Freshwater Key Biodiversity Areas in the north-western Mediterranean sub-region

Laura Máiz-Tomé, William Darwall, Catherine Numa, Violeta Barrios and Kevin G. Smith

OCCASIONAL PAPER FOR THE IUCN SPECIES SURVIVAL COMMISSION NO. 64

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This publication has been made possible by funding from MAVA Foundation.'

Published by: IUCN, Gland, Switzerland, Cambridge, UK, and Malaga, Spain.

Citation: Máiz-Tomé, L., Darwall, W., Numa, C., Barrios, V. and Smith, K. G. (2017). *Freshwater Key Biodiversity Areas in the north-western Mediterranean sub-region*. IUCN, Gland, Switzerland, Cambridge, UK and Malaga, Spain: viii + 48pp.

ISBN: 978-2-8317-1869-9

DOI: https://doi.org/10.2305/IUCN.CH.2017.SSC-OP.64.en

Cover photo: Hoces del Cabriel. Copyright: Museu Valencià d'Història Natural.

Design and layout by: miniestudio

Printed by: Solprint, Mijas (Malaga), Spain.

Available from:
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The Ticino river in Italy. © C. Puzzi

Acknowledgements

Identifying Key Biodiversity Areas in the Mediterranean region relies on the willingness of dedicated experts to contribute and pool their collective knowledge. Without their enthusiastic commitment to biodiversity conservation, this work would not be possible. We would therefore like to acknowledge the committed work of the Mediterranean experts who participated in the KBA workshop held in Madrid, Spain, in November 2015, including: Alberto Martinez-Orti, Carla Pinto Cruz, Cesare Puzzi, Eva Hernández, Filipe Ribeiro, Henri Persat, Ignacio Doadrio, Joana Robalo, Jörg Freyhof, José Antonio Molina, Magdalena Bernues, Manuel Lopes-Lima, Marian Ramos, Mary Seddon, Pablo García Murillo, Rafael Miranda, Rafael Miranda, Richard Lansdown, Silvia Perea, Carlos Prada, Susanna D'Antoni, Thomas Abeli and Vincent Prié. We sincerely thank the reviewers, Patrick Grillas and Benigno Elvira Pallan for their constructive comments and helpful suggestions on the manuscript. We also like to thank Elisa Alcazar for helping with final layout of maps.

This project was funded by the MAVA Foundation.

Executive Summary

The Mediterranean Basin biodiversity hotspot is known to be one of the most biologically rich and complex regions on Earth. The north-western part of the hotspot (the area that covers all of the Iberian Peninsula, southern France, most of Italy and Malta) supports important river, lake, karst and wetland systems critical for the survival of threatened and restricted range freshwater species. Through this project we have identified freshwater Key Biodiversity Areas, defined as sites of importance for the global persistence of biodiversity, within the north-western Mediterranean region of the hotspot.

Four priority taxonomic groups including freshwater fishes, molluscs, odonata and aquatic plants, were selected to represent a range of trophic levels within the food webs that support wetland ecosystems. Based on the IUCN Red List published data on species conservation status and distributions 218 freshwater KBAs were confirmed by regional experts for these taxonomic groups, covering an area of 100,021 km^2 (13% of the sub-region). The KBAs validated through the project support 109 globally threatened species (Critically Endangered, Endangered or Vulnerable species), 91 geographically restricted range species and demographic aggregations of four species. Of these KBAs, 11 also qualify as Alliance for Zero Extinction sites (AZE) confirming the urgency to develop and implement effective conservation actions for freshwater biodiversity in the north-western Mediterranean countries.

The spatial overlap between freshwater KBAs and existing protected areas, in particular sites within the Natura 2000 Network, and other KBAs was higher than in other Mediterranean sub-regions. Around 84% of the total area of these freshwater KBAs (83,921 km^2) lies within the boundaries of pre-existing protected areas or KBAs. However, most of these existing management units have been delineated primarily for terrestrial species and often fail to cover and manage effectively the restricted range and threatened species living in freshwater habitats. The remaining 16% of the freshwater KBAs area (16,100 km^2), lies outside of any existing protected areas or KBAs, representing priority gaps in the current network. These KBAs should be considered within future strategies for improving representation of freshwater biodiversity within the protected areas network.

Specific recommendations for conservation actions are mainly focused on improving water management, especially in relation to the over-abstraction of water from springs and ground water, dam construction and pollution from agriculture and urban areas. Increased efforts are also required to control and/or eradicate invasive alien species in freshwater systems. Management of freshwater KBAs at the catchment scale is needed to: i) ensure effective species protection from both upstream and downstream threats often originating from some distance outside of KBAs, and, ii) maintain the quality, quantity and timing of water flows required to sustain freshwater ecosystems. Countries in the sub-region are recommended to implement an Integrated River Basin

Management approach (IRBM or similar) to better coordinate conservation and management actions across sectors.

KBAs should be identified at local and national level through a participatory process that involves the relevant stakeholders to maximise buy-in and subsequent implementation of conservation actions. As part of the process 128 potential Site Champions have been identified as individuals/ organizations best placed to raise awareness of the KBAs and the issues faced with regard to biodiversity threat, and to help to implement the required actions to safeguard these globally important sites.

The information presented in this report will help guide and inform policies and conservation actions for freshwater biodiversity in the region.The KBAs identified will be useful to:

- inform the strategic expansion of protected area networks by governments and civil society working toward the achievement of the Aichi Biodiversity Targets (in particular Targets 11 and 12), as established by the Convention on Biological Diversity (CBD);
- to inform the description or identification of sites under international conventions (such as wetlands of international importance designated under the Ramsar Convention, natural World Heritage Sites, and Ecologically and Biologically Significant Areas as described under the CBD);
- inform private sector safeguard policies, environmental standards, and certification schemes; support conservation planning and priority-setting at national and regional levels; and provide local communities with opportunities for employment, recognition, economic investment and societal mobilization.

The identification and management of freshwater KBAs can also provide a metric for measurement of progress towards Sustainable Development Goals 6 and 15 to target 6.5, focused on implementation of integrated water resources management at all levels; target 6.6 focused on protecting and restoring water-related ecosystems; target 15.1 focused on the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services ; and target 15.5 focused on taking urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species (United Nations 2016).

Finally, it must be noted that the identification and delineation of KBAs is necessarily a fluid and ongoing process responding to the provision of new information and a constantly changing environment. It is therefore expected that this current freshwater KBA dataset will continue to be refined and updated by each of the countries in the region. The work presented here represents the first steps in taking this process forwards and it provides a baseline to inform future freshwater KBA designations. All validated KBAs will soon be publicly available on the World Database of Key Biodiversity Areas website (http://www.keybiodiversityareas.org/home).

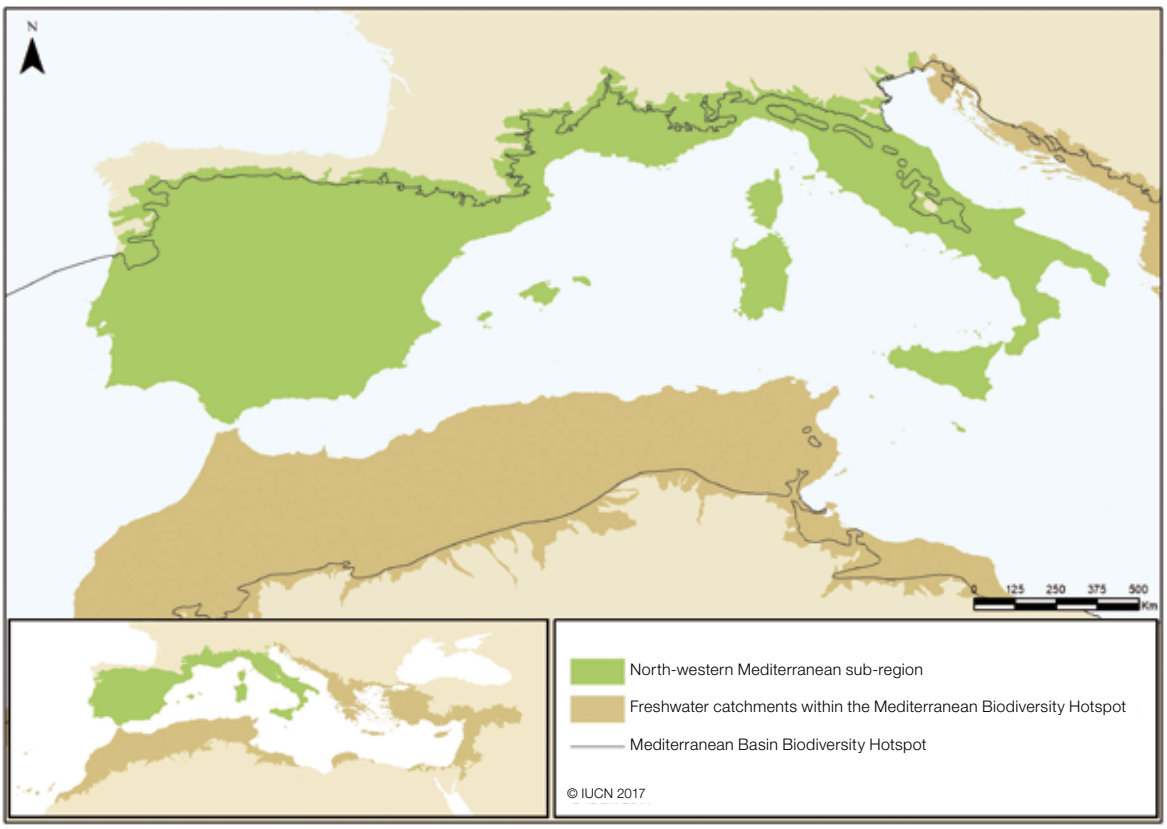
Background

Freshwater biodiversity in the Mediterranean Basin Hotspot is remarkably diverse and highly threatened as confirmed by the Mediterranean Biodiversity Red List assessments (Smith *et al*. 2014; Garcia *et al*. 2010; Cuttlelod *et al*. 2008). Lack of targeted conservation for freshwater habitats and species is notable across the globe with ongoing species losses and degradation in water supply from healthy wetlands (Collen *et al*. 2014). A major bottleneck to conservation of freshwater ecosystems is the lack of information on where the most important sites of biodiversity are located. This lack of information has hindered the development and implementation of appropriate management actions for freshwater species as well as private sector efforts to minimise impacts through the adoption of effective environmental safeguards.

As a result of the situation described above, in 2012 CEPF and the MAVA Foundation funded IUCN to fill the gaps in the Red List assessments of freshwater species in the Mediterranean Basin Hotspot (Smith *et al*. 2014) and work with the relevant stakeholders to identify and validate Freshwater Key Biodiversity Areas for the southern and eastern Mediterranean sub-regions (Darwall *et al*. 2014). The aim of this project was to better inform conservation and development activities in the region by providing reliable and accurate data on important sites for freshwater biodiversity, and to identify policy and conservation action opportunities.

In 2015 the IUCN Centre for Mediterranean Cooperation in partnership with the IUCN Freshwater Biodiversity Unit, received additional funds from the MAVA Foundation to complete the work initiated in 2012 to identify freshwater KBAs in the north-western Mediterranean sub-region (Spain, Portugal, France, Italy and Malta), providing in this way, with resources that are essential for guiding decisions on the conservation and sustainable management of freshwater biodiversity. This work therefore complements that previously completed for the other parts of the basin.

Figure 1. The project area includes the north-western Mediterranean sub-region, from the Iberian Peninsula (Spain and Portugal) to South-Eastern France, the Italian Peninsula and Malta.



PROJECT OBJECTIVES

The project aimed to fill the remaining regional gaps on freshwater Key Biodiversity Areas (KBAs) for the north-western Mediterranean countries (Spain, Portugal, Italy, France and Malta, figure 1) employing the findings of the previous freshwater biodiversity assessments (Kalkman *et al*. 2010; Cuttelod *et al*. 2011; Freyhof and Brooks, 2011; and Bilz *et al*. 2011). The process leading to the identification and delineation of freshwater KBAs included:

(i) collating data on the distribution, abundance, ecology, and utilization by humans, for several groups of species that are considered to be reliable indicators of the biological structure and functioning of freshwater ecosystems (fishes, molluscs, plants and odonata);

(ii) identifying those river/lake sub-catchments holding species that appear to meet the KBA criteria;

(iii) validating (through stakeholder consultations) KBAs within those sub-catchments that support sites that meet the criteria, and;

(iv) creating factsheets for the associated KBA Catchment Management Zones (CMZs) as advisories for the management of these KBAs within the hydrological context of associated river/lake basins.

A NEW KBA GLOBAL STANDARD

Over the last four decades, a range of organisations have invested in compiling information on the location of sites that are significant for biodiversity. Since the late 1970s, Birdlife International has maintained criteria for the identification of Important Bird Areas and more than 12,000 sites have been identified worldwide (Dudley *et al*. 2014). Building on this success, other approaches have been developed, including Important Plant Areas; Alliance for Zero Extinction sites; Prime Butterfly Areas and KBAs identified for multiple taxonomic groups in freshwater, terrestrial and marine environments (IUCN 2014). These approaches generally focus on one group of species or one biome, and use diverse assessment criteria, which has led to some confusion among decision-makers as well as duplication of conservation efforts.

As a consequence, during the World Conservation Congress held in Bangkok (Thailand) in 2004, IUCN Members requested IUCN "to convene a worldwide consultative process to agree a methodology to enable countries to identify Key Biodiversity Areas." In response to this Resolution (WCC 3.013), the IUCN Species Survival Commission and the IUCN World Commission on protected areas established a Joint Task Force on Biodiversity and protected areas. Since 2012 it has mobilized expert input from IUCN Commissions, Members, Secretariat staff, conservation organizations, academics, decision-makers, donors, and the private sector to consolidate globally-agreed scientific criteria and harmonize work for identifying KBAs (IUCN 2014).

All these efforts have culminated in "A Global Standard for the Identification of KBAs", approved by the IUCN Council during its 88th Meeting on April, 11-13, 2016 and that can be applied across taxonomic groups and all elements of biodiversity. The new standard and the data generated will be useful to:

- support the strategic expansion of protected area networks by governments and civil society working toward the achievement of the Aichi Biodiversity Targets (in particular Target 11 and 12), as established by the Convention on Biological Diversity (Butchart *et al*. 2012);
- inform the description or identification of sites under international conventions (such as wetlands of international importance designated under the Ramsar Convention, natural World Heritage Sites, and Ecologically and Biologically Significant Areas as describedunderthe CBD);
- inform private sector safeguard policies, environmental standards, and certification schemes;
- support conservation planning and priority-setting at national and regional levels; and provide local and indigenous communities with opportunities for employment, recognition, economic investment and societal mobilization (IUCN 2016).

KEY BIODIVERSITY AREAS are 'sites contributing significantly to the global persistence of biodiversity'. However, this does not imply that a specific conservation action, such as protected area designation, is required. These management decisions should be based on conservation priority-setting exercises, which combine data on biodiversity importance with the available information on site vulnerability and the management actions needed to safeguard the biodiversity for which the site is important. It is often desirable to incorporate other data into priority-setting, such as conservation cost, opportunity for action, importance for conserving evolutionary history and connectivity. KBAs thus do not necessarily equate to conservation priorities but are invaluable for informing systematic conservation planning and priority-setting, recognising that conservation priority actions may also be outside of KBAs (IUCN 2016).

Methodology

A CHANGE IN APPROACH FOR DELINEATING FRESHWATER KBAs

Previous approach

KBA delineation is an iterative process that makes use of better and more recent data as they become available (IUCN 2016). Before the adoption of the new KBA Standard in 2016, freshwater KBAs were identified using guidance and thresholds published in 2012 (Holland *et al.* 2012) and delineated based on sub-catchments which were deemed to be the relevant 'management units' for the KBA trigger species (where trigger species are defined as those species meeting the KBA Criteria according to Holland *et al.* 2012). In doing so the resulting KBAs included large areas of terrestrial habitat, where many aquatic species may not be present, which are however considered relevant for the conservation and management needs of the species. These sub-catchment KBAs might therefore be considered as predominantly landscape scale (integrated river-basin) management units which may have many diverse potential management authorities.

For some species 'Focal Areas' could be identified within the sub-catchment KBAs. Focal Areas are distinct sites (e.g. headwaters, lakes, springs, etc.) of particular importance for the long term survival of freshwater biodiversity (e.g. sites containing species spawning areas, feeding areas, or the majority of the population of a species etc.) (See Abell *et al.* 2007). In this way a distinction was made between the areas where the target species were physically present (Focal Areas) and the areas needing to be managed for conservation of the species within those Focal Areas (sub-catchment KBAs).

However, this approach didn't directly match that taken by the other existing 'terrestrial' KBA approaches such as Important Bird and Biodiversity Areas (IBAs), Important Plant Areas (IPAs), Alliance for Zero Extinction sites (AZE) etc. which should be largely equivalent to the freshwater Focal Areas.

New approach

The approach to identification and delineation of global KBAs was consolidated and refined, as set out in the draft *Consultation document on a Global standard for the identification of Key Biodiversity Areas* (Draft 1 October 2014), shortly prior to the workshop for identification and delineation of freshwater KBAs for the NW Mediterranean region. It was therefore decided to delineate freshwater KBAs according to smaller sub-catchments to better reflect those parts of the species range critical to its longterm persistence. This approach followed the guidance in the new draft KBA standard and generally aimed to define Focal Areas as the freshwater KBAs (see Annex III).

