

# The Status and Distribution of Freshwater Fish Endemic to the Mediterranean Basin

Compiled and edited by Kevin G. Smith and William R.T. Darwall



IUCN Red List of Threatened Species™ – Mediterranean Regional Assessment No. 1

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IUCN Freshwater Biodiversity Assessment Programme

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of the detailed individual species assessments, which will be available on the IUCN Freshwater Biodiversity Assessment Website ([www.iucn.org/themes/ssc/our\\_work/freshwater/indexfreshwater.htm](http://www.iucn.org/themes/ssc/our_work/freshwater/indexfreshwater.htm)), the specific contribution of each scientist is fully acknowledged. Finally, we would also like to thank the IUCN Species Programme for providing technical support and workshop facilitation, and all the staff at the IUCN Centre for Mediterranean Cooperation and in particular Sonsoles San Román Sánchez for making sure the communications and evaluation workshop ran smoothly.

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Participants of the Mediterranean Endemic Freshwater Fish Assessment Evaluation Workshop, 13–16 December 2004, IUCN Centre for Mediterranean Co-operation, Malaga, Spain.



# 1. Background

## 1.1 Mediterranean wetlands: values and threats

Freshwater in the Mediterranean basin is of huge economic, environmental and livelihood importance. However, with a growing population of about 450 million people, and being the world's main tourist destination with around 175 million visitors a year, the freshwater resources are under great pressure.

Wetlands in the region provide income at both an artisanal and commercial scale including the provision of valuable seasonal grazing land, fisheries, agricultural land, reeds for thatching and hunting grounds. Many communities depend upon wetlands for transport, and the local population, tourists, agriculture and industry also demand a clean, safe and constant water supply. Wetlands also provide many indirect benefits for which the economic value is difficult to estimate such as flood control, storm protection, groundwater recharge and sediment, pollution and nutrient retention.



Habitat of the Vulnerable *Ladigesocypris gbigii*, commonly known as Gizani, near the Gadouras Estuary, Rhodes. ©Maria Stoumboudi

All these services and products depend upon functioning freshwater ecosystems. If the ecological and physical integrity of the ecosystem is compromised fisheries may fail, flooding may be more frequent and severe, and clean drinking water will become ever more scarce.

Historically wetlands in the Mediterranean have been viewed as wastelands with their only perceived value being conversion for other purposes, mainly agriculture. This has resulted in an estimated half of all the region's

wetlands being lost. Of those that remain, industrialization, the intensification and expansion of agriculture, an increasing population and the tourism industry have also led to major ecosystem degradation and nearly every important river in the Mediterranean basin has been dammed.



Dams are one of the main threats to wetlands and freshwater fish in the Mediterranean region. © Maria Stoumboudi

The main current threats to Mediterranean wetlands are:

- eutrophication resulting from urban sewage and agricultural runoff;
- drainage for irrigation and drinking water;
- dam construction which limits sediment and nutrient flow downstream to deltas and affects species migrations and fisheries productivity;
- overfishing of lakes and lagoons;
- industrial pollution.

To protect critical services such as flood control and valuable economic and livelihood benefits, all users of freshwater including biodiversity need to be taken into consideration when managing water resources.

## 1.2 Species threatened status

The threatened status of plants and animals is one of the most widely used indicators for assessing the condition of ecosystems and their biodiversity. It provides an important tool in priority-setting exercises 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* (IUCN, 2004). The Red List 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). This system 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 global extinction (i.e. those listed as Critically Endangered, Endangered and Vulnerable).

For inland waters the coverage of species assessed for the Red List is still very poor. Nonetheless, it is clear that of those species that have been assessed a disproportionately high number are threatened with extinction.

IUCN will ensure the wide circulation of this document to relevant decision makers, NGOs, and scientists to assist in mobilizing conservation action on the ground.



The IUCN Red List of Threatened Species™ website [www.iucnredlist.org](http://www.iucnredlist.org)

### 1.3 Objectives of the assessment

The regional assessment has two main objectives:

- To assist in regional planning through provision of a baseline dataset reporting the status and distribution of freshwater fish endemic to the Mediterranean basin; and
- To develop a network of regional experts to enable future assessments and the continued updating of the baseline dataset.

The assessment provides two main direct outputs:

- This summary report on the status of freshwater fish endemic to the Mediterranean region, to include a Red List assessment of freshwater fish and identification of the centres of freshwater fish biodiversity and their main threats;
- A freely available database holding the baseline data for monitoring the status and distribution of the endemic freshwater fish of the Mediterranean basin.

The data presented in this report provide a snapshot based on available knowledge at the time of writing. The database will continue to be updated and made freely and widely available.

# 2. Assessment methodology

## 2.1 Scale of the assessment

This is an assessment of the global extinction risk of species (global Red List status) in that it is restricted to those species endemic to the Mediterranean region. A comprehensive Mediterranean regional assessment, which would include all non-endemic species, could not be undertaken due to lack of time and funds. A comprehensive assessment will however be completed later through inclusion of results from a full-scale European assessment (planned) and a northern Africa regional assessment (2007).

## 2.2 Definition of the Mediterranean catchment

The Mediterranean region in terms of freshwater systems was defined by identifying all river basins flowing into the Mediterranean Sea using GIS and the HYDRO1k Elevation Derivative Database (USGS EROS) (Figure 1). The Nile River was not included as it will be addressed through the northern African and eastern African regional assessments (2007-8). The project took advantage of the presence of regional and national expert ichthyologists and included assessment of additional river basins outside the Mediterranean region, most notably those in Spain, Portugal and the Atlantic coast of Morocco.

## 2.3 Assessment protocol

All species had their threatened status assessed according to the 2001 IUCN Red List Categories and Criteria version 3.1 ([www.iucnredlist.org/info/categories\\_criteria\\_2001.html](http://www.iucnredlist.org/info/categories_criteria_2001.html)) by Dr Alain Crivelli, Coordinator of the Aquatic Fauna Programme at Tour du Valat, using existing literature and data sources. All data collected, including information on distribution, conservation measures, threats, utilization, habitats and ecology were entered into the IUCN SSC Species Information Service Data Entry Module (SIS DEM).

## 2.4 Evaluation of assessments

Expert ichthyologists for the Mediterranean region identified by Drs William Darwall (IUCN Freshwater Biodiversity Assessment Programme Officer) and Alain Crivelli were invited to attend a five-day regional evaluation workshop held at the IUCN Centre for Mediterranean Cooperation in Malaga. The initial species summary reports, including Red List status and maps of

species distributions, were distributed to all participants before the workshop to allow time for review of the data presented and preparation of any changes. Workshop participants, and staff from the IUCN Freshwater Biodiversity Assessment Programme and the IUCN Red List Programme, evaluated the assessments to check they complied with guidelines for application of the IUCN Red List Categories and Criteria and included the most up-to-date, comprehensive information.

The resulting assessments are therefore a product of scientific consensus concerning species status and are backed by relevant literature and data sources. Updates to the data set will be made as and when new information becomes available.



Expert evaluation of species assessments.

Figure 1. Mediterranean river basins as defined for this project



Source: Hydro1k Elevation Derivative Database (USGS EROS)

# 3. Results

## 3.1 Draft assessments

Draft assessments were completed for 249 Mediterranean endemic freshwater fish species.

## 3.2 Evaluation of assessments

All draft assessments were evaluated by the expert group through an evaluation workshop. A few new species were added and a number of species were omitted on the basis of new evidence regarding their taxonomy and status as true endemics of the Mediterranean region. The final number of species assessed and evaluated was 253.

The full dataset of species summaries with distribution maps is included on the accompanying CD (see Appendix 1).

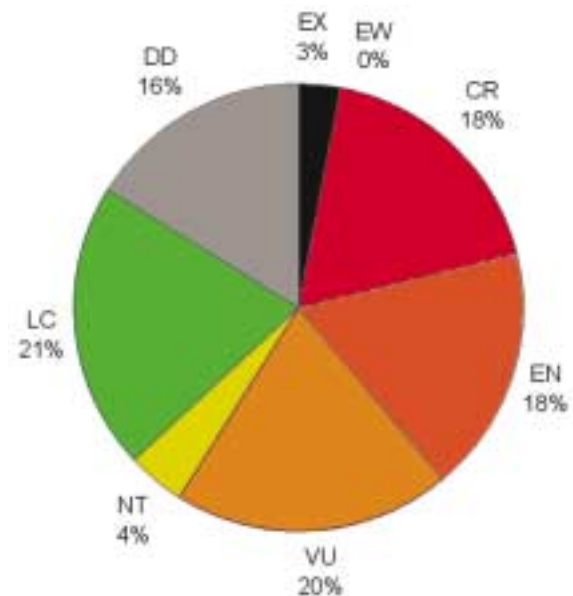
## 3.3 Species threatened status

The number of species assigned to each Red List category of threat is given in Table 1 and in Figure 2. To summarise, 56% of Mediterranean endemic freshwater fish species are threatened, with 18% Critically Endangered, 18% Endangered and 20% Vulnerable. Only 52 species (21%) are assessed as Least Concern and 41 species (16%) as Data Deficient. The Red List Category of threat assigned to each species is given in Appendix 2.

**Table 1. Summary of numbers of species within each category of threat**

IUCN Red List categories	No. species
Extinct (EX)	7
Extinct in the Wild (EW)	1
Threatened categories	
Critically Endangered (CR)	45
Endangered (EN)	46
Vulnerable (VU)	51
Near Threatened (NT)	10
Least Concern (LC)	52
Data Deficient (DD)	41
Total number of fish species assessed	253

**Figure 2. Percentage of species within each category of threat**



Categories are abbreviated as: EX- Extinct; EW-Extinct in the Wild; CR-Critically Endangered; EN-Endangered; VU-Vulnerable; NT-Near Threatened; LC-Least Concern; DD-Data Deficient.

### 3.4 Spatial distribution of species\*

Distributions have been mapped for each species to accompany a summary of their taxonomic status, general ecology, country distribution, habitat preferences, major threats, conservation measures, modes of utilization and threatened status. All information sources are documented. An example species summary and distribution map is presented in Appendix 3.

#### 3.4.1 Species richness (Figures 3, 5, 7, 9, 11, 13 and 15)

Centres of species richness include the Po river basin in northern Italy (Figure 5), the lower Orontes in south west Turkey, lake Kinneret in Israel (Figure 9) and the lower Guadiana in southern Spain (Figure 13). All these areas support between 11 and 17 species. Slightly lower concentrations of between 8 and 10 species are found in the Neretva and Cetina river basins of Bosnia Herzegovina and Croatia, respectively (Figure 5), the Acheloos, Axios and the lower Pinios river basins in Greece, lakes Prespa and Ohrid on the Greece, Albania and FYROM border (Figure 7), the Orontes river basin in west Syria and south west Turkey, the Hula Basin on the Israel / Syria border, and the Menderes and lower Gediz rivers in eastern Turkey (Figure 9). Although not strictly part of the Mediterranean basin a similar level of species richness is also found in the Rio Tajo and the coastal basins of the Golfo De Cadiz and the Rio Guadiana in Spain (Figure 13).



