot, Sonia Ferreira, Miloš Jović, Vincent J. Kalkman, Wolfgang Schneider, Boudjéma Samraoui and Annabelle Cuttelod, 2009

The Status and Distribution of Mediterranean Mammals. Compiled by Helen J. Temple and Annabelle Cuttelod, 2009

The Status and Distribution of Freshwater Biodiversity in Southern Africa. Compiled by William R.T. Darwall, Kevin G. Smith, Denis Tweddle and Paul Skelton, 2009

The Status and Distribution of Freshwater Biodiversity in Western Africa. Compiled by Kevin Smith, Mame D. Diop and Mamadou Niane, 2009

The Status and Distribution of Freshwater Biodiversity in Northern Africa. Compiled by Nieves García, Annabelle Cuttelod and Dania Abdul Malak, 2010

The Status and Distribution of Freshwater Biodiversity in the Eastern Himalaya. Compiled by David Allen, Snajay Molur and B.A. Daniel, 2010

The Status and Distribution of Freshwater Biodiversity in Central Africa. Compiled by Emma G. E. Brooks, David J. Allen and William R.T. Darwall, 2011

The diversity of life in African freshwaters; Underwater, under threat. An analysis of the status and distribution of freshwater species throughout mainland Africa. Edited by William Darwall, Kevin Smith, David Allen, Robert Holland, Ian Harrison and Emma G. Brooks, 2011

European Commission

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The European Red List is a review of the conservation status of c.6,000 European species (mammals, reptiles, amphibians, freshwater fishes, butterflies, dragonflies, and selected groups of beetles, molluscs, and vascular plants) according to IUCN regional Red Listing guidelines. It identifies those species that are threatened with extinction at the regional level – in order that appropriate conservation action can be taken to improve their status.

This publication summarises results for all of Europe's native freshwater species of mollusc and for a selection of terrestrial mollusc families.. About 44% of the freshwater molluscs and 20% of the selected terrestrial molluscs are threatened with extinction at the European level as a result of threats including pollution, dams and water extraction (mainly for agriculture and drinking purposes) for the freshwater ecosystems and urbanisation, agriculture and recreational activities for the terrestrial molluscs.

The European Red List was compiled by IUCN's Species Programme , the IUCN Regional Office for Europe and the Natural History Museum of Bern (Switzerland) and is the product of a service contract with the European Commission. It is available online at <http://ec.europa.eu/environment/nature/conservation/species/redlist> and <http://www.iucnredlist.org/europe>.