Information on the associated larger sub-catchments was retained as a separate dataset named 'Catchment Management Zones' (CMZs) to provide important additional information on the wider hydrological context and the integrated basin-management requirements for the sub-catchments in which the KBAs reside. It is intended that the KBA and its associated CMZ be used in conjunction in order to better inform implementation of suitable management actions that ensure conservation of the species in the KBAs while taking into account hydrological connectivity and the rapid and far reaching spread of threats from beyond the KBA itself.

Since completion of this work a further modification has been made to the presentation of the KBA and CMZ factsheets such that CMZ factsheets are not longer created but instead CMZ now recognized in the KBA descriptions to ensure KBA are managed within the context of their associated river or lake catchments.

While the KBA criteria and thresholds set out in the consultation document were not adopted for identifying freshwater KBAs in this workshop (as they were not yet finalised), the criteria and thresholds used to identify freshwater KBAs (Holland *et al.* 2012) are directly transferable to the 'new' system (see table 1), therefore the sites identified here still meet the new KBA standard. This of course is an issue not unique to the freshwater KBAs and parallel efforts are underway to ensure that existing IBAs, AZEs and terrestrial KBAs are also compatible with the new criteria.

Table 1. Comparative table showing how the freshwater KBA criteria used in this project map to those of the new KBA standard.

OLD FRESHWATER KBA CRITERIA (HOLLAND ET AL. 2012)	NEW KBA CRITERIA (IUCN 2016)
A site regularly supports…	
1. … a significant number of one or more globally threatened species or other species of conservation concern. **Threshold - One or more CR, EN or VU species.**	**A1: Threatened Biodiversity** (b) Site regularly holds ≥0.5% of the global population AND ≥5 functional reproductive units of a globally Critically Endangered (CR) or Endangered (EN) taxon; OR (c) Site regularly holds ≥1% of the global population AND ≥10 functional reproductive units of a globally Vulnerable (VU) taxon.
2. … non-trivial numbers of one or more species (or infra-specific taxa as appropriate) of restricted range. Thresholds - Restricted Range (based on cumulative area of sub-basin) = **20,000 km² for crabs, fish and molluscs;** **50,000 km² for odonates.**	**B1: Individually Geographically restricted species.** A site regularly holds ≥10% of the global population size/extent of any species. **B2: Co-occurring geographically restricted species.** A site regularly holds ≥1% of the global population/extent of two or more 'restricted range' species OR 0.02% of total number of species in a taxonomic group, whichever is larger.
3. … a significant component of the group of species that are confined to an appropriate biogeographic unit or units Threshold – **at least 25% of the total species from a specific taxonomic group must be restricted to the freshwater ecoregion in which the KBA is located.**	**B3: Geographically restricted assemblages.** >5 ecoregion-restricted species OR 10% of the species restricted to the ecoregion, whichever is larger.
4.a … sites known or thought to be critical for any life history stage of any species 4. b … more than a threshold number of individuals of any congregatory species Threshold - > 5% of the global population of the species	**D1: Demographic Aggregations.** (a) Species **aggregation** during one or more key stages of its **life cycle** (% global pop. Size ≥1%).

Sites identified as potential KBAs should ideally be assessed against all criteria. Although not all these criteria are applicable or relevant for the freshwater taxonomic groups considered at the workshop (e.g., not all taxonomic groups have species that aggregate), meeting any one of the criteria (or sub-criteria) is enough for a site to be considered for qualification as a KBA.

THE NEW FRESHWATER KBA DELINEATION PROCESS

Stage 1. Desk based activities in preparation for a stakeholder KBA validation workshop:

The first step of the process was a primarily desktop analysis of data collated through IUCN Red List assessments for the region. These data sets include the required information on species distributions (digital shape files) and their IUCN Red List Categories of extinction risk as published on the IUCN Red List.

Expert participants at the KBA validation and delineation workshop confirming the presence of freshwater KBA trigger species within sub-catchments in the north-western Mediterranean subregion. © IUCN Med

a. Assemble spatial data sets of:

i. Freshwater biodiversity Red List distribution maps of fishes, dragonflies and damselflies (odonata), molluscs and aquatic plants;

ii. Existing KBAs, Ramsar sites and protected areas (IUCN Categories Ia-VI).

b. Derive proposed site boundaries based on biological data

The new KBA standard acknowledges that when delineating sites that fall outside existing KBAs and protected areas, it is often necessary to incorporate other data on land/water management to derive practical site boundaries. These management data layers should be of an appropriate scale or grain of land- or water-use and can include private lands managed for biodiversity, language groups, national and sub-national administrative boundaries, catchments in the case of integrated basin management, and other permanent management units to derive ecologically relevant yet practical boundaries (IUCN 2016).

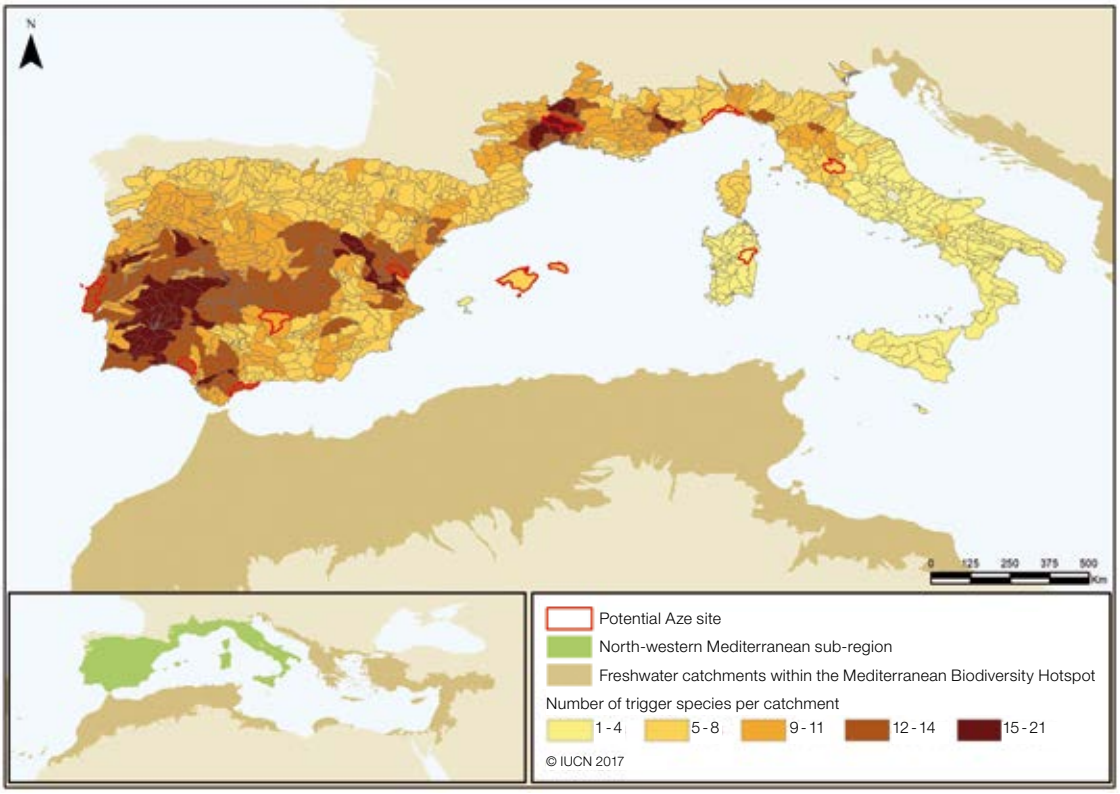
River/lake sub-catchments were delineated according to the spatial data layer called HydroBASINS (Lehner and Grill 2013) (http://hydrosheds.org/page/hydrobasins). HydroBASINS is a global standardized hydrological framework that delineates catchments at 12 resolutions and includes information on network hydrological connectivity. This global catchment delineation was customized for IUCN as a modification of the existing HydroSHEDS data (Lehner *et al*. 2008) (http://hydrosheds.org/) to include lake polygons from the Global Lakes and Wetlands Database (GLWD; Lehner and Doll 2004).

Using the species data assembled in Step 1 above all river/lake sub-catchments (Level 8 resolution) that contained KBA trigger species were identified. Level 8 resolution HydroBASINS in Europe have an average surface area of 600 km^2.

Maps were created to show all sub-catchments containing trigger species, showing the numbers of trigger species per sub-catchment (see Figure 2). Lists of trigger species thought to be present in each sub-catchment were compiled. This process was achieved through a screening of all sub-catchments against the full complement of species maps using "R" scripts, a free software for statistical computing and data analysis (Venables *et al*. 2017), to identify the trigger species present and the criteria triggered for each sub-catchment.

During the analysis those sites that potentially qualified as Alliance for Zero Extinction (AZE) sites were also identified. AZEs sites are places where species evaluated to be Endangered or Critically Endangered are restricted to single remaining sites http://www.zeroextinction.org/.

Figure 2. Sub-catchments identified prior to the stakeholder validation workshop that potentially meet the KBA criteria due to the presence of KBA trigger species. Potential AZE sites are highlighted in blue.



Stage 2. Stakeholder Workshop:

A stakeholder KBA validation and delineation workshop was held in Madrid in November 2015 in collaboration with the relevant stakeholders (species experts, Conservation NGOs and Government representatives) from the region (Picture 1). The aim of KBA delineation workshop was to derive site boundaries that are biologically relevant yet practical for management. Workshop participants were asked to confirm the presence of the trigger species within those sub-catchments identified through Stage 1 (desk analysis) and delineate KBA boundaries according to the following procedures:

a. Delineation with respect to existing sites of importance for biodiversity.

Wherever possible, identification and delineation of KBAs for new biodiversity elements should take into consideration the boundaries of existing terrestrial KBAs, IBAs, IPAs or AZE sites, because many have national recognition, active conservation and monitoring initiatives, and/or are linked to international, national, regional legislative and policy processes (IUCN 2016). Thus, where freshwater trigger species are present in sub-catchments overlapping existing sites the boundary of the existing site should be adopted if:

- The site contains enough of the new element (KBA trigger species in this case) to meet the threshold of significance; and
- The boundary is ecologically relevant for the freshwater species.

b. Delineation with respect to protected areas

Many protected areas are recognized management units with the goal of safeguarding the biodiversity contained within them, and the additional recognition of the site as a KBA, using the existing boundaries, helps to consolidate the importance of these management units. Therefore, when a freshwater trigger species falls within a sub-catchment overlapping an existing Protected Area it is often advisable to use the protected area boundary to delineate the KBA if:

- The protected area contains enough of the new element (KBA trigger species in this case) to meet the threshold of significance; and
- The boundary is ecologically relevant for the freshwater species.

It is important to highlight however, that regional-scale assessments of the coverage and effectiveness of protected areas have shown that protected areas are largely ineffective for conserving freshwater habitats and species (Leadley *et al.* 2014). For example, rivers have often been used to delineate the borders of protected areas rather than being the targets of conservation themselves (Abell *et al*. 2007). Therefore, when the freshwater trigger species partially overlap an existing site there are generally three options: i) disregard the area of overlap (if trivial); ii) adopt the PA boundary if the KBA is found fully within the PA; or iii) delineate a second KBA covering the portion of the biodiversity element outside the protected area, assuming both areas meet the thresholds of significance, and recommend an extension to the PA boundary. The appropriate option will typically depend on how much of an overlap there is and the feasibility of modifying an existing PA boundary.

c. Delineation of new KBAs based on species Focal Areas

When there is no spatial overlap between the proposed freshwater KBA and existing KBAs or protected areas, freshwater KBA boundaries should be based on the distribution of focal areas identified for trigger species. As explained before, Focal Areas are distinct sites (e.g. headwaters, lakes, springs, etc.) of particular importance for the long-term survival of freshwater biodiversity (e.g. sites containing species spawning areas, feeding areas, or the majority of the population of a species etc.) (See Abell *et al.* 2007; Holland *et al.* 2012). It is recommended where possible, to delineate Focal Areas using HydroBasins Level 12 sub-catchments (highest resolution).

For some species, the inherent connectivity of aquatic systems presents challenges for site delineation. Many aquatic species are highly mobile and widespread across the catchment (e.g. migratory fish species such as sturgeons) and may not occur at identifiable sites in globally significant populations. These type of species may not benefit from KBA delineation and site scale conservation but from a wider integrated catchment management approach.

d. Complete minimum documentation requirements for each KBA

At the workshop, participants were also asked to complete some minimum documentation requirements for each KBA Catchment Management Zone including a site description, the list of validated trigger species, current and potential threats, habitat types, potential site champions and conservation actions recommended. This information supports and justifies the identification of a site as a KBA and guides management of the biodiversity elements triggering the criteria; site-scale monitoring; national conservation planning and priority-setting; and global and regional analyses of KBA status.

Expert participants at the Freshwater KBA workshop, November 2015 –National Museum of Natural Sciences, Madrid, Spain. ©IUCN

Results

FRESHWATER KBA TRIGGER SPECIES

The priority taxonomic groups considered at the KBA delineation workshop were freshwater fishes, molluscs, dragonflies and damselflies (odonata), and aquatic plants. The preliminary analysis identified 191 potential KBA trigger species, out of which 137 were confirmed by the regional experts as valid, meaning they are present within the sub-catchments of interest (see Annex I for the full list of KBA trigger species validated by country, also see Table 4).

KBAs validated at the workshop support 107 globally threatened species (Critically Endangered, Endangered or Vulnerable), 92 geographically restricted range species and 4 species with demographic aggregations during one or more key stages of their life cycle (Table 2) confirming the urgency to develop and implement effective conservation actions and management plans for freshwater biodiversity in the north-western Mediterranean countries.

Molluscs

The highest species richness of freshwater molluscs within the north-western Mediterranean sub-region is found in the Iberian Peninsula (Table 3), where they are frequently restricted to small numbers of freshwater springs, particularly in karst systems (Abell *et al.* 2008). Some examples of these KBA trigger species are *Spiralix valenciana* which is Endangered and found only in five localities in the Provinces of Valencia and Castellon (Spain), *Melanopsis penchinati* which is restricted to the thermal springs on the River Jalón (Spain) and *Belgrandia alcoaensis*, a Critically Endangered species endemic to Portugal where it is known only from the type locality, a freshwater spring near Chiqueda de Cima at the head of the Rio Alcoa in the Serras d'Aire e Candeeiros.

Freshwater molluscs are essential to the maintenance of wetland ecosystems, primarily through their control of water quality and nutrient balance through filter-feeding and consumption of algae and plant material, and to a lesser degree, as a food source for predators including a number of fish species (Cuttelod *et al.* 2011). Unfortunately, freshwater molluscs are one of the most threatened groups of freshwater taxa and yet one of the most unnoticed. Changes in their diversity and population structure are being driven by habitat loss and fragmentation, overexploitation, pollution, loss of host fishes for larvae, introduction of non-native species, water abstraction, acidification, euthrophication and desertification caused by climate change (Lopes-Lima *et al.* 2016).

Table 2. Number of trigger species, threatened species, geographically restricted species and AZE species by country. Note that the "Total" represents the number of unique species and is thus not the sum of the columns.

Critera	Portugal	Spain	France	Italy	Malta	Total
Trigger Species	36	75	28	28	2	**137**
Threatened Species	33	65	21	18	0	**107**
Geographically Restricted	14	41	21	20	2	**92**
Demographic Aggregations	3	4	NA	NA	0	**4**
AZE Species	4	5	1	3	0	**11**

Table 3. Number of KBA trigger species by group and country. Note that the "Total" represents the number of unique species and is thus not the sum of the columns.

Group	Portugal	Spain	France	Italy	Malta	Total
Molluscs	7	36	21	12	0	**69**
Odonata	1	1	1	0	0	**1**
Fishes	21	26	4	12	0	**47**
Plants	7	12	2	4	2	**20**
Total	**36**	**75**	**28**	**28**	**2**	**137**

Fishes

The richness of freshwater fish species is relatively low in the European Mediterranean sub-region (Freyhof and Brooks 2011). However it supports a significant number of threatened species, many of which are locally endemic, with natural ranges limited to just a few streams, springs, lakes or rivers. For example, populations of *Scardinius scardafa* (AZE species) in the Lago di Scanno and *Acipenser naccarii* in Boschi del Ticino (Italy), or the populations of *Parachondrostoma arrigonis* in the Laguna del Arquillo (Spain) are all restricted range species.

Freshwater resources are very limited in southern Europe. Water abstraction for agriculture and human consumption, along with pollution, alterations of natural habitats impacted by dams and the introduction of invasive and non-native species are causing rapid population declines of freshwater fishes such as Zingel asper in the Basse Ardèche (France) or *Thymallus aeliani* in the Sesia River (Italy). Therefore, it is crucial to inform the strategic expansion of national protected areas and the Natura 2000 network to ensure adequate protection and management of sites such as feeding grounds and spawning areas, which are irreplaceable and so vital for the long-term survival of these freshwater fishes (Hermoso *et al.* 2015; Lopez *et al.* 2015).