*Padogobius bonelli*. Commonly known as Ghiozzo padano, it is one of the many Mediterranean endemic species found in the Po River in Northern Italy. ©Andreas Hartl

#### 3.4.2 Threatened species richness (Figures 4, 6, 8, 10, 12 and 14)

The greatest concentration of threatened species is in the Rio Guadiana in southern Spain and Portugal (not part of the Mediterranean basin) (Figure 14) where between 8 and 10 species occur. The Orontes river basin in west Syria and south west Turkey, lake Kinneret and the Hula basin in northern Israel (Figure 10), the lower Neretva river in Croatia and Bosnia Herzegovina (Figure 6), lake Prespa on the Greece, Albania and FYROM border (Figure 8) and parts of the Tajo river in Spain and Portugal (Figure 14) all support between 6 and 7 threatened species.

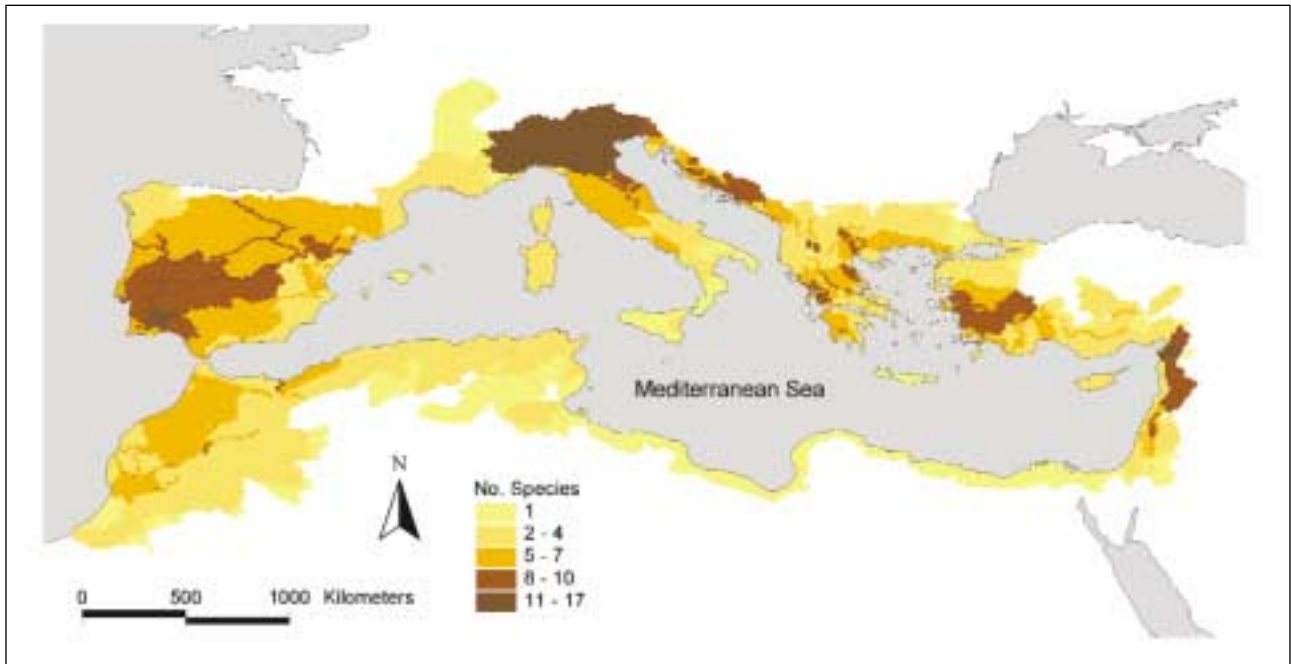


*Squalius keadicus*. An Endangered species threatened by water extraction, pollution and drought. This species is restricted to the Evrotas river in Greece. © Kassis Ioannis

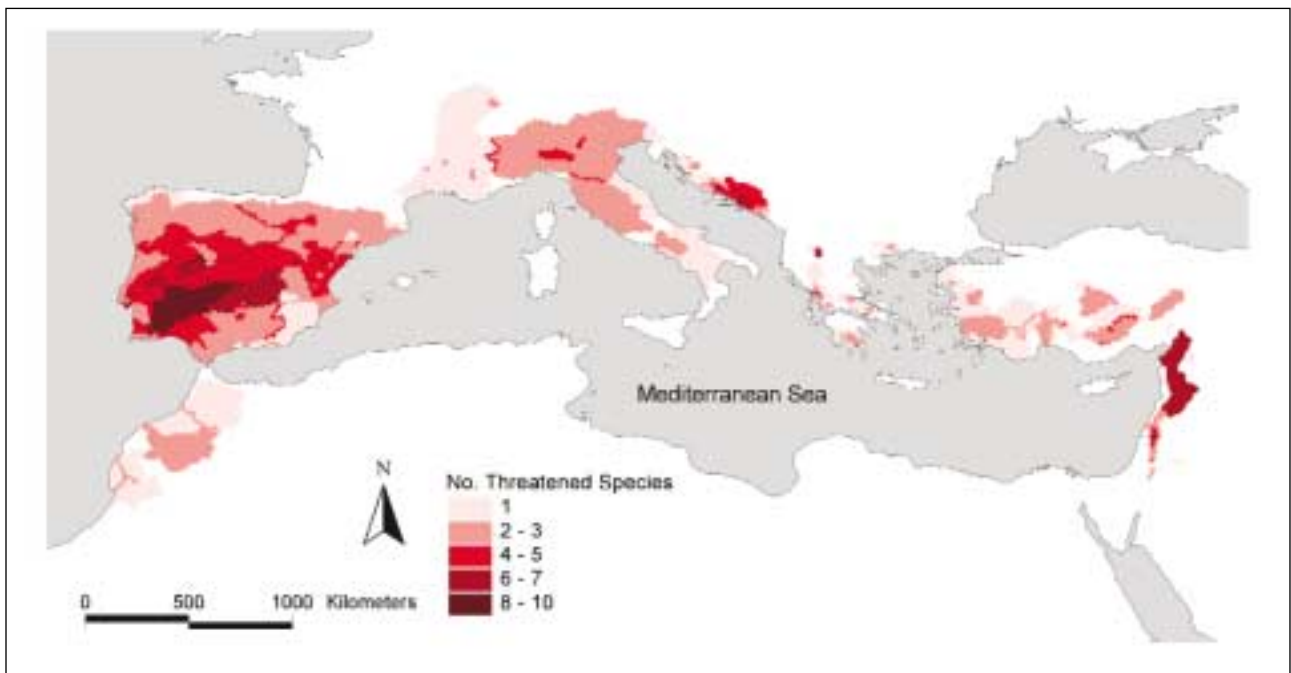
\* Note 1: When using grids to analyse species richness based upon river basin distributions, the grid square overlapping two bordering river basins will count the number of species in both river basins. This results in 'lines' of apparent high species richness that follow the borders between some river basins. This artefact can be seen most clearly in Spain, parts of Morocco and the south of Turkey in the following figures.

\* Note 2: No threatened species occur in Algeria and Tunisia and therefore there is no map.

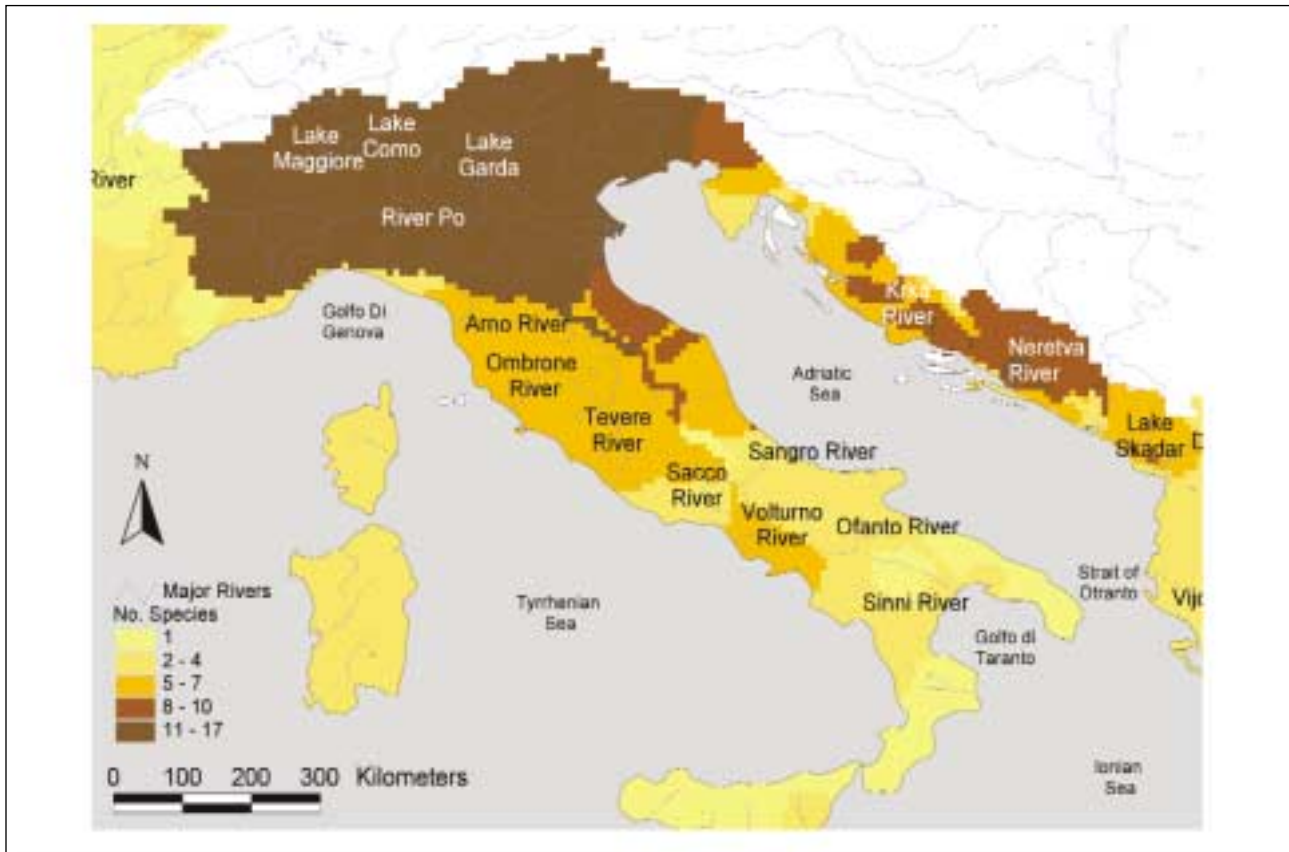
**Figure 3. Regional distribution of Mediterranean endemic freshwater fish (mapped to a 5 minute grid following natural breaks)**



**Figure 4. Regional distribution of threatened Mediterranean endemic freshwater fish (mapped to a 5 minute grid following natural breaks)**



**Figure 5. Species richness in Italy and the Adriatic countries (mapped to a 5 minute grid following natural breaks)**



**Figure 6. Threatened species richness in Italy and the Adriatic countries (mapped to a 5 minute grid following natural breaks)**