Freshwater Plants

The north-western Iberian Peninsula supports a significant number of endemic and threatened freshwater species, primarily due to the combination of restricted range species in vulnerable habitats such as ephemeral pools (Bilz *et al.* 2011). Loss of these freshwater habitats through wetlands drainage for agriculture, development and expansion of pastures for livestock farming together with alterations of the water levels due to surface and groundwater abstraction, eutrophication through run-off and competition with invasive species are the main threats to freshwater plant species such as *Rorippa valdes-bermejoi* in the Marismas del Guadalquivir (Spain), *Pilularia minuta* in Arade Vicentina (Portugal) and *Isoetes malinverniana* (AZE species) in Boschi del Ticino (Italy).

Odonata

Only one dragonfly species qualified as a KBA trigger species. *Macromia splendens* is endemic to Spain, Portugal and France, where it shows a disjunct distribution with the largest populations in southern France and north-west Iberia. This species is rapidly extirpated when faced with water pollution, oxygen deficiency and introduction of non-indigenous crayfish. In addition, the increasing droughts in southern Europe triggered by climate change will inevitably lead to a reduction of the number of sub-populations during the next decade. The species is assessed as Vulnerable as it is expected to show a population decline of at least 30% in the next ten years due to a continuing decline of its habitat quality (Boudot 2010).

Table 4. Validated trigger species and the qualifying KBA Criteria. A1 (Threatened species: CR Critically Endangered, EN Endangered, VU Vulnerable); B1 (Restricted Range); B3 (Geographically restricted assemblages); D1 (Demographic Agregations). Note that the "Total" represents the number of unique trigger species and is thus not the sum of the rows.

	KBA Criteria				
Group	**A1**	**B1**	**B3**	**D1**	**Total**
Molluscs	47	57	n/a	n/a	69
Odonata	1	1	n/a	n/a	1
Fishes	42	24	n/a	4	47
Plants	17	10	n/a	n/a	20
Total number of species	107	92	-	4	137

Isoetes malinverniana (CR) Endemic species to the Piedmont and western Lombardy (Italy). A comparison study of the historic with the current range revealed a decline in its extent of occurrence of 88% in the last ten years (Barni *et al.* 2010). © P. Cauzzi

KBA CATCHMENT MANAGEMENT ZONES

Delineation of freshwater KBAs to river or lake sub-catchment boundaries is an approach that differs somewhat from that of other KBAs so warrants explanation. Threats to freshwater species primarily include alterations in hydrology (dams and water abstraction), invasive alien species, and water pollution. These types of threat tend to spread very rapidly throughout catchments due to the high levels of hydrological connectivity. Localized conservation actions limited to parts of a catchment will therefore often fail to address key ecological processes such as upstream-downstream propagation of impacts along water bodies or the migration requirements of freshwater-dependent species moving between spawning and feeding grounds (Darwall *et al.* 2014).

Rivers have often been used to delineate the borders of protected areas rather than being the targets of conservation themselves (Abell *et al.* 2007). However, if we consider the nature of threats and the hydrological connectivity of freshwater ecosystems the appropriate and logical management unit for most freshwater KBAs will be a sub-catchment or a grouping of connected sub-catchments including the component river and stream networks, lakes and wetlands (Bruno *et al.* 2014).

Through this project a total of 55 Catchment Management Zones containing KBA trigger species were identified, 20 in Spain, 9 in Portugal, 17 in Italy, 12 in France and 1 in Malta. Three of these are transboundary catchments shared between Spain and Portugal. Within these catchments 136 KBAs were adopted and delineated in Spain, 50 in Portugal, 26 in France, 30 in Italy, and 8 in Malta (Table 5).

Table 5 . Number of CMZs by country and number of existing KBAs/PAs adopted and newly delineated Freshwater KBAs within them.

		Adopted			
Country	**CMZ**	**KBAs**	**Protected areas**	**New FW KBAs**	**Total No. of FW KBAs**
Portugal	9	22	10	18	50
Spain	20	70	27	39	136
France	12	7	15	4	26
Italy	17	9	10	11	30
Malta	1	0	8	0	8
Total	**55**	**92**	**64**	**62**	**218**

The Natura 2000 site Boschi del Ticino has been adopted as freshwater KBA because it shelters the last habitat of the plant *Isoetes malinverniana* and the only known natural spawning site for the endemic Adriatic sturgeon (*Acipenser naccarii*) in the right page. Both species are threatened with extinction (Critically Endangered). © P. Cauzzi

The Catchment Management Zones represent an important counterpart data set to the freshwater KBAs, as not only would many of the freshwater KBAs benefit from some degree of landscape management but many of the KBA trigger species did not have identifiable 'focal areas' and were not found within existing KBAs. For these species KBAs may not be the relevant management conservation tool, as they maybe widespread throughout a larger catchment and require integrated basin-management.

Fact sheets and maps for each CMZ have been produced and will be available for public consultation and viewing within the World Biodiversity Database under development by BirdLife International (http://datazone.birdlife.org/freshwater).

FRESHWATER KBAs OVERVIEW

The north-western Mediterranean sub-region supports a large number of important river, lake, karst and wetlands systems validated as freshwater KBAs, 11 of which are also potential AZE sites (Table 2).

Existing KBAs/PAs Adopted as Freshwater KBAs

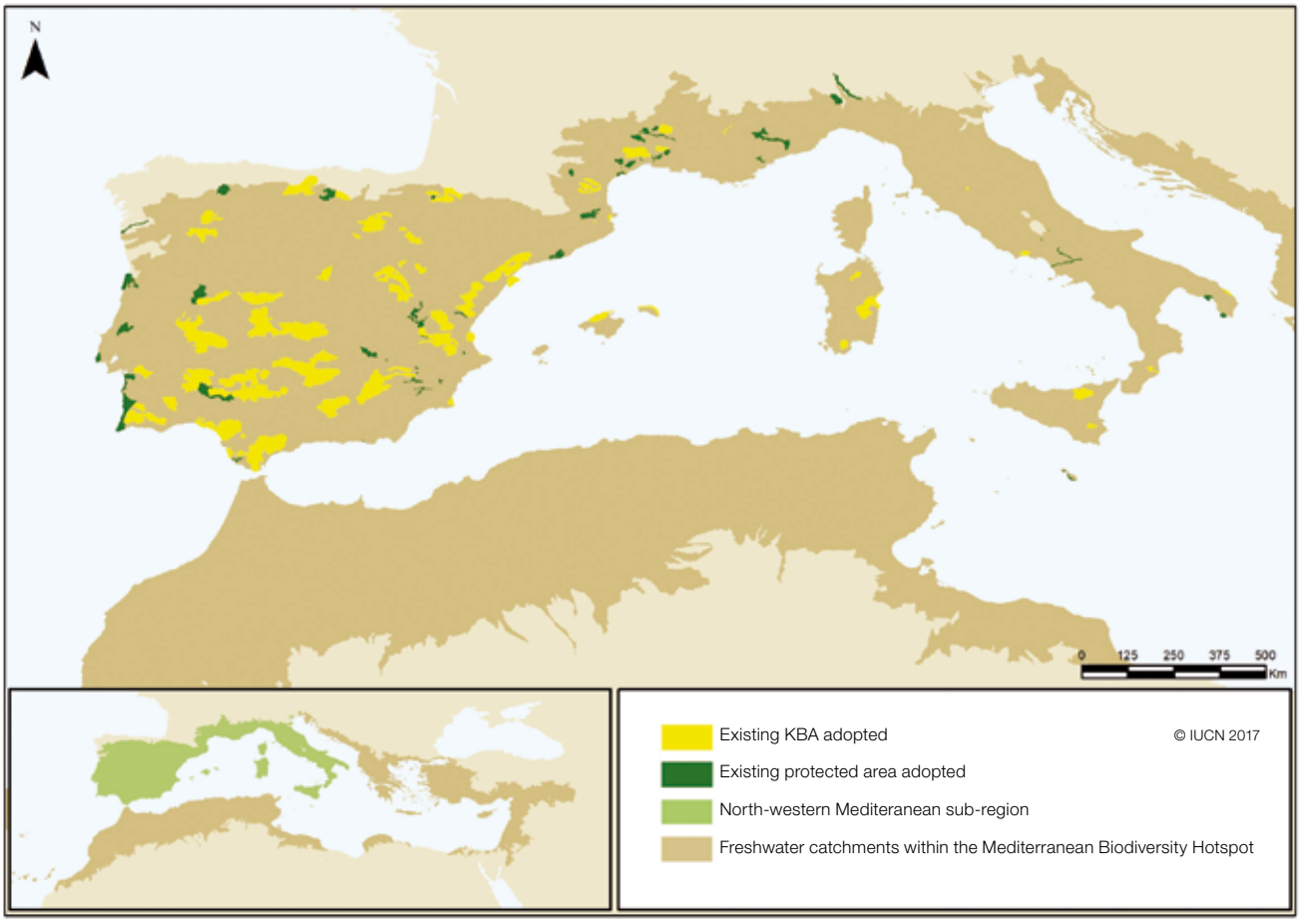
When important sites for biodiversity, such as Important Bird and Biodiversity Areas (IBAs), Important Plant Areas (IPAs), Alliance for Zero Extinction sites (AZE), and KBAs identified under previously published criteria, have already been identified in the region of interest, the identification and delineation of KBAs for new biodiversity elements or application of additional criteria should take into consideration their boundaries. Many of these sites have national recognition, active conservation and monitoring initiatives and/or are linked to legislative and policy processes. If the additional freshwater biodiversity element partially overlaps an existing site of importance for biodiversity, or is larger than the existing site, there are generally three options: disregard the area that does not overlap (if it is ecologically insignificant), extend the existing boundary in consultation with the individual or group who originally delineated the site (challenging to implement in practice), or delineate a new KBA adjacent to the site whilst also adopting the existing site as a freshwater KBA. The appropriate option will typically depend on how much of an overlap there is (IUCN 2016).

During the workshop a total of 92 existing 'terrestrial' KBAs and 64 existing protected areas were adopted as freshwater KBAs for 108 trigger species (Figure 3). It is hoped that the recognition of these sites for their importance as freshwater KBAs will lead to site management better tailored to benefit their associated freshwater trigger species.

Acipenser naccarii (Critically Endangered). © P. Cauzzi

Achondrostoma occidentale (Endangered). © J. Robalo

Figure 3. Pre-existing terrestrial KBAs and protected areas adopted as Freshwater KBAs.



Freshwater habitats of the new delineated KBA Alcabrichel, Sizandro and Safarujo in coastal wetern Portugal, harbour the endemic fish *Achondrostoma occidentale,* which is threatened with extinction (Endangered) by sewage and water abstraction. © J. Robalo

Current Levels of Protection

Protected areas coverage is globally on track to meet the Aichi Biodiversity Target 11 to conserve through effective and equitable management at least 17% of terrestrial (and inland water) areas and 10% of coastal and marine areas by 2020, with main focus on areas of particular importance for biodiversity (CBD Strategic Plan 2011-2020). However protected area expansion has rarely accounted for the conservation needs of freshwater biodiversity. Where freshwater species are represented in PAs these are often ineffective in dealing with the pressures and required conservation management actions for freshwater species (Abell *et al.* 2007).

The Natura 2000 network is the largest coordinated network of protected areas in the world. It stretches across all the 28 EU Member States and covers over 18% of the EU's land area and almost 6% of its marine territory (European Commision 2017). Many freshwater KBAs identified in the north-west Mediterranean sub-region overlap wholly or partly with Natura 2000 sites, protected areas designated at national, regional and local levels (e.g. national parks), and sites recognised under international conventions (e.g. Ramsar Sites).

The total area of validated freshwater KBAs is 96,640 km^2 representing 13% of the total area of the north-western Mediterranean sub-region. The protected areas adopted as freshwater KBAs cover 11,219 km^2 (12% of the total area of validated freshwater KBAs). While the area covered by existing terrestrial KBAs and adopted as freshwater KBAs is 70,879 km^2 (73% of the total area of validated freshwater KBAs).

Table 6. Area covered by New Freshwater KBAs, Existing terrestrial KBAs and protected areas adopted for freshwater KBA trigger species in the north-western Mediterranean sub-region.

	Area (km^2)	% Total Area (Sub-Region)
North-western Mediterranean Sub-Region	765,603	**100%**
New Freshwater KBAs delineated	14,542	1.9%
Existing Terrestrial KBAs Adopted	70,879	9.3%
Protected Areas Adopted	11,219	1.5%
Total Area of New KBAs + Adopted KBAs & PAs.	96,640	13%

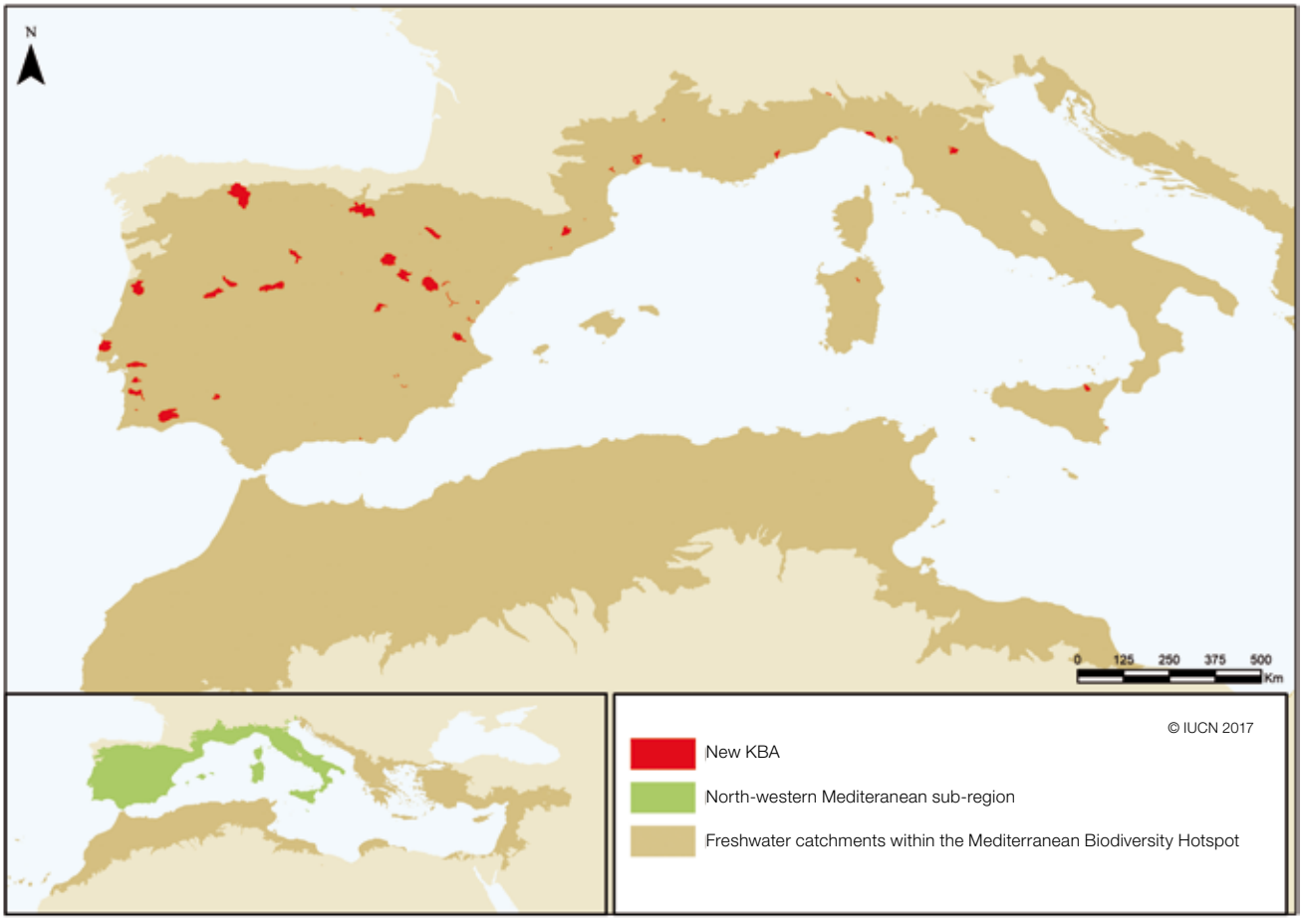
Although 79% of freshwater KBA trigger species spatially overlap the network of Natura 2000 sites terrestrial KBAs, freshwater species are not often the focus of conservation and management actions within these existing management units which are delineated primarily for management of terrestrial species. The Natura 2000 network often fails to cover adequately the distribution of restricted range and threatened aquatic species, and lacks the appropriate spatial design and management focus to make conservation of freshwater biodiversity effective (Hermoso *et al.* 2015). An indicator of this failure to focus on conservation of freshwater biodiversity is that, despite their legal protection under the Habitats Directive, 56% of freshwater ecosystems in Europe face an unfavourable-inadequate conservation status as presented in the latest State of Nature in Europe Report (EEA 2015).

Newly Delineated KBAs

A total of 62 new freshwater KBAs (see Annex I) were delineated for 62 trigger species, covering 14,542 km^2 (15% the total area of validated freshwater KBAs). All these sites remain outside the boundaries of any existing PAs or KBAs suggesting that despite the significant coverage of freshwater KBAs by existing management units, significant gaps still remain. These gaps highlight sites for potential consideration within an expanded protected areas network or for alternative site based conservation actions.