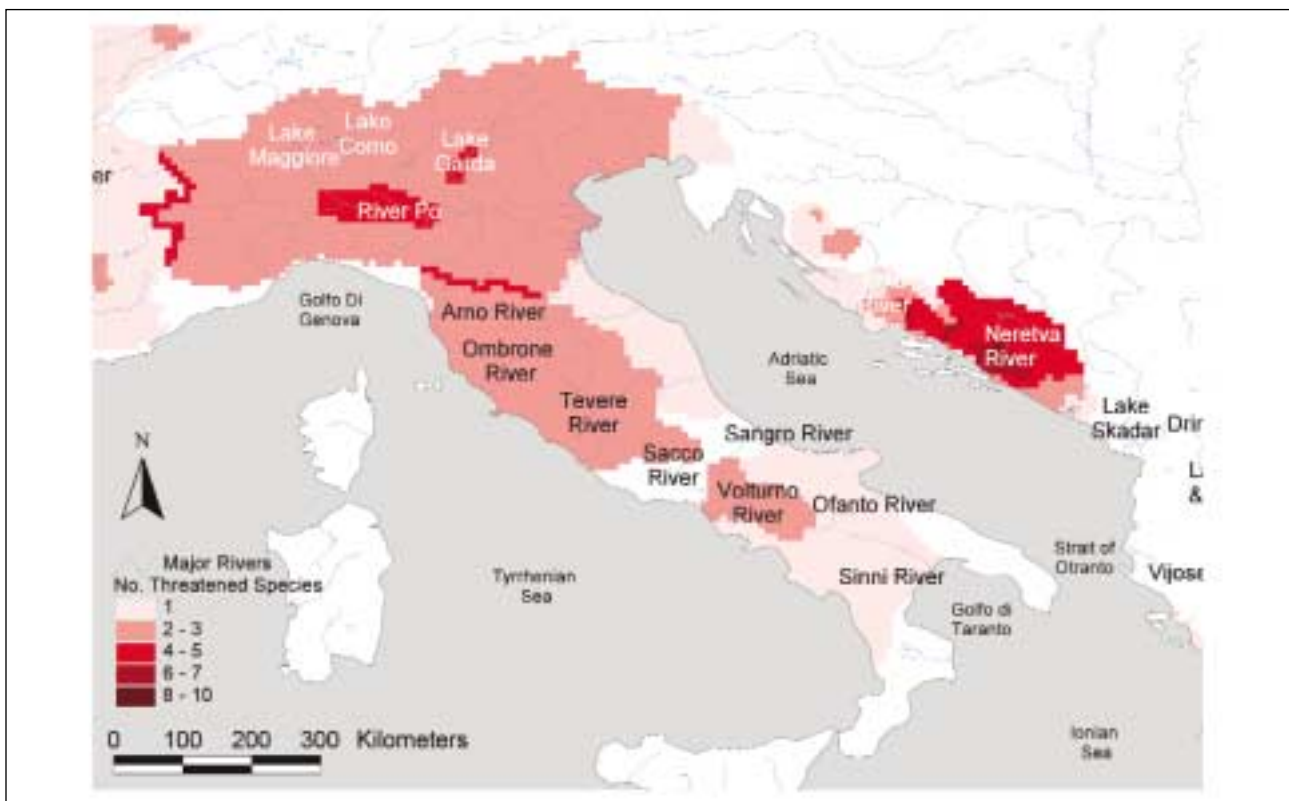


Figure 7. Species richness in Greece, Albania, Bulgaria and the FYROM (mapped to a 5 minute grid following natural breaks)

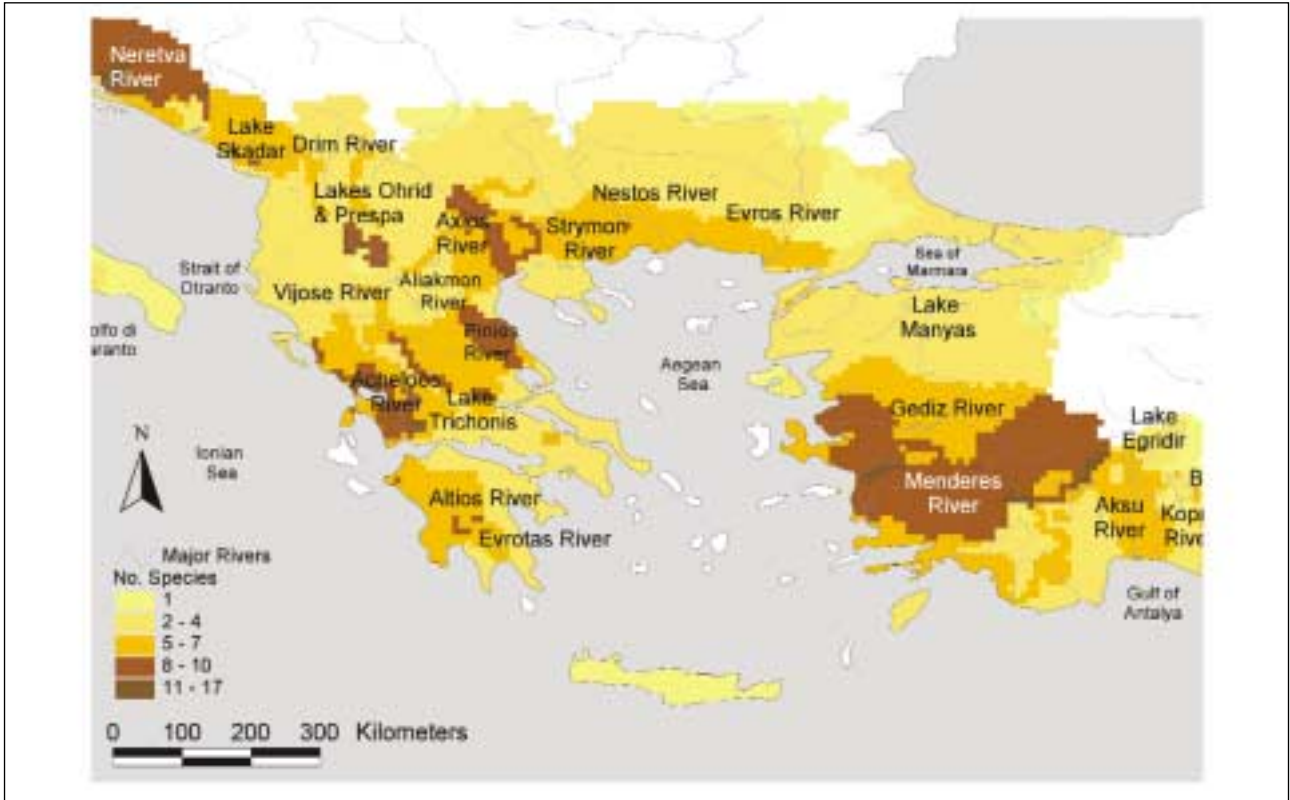
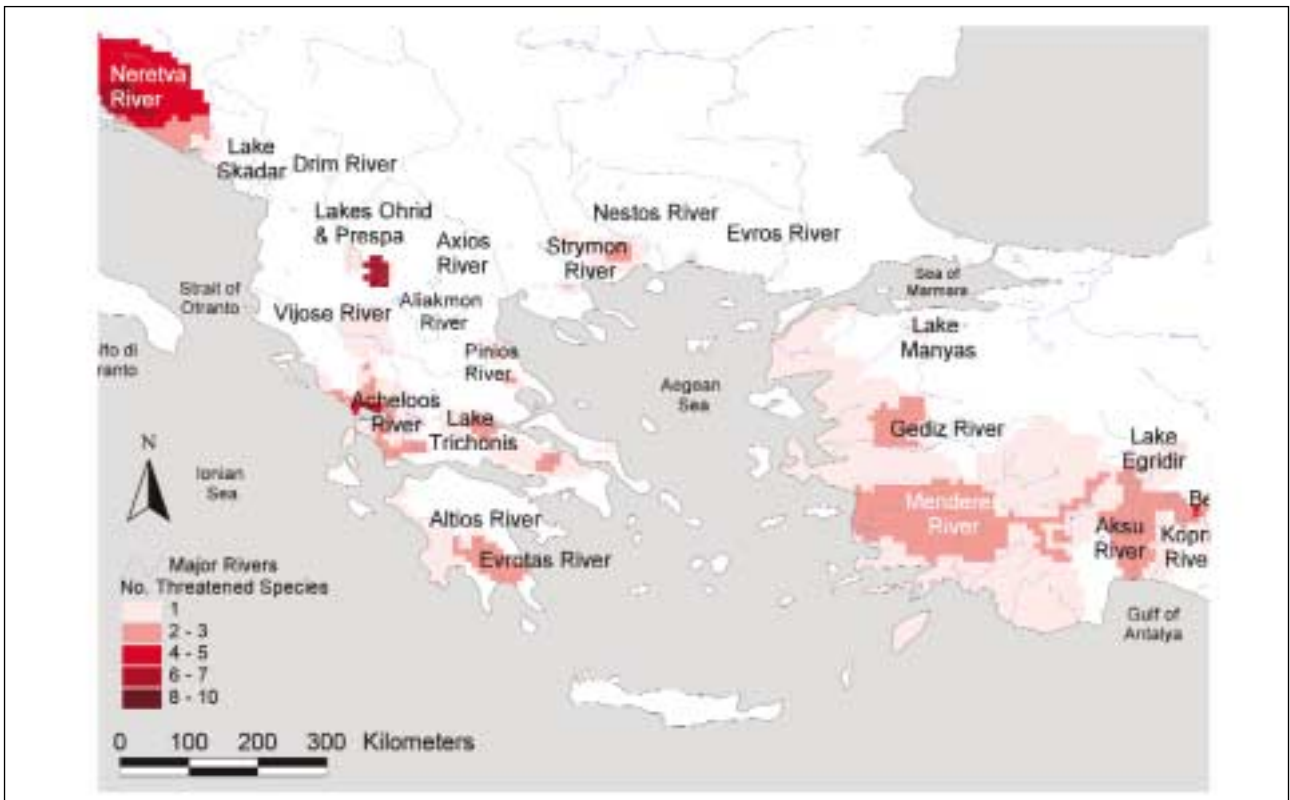
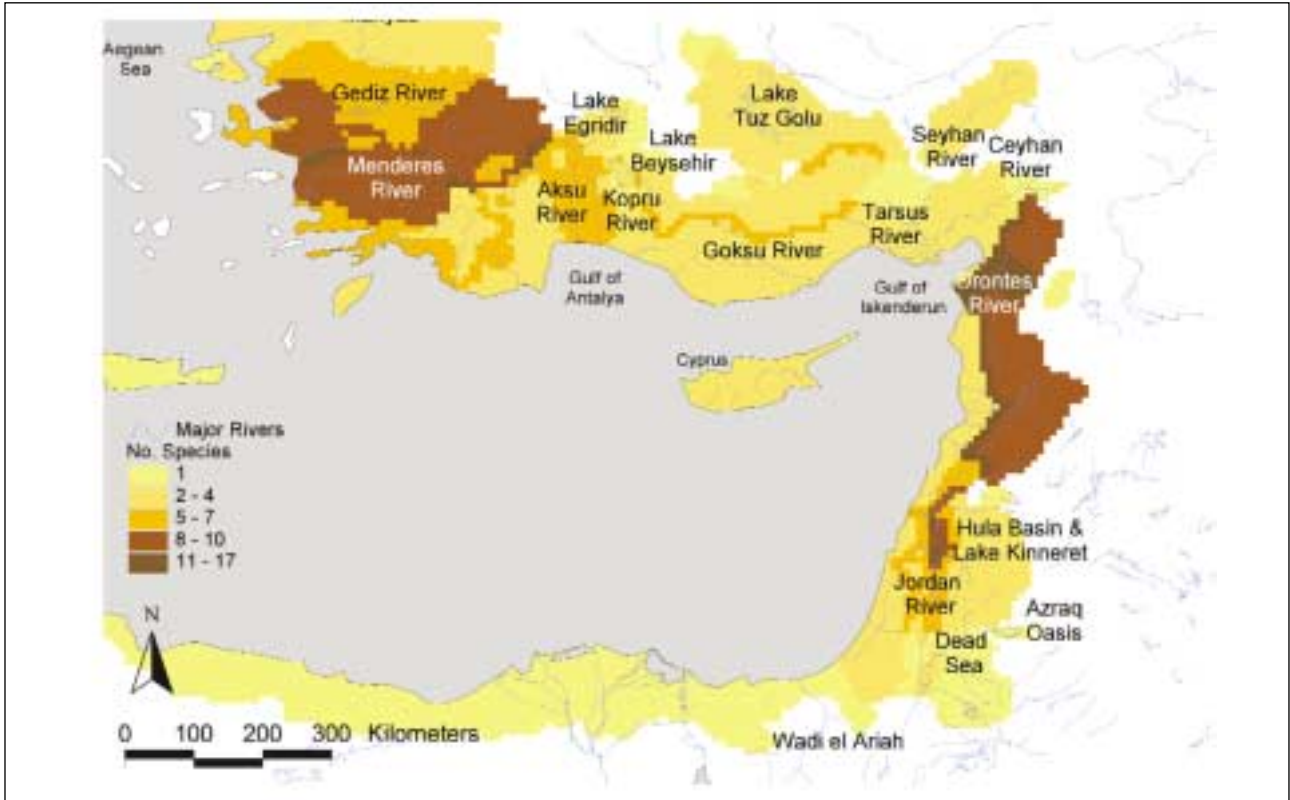


Figure 8. Threatened species richness in Greece, Albania, Bulgaria and the FYROM (mapped to a 5 minute grid following natural breaks)





**Figure 9.** Species richness in Turkey and the Middle East countries (mapped to a 5 minute grid following natural breaks)



**Figure 10.** Threatened species richness in Turkey and the Middle East countries (mapped to a 5 minute grid following natural breaks)

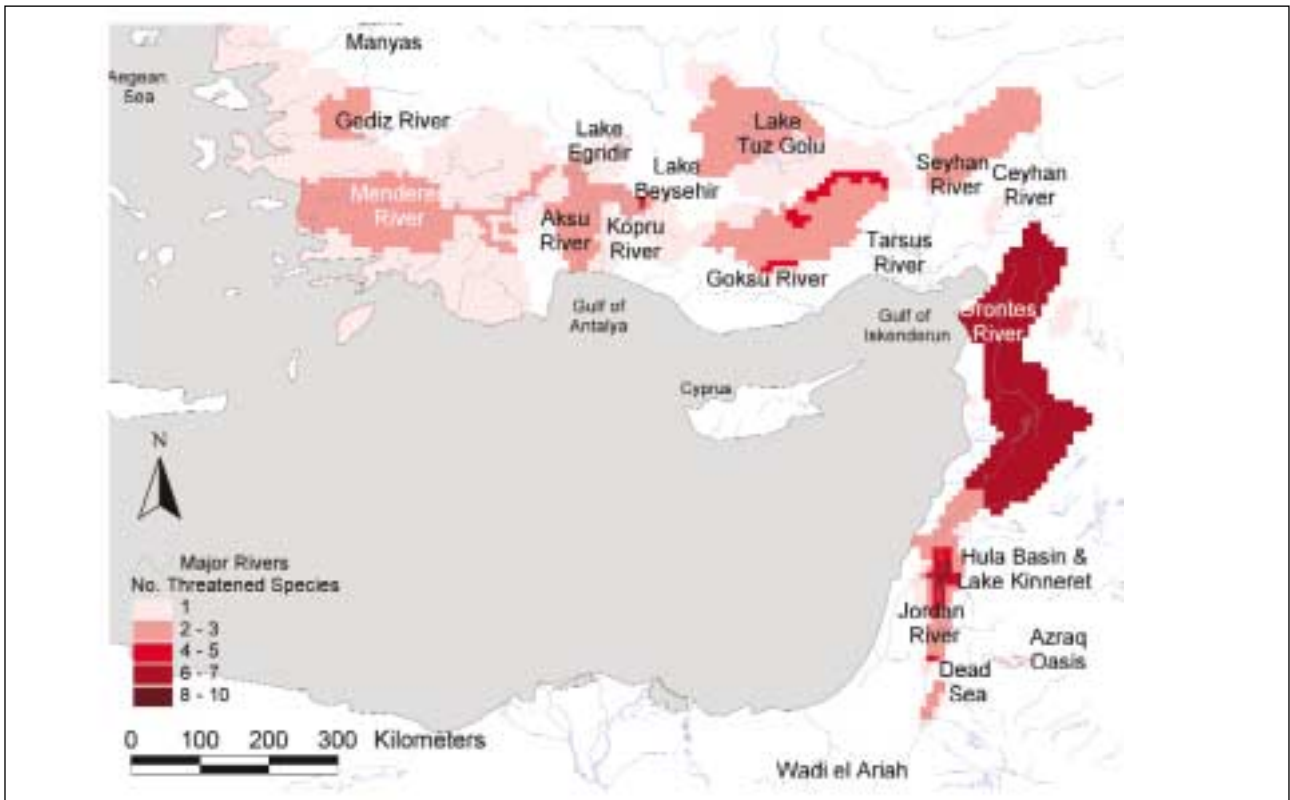


Figure 11. Species richness in Morocco (mapped to a 5 minute grid following natural breaks)

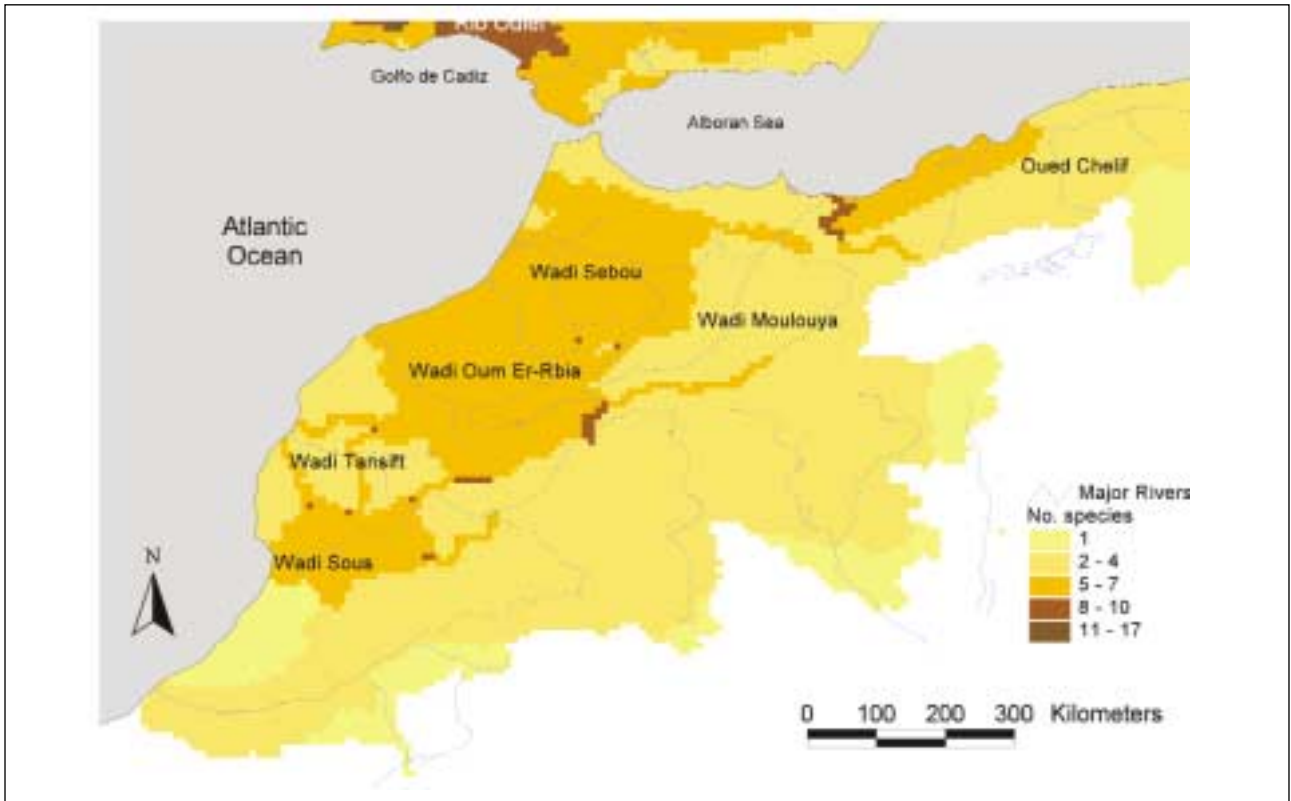


Figure 12. Threatened species richness in Morocco (mapped to a 5 minute grid following natural breaks)

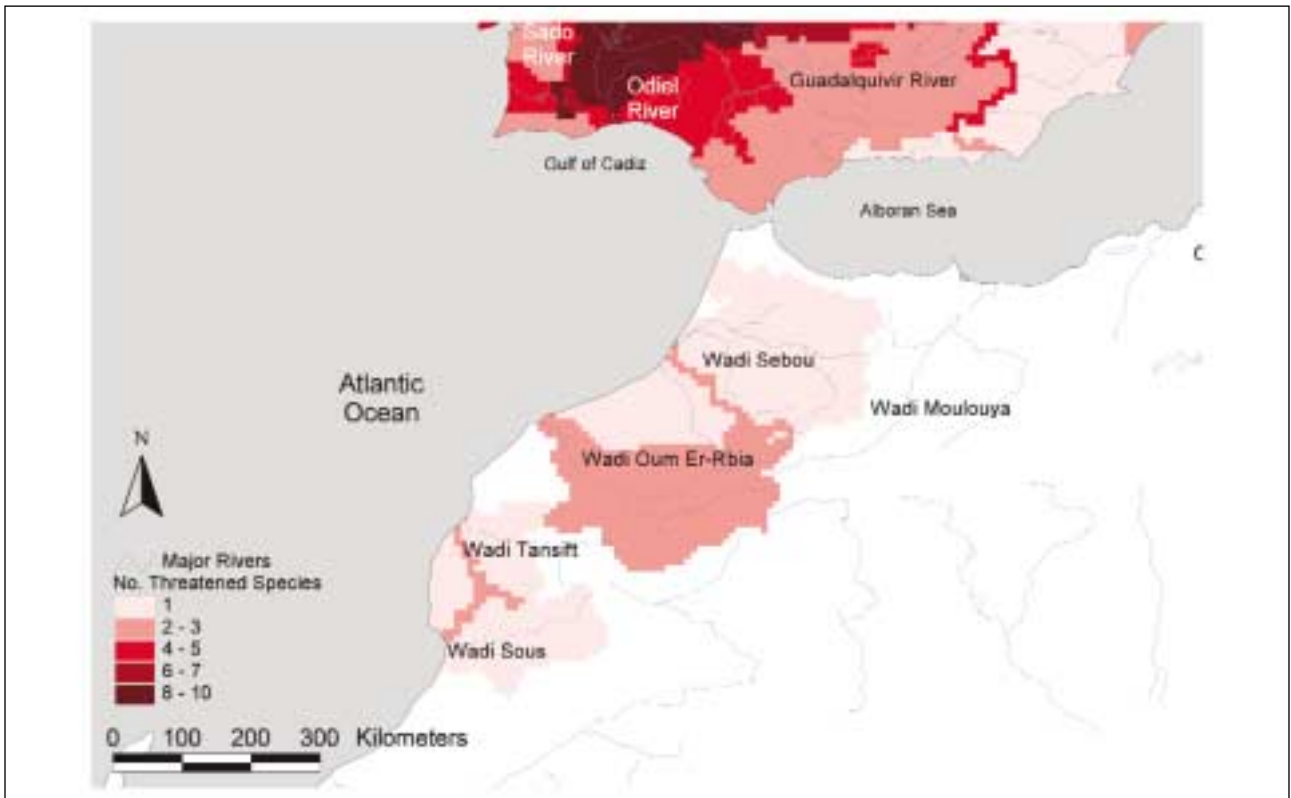


Figure 13. Species richness in Spain and Portugal (mapped to a 5 minute grid following natural breaks)