Using sub-catchments to delineate new site boundaries provides clear advantages over other approaches as they represent well defined and ecologically meaningful management units.The following summary provides some examples of freshwater KBAs delineated in Italy, France, Spain and Portugal and is largely based on information provided at the workshop by regional experts, Red List assessments and general descriptions from the Freshwater Ecoregions of the World (FEOW 2015).

Figure 4. New KBAs delineated in the north-western Mediterranean sub-region.



ITALY AND FRANCE

The river catchments of northern Italy, include tributaries of the Po that extend into southern Switzerland. Most of these rivers are fed by glacial streams with relatively high rainfall and runoff from Alpine glaciers and snowfields. In this region a new KBA **Sesia River** has been delineated to cover the species focal area of two restricted range fish species *Salmo marmoratus* and *Thymallus aeliani* – from Borgosesia to Piode (Annex I). Another tributary of the Po is the Ticino River, where two Natura 2000 sites **Boschi del Ticino** and **Risaie della Lomellina** have been adopted for the AZE plant species *Isoetes malinverniana*, a hydrophyte primarily threatened by rice cultivation, inappropriate channel management practices and nutrient load into the water which has caused an 88% decline in its extent of occurrence in the last ten years (Abeli *et al.* 2011, Minuzzo *et al*. 2016). Boschi del Ticino has also been adopted as a freshwater KBA because it has the only known natural spawning site for the endemic Critically Endangered Adriatic sturgeon (*Acipenser naccarii*) which has suffered a major population decline in the last 60 years due to overfishing and river barriers blocking its migratory routes between feeding and spawning grounds.

Notable glacial lakes for freshwater fishes include the new KBAs **Lago di Como** and **Lago di Garda**. Lago di Garda supports an endemic Critically Endangered fish species commonly know as Carpione Del Garda (*Salmo carpio*). The population of this species has reduced by more than 80% in the past ten years due to overfishing, water pollution and competition from introduced species such as *Coregonus spp*. (Crivelli 2006c).

Freshwater KBAs in central Italy have been delineated in the Volturno, Magra and Sieve catchments among others. The Volturno River rises in the Abruzzese central Apennines and runs south-west through gallery forests into the Tyrrhenian Sea. Two Natura 2000 sites **Fiumi Volturno e Calore Beneventano** and **Le Mortine** reservoir have been adopted as freshwater KBAs for the restricted range fish species *Cobitis zanandreai* (restricted to Volturno River). Water extraction, dams, predation by alien species, pollution and droughts are some of the most important threats to this species.

The upper and middle part of the **Sieve river** basin, including the Bilancino dam and lake, and Apenninic streams, have been delineated as a new freshwater KBA for two fish Vulnerable and Endangered fish species, *Padogobius nigricans* and *Romanogobio benacensis*. Recommended actions to help these species include regulation of water extraction, control of agriculture run-off, invasive species management and restoration of river connectivity for eels through creating a fish passage at Bilancino dam. Also in the central Apennines the existing Natura 2000 site **Lago di Scanno ed Emissari**, a deep mountain lake with karstic springs and streams, has been adopted as a freshwater KBA for the AZE species *Scardinius scardafa* (endemic to the lake).

In Southern Italy in Calabria, the existing KBA **Boschi di Stilo e Archiforo e Vallata dello Stilaro** has been adopted for the freshwater trigger species *Salmo cettii*. Also in Coastal Puglia existing Natura 2000 sites have been adopted for freshwater plants and molluscs.

In Sardinia, the existing KBA **Golfo di Orosei e Gennargentu** has been adopted for two threatened species of mollusc: *Sardohoratia islamioides* and *Sardopaladilhia plagigeyrica*. These two species are found in the area surrounding Lake Cedrino, an artificial reservoir located in a vast plateau extension, bordered by massive dolomitic limestone peaks with a rich underground hydrology. **Lago di Coghinas** has been delineated as a new freshwater KBA for a species of sedge *Carex panormitana* as more than an 80% of the population is found in the lake and its associated catchment. Finally, also in Sardinia, the existing KBA **Punta Maxia e Monte Arcosu** has been adopted for *Salmo cettii*, proposing a boundary extension in the north to better cover the species focal areas in Rio Marroccu, Rio Is Abius, Rio Camboni and Lago del Cixerri (Annex I). Another extension of this KBA to the south-east is recommended to include additional focal areas of *Salmo cettii* in the upper parts of Rio Monte Nieddu and Rio di Pula.

Freshwater KBAs in France have been delineated in the lower Rhône's southern catchment, in particular in its last tributaries: the Durance on its left bank and the Ardèche and Gard on its right. The existing KBA **Basse Ardèche** has been adopted for the fish *Zingel asper*, and two molluscs, *Islamia bomangiana* and *Paladilhia gloeeri*, while a new KBA **Upper Ardèche** has been delineated for *Potomida littoralis*, another species of mollusc. This area is under increasing human pressure, which has led to a general decrease in water quality and quantity. The major threats to the freshwater species are posed by water abstraction for domestic and agricultural purposes, and organic (sewage) and chemical pollution caused by the use of pesticides and herbicides in vineyards.

Coastal rivers like the Aude, the Var, the Grasse, the Hérault and Lez Mosson on the Mediterranean coast in southern France are also key areas for freshwater biodiversity. In the Aude catchment the existing KBA **Hautes Corbières** and the Natura 2000 site **Vallée du Lampy** have been adopted as freshwater KBAs for *Parachondrostoma toxostoma*. This fish is threatened by dams, water extraction, pollution caused by farming and agriculture activities and it is estimated to have

declined by at least 30% in the past 10 years based on data from hybridisation studies (Crivelli 2006b). In Lez Mosson a new KBA **Lez Mosson Karstic Drainage** has been delineated for the AZE mollusc species *Bythinella eutrepha*, threatened by urban encroachment from the town of Montpellier. Other important catchments for freshwater species in southern France are the Herault and the Ceze (See Annex I).

In the Var a new KBA **Lower Var** has been delineated for threatened and restricted range molluscs such as *Graziana trinitatis* and *Graziana provincialis*, and the existing Natura 2000 site **Le Mercantour** has been adopted for the Vulnerable mollusc species *Bythinella roubionensis*. While in the Grasse catchment the Natura 2000 site **Gorges de la Siagne** has been adopted as a freshwater KBA for the Endangered mollusc species *Graziana cezairensis*. Most of these spring-dwelling mollusc species are threatened with habitat destruction. Freshwater springs are subject to increasing pressure often being reduced to temporary flows when ground water is extracted, thus lowering the subterranean water level. They are also often built over to enable water extraction directly from the spring (Prié 2010).

The Cova del Toro in adopted KBA Sierra de Espadán in Spain is the habitat of the endemic mollusc *Spiralix valenciana* which is threatened with extinction. © MVHN

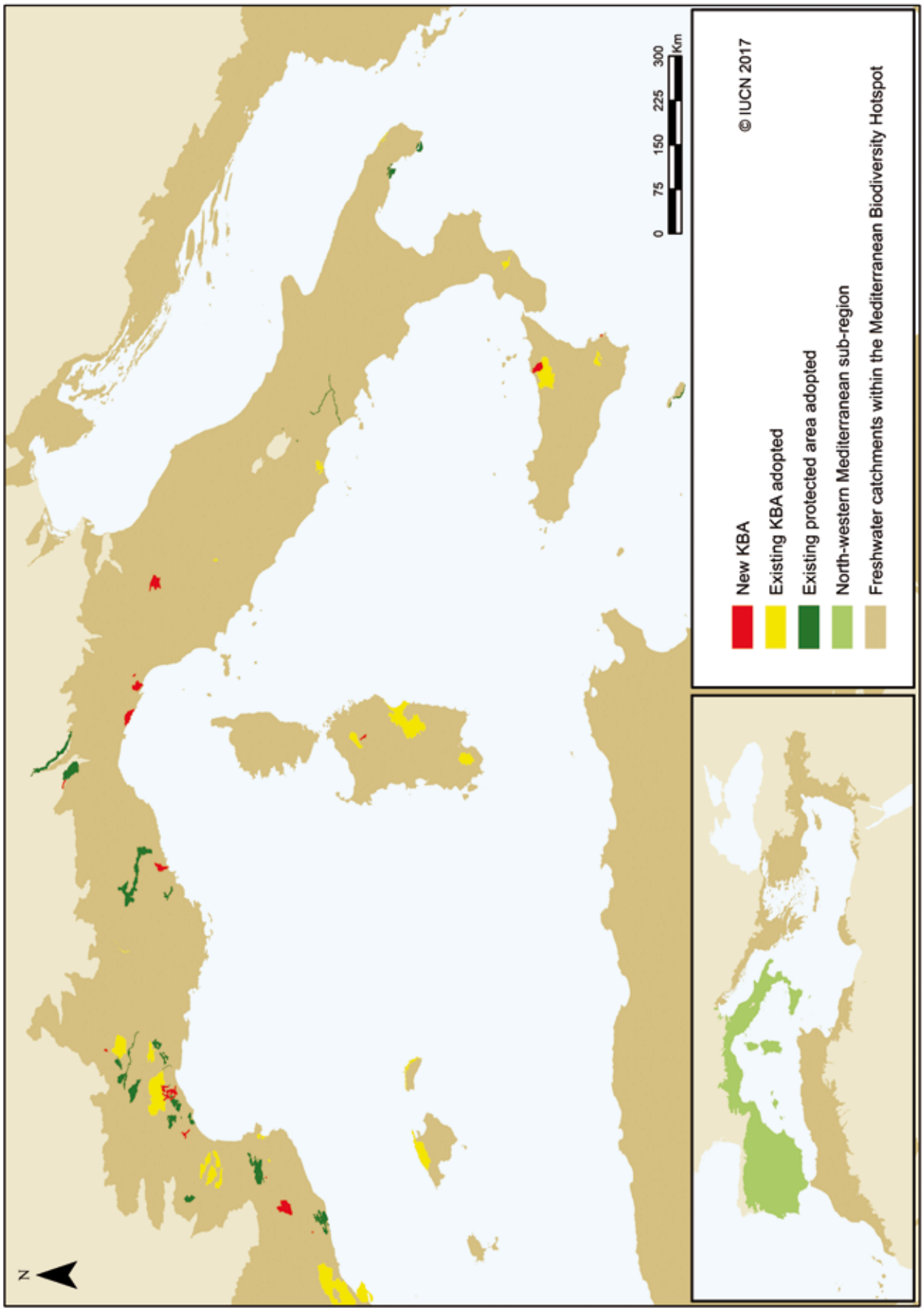


Figure 5. Overview of newly delineated KBAs and adopted KBAs/PAs in Italy and France.

SPAIN AND PORTUGAL

Eastern Iberia includes the Ebro River which is the largest Iberian river. After crossing the Catalan Coastal Range the river empties into the Mediterranean Sea at the Ebro Delta, a large wetland of international importance (Ramsar Site) adopted as a freshwater KBA for three threatened and restricted range fish species *Aphanius iberus*, *Valencia hispanica* and *Tarraconia rolani*. Unfortunately, more than half of the delta surface is now converted to rice cultivation, resulting in a general reduction in salinity and an increase in eutrophication, also favouring the dominance of freshwater invasive species, especially fish, molluscs and crayfish. Twelve new freshwater KBAs have been delineated and thirteen existing KBAs have been adopted within the river Ebro catchment management zone (See Annex I).

Southern Iberia encompasses the drainage basins of the Guadiana and Guadalquivir, which flow into the Atlantic Ocean, and Segura, which then flows into the Mediterranean Sea. Other coastal rivers include the Odiel, Tinto and Guadalete. Within all these catchments freshwater KBAs have been identified, some of them falling within existing KBAs, protected areas or Ramsar Sites such as the **Lagunas de Ruidera** adopted for the Vulnerable fish species *Iberochondrostoma lemmingii*, *Luciobarbus comizo*, *Luciobarbus microcephalus* and *Luciobarbus guiraonis*, the Natura 2000 Site **Valle y Sierra de Alcudia** adopted for the AZE fish species *Iberochondrostoma oretanum* and the **Marismas del Guadalquivir** adopted for the Critically Endangered plant species *Rorippa valdes-bermejoi*.

Three Mediterranean coastal Ramsar Sites have been adopted as freshwater KBAs. The **Mar Menor** in Murcia has been adopted for the Endangered endemic fish species *Aphanius iberus*, with important populations found in the Salinas de San Pedro del Pinatar, El Carmolí and salinas de Marchamalo. This species has undergone a population decline of at least 50% in the past 10 years due to urban and agriculture pollution and competition with introduced species (Crivelli 2006a). The **Marjales de Pego – Oliva** in Alicante, a marsh separated from the shoreline by a sand bar, has also been adopted for the Endangered fish species *Aphanius iberus* and the Critically Endangered *Valencia hispanica*, which faces a population decline of more than 80% (Crivelli 2006d). The **Albufera de Valencia**, a large shallow coastal lagoon fed by streams, rivers and irrigation channels, fringed by areas of rice cultivation was adopted for *Squalius valentinus*, *Valencia hispanica*, and the threatened mollusc *Potomida littoralis*.

Western Iberia includes steep mountains, rolling plains, plateaus and deep valleys crossed by Atlantic coastal rivers including the transboundary catchemnts of the Duero (Douro) and Tagus (Tajo) rivers. In this last catchment two new freshwater KBAs have been delineated for two AZE species, a fish and a mollusc: **Rio Gallo** for *Squalius castellanus* threatened by urban pollution from the city of Molina de Aragon and **Patones Spring** for *Islamia pallida*, assessed as Endangered with an area of occupandy of 12 km² and only three springs locations known.

In Portugal the new KBA **Río Vouga** has been delineated for the trigger species *Potomida littoralis* and *Macromia splendens*. This new KBA partially overlaps with the Natura 2000 site **Ría de Aveiro**. In the **Rio Sado** five new KBAs have been delineated for a freshwater fish (*Iberochondrostoma lusitanicus*), two plants (*Rhynchospora modesti-lucennoi*, *Thorella verticillato-inundata*) and a mollusc (*Unio tumidiformis*).

The western coastal rivers of Portugal support critical AZE species such as *Belgrandia alcoaensis*, a freshwater mollusc known from only the type locality, a freshwater spring near Chiqueda de Cima at the head of the Rio Alcoa, which is currently under pressure of increasing exploitation for domestic water supplies (Rolán 2011). The Natura 2000 site **Serras d'Aire e Candeeiros** has been adopted for this species. An extension to the site boundary is, however, recommended to include the focal area for this species (Annex I). A final example in western coastal Portugal is the new KBA **Alcabrichel, Sizandro and Safarujo** delineated for the AZE species *Achondrostoma occidentale*. This species has a very restricted range and it is is heavily impacted by domestic and agricultural pollution and water abstraction (Freyhof and Kottelat 2008).

SITE CHAMPIONS

128 potential Site Champions have been identified by stakeholders as individuals/organizations best placed to raise awareness of the existence of the KBAs and the issues faced with respect to threats to biodiversity, and to help implement the required actions to safeguard these globally important sites (See Annex II).

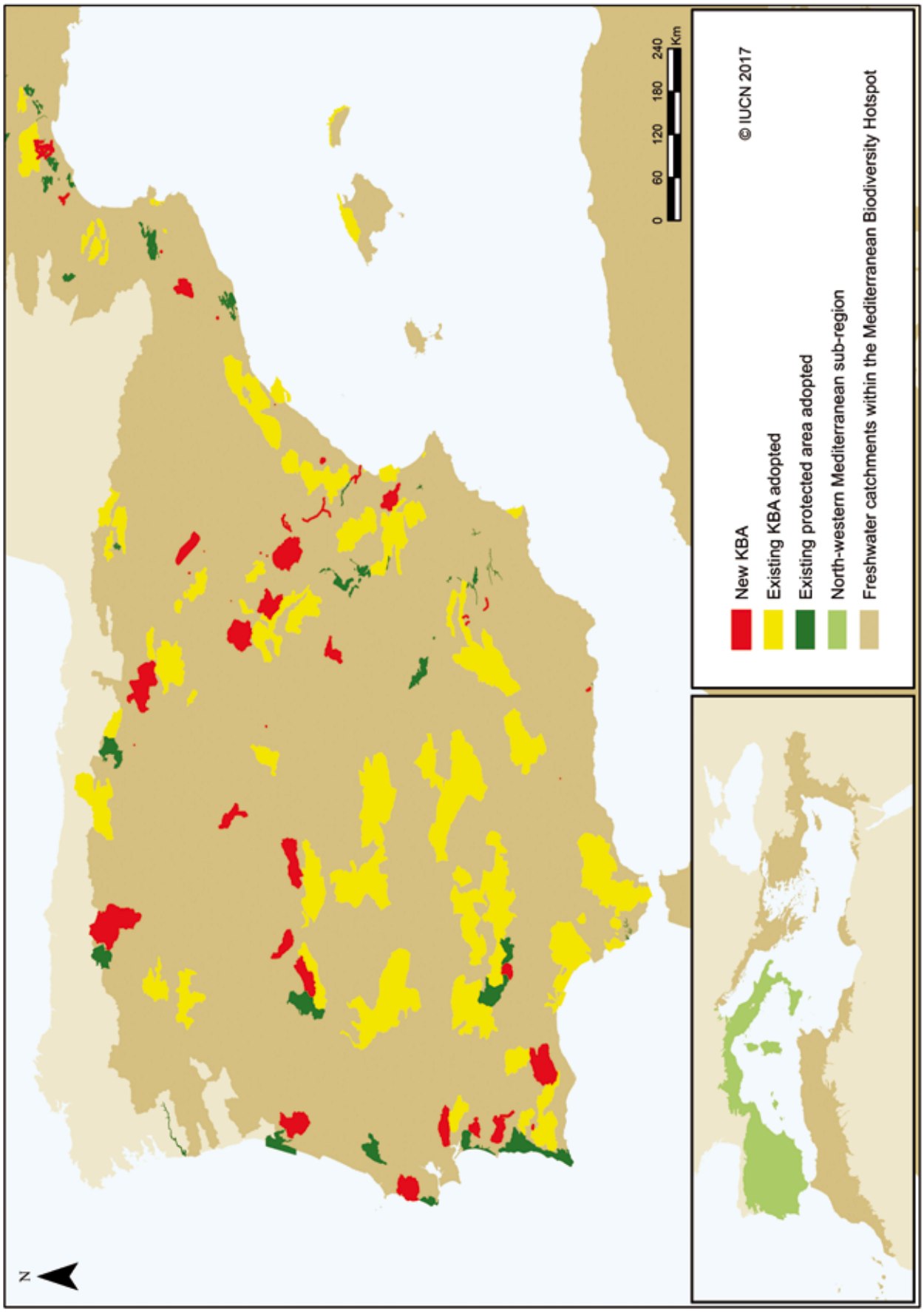


Figure 6. Overview of new delineated KBAs and adopted KBAs/PAs in Spain and Portugal.