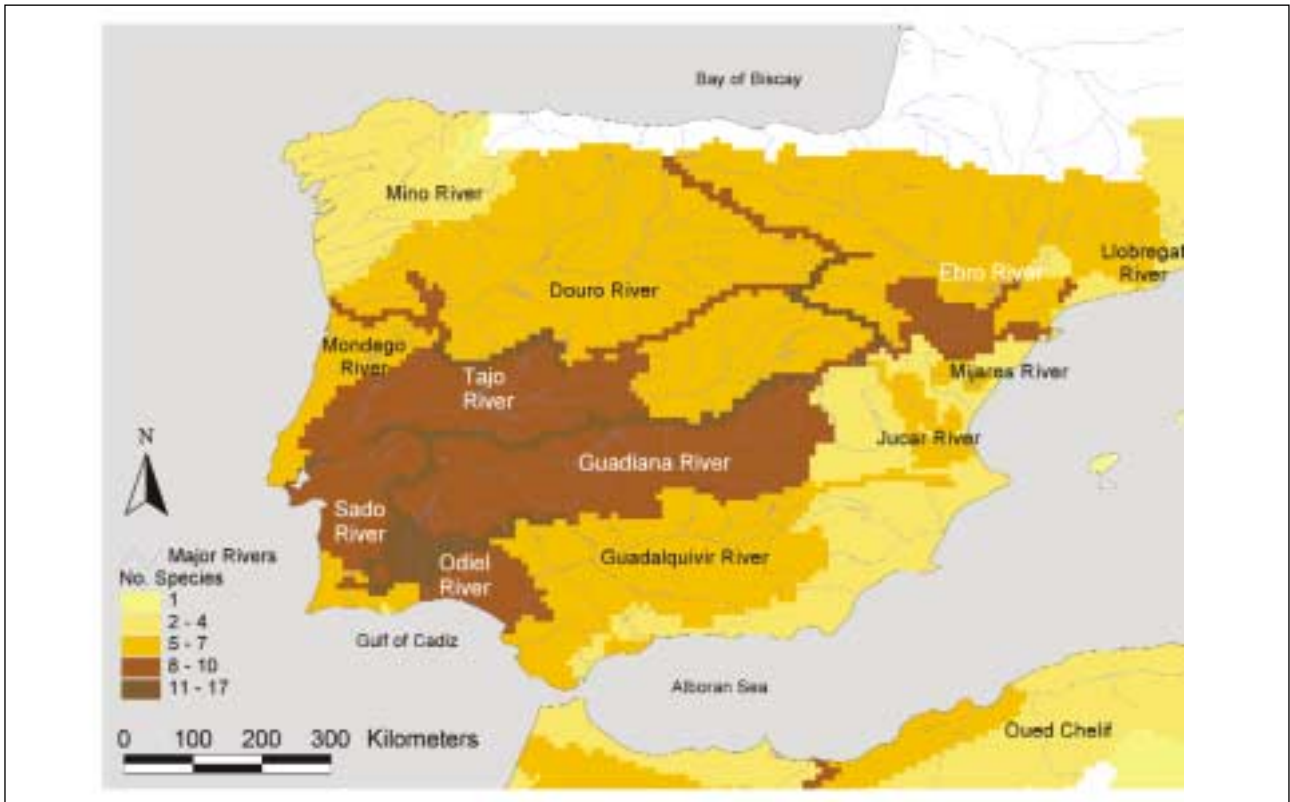


Figure 14. Threatened species richness in Spain and Portugal (mapped to a 5 minute grid following natural breaks)

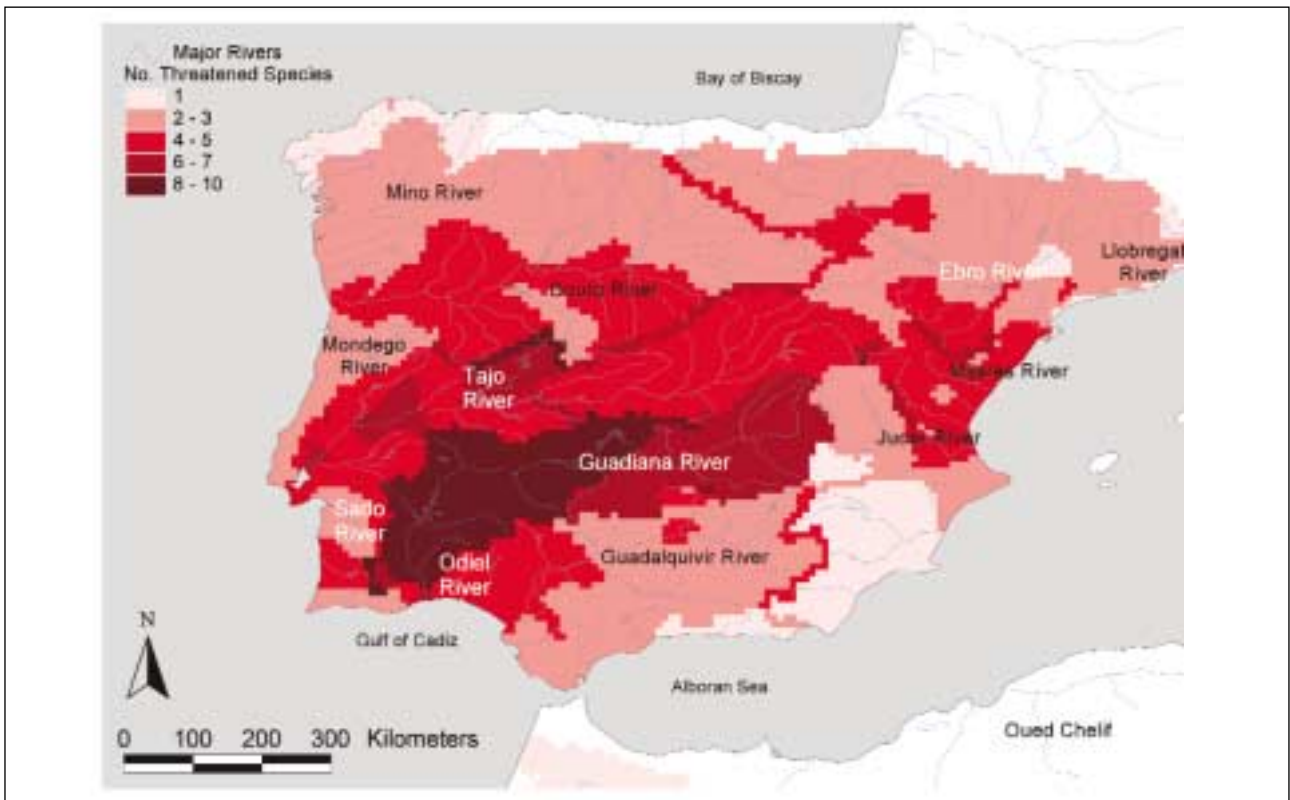
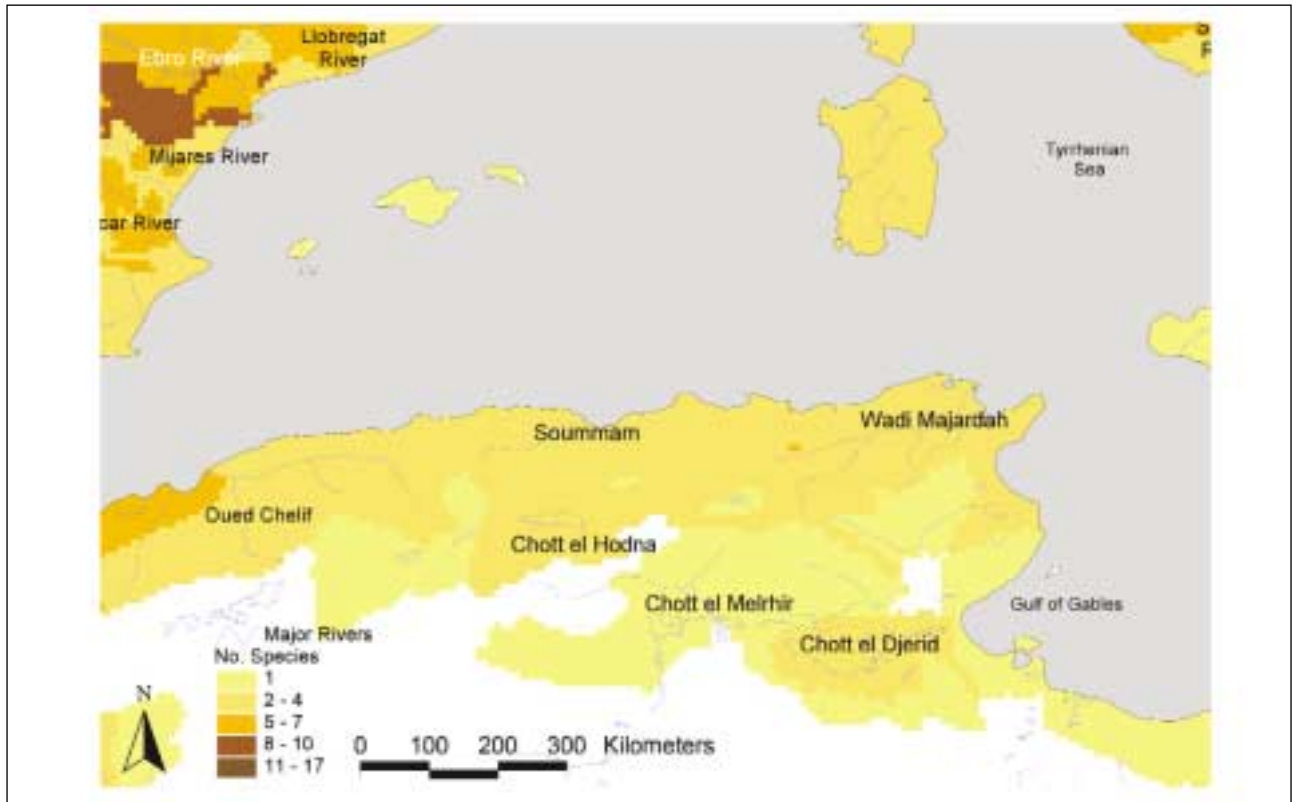


Figure 15. Species richness in Algeria and Tunisia (mapped to a 5 minute grid following natural breaks)



### 3.5 Major threats

A summary of the major threats to Mediterranean endemic freshwater fish is presented in Table 2. Water pollution and water extraction are identified as the two greatest current threats and, along with drought, are perceived to be the main future threats. Other major threats to future survival include intrinsic factors such as restricted range and limited dispersal, and invasive species and the construction of dams. For a complete breakdown of all the threats identified see Appendix 4.