Turia river in Spain provides habitat to four Vulnerable fishes *Luciobarbus guiraonis*, *Parachondrostoma turiense*, *Squalius valentinus* and *Barbus haasi* and also the Endangered mollusc *Spiralix valenciana*. ©MVHN

Conclusions and Recommendations

The north-west Mediterranean sub-region has been recognised through this project as a centre of freshwater endemism supporting significant numbers of restricted range and threatened species of fishes, molluscs and aquatic plants. The identification and delineation of freshwater KBAs puts these species on the map and provides critical data for priority setting analysis and the implementation of conservation actions on the ground.

The primary threats identified to freshwater species across the north-west Mediterranean region, as described by the experts at the workshop, are increasing severity of droughts, hydrological alterations following construction of dams, over-abstraction of surface and ground waters, water pollution, including pesticides, and competition with invasive alien species. The impacts of these types of threat tend to spread rapidly throughout catchments such that localized conservation actions restricted to limited parts of a catchment will often fail to provide effective solutions. For this reason the appropriate management unit recommended for most freshwater KBAs is a sub-catchment, or a group of connected sub-catchments.

Water management needs to be improved, especially regarding the over-abstraction from springs and of ground water and pollution from agriculture and urbanization. Invasive species must also be controlled to reduce their impacts on the native freshwater taxa. Periodic updates of Red List assessments and monitoring of sites will allow the production of a **Red List Index** to track trends in the projected overall extinction risk of freshwater species so potentially helping to inform managers on the effectiveness of any management interventions.

This project has found significant gaps in the protected areas coverage of freshwater species, with 16% of the sites identified as freshwater KBAs falling completely outside of any existing 'terrestrial' KBAs or protected areas. Thus, the freshwater KBAs delineated in Italy, France, Spain and Portugal as presented here, might be used to **inform strategic expansion of protected areas** for better inclusion of threatened and restricted range freshwater species. Many existing KBAs and protected areas have been adopted as freshwater KBAs on account of their inclusion of important freshwater species. In these cases, it is now most important to ensure site management practices include a focus on these freshwater species, in most cases not previopusly recognised as management targets. It may therefore be necessary for management actions to extend to areas of catchments currently outside of the site boundary.

Catchment scale management of freshwater Key Biodiversity Areas is required to ensure effective protection of freshwater species from both, upstream and downstream threats, originating outside of the KBA boundaries and to improve connectivity among existing protected areas. Countries within this Mediterranean sub-region are recommended to implement an **Integrated River Basin Management approach** (IRBM, or similar strategy) to better coordinate conservation, management and development of water, land and related resources across sectors. This approach is fundamental to maximising the economic and social benefits derived from water resources in an equitable manner while preserving and, where necessary, restoring freshwater ecosystems.

IRBM is especially relevant for transboundary catchments in the Iberian Peninsula such as for the Duero and the Tajo rivers, where it is strongly recommended that Spain and Portugal fully implement the principles of the EU Water Framework Directive and the UN Watercourse Convention (UNWC). The two countries need to coordinate their efforts to promote sustainable water use and the protection of connected aquatic ecosystems, and to take responsibility for connected wetlands beyond national boundaries (Directive 2000/60/EC).

The implementation of **Environmental Flows (E-Flows)** assessment methodologies is also important to the future conservation and management of freshwater KBAs. The main idea of E-Flows is to maintain the quality, quantity and timing of water flows required to sustain freshwater ecosystems and the human livelihoods that depend on them (Dyson *et al.* 2008). As a first priority E-Flows should be determined, where appropriate, for all freshwater AZE sites involving riverine systems.

The freshwater KBAs delineated in this project will also help inform and support the implementation of Multilateral Environmental Agreements, such as through helping countries to: i) identify new and potential Wetlands of International Importance (Ramsar Sites) under Criteria 2 to 9 (Ramsar 2010) and; ii) update existing Ramsar site management to focus on the new freshwater trigger species found within their boundaries. Freshwater KBAs can also help contracting parties to meet other international environmental commitments such as the CBD Aichi Biodiversity Targets (11 and 12) and strategic expansion of the Natura 2000 Network. In addition, freshwater KBAs can help identify freshwater ecosystem priorities for the UN Sustainable Development Goals and provide a better metric for measurement of Sustainable Development target 6.5 focused on implement integrated water resources management at all levels; target 6.6 focused on protecting and restoring water-related ecosystems; target 15.1 focused on the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services; and target 15.5 focused on taking urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species (United Nations 2016).

The list of freshwater KBAs presented in this report can help to: i) guide investment priorities of EU's LIFE programme and donor organisations, such as the Critical Ecosystem Partnerhsip Fund (CEPF), and ii) inform Performance Standards and Environmental Safeguard policies of financial institutions such as the World Bank and the International Finance Corporation and the private sector.

Building awareness of the existence of these priority freshwater sites and the need for conservation actions and their future protection will be addressed through encouraging the identified site champions. Site champions are the individuals or organisations identified as having a potential interest in helping building awareness of the conservation values and needs of species at these KBAs and developing site action plans to benefit the long-term survival of species in these sites. Information on the sites will be made available through the World Database on Key Biodiversity Areas (WDKBA) and through Integrated Biodiversity Assessment Tool (IBAT) – a tool that is already well known amongst the private sector and donor community.

The identification and delineation of KBAs is necessarily a fluid and ongoing process responding to the provision of new information and a constantly changing environment and thus, it is expected that this current freshwater KBA dataset for the north-western Mediterranean region will continue to be refined and updated. The identification of KBAs derived from different datasets developed by existing approaches (IBAs, AZEs, freshwater KBAs, etc.) must be led at national level according to the new KBA global standard. The work presented above represents the first steps in taking this process forwards and it provides a baseline data set to inform future KBA designations.

Next Steps

1. Publish the freshwater KBAs in the WDKBA. This is the database currently managed by Birdlife International which stores, manages and publishes all data on KBAs.
2. Integrate the freshwater KBAs data set in IBAT.
3. Circulate this report and related policy briefs to all Site Champions (Annex II) and cross-sectoral Government departments.

KBA Data Availability

All KBA data (including GIS shapefiles and individual Catchment Management Zone fact sheets) will be made available through a number of online sources, including:

- World Database on Key Biodiversity Areas, Managed by BirdLife International on behalf of the KBA Partnership http://www.keybiodiversityareas.org/home
- Integrated Biodiversity Assessment Tool: https://www.ibat-alliance.org/ibat-conservation/login or https://www.ibatforbusiness.org/
- IUCN (Global Species Programme, Freshwater Biodiversity Unit): www.iucn.org/species/freshwater

References

Abeli, T., Barni, E., Gentili, R., Rossi, G. and Siniscalco, C. (2011). *Isoetes malinverniana*. The IUCN Red List of Threatened Species 2011: e.T162124A5545015. http://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T162124A5545015.en. Downloaded on 05 December 2016.

Abell, R., Allan, J.D. and Lehner, B. (2007). Unlocking the potential of protected areas for freshwaters. Biological Conservation 134:48-63.

Abell, R., M.L. Thieme, C. Revenga, M. Bryer, M. Kottelat, N. Bogutskaya, B. Coad, N. Mandrak, S.C. Balderas, W. Bussing, M.L.J. Stiassny, P. Skelton, G.R. Allen, P. Unmack, A. Naseka, R. Ng, N. Sindorf, J.Robertson, E. Armijo, J.V. Higgins, T.J. Heibel, and E. Wikramanayake (2008). "Freshwater Ecoregions of the World: A New Map of Biogeographic Units for Freshwater Biodiversity Conservation." BioScience 58(5) 403–414.

Barni, E., Minuzzo, C., Siniscalco, C., Gatto, F., Abeli, T., Amosso, C., Rossi, G., Gentili, R., Pistoja, F. and Soldano, A. (2010). *Isoëtes malinverniana* Ces. et De Not. *Informatore Botanica Italiano* 42: 640 – 642.

Bilz, M., Kell, S.P., Maxted, N. and Lansdown, R.V. (2011). European Red List of Vascular Plants. Luxembourg: Publications Office of the European Union.

Boudot, J.-P. (2010). *Macromia splendens*. The IUCN Red List of Threatened Species 2010: e.T12598A3364642. http://dx.doi.org/10.2305/IUCN.UK.2010-1.RLTS.T12598A3364642.en. Downloaded on 14 October 2016.

Bruno D., Belmar O., Sánchez-Fernández D., Guareschi S., Millán, A. and Velasco, J. (2014). Responses of Mediterranean aquatic and riparian communities to human pressures at different spatial scales.

Butchart, S. H.M., Scharlemann J.P. W, Evans, M.I., Quader, S., Aricò, S., *et al.* (2012), Protecting important sites for biodiversity contributes to meeting global conservation targets. PLoS ONE 7(3): e32529.

Carrizo, S. F., Lengyel, S., Kapusi, F., Szabolcs, M., Kasperidus, H. D., Scholz, M., Markovic, D., Freyhof, J., Cid, N., Cardoso, A. C. and Darwall, W. (2017), Critical catchments for freshwater biodiversity conservation in Europe: identification, prioritisation and gap analysis. J Appl Ecol. doi:10.1111/1365-2664.12842

CBD (2010) COP Decision X/2. Strategic plan for biodiversity 2011–2020. Available: http://www.cbd.int/decision/cop/?id = 12268. Accessed 12 October 2016.

Collen B., Whitton, F., Dyer, E.E., Baillie, J.E., Cumberlidge, N., Darwall, W.R.T., Pollock, C., Richman, N.I., Soulsby, A.-M. and Böhm, M. (2014). *Global patterns of freshwater species diversity, threat and endemism*. Global Ecology and Biogeography, 23, 40–51.

Crivelli, A.J. (2006a). *Aphanius iberus*. The IUCN Red List of Threatened Species 2006: e.T1846A8299534. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T1846A8299534.en. Downloaded on **02 December 2016**.

Crivelli, A.J. (2006b). *Parachondrostoma toxostoma*. The IUCN Red List of Threatened Species 2006: e.T4795A11095903. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T4795A11095903.en. Downloaded on **26 April 2017**.

Crivelli, A.J. (2006c). *Salmo carpio*. The IUCN Red List of Threatened Species 2006: e.T19856A9030378. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T19856A9030378.en. Downloaded on 02 December 2016.

Crivelli, A.J. (2006d). *Valencia hispanica*. The IUCN Red List of Threatened Species 2006: e.T22829A9392487. http://dx.doi.org/10.2305/IUCN.UK.2006.RLTS.T22829A9392487.en. Downloaded on **02 December 2016**.

Cuttelod, A., García, N., Abdul Malak, D., Temple, H. and Katariya, V. (2008). The Mediterranean: a biodiversity hotspot under threat. In: J.-C. Vié, C. Hilton-Taylor and S.N. Stuart (eds). The 2008 Review of The IUCN Red List of Threatened Species. IUCN Gland, Switzerland.

Cuttelod, A., Seddon, M. and Neubert, E. (2011). European Red List of Non-marine Molluscs. Luxembourg: Publications Office of the European Union.

Darwall, W., Carrizo, S., Numa, C., Barrios, V., Freyhof, J. and Smith, K. (2014). *Freshwater Key Biodiversity Areas in the Mediterranean Basin Hotspot: Informing species conservation and development planning in freshwater ecosystems*. Cambridge, UK and Malaga, Spain: IUCN. x + 86pp.

Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy.

Dudley, N., Boucher, J.L., Cuttelod, A., Brooks, T.M., and Langhammer, P.F., Eds. (2014) *Applications of Key Biodiversity Areas: end-user consultations*. Cambridge, UK and Gland, Switzerland: IUCN.

Dyson, M., Bergkamp, G., Scanlon, J. (2008). Flow: The Essentials of Environmental Flows. IUCN, Gland, Switzerland and Cambridge, UK. xiv + 118 pp. Ecological Indicators 45: 456–464.

European Commission (2017). Natura 2000. http://ec.europa.eu/environment/nature/natura2000/index_en.htm. Accessed on April 26 2017.

European Environmental Agency (2015) State of Nature in Europe: Results from reporting under nature directives 2007-2012. EEA Technical Report No 2/2015.

FEOW. (2015). Freshwater Ecoregions of the World. Available online at: http://www.feow.org/

Freyhof, J. and and Kottelat, M. (2008). *Achondrostoma occidentale*. The IUCN Red List of Threatened Species 2008: e. T135683A4180158. http://dx.doi.org/10.2305/IUCN.UK.2008.RLTS.T135683A4180158.en. Downloaded on 06 December 2016.

Freyhof, J. and Brooks, E. (2011). European Red List of Freshwater Fishes. Luxembourg: Publications Office of the European Union.

Garcia, N., Cuttelod, A. and Abdul Malak, D. (eds.) (2010). The Status and Distribution of Freshwater Biodiversity in Northern Africa. Gland, Switzerland, Cambridge, UK, and Malaga, Spain : IUCN, 2010. xiii+141pp.

Global Lakes and Wetlands Database. Available at: http://www.worldwildlife.org/pages/global-lakes-and-wetlands-database

Hermoso V., Filipe, A.F., Segurado P., Beja P. (2015) Filling gaps in a large reserve network to address freshwater conservation needs. Journal of Environmental Management, Volume 161, 15 September 2015, Pages 358-365, ISSN 0301-4797.

Holland, R.A., Darwall, W.R.T., and Smith, K.G. (2012). Conservation priorities for freshwater biodiversity: the Key Biodiversity Area approach refined and tested for continental Africa. *Biological Conservation*. 148(1):167-179.

IUCN (2010) *An introducition to freshwater taxa*. Availabe on: http://www.iucnredlist.org/initiatives/freshwater/process/introduction

IUCN (2014) *Consultation Document on an IUCN Standard for the Identification of Key Biodiversity Areas*. Available at: http://www.kbaconsultation.org/#!executive-summary/c109f

IUCN (2015), IUCN Red List of Threatened Species. Available at: www.iucnredlist.org

IUCN (2016), *A Global Standard for the Identification of Key Biodiversity Areas, Version 1.0*. First edition. Gland, Switzerland: IUCN.

IUCN (2004), Resolution (WCC 3.013) World Conservation Congress, Bangok, Thailand 17-25 November 2004. Available at: https://cmsdata.iucn.org/downloads/wcc_res_rec_eng.pdf

Kalkman, V.J., Boudot, J.-P. Bernard, R. Conze, K.-J. De Knijf, G. Dyatlova, E. Ferreira, S. Jović, M. Ott, J. Riservato E. and Sahlén, G.. (2010). European Red List of Dragonflies. Luxembourg: Publications Office of the European Union.

Leadley, P.W., Krug, C.B., Alkemade, R., Pereira, H.M., Sumaila, U.R., Walpole, M., Marques, A., Newbold, T., Teh, L.S., van Kolck, J. and Bellard, C. (2014). Progress towards the Aichi Biodiversity Targets: An assessment of biodiversity trends, policy scenarios and key actions. Secretariat of the Convention on Biological Diversity, Montreal, Canada. Technical Series 78. https://www.cbd.int/doc/publications/cbd-ts-78-en.pdf

Lehner, B., Grill G. (2013), Global river hydrography and network routing: baseline data and new approaches to study the world's large river systems. Hydrological Processes, 27(15): 2171–2186. Data is available at www.hydrosheds.org

Lehner, B., K. Verdin, and A. Jarvis (2008), New Global Hydrography Derived From Spaceborne Elevation Data, Eos Trans. AGU, 89(10), 93–94, doi:10.1029/2008EO100001.