Water extraction is identified as one of the greatest threats to freshwater fish in the Mediterranean © Maria Stoumboudi



*Piaractus brachypterus*. A non-native introduced species. Introduced to Israel by fish farmers and has since escaped into the Taninim River. Due to its massive consumption of vegetation it has become a serious competitor with native species. This rate of consumption also reduces the availability of shelter for post larval fish. © Menachem Goren

**Table 2. Major threats to Mediterranean endemic freshwater fish***\*Note: More than one threat category can be selected for each species.*

Threat category	No. species affected by the threat		
	As a past threat	As a present threat	As a future threat
Pollution (affecting habitat or species)	141	178	197
Water extraction	115	160	183
Restricted range	139	140	143
Limited dispersal	137	137	141
Drought	41	112	180
Invasive alien species (affecting the species)	65	89	111
Dam construction	68	81	88

# 4. Discussion

## 4.1 River basin protection and management

River basins are complex, open systems with ill-defined boundaries. They fulfil many important functions ranging from the supply of water to households and agriculture to the provision of transport routes. They also provide habitat for many different species which in turn provide a valuable resource to people through activities such as fishing and recreation. It is essential that there is sufficient water of the right quality in the right place at the right time. To guarantee the continued social, environmental and economic services provided by freshwater systems, these systems must be adequately protected and sensitively developed. Integrated River Basin Management (IRBM) is receiving increasing attention as the best way to achieve sustainable development of large river basins (see [www.riverbasin.org](http://www.riverbasin.org)). The term 'integrated' refers to the need to consider the whole suite of uses of water resources in order to achieve sustainable development of river basins. IRBM encompasses various policy areas including land-use planning, agriculture and erosion control and incorporates water demand and supply,

trans-boundary aspects, the linkages between water, the environment and development (including poverty alleviation), as well as organizational and institutional aspects at all scales.

A large part of the Mediterranean basin is included within the European Union (EU) and now falls under the legislation of the Water Framework Directive which is following the IRBM approach. The purpose of the Directive is to establish a framework for the protection of inland surface waters (rivers and lakes), transitional waters (estuaries), coastal waters and groundwater. It will ensure all aquatic ecosystems and, with regard to their water needs, terrestrial ecosystems meet 'good status' by 2015 (see [www.jncc.gov.uk](http://www.jncc.gov.uk)). To meet clear objectives that must be achieved by specified dates, each member state has to establish river basin districts and produce a river basin management plan for each district. Data such as provided through this assessment are essential for effective implementation of the IRBM approach as required by the EU Water Framework Directive. This baseline assessment will also allow the impacts of IRBM to be monitored for input to any adaptive management processes.



# 5. Conclusions

## 5.1 Methodology – lessons learned

Geographic bias in sampling intensity has been identified as a problem in representing a true regional picture of species distributions and threatened status. For example, the lack of data for Northern Africa (except Morocco and parts of Tunisia and Algeria) fish species is apparent. As these sampling biases become known, such as through this study, it is hoped that researchers will be encouraged to focus their efforts on the lesser known regions and work towards eliminating this current bias in sampling.

## 5.2 Conservation priorities

A number of sites have been identified as regionally important for endemism and as centres of threatened species, the main sites being the Po river, Orontes river, lake Kinneret and Hula basin, Guadiana river, Tajo (Tejo in Portugal) river, Neretva and Cetina river basins, Acheloos river, Axios river, Lakes Prespa and Ohrid and the Menderes river. The main threats have been identified as water pollution and extraction, introduced species, drought and dam construction. The challenge now is to ensure that the information collated and presented here and in the SIS database is made readily available for policy makers and environmental planners in a format that can easily be employed for integration within the development planning process.

## 5.3 Application of project outputs

The outputs from this project can be applied at the regional scale by organizations such as IUCN to prioritize sites for inclusion in regional research programmes and for identification of internationally important sites of biodiversity. All the species assessed in this project will be submitted for inclusion in the IUCN global Red List ([www.iucnredlist.org](http://www.iucnredlist.org)).



*Acanthobrama telavivensis*, a species assessed as Extinct in the Wild following a sharp decline in population numbers and a major drought in 1999, nearly causing the extinction of the species. Conservation activities were taken and the last remaining individuals were taken from the wild and bred in captivity. Even though two populations have since been released back into the wild, the species is still Extinct in the Wild as it is still unknown whether they have reproduced. © Menachem Goren





# 6. Future work

If the biodiversity data sets collated by the project are to be effectively integrated within the environmental or development planning process then:

- i) the data that have been collated will need to be voluntarily updated by the network of Mediterranean ichthyologists who have already provided their valuable time and expertise for this project;
- ii) established links between regional decision makers and policy makers and the partner organizations must be strengthened and maintained and the data sets made available to these people and/or organizations, and;
- iii) a “best practice methodology” for the process of integrating biodiversity information within the development/environmental planning process must be developed. This methodology should aim to both provide information in a “user-friendly” format for all stakeholders and to provide guidelines as to when and where the information should be made available. Efforts to take this process forward are a major component of a newly initiated IUCN Pan-African freshwater biodiversity assessment.



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Note. For the extensive literature used to compile the species assessments please see the species summaries (CD-ROM).



# Appendix 1. CD ROM contents and instructions

The CD ROM accompanying this publication includes:

## **Species summaries (PDF)**

A report presenting all information collated for this assessment including distribution maps for each species.

## **Species distributions (shape files)**

Distribution shape files for every species assessed. For use with GIS software.

## **Species Information Service Database (SIS DEM)**

The SIS DEM holds all information collated during this assessment. If you have Access 97 or 2003 you will not be able to use this database, a suitable update will shortly be available on request from IUCN. Follow the instructions in the 'SIS - Instructions for DEM'. It will automatically install the database at C:\Program Files\SIS, do not move the database from this location.

## **Instructions for the SIS DEM (Word document)**

Instruction manual explaining how to install and use the SIS DEM.

## **Status and Distribution of Freshwater Fish Endemic to the Mediterranean Basin**

A copy of this report in PDF format (English, French and Spanish versions).



## Appendix 2. Species assessed and their threatened status

Family	Genus	Species	IUCN Red List category
<i>Acipenseridae</i>	<i>Acipenser</i>	<i>naccarii</i>	Critically Endangered (CR)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>bureschi</i>	Least Concern (LC)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>eregliensis</i>	Critically Endangered (CR)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>namiri</i>	Data Deficient (DD)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>pinus</i>	Vulnerable (VU)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>samantica</i>	Endangered (EN)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>seyhanensis</i>	Endangered (EN)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>simavica</i>	Critically Endangered (CR)
<i>Balitoridae</i>	<i>Barbatula</i>	<i>tschaiyssuensis</i>	Endangered (EN)
<i>Balitoridae</i>	<i>Nemacheilus</i>	<i>dori</i>	Critically Endangered (CR)
<i>Balitoridae</i>	<i>Nemacheilus</i>	<i>insignis</i>	Data Deficient (DD)
<i>Balitoridae</i>	<i>Nemacheilus</i>	<i>jordanicus</i>	Endangered (EN)
<i>Balitoridae</i>	<i>Nemacheilus</i>	<i>leontinae</i>	Data Deficient (DD)
<i>Balitoridae</i>	<i>Nemacheilus</i>	<i>pantheroides</i>	Endangered (EN)
<i>Balitoridae</i>	<i>Nemacheilus</i>	sp.	Endangered (EN)
<i>Balitoridae</i>	<i>Nun</i>	<i>galilaeus</i>	Data Deficient (DD)
<i>Blenniidae</i>	<i>Salaria</i>	<i>economidisi</i>	Critically Endangered (CR)
<i>Blenniidae</i>	<i>Salaria</i>	<i>fluviatilis</i>	Least Concern (LC)
<i>Cichlidae</i>	<i>Astatotilapia</i>	<i>flavijosephi</i>	Endangered (EN)
<i>Cichlidae</i>	<i>Haplochromis</i>	<i>desfontainii</i>	Data Deficient (DD)
<i>Cichlidae</i>	<i>Tristramella</i>	<i>intermedia</i>	Extinct (EX)
<i>Cichlidae</i>	<i>Tristramella</i>	<i>magdelainae</i>	Extinct (EX)
<i>Cichlidae</i>	<i>Tristramella</i>	<i>sacra</i>	Critically Endangered (CR)
<i>Cichlidae</i>	<i>Tristramella</i>	<i>simonis</i>	Least Concern (LC)
<i>Clupeidae</i>	<i>Alosa</i>	<i>macedonica</i>	Vulnerable (VU)
<i>Clupeidae</i>	<i>Alosa</i>	<i>vistonica</i>	Critically Endangered (CR)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>arachthosensis</i>	Endangered (EN)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>bilineata</i>	Least Concern (LC)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>bilseli</i>	Critically Endangered (CR)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>calderoni</i>	Endangered (EN)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>dalmatina</i>	Vulnerable (VU)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>fahireae</i>	Least Concern (LC)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>hellenica</i>	Endangered (EN)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>kurui</i>	Least Concern (LC)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>levantina</i>	Vulnerable (VU)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>maroccana</i>	Vulnerable (VU)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>meridionalis</i>	Vulnerable (VU)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>narentana</i>	Vulnerable (VU)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>ohridana</i>	Least Concern (LC)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>paludica</i>	Vulnerable (VU)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>puncticulata</i>	Critically Endangered (CR)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>punctilineata</i>	Vulnerable (VU)



Family	Genus	Species	IUCN Red List category
<i>Cobitidae</i>	<i>Cobitis</i>	<i>stephanidisi</i>	Critically Endangered (CR)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>trichonica</i>	Endangered (EN)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>tureica</i>	Endangered (EN)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>vettonica</i>	Endangered (EN)
<i>Cobitidae</i>	<i>Cobitis</i>	<i>zanandreaei</i>	Vulnerable (VU)
<i>Cottidae</i>	<i>Cottus</i>	<i>petiti</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Acanthobrama</i>	<i>centisquama</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Acanthobrama</i>	<i>lissneri</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Acanthobrama</i>	<i>telavivensis</i>	Extinct in the Wild (EW)
<i>Cyprinidae</i>	<i>Acanthobrama</i>	<i>terraesanctae</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Alburnus</i>	<i>akili</i>	Extinct (EX)
<i>Cyprinidae</i>	<i>Alburnus</i>	<i>albidus</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Alburnus</i>	<i>belvica</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Alburnus</i>	<i>orontis</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Alburnus</i>	<i>qalilus</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Anaocypris</i>	<i>hispanica</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Aulopyge</i>	<i>huegeli</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>albanicus</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>antinorii</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>bocagei</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>callensis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>caninus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>canis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>chantrei</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>comizo</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>cyclolepis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>euboicus</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>figuiguensis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>fritschii</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>graecus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>graellsii</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>guiraonis</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>haasi</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>harterti</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>issenensis</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>ksibi</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>labiosa</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>lepineyi</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>longiceps</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>lorteti</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>macedonicus</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>magniatlantis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>massaensis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>meridionalis</i>	Near Threatened (NT)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>microcephalus</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>moulouyensis</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Barbus</i>	<i>nasus</i>	Near Threatened (NT)