Lehner, B., Döll, P. (2004), Development and validation of a global database of lakes, reservoirs and wetlands. Journal of Hydrology 296(1-4): 1-22. Data available at http://www.wwfus.org/science/data/globallakes.cfm

Lopes-Lima, M., Sousa, R., Geist, J., Aldridge, D. C., Araujo, R., Bergengren, J., Bespalaya, Y., Bódis, E., Burlakova, L., Van Damme, D., Douda, K., Froufe, E., Georgiev, D., Gumpinger, C., Karatayev, A., Kebapçi, Ü., Killeen, I., Lajtner, J., Larsen, B. M., Lauceri, R., Legakis, A., Lois, S., Lundberg, S., Moorkens, E., Motte, G., Nagel, K.-O., Ondina, P., Outeiro, A., Paunovic, M., Prié, V., von Proschwitz, T., Riccardi, N., Rudzīte, M., Rudzītis, M., Scheder, C., Seddon, M., Şereflişan, H., Simić, V., Sokolova, S., Stoeckl, K., Taskinen, J., Teixeira, A., Thielen, F., Trichkova, T., Varandas, S., Vicentini, H., Zajac, K., Zajac, T. and Zogaris, S. (2016), Conservation status of freshwater mussels in Europe: state of the art and future challenges. Biol Rev. doi:10.1111/brv.12244 Plants. Luxembourg: Publications Office of the European Union.

Lopez, V. H., Filipe, A. F., Segurado, P., and Beja, P. (2015). Filling gaps in a large reserve network to address freshwater conservation needs. *Journal of Environmental Management*, 161, 358–365.

Minuzzo, C., Barni, E., Selvaggi, A., Forte, T. and Siniscalco, C. (2016). *Isoëtes malinverniana* Ces. & De Not. In: Ercole S., Giacanelli V., Bacchetta G., Fenu G., Genovesi P. (ed.). Manuali per il monitoraggio di specie e habitat di interesse comunitario (Direttiva 92/43/CEE) in Italia: specie vegetali. ISPRA, Serie Manuali e linee guida, 140/2016.

Natura 2000 Site Website: http://ec.europa.eu/environment/nature/natura2000/index_en.htm

Prié, V. (2010). *Graziana cezairensis*. The IUCN Red List of Threatened Species 2010: e.T156101A4895285. http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T156101A4895285.en. Downloaded on **27 April 2017**.

Ramsar Convention Secretariat. (2010). Designating Ramsar Sites: Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance. Ramsar handbooks for the wise use of wetlands, 4th edition, vol. 17. Ramsar Convention Secretariat, Gland, Switzerland.

Ricketts, T.H., Dinerstein, E., Boucher, T., Brooks, T.M., Butchart, S.H.M., Hoffmann, M., Lamoreux, J.F., Morrison, J., Parr, M., Pilgrim, J.D., Rodrigues, A.S.L., Sechrest, W., Wallace, G.E., Berlin, K., Bielby, J., Burgess, N.D., Church, D.R., Cox, N., Knox, D., Loucks, C., Luck, G.W., Master, L.L., Moore, R., Naidoo, R., Ridgely, R., Schatz, G.E., Shire, G., Strand, H., Wettengel, W. and Wikramanayake, E. (2005). Pinpointing and preventing imminent extinctions. Proceedings of the National Academy of Sciences of the United States of America, 102, 18497–501.

Rolán, E. (2011). *Belgrandia alcoaensis*. The IUCN Red List of Threatened Species 2011: e.T194492A8893732. http://dx.doi.org/10.2305/IUCN.UK.2011-1.RLTS.T194492A8893732.en. Downloaded on 05 December 2016.

Smith, K.G., Barrios, V., Darwall, W.R.T. and Numa, C. (Editors). (2014). The Status and Distribution of Freshwater Biodiversity in the Eastern Mediterranean in the Eastern Mediterranean. Cambridge, UK, Malaga, Spain and Gland, Switzerland: IUCN. xiv+132pp.

Venables, W.N. Smith D.M. and the R Core Team (2017). An Introduction to R. Notes on R: A Programming Environment for Data Analysis and Graphics. Version 3.4.1 (2017 -06-03). The R Manuals. Available at: https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf

United Nations (2016). The Sustainable Development Goals Report 2016. (www.un.org.lb/Library/Assets/The-Sustainable-Development-Goals-Report-2016-Global.pdf)

Ulial Baltasar in Delta de l'Ebre (KBA) is the type locality of the Endangered mollusc *Tarraconia rolani*. © MVHN

Annex I. KBA Trigger Species

LIST OF KBA AND KBA TRIGGER SPECIES

(*) Freshwater KBAs having no spatial overlap with existing PAs/Terrestrial KBAs.

CMZ = Catchment Management Zone name.

KBA = Freshwater Key Biodiversity Area name.

KBA type = KBA delineation method: adopted from Natura 2000 sites (N2000), protected areas (PA), existing KBAs (KBA)and new delineated KBAs (NEW).

Trigger Species = Freshwater species meeting the KBA Criteria.

A1 = Threatened Species (Critically Endangered, Endangered and Vulnerable).

B1 = Individually geographically restricted species.

D1 (a) = Species aggregation during one or more key stages of its life cycle.

AZE Sites = Sites that contain the last or only populations of globally Critically Endangered or Endangered species restricted to that single remaining site

Focal Area = Distinct sites (e.g. headwaters, lakes, springs, etc.) of particular importance for the long term survival of freshwater biodiversity (e.g. sites containing species spawning areas, feeding areas, or the majority of the population of a species etc.)

PORTUGAL

CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
						A1	B1	D1 (a)		
Arade Vicentina	Costa Sudoeste	N2000	PTCON0012 PTZPE0015	odonata	*Macromia splendens*	VU				
				plants	*Juncus emmanuelis*	EN				YES
					Pilularia minuta	EN				
	Serra de Monchique	KBA*		fishes	*Iberochondrostoma almacai*	CR	YES			YES
					Squalius aradensis	VU	YES			
	Serra do Caldeirão	KBA*		fishes	*Iberochondrostoma almacai*	CR	YES			YES
					Squalius aradensis	VU	YES			
Bacia do Mira	Costa Sudoeste	N2000	PTCON0012 PTZPE0015	fishes	*Iberochondrostoma almacai*	CR	YES			YES
					Squalius torgalensis	EN	YES			
				molluscs	*Unio tumidiformis*	VU				YES
				plants	*Juncus emmanuelis*		YES			
					Thorella verticillato-inundata	VU				YES
	Luzianes	KBA		fishes	*Squalius torgalensis*	EN	YES			
	Saboia Mira	NEW		molluscs	*Potomida littoralis*	EN				
Río Sado	Agua Derramada	NEW		plants	*Rhynchospora modesti-lucennoi*	EN				
					Thorella verticillato-inundata	VU				YES
	Alvalade	NEW		fishes	*Iberochondrostoma lusitanicus*	CR				YES
	Cabrela	KBA		fishes	*Lampetra lusitanicum*		YES			
	Comporta/Galé	N2000	PTCON0034	fishes	*Lampetra lusitanicum*		YES			
	Marateca	NEW		fishes	*Iberochondrostoma lusitanicus*	CR				YES
				molluscs	*Unio tumidiformis*	VU				
				plants	*Rhynchospora modesti-lucennoi*	EN				
					Thorella verticillato-inundata	VU				YES
	Serra Grandola	NEW		fishes	*Iberochondrostoma lusitanicus*	CR				YES
	Torre Va	NEW		molluscs	*Unio tumidiformis*	VU				YES
Río Vouga	Ria de Aveiro	N2000	PTCON0061 PTZPE0004	molluscs	*Potomida littoralis*	EN				
				odonata	*Macromia splendens*	VU				
	Río Vouga	NEW		molluscs	*Potomida littoralis*	EN				
				odonata	*Macromia splendens*	VU				

	CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
							A1	B1	D1 (a)		
PORTUGAL	West Coastal Portugal	Alcabrichel, Sizandro and Safarujo	NEW		fishes	*Achondrostoma occidentale*	EN	YES		YES	YES
		Serras d'Aire e Candeeiros	N2000*	PTCON0015	molluscs	*Belgrandia alcoaensis*	CR	YES		YES	YES
						Belgrandia heussi		YES			
		Sintra-Cascais National Park	N2000	PTCON0008	fishes	*Iberochondrostoma lusitanicus*		YES			
SPAIN	Albufera de Valencia	Albufera de Valencia	KBA		fishes	*Squalius valentinus*	VU				YES
						Valencia hispanica	CR				YES
					molluscs	*Potomida littoralis*	EN				
	Andalucia Basins	Serranía de Ronda, Sierras Bermeja y Crestellina	KBA*		fishes	*Pseudochondrostoma willkommii*	VU				YES
						Squalius malacitanus	EN				
		Sierras de las Cabras del Aljibe y de Montecoche	KBA		fishes	*Squalius malacitanus*	EN				YES
		Sierras de Ubrique y Grazalema	KBA		fishes	*Squalius malacitanus*	EN				
	Balearic Islands	Costa Norte y Este de Menorca e Isla del Aire	KBA		plants	*Apium bermejoi*	CR	YES			YES
						Pilularia minuta	EN				YES
		Sierra de Tramuntana	KBA		molluscs	*Alzoniella edmundi*	EN	YES			
						Bithynia kobialkai	VU	YES			
	Catalonian coastal rivers	Aiguamolls de l'Emporda	KBA		fishes	*Aphanius iberus*	EN				
		Alta Garrotxa - Massís de les Salines	N2000	ES5120001	molluscs	*Moitessieria mugae*	VU				YES
						Pseudoamnicola subproducta		YES			
		Estany de Banyoles	KBA		molluscs	*Pseudoamnicola subproducta*		YES			YES
		Font de Sant Cristòfol	NEW		molluscs	*Moitessieria juvenisanguis*	VU				
		Les Deus spring	NEW		molluscs	*Moitessieria dexteri*		YES			YES
		Riera Gavarresa	NEW*		fishes	*Barbus haasi*	VU				YES
		Serra de Montsant i Muntanyes de Prades	KBA		molluscs	*Moitessieria lludriguensis*	VU				YES
		Serres del Litoral central	N2000	ES5110013	molluscs	*Islamia lagari*	VU				YES
						Pseudoamnicola subproducta		YES			
	Gibraltar	Medina Sidonia	KBA		fishes	*Aphanius baeticus*	EN				YES
		Pinar de Roche	N2000	ES6120018	fishes	*Aphanius baeticus*	EN				YES
		Río Salado de Conil	N2000	ES6120019	fishes	*Aphanius baeticus*	EN				YES
		Sierras de las Cabras del Aljibe y de Montecoche	KBA		fishes	*Pseudochondrostoma willkommii*	VU				YES
						Squalius malacitanus	EN	YES			
					molluscs	*Potomida littoralis*	EN				
						Unio gibbus		YES			
		Sierras del Bujeo, Ojén, del Niño y Blanquilla	KBA		fishes	*Pseudochondrostoma willkommii*	VU				YES
						Squalius malacitanus	EN	YES			
		Tarifa	KBA		fishes	*Squalius malacitanus*	EN	YES			YES

	CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
							A1	B1	D1 (a)		
SPAIN	Levantine Basins	Cabanes	NEW		fishes	*Aphanius iberus*	EN				YES
						Valencia hispanica	CR	YES			
		Curs mitjà del riu Palància	N2000	ES5232003	molluscs	*Spathogyna fezi*	EN	YES			
		La Esperanza Municipal Natural Park	PA	ES5232003	molluscs	*Tarraconia gasulli*	CR	YES		YES	YES
		Marjal del Moro	KBA		fishes	*Aphanius iberus*	EN				YES
						Valencia hispanica	CR	YES			
		Penyagolosa	KBA		fishes	*Aphanius iberus*	EN				YES
						Valencia hispanica	CR	YES			
		Río Albentosa	NEW		fishes	*Squalius valentinus*	VU				
		Río Mijares	NEW		fishes	*Achondrostoma arcasii*	VU				
						Barbus haasi	VU				
						Luciobarbus guiraonis	VU				
						Parachondrostoma turiense	EN	YES			
						Squalius valentinus	VU				
					molluscs	*Spiralix pequenoensis*	VU	YES			
		Río Palancia	NEW		fishes	*Achondrostoma arcasii*	VU				
						Aphanius iberus	EN				YES
						Barbus haasi	VU				
						Luciobarbus guiraonis	VU				
						Valencia hispanica	CR	YES			
		Sierra de Espadán	KBA		molluscs	*Spiralix gloriae*	VU	YES			YES
						Spiralix valenciana	EN	YES			
	Río Ebro	Mar Menor	KBA		fishes	*Aphanius iberus*	EN				YES
		Marjales de Pego - Oliva	KBA		fishes	*Aphanius iberus*	EN				
						Valencia hispanica	CR	YES			
		Albufera del Adra	N2000	ES6110001	fishes	*Aphanius iberus*	EN				YES
		Upper Adra	NEW		fishes	*Aphanius iberus*	EN				YES
		Alhama de Aragon thermal spring	NEW		molluscs	*Melanopsis penchinati*	CR	YES			YES
		Alto Jalon	NEW		fishes	*Barbus haasi*	VU				YES
		Alto Jiloca	NEW		fishes	*Barbus haasi*	VU				YES
		Belagua - Ansó - Hecho	KBA*		fishes	*Barbus haasi*	VU				YES
		Borja springs	NEW		molluscs	*Pseudoamnicola hinzi*		YES			YES
		Bosques Del Valle De Mena	N2000	ES4120049	molluscs	*Spiralix burgensis*		YES			YES
		Calamocha spring	NEW		molluscs	*Pseudoamnicola hinzi*		YES			YES
		Canal Imperial and Canal de Tauste	NEW		molluscs	*Margaritifera auricularia*	CR				YES
		Cortados del Río Mesa	KBA		molluscs	*Melanopsis penchinati*	CR	YES			YES
		Delta de l'Ebre	KBA		fishes	*Aphanius iberus*	EN				yes
						Valencia hispanica	CR	YES			
					molluscs	*Tarraconia rolani*	EN	YES			
		Gallocanta	KBA		plants	*Coronopus navasii*	CR				
		Hoces del Alto Ebro y Rudrón	N2000	ES4120089	molluscs	*Spiralix affinitatis*		YES			
		Hoces del Iregua	KBA		fishes	*Cobitis calderoni*	EN				YES

	CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
							A1	B1	D1 (a)		
SPAIN	Río Ebro	La Carroba Spring	NEW		molluscs	*Tarraconia rolani*	EN	YES			
		Is Ports - Beceite - Monte Turmell	KBA*		fishes	*Barbus haasi*	VU				YES
					plants	*Allium schmitzii*	VU				YES
		Merinda de Rio Ubierna	NEW		molluscs	*Guadiella arconadae*	VU	YES			
		Montaña oriental	N2000	ES1300002	molluscs	*Spiralix burgensis*		YES			YES
		Montes de Areta, Artxuba y Zariquieta	KBA		fishes	*Barbus haasi*	VU				YES
		Najerilla yTirón	NEW		fishes	*Cobitis calderoni*	EN				YES
		Ojo Guareña	N2000	ES4120025	molluscs	*Spiralix burgensis*		YES			YES
		Prado spring Caminreal	NEW		molluscs	*Pseudoamnicola hinzi*		YES			YES
		Puertos de Morella	KBA		molluscs	*Spiralix valenciana*	EN				YES
		Quintanilla de Valdebodres	NEW		molluscs	*Spiralix burgensis*		YES			YES
		Rueda de Jalon thermal spring	NEW		molluscs	*Melanopsis penchinati*	CR	YES			YES
		Serra de Montsant i Muntanyes de Prades	KBA		molluscs	*Moitessieria foui*	VU				
		Serres de Cardó, Tivissa i Llaberia	KBA		molluscs	*Moitessieria guadelopensis*	VU	YES			
		Sierra de Alcarama y Río Alhama	KBA*		fishes	*Barbus haasi*	VU				YES
		Sierra de Ugarra	N2000*	ES2200026	fishes	*Barbus haasi*	VU				YES
		Sierra del Moncayo	KBA*		fishes	*Barbus haasi*	VU				YES
		Sierras de Leyre Illón y San Miguel	KBA		fishes	*Barbus haasi*	VU				
		Sierras de los Dos Ríos y de Orba	KBA		fishes	*Barbus haasi*	VU				YES
		Sierras de Oña y de la Tesla	KBA		molluscs	*Spiralix affinitatis*		YES			
						Spiralix burgensis		YES			YES
	Río Guadalete	Bahía de Cádiz	KBA		fishes	*Aphanius baeticus*	EN				YES
		Sierras de las Cabras del Aljibe y de Montecoche	KBA		molluscs	*Potomida littoralis*	EN				YES
		Sierras de Ubrique y Grazalema	KBA		molluscs	*Iberhoratia morenoi*	VU	YES			
					odonata	*Macromia splendens*	VU	YES			
	Río Guadalquivir	Alto Guadiato	KBA		fishes	*Iberochondrostoma lemmingii*	VU				YES
					plants	*Pilularia minuta*	EN				
		Azuaga, Llarena, Peraleda de Zaucejo	KBA		fishes	*Anaecypris hispanica*	EN				YES
						Iberochondrostoma lemmingii	VU				
		Fuente de Cantos-Montmolin	KBA		fishes	*Iberochondrostoma lemmingii*	VU				YES
		La Carmonilla	NEW		molluscs	*Boetersiella sturmi*	EN	YES			YES
		Lagunas de Lebrija, las Cabezas y Espera	KBA		fishes	*Aphanius baeticus*	EN				YES

	CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
							A1	B1	D1 (a)		
SPAIN	Río Guadalquivir	Marismas de Guadalquivir	KBA*		fishes	*Aphanius baeticus*	EN				YES
					odonata	*Macromia splendens*	VU				
					plants	*Marsilea batardae*	EN				
						Micropyropsis tuberosa	EN	YES			
						Rhynchospora modesti-lucennoi	EN	YES			
						Rorippa valdes-bermejoi	CR	YES		YES	YES
						Thorella verticillato-inundata	VU				
		Sierra de Aracena y Picos de Aroche	N2000	ES0000051	molluscs	*Arganiella wolfi*	VU	YES			YES
		Sierra Madrona-Sierra de Andújar	KBA		fishes	*Iberochondrostoma lemmingii*	VU				
		Sierra Morena de Córdoba	KBA		fishes	*Anaecypris hispanica*	EN				
						Iberochondrostoma lemmingii	VU				
					molluscs	*Islamia henrici*	EN	YES			
		Sierra Morena de Sevilla	KBA		fishes	*Iberochondrostoma lemmingii*	VU				
		Sierras al sur de Jaén	KBA		molluscs	*Boetersiella sturmi*	EN	YES			YES
		Sierras de Cazorla y Segura	KBA		molluscs	*Guadiella ramosae*	VU	YES			YES
		Valle y Sierra de Alcudia	KBA		fishes	*Iberochondrostoma lemmingii*	VU				
						Iberochondrostoma oretanum	VU	YES		YES	YES
	Río Júcar	Curs mitjà del riu Albaid	N2000	ES5232008	fishes	*Squalius valentinus*	VU				
		Hoces del Cabriel y del Júcar	KBA		fishes	*Luciobarbus guiraonis*	VU				YES
						Parachondrostoma arrigonis	CR	YES			
						Squalius valentinus	VU				
					molluscs	*Josefus aitanica*		YES			
						Spiralix valenciana	EN	YES			
		Hoces del Cabriel, Guadazaón y ojos de Moya	N2000	ES4230013	molluscs	*Spathogyna fezi*	EN	YES			
		Laguna del Arquillo	N2000	ES4210006	fishes	*Parachondrostoma arrigonis*	CR	YES			
		Río Magre	NEW		fishes	*Parachondrostoma arrigonis*	CR	YES			
		Serranía de Cuenca	KBA		fishes	*Luciobarbus guiraonis*	VU				
						Squalius valentinus	VU				
		Sierra de Enguera - La Canal de Navarrés	KBA		fishes	*Luciobarbus guiraonis*	VU				
						Squalius valentinus	VU				
	Río Segura	Hoces del Río Mundo y del Río Segura	KBA		plants	*Zannichellia contorta*	EN				
		La Erra Spring	NEW		molluscs	*Pseudamnicola falkneri*		YES			
		Letur Spring	NEW		molluscs	*Pseudamnicola falkneri*		YES			
		Río Argos	NEW		plants	*Zannichellia contorta*	EN	YES			
		Río Chícamo	N2000	ES6200028	fishes	*Aphanius iberus*	EN				
		Río Mula y Pliego	N2000	ES6200045	plants	*Zannichellia contorta*	EN				

	CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
							A1	B1	D1 (a)		
SPAIN	Río Segura	Saladares de Cordovilla y Agramon y Laguna de Alboraj	N2000	ES4210011	molluscs	*Pseudamnicola falkneri*		YES			
		Sierras de Cazorla y Segura	KBA		molluscs	*Islamia henrici*	EN	YES			YES
		Sierras y Vega Alta del Segura y Ríos Alhárabe y Moratalla	N2000	ES6200004	plants	*Zannichellia contorta*	EN				
	Río Turia	Hoces del Turia y Los Serranos	KBA		fishes	*Luciobarbus guiraonis*	VU				YES
						Parachondrostoma turiense	EN	YES			
						Squalius valentinus	VU				
					molluscs	*Spiralix valenciana*	EN	YES			
		Río Alfambra	NEW		fishes	*Barbus haasi*	VU				
	Ríos Tinto y Odiel	Alto Odiel	NEW		fishes	*Iberochondrostoma lemmingii*	VU				
						Iberocypris alburnoides	VU				
		Marismas del Tinto y del Odiel y Lagunas Costeras de Huelva	KBA		odonata	*Macromia splendens*	VU				
					plants	*Pilularia minuta*	EN				
		Sierra de Aracena y Picos de Aroche	N2000	ES0000051	molluscs	*Arganiella wolfi*	VU	YES			
						Iberhoratia morenoi	VU	YES			
SPAIN/PORTUGAL	Río Duero/ Douro	Babia - Somiedo	NEW		fishes	*Cobitis calderoni*	EN				YES
		Cañón del Río Lobos	KBA*		fishes	*Achondrostoma arcasii*	VU				YES
						Pseudochondrostoma duriense	VU				
		Fuentes Carrionas	KBA		fishes	*Pseudochondrostoma duriense*	VU				YES
		Malcata	N2000	PTCON0004	plants	*Eryngium viviparum*	EN				YES
		Río Adaja	NEW		fishes	*Achondrostoma arcasii*	VU				YES
						Cobitis paludica	VU				
		Río Corneja	NEW		fishes	*Achondrostoma arcasii*	VU				YES
		Río Eresma	NEW		fishes	*Achondrostoma arcasii*	VU				YES
						Cobitis calderoni	EN				
		Río Yeltes	NEW		fishes	*Achondrostoma salmantinum*	EN	YES			YES
						Cobitis paludica	VU				
		Serras de Montesinho e Nogueira	KBA*		fishes	*Cobitis calderoni*	EN				YES
					molluscs	*Margaritifera margaritifera*	EN				
		Sierra de La Cabrera	KBA		fishes	*Achondrostoma arcasii*	VU				YES
						Cobitis calderoni	EN				
		Sierras de Peña Labra y del Cordel	KBA		fishes	*Pseudochondrostoma duriense*	VU				YES
		Sierras de Urbión, Cebollera y Neila	KBA*		fishes	*Achondrostoma arcasii*	VU				YES
						Cobitis calderoni	EN				
						Pseudochondrostoma duriense	VU				

SPAIN/PORTUGAL

CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
						A1	B1	D1 (a)		
Río Guadiana	Botoa-Villar del Rey	KBA		fishes	*Anaecypris hispanica*	EN				
					Luciobarbus microcephalus	VU		YES		
	Campo de Calatrava	KBA		plants	*Marsilea batardae*	EN				
	Campo Maior	KBA		fishes	*Anaecypris hispanica*	EN				
					Luciobarbus microcephalus	VU		YES		
	Dehesas de Jerez de los Caballeros-Embalse de Valuengo	KBA		fishes	*Anaecypris hispanica*	EN				
				molluscs	*Arganiella wolfi*	VU	YES			YES
Río Guadiana	Lagunas de Ruidera	N2000	ES4210017	fishes	*Iberochondrostoma lemmingii*	VU				YES
					Luciobarbus comizo	VU		YES		YES
					Luciobarbus guiraonis	VU				
					Luciobarbus microcephalus	VU		YES		
	Montes de Toledo - Cabañeros	KBA		fishes	*Anaecypris hispanica*	EN				YES
					Iberochondrostoma lemmingii	VU				YES
	Moura e Barrancos	KBA		fishes	*Anaecypris hispanica*	EN				
					Cobitis paludica	VU				
					Iberochondrostoma lemmingii	VU				YES
					Iberocypris alburnoides	VU				
					Luciobarbus comizo	VU		YES		
					Luciobarbus microcephalus	VU		YES		YES
					Pseudochondrostoma willkommii	VU		YES		
	Río Ciguela	NEW		fishes	*Luciobarbus guiraonis*	VU				
	Río Guadiana	KBA		fishes	*Luciobarbus comizo*	VU		YES		
					Luciobarbus microcephalus	VU		YES		YES
					Luciobarbus steindachneri	VU		YES		
					Pseudochondrostoma willkommii	VU		YES		
	Sierra de Las Villuercas	KBA		fishes	*Anaecypris hispanica*	EN				YES
	Sierra de San Pedro	KBA		fishes	*Anaecypris hispanica*	EN				
					Luciobarbus microcephalus	VU		YES		
	Sotavento Guadiana	NEW		fishes	*Anaecypris hispanica*	EN				
				molluscs	*Potomida littoralis*	EN				
					Unio tumidiformis	VU				
				odonata	*Macromia splendens*	VU				
	Valle y Sierra de Alcudia	KBA		fishes	*Anaecypris hispanica*	EN				YES
					Iberochondrostoma lemmingii	VU				YES
Río Miño/ Minho	Alto Sil	N2000	ES0000210	fishes	*Cobitis calderoni*	EN				YES
	Baixo Minho	N2000	ES1140007	fishes	*Achondrostoma arcasii*	VU				
					Cobitis paludica	VU				
				molluscs	*Margaritifera margaritifera*	EN				
				odonata	*Macromia splendens*	VU				

SPAIN/PORTUGAL

CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
						A1	B1	D1 (a)		
Río Miño/ Minho	Parga - Ladra – Támoga	N2000	ES1120003	plants	*Isoetes fluitans*	EN				YES
	Río Tea	N2000	ES1140006	fishes	*Achondrostoma arcasii*	VU				YES
					Cobitis paludica	VU				
Río Tajo/Tejo	Alto Lozoya-La Pedriza	KBA		fishes	*Cobitis calderoni*	EN				YES
	Alto Tajo y Tajuña	KBA		fishes	*Achondrostoma arcasii*	VU				
				plants	*Zannichellia contorta*	EN				
	Campo Arañuelo-Emabalse de Valdecañas	KBA		plants	*Pilularia minuta*	EN				YES
	El Rebollar	KBA		fishes	*Cobitis vettonica*	EN	YES			
	Patones spring	NEW		molluscs	*Islamia pallida*	EN	YES		YES	YES
	Rio Gallo	NEW*		fishes	*Achondrostoma arcasii*	VU				YES
					Squalius castellanus	EN	YES		YES	YES
	Rio Maior	NEW*		fishes	*Iberochondrostoma lusitanicus*	CR				
					Iberochondrostoma olisiponensis	CR				YES
					Iberocypris alburnoides	VU				
	Rio Muge	NEW		fishes	*Iberochondrostoma lusitanicus*	CR				
					Iberochondrostoma olisiponensis	CR				YES
					Iberocypris alburnoides	VU				
	Rio Trancao	NEW		fishes	*Iberochondrostoma lusitanicus*	CR				
					Iberochondrostoma olisiponensis	CR				YES
					Iberocypris alburnoides	VU				
	Serras d'Aire e Candeeiros	N2000	PTCON0015	molluscs	*Belgrandia heussi*		YES			YES
	Sierra de Gredos y Candelario	KBA		molluscs	*Iberhoratia aurorae*		YES			YES
	Sierra de Las Villuercas	KBA		fishes	*Iberochondrostoma lemmingii*	VU				
				molluscs	*Iberhoratia aurorae*					YES
	Sierra de San Pedro	KBA		fishes	*Iberochondrostoma lemmingii*	VU				
	Solana de la Sierra de Gata - Las Hurdes	KBA		fishes	*Cobitis vettonica*	EN	YES			
	Tejo Internacional	KBA*		fishes	*Cobitis vettonica*	EN	YES			YES
					Iberochondrostoma lemmingii	VU				
					Luciobarbus comizo	VU				
					Luciobarbus steindachneri	VU				
	Valle Cuerpo del Hombre	KBA		fishes	*Achondrostoma arcasii*	VU				

FRANCE

CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
						A1	B1	D1 (a)		
Ardèche	Ardèche Headwaters	NEW		molluscs	*Potomida littoralis*	EN				YES
	Basse Ardêche	KBA		fishes	*Zingel asper*	CR	YES			YES
				molluscs	*Islamia bomangiana*	VU	YES			YES
					Paladilhia gloeeri	EN				
	Bois de Païolive et Basse Vallée du Chassezac	N2000	FR8201656	molluscs	*Avenionia berenguieri*		YES			
					Bythiospeum articense		YES			
Aude	Hautes Corbières	KBA		fishes	*Parachondrostoma toxostoma*	VU				
	Vallée du Lampy	N2000	FR9101446	fishes	*Parachondrostoma toxostoma*	VU				
Gardon	Gorges du Gardon	KBA		molluscs	*Avenionia berenguieri*		YES			
					Moitessieria heideae		YES			
					Paladilhia roselloi	VU	YES			
	Vallée du Gardon de Mialet	N2000	FR9101367	molluscs	*Bythiospeum articense*		YES			YES
					Paladilhia umbilicata	VU	YES			
					Spiralix hofmanni		YES			
Grasse	Gorges de la Siagne	N2000	FR9301574	molluscs	*Graziana cezairensis*	EN	YES			YES
Hérault	Aqueduc de Pézenas	N2000	FR9102005	molluscs	*Heraultiella exilis*	VU	YES			
	Est et sud de Béziers	N2000	FR9112022	molluscs	*Bythiospeum bourguignati*		YES			
	Gorges de la Vis et Cirque de Navacelles	KBA		fishes	*Cottus rondeletti*	CR	YES			
				molluscs	*Bythinella eurystoma*	VU	YES			
	Hautes Garrigues du Montpellierais	KBA		fishes	*Cottus rondeletti*	CR	YES			
					Parachondrostoma toxostoma	VU				
				molluscs	*Belgrandia gibberula*	VU	YES			
					Bythinella cebennensis	VU	YES			
					Bythinella eurystoma	VU	YES			
					Bythiospeum bourguignati		YES			
					Paladilhia conica		YES			
					Paladilhia pleurotoma		YES			
					Potomida littoralis	EN				
				odonata	*Macromia splendens*	VU				
	Le Salagou	N2000	FR9112002	molluscs	*Heraultiella exilis*	VU	YES			
Hérault	Montagne de la Moure et Causse d'Aumelas	N2000	FR9101393	molluscs	*Bythiospeum bourguignati*		YES			
					Heraultiella exilis	VU	YES			
					Paladilhia pleurotoma		YES			
	Plaine de Villeveyrac-Montagnac	N2000	FR9112021	molluscs	*Bythiospeum bourguignati*		YES			
La Cèze	Hautes vallées de la Cèze et du Luech	N2000	FR9101364	fishes	*Parachondrostoma toxostoma*	VU				
				odonata	*Macromia splendens*	VU				
	La Cèze et ses gorges	N2000	FR9101399	fishes	*Parachondrostoma toxostoma*	VU				
				odonata	*Macromia splendens*	VU				

CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
						A1	B1	D1 (a)		
FRANCE										
Lez Mosson	Le Lez	N2000	FR9101392	fishes	*Cottus petiti*	VU	YES			
					Parachondrostoma toxostoma	VU				
				molluscs	*Bythiospeum bourguignati*		YES			
					Heraultiella exilis	VU	YES			
					Paladilhia conica		YES			
					Paladilhia pleurotoma		YES			
				odonata	*Macromia splendens*	VU				
	Lez Mosson Karstic Drainage	NEW		fishes	*Cottus petiti*	VU	YES			
				molluscs	*Bythinella eutrepha*	CR			YES	
					Bythiospeum bourguignati		YES			
					Heraultiella exilis	VU	YES			
					Paladilhia conica		YES			
					Paladilhia pleurotoma		YES			
					Potomida littoralis	EN				
				odonata	*Macromia splendens*	VU				
Middle Durance-Verdon	Vallée de la Durance de Tallard à Sisteron	KBA		fishes	*Parachondrostoma toxostoma*	VU				
					Zingel asper	CR				
Orb	Plateau de Roquehaute	KBA		plants	*Marsilea strigosa*	VU				
					Pilularia minuta	EN				
	Upper Orb	NEW		fishes	*Parachondrostoma toxostoma*	VU				
				molluscs	*Heraultiella exilis*	VU	YES			
				odonata	*Macromia splendens*	VU				
Var	Le Mercantour	N2000	FR9301559 FR9310035	molluscs	*Bythinella roubionensis*	VU	YES			YES
	Lower Var	NEW		molluscs	*Graziana provincialis*	EN	YES			YES
					Graziana trinitatis	EN	YES			
Vidourle	Hautes Garrigues du Montpellierais	KBA		fishes	*Parachondrostoma toxostoma*	VU				
				molluscs	*Bythiospeum bourguignati*		YES			
					Paladilhia conica		YES			
					Paladilhia pleurotoma		YES			YES
					Potomida littoralis	EN				
				odonata	*Macromia splendens*	VU				YES
Vidourle	Le Vidourle	N2000	FR9101391	molluscs	*Bythiospeum bourguignati*		YES			
					Paladilhia pleurotoma		YES			
				odonata	*Macromia splendens*	VU				
Vistre	Costières nîmoises	N2000	FR9112015	molluscs	*Bythiospeum articense*		YES			
	Gorges du Gardon	KBA		molluscs	*Bythiospeum articense*		YES			
					Paladilhia conica		YES			
					Paladilhia pleurotoma		YES			