Family	Genus	Species	IUCN Red List category
Cyprinidae	<i>Barbus</i>	<i>pallaryi</i>	Least Concern (LC)
Cyprinidae	<i>Barbus</i>	<i>paytonii</i>	Vulnerable (VU)
Cyprinidae	<i>Barbus</i>	<i>peloponnesius</i>	Least Concern (LC)
Cyprinidae	<i>Barbus</i>	<i>plebejus</i>	Least Concern (LC)
Cyprinidae	<i>Barbus</i>	<i>prespensis</i>	Vulnerable (VU)
Cyprinidae	<i>Barbus</i>	<i>reinii</i>	Vulnerable (VU)
Cyprinidae	<i>Barbus</i>	<i>sclateri</i>	Least Concern (LC)
Cyprinidae	<i>Barbus</i>	<i>setivimensis</i>	Least Concern (LC)
Cyprinidae	<i>Barbus</i>	<i>steindachneri</i>	Vulnerable (VU)
Cyprinidae	<i>Barbus</i>	<i>tyberinus</i>	Least Concern (LC)
Cyprinidae	<i>Capoeta</i>	<i>antalyensis</i>	Vulnerable (VU)
Cyprinidae	<i>Capoeta</i>	<i>bergamae</i>	Vulnerable (VU)
Cyprinidae	<i>Capoeta</i>	<i>pestai</i>	Critically Endangered (CR)
Cyprinidae	<i>Chondrostoma</i>	<i>arcasii</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>arrigonis</i>	Critically Endangered (CR)
Cyprinidae	<i>Chondrostoma</i>	<i>beysehirensis</i>	Endangered (EN)
Cyprinidae	<i>Chondrostoma</i>	<i>duriense</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>genei</i>	Least Concern (LC)
Cyprinidae	<i>Chondrostoma</i>	<i>holmwoodii</i>	Data Deficient (DD)
Cyprinidae	<i>Chondrostoma</i>	<i>kinzelbachi</i>	Endangered (EN)
Cyprinidae	<i>Chondrostoma</i>	<i>knerii</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>lemmingii</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>lusitanicus</i>	Critically Endangered (CR)
Cyprinidae	<i>Chondrostoma</i>	<i>macrolepidotus</i>	Least Concern (LC)
Cyprinidae	<i>Chondrostoma</i>	<i>meandrense</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>miegii</i>	Least Concern (LC)
Cyprinidae	<i>Chondrostoma</i>	<i>oretanum</i>	Critically Endangered (CR)
Cyprinidae	<i>Chondrostoma</i>	<i>phoxinus</i>	Endangered (EN)
Cyprinidae	<i>Chondrostoma</i>	<i>polylepis</i>	Least Concern (LC)
Cyprinidae	<i>Chondrostoma</i>	<i>prespense</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>scodrense</i>	Extinct (EX)
Cyprinidae	<i>Chondrostoma</i>	<i>soetta</i>	Endangered (EN)
Cyprinidae	<i>Chondrostoma</i>	<i>toxostoma</i>	Vulnerable (VU)
Cyprinidae	<i>Chondrostoma</i>	<i>turiense</i>	Endangered (EN)
Cyprinidae	<i>Chondrostoma</i>	<i>vardarense</i>	Near Threatened (NT)
Cyprinidae	<i>Chondrostoma</i>	<i>willkommii</i>	Vulnerable (VU)
Cyprinidae	<i>Garra</i>	<i>ghorensis</i>	Critically Endangered (CR)
Cyprinidae	<i>Gobio</i>	<i>benacensis</i>	Endangered (EN)
Cyprinidae	<i>Gobio</i>	<i>elimeius</i>	Data Deficient (DD)
Cyprinidae	<i>Gobio</i>	<i>hettitorum</i>	Vulnerable (VU)
Cyprinidae	<i>Hemigrammocapoeta</i>	<i>caudomaculata</i>	Data Deficient (DD)
Cyprinidae	<i>Hemigrammocapoeta</i>	<i>culiciphaga</i>	Data Deficient (DD)
Cyprinidae	<i>Hemigrammocapoeta</i>	<i>kemali</i>	Critically Endangered (CR)
Cyprinidae	<i>Hemigrammocapoeta</i>	<i>nana</i>	Vulnerable (VU)
Cyprinidae	<i>Ladigesocypris</i>	<i>ghigii</i>	Vulnerable (VU)
Cyprinidae	<i>Ladigesocypris</i>	<i>irideus</i>	Data Deficient (DD)
Cyprinidae	<i>Ladigesocypris</i>	<i>mermere</i>	Data Deficient (DD)

Family	Genus	Species	IUCN Red List category
<i>Cyprinidae</i>	<i>Leuciscus</i>	<i>anatolicus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Leuciscus</i>	<i>spurius</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Leuciscus</i>	<i>svallize</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Mirogrex</i>	<i>hulensis</i>	Extinct (EX)
<i>Cyprinidae</i>	<i>Pachychilon</i>	<i>macedonicum</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pachychilon</i>	<i>pictum</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Petroleuciscus</i>	<i>smyrnaeus</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>adspersus</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>alepidotus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>croaticus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>dalmaticus</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>fontinalis</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>ghetaldii</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>jadovensis</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>krbavensis</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>metohiensis</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Phoxinellus</i>	<i>pseudalepidotus</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>anatolicus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>antalyae</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>battalgili</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>callensis</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>crassus</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>drusensis</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>egridiri</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>epiroticus</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>fahirae</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>handlirschi</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>kervillei</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>laconicus</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>maeandri</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>maeandricus</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>minutus</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>prespensis</i>	Endangered (EN)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>punicus</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>stymphalicus</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>syriacus</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>thesproticus</i>	Near Threatened (NT)
<i>Cyprinidae</i>	<i>Pseudophoxinus</i>	<i>zeregi</i>	Critically Endangered (CR)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>aula</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>basak</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>karamani</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>ohridanus</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>prespensis</i>	Vulnerable (VU)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>rubilio</i>	Near Threatened (NT)
<i>Cyprinidae</i>	<i>Rutilus</i>	<i>ylikiensis</i>	Data Deficient (DD)
<i>Cyprinidae</i>	<i>Sabanejewia</i>	<i>larvata</i>	Least Concern (LC)
<i>Cyprinidae</i>	<i>Scardinius</i>	<i>acarnanicus</i>	Near Threatened (NT)

Family	Genus	Species	IUCN Red List category
Cyprinidae	<i>Scardinius</i>	<i>elmaliensis</i>	Data Deficient (DD)
Cyprinidae	<i>Scardinius</i>	<i>graecus</i>	Critically Endangered (CR)
Cyprinidae	<i>Scardinius</i>	<i>scardafa</i>	Critically Endangered (CR)
Cyprinidae	<i>Squalius</i>	<i>alburnoides</i>	Vulnerable (VU)
Cyprinidae	<i>Squalius</i>	<i>aradensis</i>	Vulnerable (VU)
Cyprinidae	<i>Squalius</i>	<i>carolitertii</i>	Least Concern (LC)
Cyprinidae	<i>Squalius</i>	<i>illyricus</i>	Near Threatened (NT)
Cyprinidae	<i>Squalius</i>	<i>keadicus</i>	Endangered (EN)
Cyprinidae	<i>Squalius</i>	<i>lucumonis</i>	Endangered (EN)
Cyprinidae	<i>Squalius</i>	<i>microlepis</i>	Endangered (EN)
Cyprinidae	<i>Squalius</i>	<i>palaciosi</i>	Critically Endangered (CR)
Cyprinidae	<i>Squalius</i>	<i>peloponnensis</i>	Least Concern (LC)
Cyprinidae	<i>Squalius</i>	<i>prespensis</i>	Least Concern (LC)
Cyprinidae	<i>Squalius</i>	<i>pyrenaicus</i>	Near Threatened (NT)
Cyprinidae	<i>Squalius</i>	<i>torgalensis</i>	Endangered (EN)
Cyprinidae	<i>Squalius</i>	<i>zrmanjiae</i>	Near Threatened (NT)
Cyprinidae	<i>Telestes</i>	<i>beoticus</i>	Endangered (EN)
Cyprinidae	<i>Telestes</i>	<i>montenigrinus</i>	Least Concern (LC)
Cyprinidae	<i>Telestes</i>	<i>muticellus</i>	Least Concern (LC)
Cyprinidae	<i>Telestes</i>	<i>pleurobipunctatus</i>	Least Concern (LC)
Cyprinidae	<i>Telestes</i>	<i>polylepis</i>	Critically Endangered (CR)
Cyprinidae	<i>Telestes</i>	<i>turskyi</i>	Critically Endangered (CR)
Cyprinidae	<i>Telestes</i>	<i>ukliva</i>	Extinct (EX)
Cyprinidae	<i>Tropidophoxinellus</i>	<i>hellenicus</i>	Least Concern (LC)
Cyprinidae	<i>Tropidophoxinellus</i>	<i>spartiaticus</i>	Vulnerable (VU)
Cyprinidae	<i>Tylognathus</i>	<i>klatti</i>	Data Deficient (DD)
Cyprinidae	<i>Varicorhinus</i>	<i>angorae</i>	Data Deficient (DD)
Cyprinidae	<i>Varicorhinus</i>	<i>maroccanus</i>	Data Deficient (DD)
Cyprinidae	<i>Vimba</i>	<i>melanops</i>	Data Deficient (DD)
Cyprinodontidae	<i>Aphanius</i>	<i>anatoliae</i>	Data Deficient (DD)
Cyprinodontidae	<i>Aphanius</i>	<i>apodus</i>	Data Deficient (DD)
Cyprinodontidae	<i>Aphanius</i>	<i>baeticus</i>	Endangered (EN)
Cyprinodontidae	<i>Aphanius</i>	<i>fasciatus</i>	Least Concern (LC)
Cyprinodontidae	<i>Aphanius</i>	<i>iberus</i>	Endangered (EN)
Cyprinodontidae	<i>Aphanius</i>	<i>richardsoni</i>	Critically Endangered (CR)
Cyprinodontidae	<i>Aphanius</i>	<i>sirhani</i>	Critically Endangered (CR)
Cyprinodontidae	<i>Aphanius</i>	<i>sureyanus</i>	Data Deficient (DD)
Gasterosteidae	<i>Pungitius</i>	<i>hellenicus</i>	Critically Endangered (CR)
Gobiidae	<i>Economidichthys</i>	<i>pygmeus</i>	Least Concern (LC)
Gobiidae	<i>Economidichthys</i>	<i>trichonis</i>	Endangered (EN)
Gobiidae	<i>Knipowitschia</i>	<i>croatica</i>	Vulnerable (VU)
Gobiidae	<i>Knipowitschia</i>	<i>ephesi</i>	Critically Endangered (CR)
Gobiidae	<i>Knipowitschia</i>	<i>goernerii</i>	Data Deficient (DD)
Gobiidae	<i>Knipowitschia</i>	<i>mermere</i>	Critically Endangered (CR)
Gobiidae	<i>Knipowitschia</i>	<i>milleri</i>	Critically Endangered (CR)
Gobiidae	<i>Knipowitschia</i>	<i>panizae</i>	Least Concern (LC)
Gobiidae	<i>Knipowitschia</i>	<i>punctatissima</i>	Near Threatened (NT)

<b>Family</b>	<b>Genus</b>	<b>Species</b>	<b>IUCN Red List category</b>
<i>Gobiidae</i>	<i>Knipowitschia</i>	<i>thessala</i>	Endangered (EN)
<i>Gobiidae</i>	<i>Padogobius</i>	<i>bonelli</i>	Least Concern (LC)
<i>Gobiidae</i>	<i>Padogobius</i>	<i>nigricans</i>	Vulnerable (VU)
<i>Percidae</i>	<i>Zingel</i>	<i>asper</i>	Critically Endangered (CR)
<i>Percidae</i>	<i>Zingel</i>	<i>balcanicus</i>	Data Deficient (DD)
<i>Petromyzontidae</i>	<i>Eudontomyzon</i>	<i>hellenicus</i>	Critically Endangered (CR)
<i>Petromyzontidae</i>	<i>Lethenteron</i>	<i>zanandrei</i>	Least Concern (LC)
<i>Salmonidae</i>	<i>Acantholingua</i>	<i>ohridana</i>	Vulnerable (VU)
<i>Salmonidae</i>	<i>Salmo</i>	<i>aphelios</i>	Data Deficient (DD)
<i>Salmonidae</i>	<i>Salmo</i>	<i>balcanicus</i>	Data Deficient (DD)
<i>Salmonidae</i>	<i>Salmo</i>	<i>carpio</i>	Critically Endangered (CR)
<i>Salmonidae</i>	<i>Salmo</i>	<i>letnica</i>	Data Deficient (DD)
<i>Salmonidae</i>	<i>Salmo</i>	<i>lumi</i>	Data Deficient (DD)
<i>Salmonidae</i>	<i>Salmo</i>	<i>macedonicus</i>	Data Deficient (DD)
<i>Salmonidae</i>	<i>Salmo</i>	<i>macrostigma</i>	Data Deficient (DD)
<i>Salmonidae</i>	<i>Salmo</i>	<i>marmoratus</i>	Least Concern (LC)
<i>Salmonidae</i>	<i>Salmo</i>	<i>pallaryi</i>	Extinct (EX)
<i>Salmonidae</i>	<i>Salmo</i>	<i>peristericus</i>	Endangered (EN)
<i>Salmonidae</i>	<i>Salmo</i>	<i>platycephalus</i>	Critically Endangered (CR)
<i>Salmonidae</i>	<i>Salmothymus</i>	<i>obtusirostris</i>	Endangered (EN)
<i>Siluridae</i>	<i>Silurus</i>	<i>aristotelis</i>	Data Deficient (DD)
<i>Valenciidae</i>	<i>Valencia</i>	<i>hispanica</i>	Critically Endangered (CR)
<i>Valenciidae</i>	<i>Valencia</i>	<i>letourneuxi</i>	Critically Endangered (CR)

# Appendix 3. Example 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 download all the summaries and distribution maps from the enclosed CD (Annex 4) or by visiting our website at [www.iucn.org/themes/ssc/our\\_work/freshwater/regional\\_fw.htm](http://www.iucn.org/themes/ssc/our_work/freshwater/regional_fw.htm)

**Barbatula samantica** Region: 1

Taxonomic Authority: (Baranescu & Nalbant, 1978) Common Name:

Synonyms: Order: Cypriniformes

Order: Cypriniformes Family: Balitoridae

Notes on taxonomy: The taxonomy of *Barbatula* is in need of revision.

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**General Information**

Biores:  Terrestrial  Freshwater  Marine

Geographic Range of species: *B. samantica* is found only in the Zamsanti Stream of the Seyhan River, Turkey. Habitat and Ecology Information: Riverine species.

Conservation Measures: None known to be in place. Threats: Water pollution (Cank et al. 1998), water extraction, drought and the construction of a fuel pipeline are the main threats to the species.

Species population information: No published data on trends, but the population is believed to be declining as a result of habitat degradation.

---

**Country Distribution**

Country	Native - Proven/Confirmed	Native - Preserv./Possible	Exotic	Reintroduced	Introduced	Vagrant
Turkey	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

---

**Upper Level Habitat Preferences** Score: 1 **Lower Level Habitat Preferences** Score:

5.1 Wetlands (inland) - Permanent Rivers/Streams/Creeks (includes waterfalls)

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**Major threats** Conservation Measures

Code	Description of threat	Past	Present	Future	Code	Conservation measures	In place	Needed
1	Habitat Loss/Degradation (human induced)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1	Policy-based actions	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.3	Extraction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2	Legislation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.3.6	Groundwater extraction	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2.1	Development	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.4	Infrastructure development	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2.1.1	International level	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1.4.6	Dams	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2.1.2	National level	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	Pollution (affecting habitat and/or species)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2.2	Implementation	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6.3	Water pollution	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2.2.1	International level	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	Natural disasters	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.2.2.2	National level	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7.1	Drought	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3	Research actions	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	Intrinsic factors	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.2	Population numbers and range	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.1	Limited dispersal	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.3	Biology and Ecology	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9.9	Restricted range	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3.4	Habitat status	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					3.5	Threats	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					4	Habitat and site-based actions	<input type="checkbox"/>	<input checked="" type="checkbox"/>
					4.1	Maintenance/Conservation	<input type="checkbox"/>	<input checked="" type="checkbox"/>

---

**Utilisation of Species**

Purpose/Type of Use	Subsistence	National	International	Other purpose: Not used
Primary forms removed from the wild	100%	>75%	51-75%	26-50%
Source of specimens in commercial trade	100%	>75%	51-75%	26-50%

Trend in wild offtake/harvest in relation to total wild population numbers over last five years:  
Trend in offtake/harvest produced through domestication/cultivation over last five years:  
CITES:

---

**Red Listing**

Red List Assessment: Endangered (EN)  Possibly Extinct

Red List Criteria: B1ab(i)

Rationale for the Red List Assessment: The species is restricted to the Zamsanti Stream in the Seyhan River watershed. Extent of occurrence is estimated at less than 5,000 km<sup>2</sup>. It is known from no more than five locations and habitat quality is declining as a result of pollution, water extraction, drought and dam construction.

Current Population Trend: Decreasing Date of Assessment: 14/12/2004

Assessor(s): A.J. Crivell

Evaluator: A. Karataş, F. Erilken, N. Bogutskaya & M. Gören

Notes on Red listing:

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Baranescu, P.M., Nalbant, T.T. & Raik, S., 1978, Biotwasserfauna der Türkei, 11. Teil, Die gattung *Orfias* in der Türkei und in Südalgerien (Pisces, Cobitidae, Noemacheilinae). *Mit. Hamb. Zool. Mus. Inst.*, 75, 255-266.

Canlı, M. Ay. Ö and Kalay, M., 1998, Levels of heavy metals (Cd, Pb, Cu, Cr and Ni) in tissue of *Cyprinus carpio*, *Barbus capito* and *Chondrostoma regium* from the Seyhan River, Turkey. *Turkish Journal of Zoology*, 22, 149-158.



0 50 100 150 Kilometers

△ Rivers  
 ■ *Barbatula samantica*



0 1000 2000 Kilometers

# Appendix 4. Full list of identified threats to Mediterranean endemic freshwater fish

Note 1: More than one threat category can be selected for each species.

Note 2: When a lower level threat is selected (e.g. 1.3.2. Fisheries) the corresponding higher levels (e.g. 1.3. Extraction and 1. Habitat loss) are automatically selected.

Note 3: Higher level threat categories are only selected once for each species even if multiple lower level categories have been selected.

Note 4: Higher level categories can be selected without the need to identify more detailed lower level categories.

Note 5: As there currently is no threat category for Water extraction, 1.3.6. Groundwater extraction under Habitat Loss was selected as a surrogate.

## Key:

1.	Habitat loss/degradation (human induced)	Level 1 (Highest layer)
1.3.	Extraction	Level 2
1.3.2.	Fisheries	Level 3
1.3.2.1.	Subsistence	Level 4 (Lowest layer)

Threat	Category	No. species selecting threat		
		Past	Present	Future
1.	Habitat loss/degradation (human induced)	158	183	200
1.1.	Agriculture	1	1	1
1.3.	Extraction	131	170	189
1.3.2.	Fisheries	14	11	10
1.3.2.1.	Subsistence	7	6	5
1.3.2.2.	Artisanal/small scale	12	9	8
1.3.2.3.	Industrial/large scale	1	0	0
1.3.6.	Groundwater extraction	115	160	183
1.3.7.	Other extraction	5	6	6
1.4.	Infrastructure development	73	87	96
1.4.2.	Human settlement development	1	2	2
1.4.3.	Tourism development	2	2	3
1.4.4.	Transport - land/air	0	0	1
1.4.5.	Water transport development	2	2	2
1.4.6.	Dam building	68	81	88
1.4.7.	Telecommunications development	2	2	2
2.	Invasive alien species (affecting the species)	65	89	111
2.1.	Alien competitors	7	7	9
2.2.	Alien predators	19	26	28
2.3.	Hybridisers	5	8	9
3.	Harvesting	10	14	14
3.1.	Harvesting for food	7	10	10
3.1.1.	Subsistence use	5	7	7
3.1.2.	Sub-national/national trade	6	6	6
3.1.3.	Regional/international trade	2	2	2
3.5.	Harvesting for culture/scientific/leisure	2	4	4
3.5.1.	Subsistence use	0	1	1
3.5.2.	Sub-national/national trade	1	2	2
3.5.3.	Regional/international trade	1	2	2
3.6.	Other harvesting	1	1	1



Threat	Category	No. species selecting threat		
		Past	Present	Future
4.	Accidental mortality	2	2	2
4.1.	Bycatch	2	2	2
4.1.1.	<i>Fisheries-related bycatch</i>	2	2	2
4.1.1.2.	Hooking	1	2	2
4.1.1.4.	Dynamite	1	0	0
4.1.1.5.	Poisoning	2	2	2
6.	Pollution (affecting habitat or species)	141	178	197
6.2.	Land pollution	0	1	1
6.2.1.	<i>Agricultural land pollution</i>	0	1	1
6.2.2.	<i>Domestic land pollution</i>	0	1	1
6.3.	Water pollution	135	175	195
6.3.1.	<i>Agricultural water pollution</i>	57	72	72
6.3.2.	<i>Domestic water pollution</i>	44	59	59
6.3.3.	<i>Industrial water pollution</i>	31	36	36
6.3.7.	<i>Sediment</i>	1	1	1
6.3.8.	<i>Sewage</i>	24	27	26
7.	Natural disasters	42	113	181
7.1.	Drought	41	112	180
7.3.	Temperature extremes	1	1	1
8.	Changes in native species dynamics	2	3	5
8.2.	Predators	2	2	2
8.4.	Hybridisers	0	0	2
9.	Intrinsic factors	161	162	166
9.1.	Limited dispersal	137	137	141
9.2.	Poor recruitment/reproduction	5	5	5
9.5.	Low densities	4	4	4
9.7.	Slow growth rates	3	3	3
9.8.	Population fluctuations	3	3	3
9.9.	Restricted range	139	140	143
9.10.	Other intrinsic factors	12	12	12
10.	Human disturbance	1	1	1
10.1.	Recreation/tourism	0	1	1
10.7.	Unknown	1	0	0
11.	Other threat	1	1	2
12.	Unknown threat	23	21	21
13.	No threat	1	2	2





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