ITALY

CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
						A1	B1	D1 (a)		
Anapo and Ciane	Fonte Ciane	NEW		molluscs	*Islamia cianensis*	VU	YES			YES
	Monti Iblei	KBA		fishes	*Salmo cettii*		YES			YES
Cedrino	Golfo di Orosei e Gennargentu	KBA		molluscs	*Sardohoratia islamioides*	EN	YES			YES
					Sardopaladilhia plagigeyerica		YES			
Coastal Puglia	Litorale di Lecce	KBA		molluscs	*Salenthydrobia ferrerii*	EN	YES			
				plants	*Ipomea sagittata*	VU				
	Litorale di Ugento	N2000	IT9150009	plants	*Ipomea sagittata*	VU				
	Palude del Conte, dune di Punta Prosciutto	N2000	IT9150027	plants	*Ipomea sagittata*	VU				
	Porto Cesareo	N2000	IT9150028	molluscs	*Salenthydrobia ferrerii*	EN	YES			
	Torre Colimena	N2000	IT9130001	molluscs	*Salenthydrobia ferrerii*	EN	YES			
Fiume Sieve	Sieve	NEW		fishes	*Padogobius nigricans*	VU				YES
					Romanogobio benacensis	EN				YES
Lago di Coghinas	Coghinas	NEW		plants	*Carex panormitana*		YES			YES
	Monte Limbara e Lago del Coghinas	KBA		plants	*Carex panormitana*		YES			YES
Lago di Como	Lago di Como	NEW		fishes	*Chondrostoma soetta*	EN				YES
					Rutilus pigus		YES			
Lago di Fondi	Monti Ausoni e Lago di Fondi	KBA		fishes	*Cobitis zanandreai*	VU	YES			YES
Lago di Garda	Lago di Garda	NEW		fishes	*Romanogobio benacensis*	EN				
					Salmo carpio	CR				YES
Lago di Posta Fibreno	Lago di Posta Fibreno	N2000	IT6050015	fishes	*Salmo fibreni*	VU	YES			YES
Lago di Scanno	Lago di Scanno ed Emissari	N2000	IT7110101	fishes	*Scardinius scardafa*	CR			YES	
Magra River	Alpi Apuane	NEW*		molluscs	*Heleobia foxianensis*	EN	YES			YES
	Levante Ligure	NEW		molluscs	*Alzoniella braccoensis*		YES			
	Lower Magra	NEW		molluscs	*Alzoniella lunensis*	VU	YES			
					Alzoniella macrostoma		YES			
					Alzoniella microstoma		YES			
					Avenionia ligustica		YES			
Monte Arcosu	Punta Maxia e Monte Arcosu	KBA		fishes	*Salmo cettii*		YES			YES
North Eastern Sicily	Nebrodi	KBA		plants	*Petagnaea gussonei*	EN	YES			
	Tortorici	NEW		plants	*Petagnaea gussonei*	EN	YES			

	CMZ name	KBA name	KBA Type	site code N2000	Taxonomic group	Trigger species	Criteria			AZE sites	Focal area identified?
							A1	B1	D1 (a)		
ITALY	Sesia Ticino	Boschi del Ticino	N2000	IT2080301	fishes	*Acipenser naccarii*	CR	YES			YES
					plants	*Isoetes malinverniana*	CR			YES	YES
		Risaie della Lomellina	N2000	IT2080501	plants	*Isoetes malinverniana*	CR			YES	
		Sesia river	NEW		fishes	*Salmo marmoratus*		YES			YES
						Thymallus aeliani		YES			
		Torrente Marcova	NEW		molluscs	*Microcondylaea bonellii*	VU				YES
					fishes	*Salmo marmoratus*		YES			YES
						Thymallus aeliani		YES			YES
	Stilaro and Alli	Boschi di Stilo e Archiforo e Vallata dello Stilaro	KBA		fishes	*Salmo cettii*		YES			
	Superiore Tevere	Monte Cetona	KBA		molluscs	*Alzoniella fabrianensis*	CR	YES		YES	YES
	Volturno	Fiumi Volturno e Calore Beneventano	N2000	IT8010027	fishes	*Cobitis zanandreai*	VU				
		Le Mortine	N2000	IT8010030	fishes	*Cobitis zanandreai*	VU				
MALTA	Malta & Gozo	L-Inhawi ta' Ta' Cenc	N2000	MT0000034	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
		L-Inhawi tal-Buskett u tal-Girgenti	N2000	MT0000018	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
		L-Inhawi tax-Xlendi u tal-Wied tal-Kantra	N2000	MT0000020	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
	Malta & Gozo	Rdumijiet ta' Ghawdex: Id-Dawra tas-Sanap sa Tal-Hajt	N2000	MT0000028	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
		Rdumijiet ta' Ghawdex: Il-Ponta ta' Harrux sal-Bajja tax-Xlendi	N2000	MT0000028	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
		Rdumijiet ta' Ghawdex: Ta' Cenc	N2000	MT0000027	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
		Rdumijiet ta' Malta: Ir-Ramla tac-Cirkewwa sal-Ponta ta' Benghisa	N2000	MT0000024	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			
		Rdumijiet ta' Malta: Ix-Xaqqa sa Wied Moqbol	N2000	MT0000031	plants	*Elatine gussonei*		YES			YES
						Zannichellia melitensis		YES			

Salto de la Novia in Mijares river (KBA) Spain. Mijares river hosts six threatened species, the little mollusc *Spiralix pequenoensis* and the fishes *Achondrostoma arcasii*, *Barbus haasi*, *Luciobarbus guiraonis*, *Parachondrostoma turiense* and *Squalius valentinus*. ©MVHN

Annex II. Site Champions

Organizations or individuals to be considered as potential 'Site Champions' for each KBA (i.e. those who can undertake conservation actions or raise the KBA profile) or those who have an interest in, or are impacting, the CMZ or KBA site.

SITE CHAMPIONS

PORTUGAL

CMZ	Site Champion
Arade Vicentina	Aguas de Portugal, Aguas do Algarve; Almargem, Local NGO for the environment; ECO123, Local NGO for the environment
Bacia do Mira	Quercus NGO; University of Evora- Biology department; Agência Portuguesa do Ambiente;Instituto de Conservacion de Naturaleza; Sociedad Ibérica de Ictiología (SIBIC)
Río Sado	ICNF - Instituto da Conservação da Natureza e Florestas; QUERCUS (NGO); LPN, Liga para a Proteção da Natureza (NGO); Agência Portuguesa do Ambiente; Sociedad Ibérica de Ictiología (SIBIC); EDIA, SA - Alqueva reservoir company that has local protected area in KBA; cE3c - Centre for Ecology, Evolution and Environmental Changes, has a field station in the Serra de Grandola.
Río Vouga	Energias de Portugal - Producao - Energy production company MARE - Marine and Environmental Sciences Centre - Contact group Pedro Raposo Almeida; Agência Portuguesa do Ambiente; Local Municipalities are involved in active conservatio actions.
West coastal Portugal	QUERCUS (NGO)

SPAIN / PORTUGAL

Río Duero	AEMS Ríos con vida (NGO) www.riosconvida.es GEOTA – Rios livres Confederación HIdrográfica del Duero (RBA in Spain) Energias de Portugal - Producao - Energy production company SPB - Sociedade Portuguesa de Botânica ICNF - Instituto da Conservacao da Natureza e Florestas Associacao de Transumancia e Natureza (local NGO, that manages the largest private reserve in Coa region - COORDINATES 40.921605, -7.100615; CONTACT: + 351 271 311 202; EMAIL: geral@atnatureza.org Sociedad Ibérica de Ictiología (SIBIC) Ignacio Doadrio (Madrid Museum of NH)
Río Minho	Sociedad Ibérica de Ictiología (SIBIC) Fernando Cobo (ESTACIÓN DE HIDROBIOLOXÍA "ENCORO DO CON"/Universidade Santiago de Compostela) Ignacio Doadrio (Madrid Museum of NH) Escola Gallaecia (Carlos Antunes/CIIMAR)
Río Tajo	Museo Nacional de Ciencias Naturales (CSIC). Departamento de Biodiversidad y Biología Evolutiva. Grupo peces: Ignacio Doadrio, Anabel Perdices. Grupo Moluscos: Mariam Ramos Red del Tajo/Rede do Tejo (Citizen Platform for a new water culture in the Tagus basin www.redtajo.es) Confederación Hidrográfica del Tajo (RBA) Sociedad Ibérica de Ictiología (SIBIC) LPN, Liga para a Proteção da Natureza (NGO) QUERCUS (NGO) ICNF - Instituto da Conservação da Natureza e Florestas

SITE CHAMPIONS

SPAIN

CMZ	Site Champion
Albufera de Valencia	Museu Valencià d'Història Natural (i\Biotaxa) Jardin Botánico. Universidad de Valencia Departamento de Microbiologia y Ecologia. Universidad de Valencia Ignacio Doadrio team (Madrid Museum of NH)
Andalucia Basins	Sociedad Ibérica de Ictiología (SIBIC) Ignacio Doadrio team (Madrid Museum of NH) Consejeria de Medio Ambiente y Ordenación del Territorio. Junta de Andalucia (Regional Environment Ministry) Universidad de Málaga (Department of Ecology)
Balearic Islands	GOB -Balearic Ornithology Group- local NGO www.gobmallorca.com; regional government of Balearic Islands University of the Balearic Islands, Carr. de Valldemossa, km 7,5, 07122 Palma, Balearic Islands, Spain Pere Fraga i Argimbau. Consell Insular de Menorca
Catalonian coastal rivers	Sociedad Ibérica de Ictiología (SIBIC) Institut d'Ecologia Aquàtica de la Universitat de Girona Ignacio Doadrio (Madrid Museum of NH)
Gibraltar	Sociedad Ibérica de Ictiología (SIBIC) Ignacio Doadrio team (Madrid Museum of NH) Consejeria de Medio Ambiente y Ordenación del Territorio. Junta de Andalucia (Regional Environment Ministry) Universidad de Málaga (Department of Ecology)
Río Adra	Sociedad Ibérica de Ictiología (SIBIC); Ignacio Doadrio Research team (Madrid Museum of NH)
Levantine Basins	Museo Valenciano de Historia Natural (i\Biotaxa) Sociedad Ibérica de Ictiología (SIBIC); Ignacio Doadrio team (Madrid Museum of NH); Conselleria de Medi Ambient, Aigua, Urbanisme i Habitatge,. Generalitat de Valencia (Regional Environment Ministry).
Mar Menor	Ignacio Doadrio team (Madrid Museum of NH) Sociedad Ibérica de Ictiología (SIBIC)
Marjales Alicante-Valencia	ANSE -Asociación de Naturalistas del Sureste www.asociacionanse.org Museo Valenciano de Historia Natural (i\Biotaxa) Sociedad Ibérica de Ictiología (SIBIC) Ignacio Doadrio Research Team (Madrid Museum of NH)
Río Ebro	Sociedad Ibérica de Ictiología (SIBIC); Ignacio Doadrio (Madrid Museum of NH); Museo Valenciano de Historia Natural (i\Biotaxa)
Río Guadalete	Sociedad Ibérica de Ictiología (SIBIC); Ignacio Doadrio (Madrid Museum of NH); (RENPA) Direccion general de areas protegidas, Junta de Andalucia; conocetusfuentes.com (project on raising awareness on springs in Andalucia). Consejeria de Medio Ambiente y Ordenación del Territorio. Junta de Andalucia (Regional Environment Ministry) Sociedad Ibérica de Ictiología (SIBIC)

CMZ	Site Champion
Río Guadalquivir	Museo Nacional de Ciencias Naturales (CSIC). Departamento de Biodiversidad y Biología Evolutiva. Grupo peces: Ignacio Doadrio, Anabel Perdices. Grupo Moluscos: Mariam Ramos Regional Ministry fo the Environment (Andalusia) Univ. Córdoba (Grupo de Investigación Aphanius, Carlos Fernández Delgado, http://www.uco.es/aphanius/proyectodetalle.php?id_proyectos=12 ICMAN Cádiz (Javier Ruiz) Confederación Hidrográfica del Guadalquivir (RBA) Estación Biológica de Doñana (EBD-CSIC) WWF Spain (NGO) Museo Valenciano de Historia Natural (i\Biotaxa) Consejeria de Medio Ambiente y Ordenación del Territorio. Junta de Andalucia (Regional Environment Ministry) Universidad de Sevilla. Departamento Biología Vegeta y Ecología. Grupo PLACCA: Pablo García Murillo; Grupo Ecología Funcional de Ecosistemas Terrestres y Acuáticos: Laura Serrano, Julia Toja Sociedad Ibérica de Ictiología (SIBIC) Univ. Granada (Dep. Zoology - PHD. Sostoa; Javier Alba Tercedor)
Río Guadiana**	Museo Nacional de Ciencias Naturales (CSIC). Departamento de Biodiversidad y Biología Evolutiva. Grupo peces: Ignacio Doadrio, Anabel Perdices. Grupo Moluscos: Mariam Ramos LPN, Liga para a Proteção da Natureza (NGO) - Portugal Confederación Hidrográfica del Guadiana (RBA in Spain) ICNF - Instituto da Conservação da Natureza e Florestas; Natural Park of the Guadiana WWF Spain (mainly for upper basin) EDIA, SA - Alqueva reservoir company that has local protected area in KBA (for KBA - Ardila) Almargem, local NGO (for KBA - Sotavento Guadiana) Sociedad Ibérica de Ictiología (SIBIC) Museo Valenciano de Historia Natural (i\Biotaxa) In La Mancha Temporay Pool Complexes, very important for aquatic plants Biosphere Reserve “La Mancha Húmeda” - Castilla La Mancha Regional Authority CSIC- Real Jardín Botánico (Mr. Santos Cirujano) SEO-Bird Life Univ. Castilla La Mancha - CREA (PHD. Máximo Florín) NGO-ADENEX NGO-Fondo Patrimonio Natural Europeo NGO-Asociación “ojos del Guadiana” vivos
Río Jucar	ANSE -Asociación de Naturalistas del Sureste www.asociacionanse.org Sociedad Ibérica de Ictiología (SIBIC) Museo Valenciano de Historia Natural (i\Biotaxa)
Río Segura	ANSE -Asociación de Naturalistas del Sureste www.asociacionanse.org Sociedad Ibérica de Ictiología (SIBIC) Museo Valenciano de Historia Natural (i\Biotaxa)
Río Turia	Museo Valenciano de Historia Natural (i\Biotaxa) Sociedad Ibérica de Ictiología (SIBIC) Ignacio Doadrio team (Madrid Museum of NH)
Ríos Odiel y Tinto	Sociedad Ibérica de Ictiología (SIBIC) Ignacio Doadrio (Madrid Museum of NH)

** The country/countries at which some rivers have been listed depend on the location of the KBAs. Thus, some cross-border rivers can be listed in only one country.

SITE CHAMPIONS

FRANCE

CMZ	Site Champion
Ardèche	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000 Syndicat de Gestion des Gorges de l'Ardèche
Aude	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000
Cèze	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000
Gardon	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000 Syndicat Mixte des Gorges du Gardon
Grasse	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000; SYNDICAT INTERDEPARTEMENTAL INTERCOMMUNAL A VOCATION UNIQUE DE LA HAUTE SIAGNE (SIIVU HAUTE SIAGNE);
Hérault	Communauté de Commune de la Vallée de l'Hérault; EPTB Syndicat Mixte du Bassin du Fleuve Hérault ; Communauté d'Agglomération Hérault-Méditerranée; Ligue de Protection des Oiseaux Hérault - LPO; Syndicat Mixte du Bassin de Thau;
Lez Mosson	Conseil Départemental de l'Hérault Syndicat du Bassin du Lez
Mare de Lanau	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000 ; Fondation Tour du Valat, Conservatoires des Espaces Naturels PACA (CEN PACA).
Middle Durance-Verdon	DREAL Provence-Alpes-Côte-d'Azur; Syndicat Mixte d'Aménagement de la Vallée de la Durance; Parc Naturel Régional du Verdon.
Orb	Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000
Var	Agence du bassin Rhône-Mediterranean and Corsica; Mercantour National Park
Vidourle	Syndicat Interdépartemental d'Aménagement du Vidourle; Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000
Vistre	Communauté d'Agglomération de Nîmes Métropole; Ministère de l'écologie, du développement durable et de l'énergie - DGALN/DEB/SDEN/Bureau Natura 2000

SITE CHAMPIONS
ITALY

CMZ	Site Champion
Anapo and Ciane	Regione Siciliana Ass.to Territorio e Ambiente Servizio 4°; Corpo Forestale di Siracusa (Organisation responsible for the management of the Natura 2000 site)
Cedrino	Regione Autonoma della Sardegna - Assessorato della difesa dell'ambiente - Servizio Tutela della Natura; Parco nazionale del Golfo di Orosei e del Gennargentu
Coastal Puglia	Regione Puglia
Fiume Sieve	Regione Toscana - Assessorato ambiente; WWF Italy; Basin authority of Arno
Lago di Coghinas	Regione Sardegna
Lago di Como	Regione Lombardia; Autorità di bacino del Lario e dei Laghi Minori
Lago di Fondi	Regione Lazio - Direzione Infrastrutture, Ambiente e Politiche abitative (Body responisble for the Natura 2000 site (lake) management)
Lago di Garda	Autorità di bacino dei laghi di Garda e Idro Regione Veneto, Regione Lombardia; Provincia Autonoma di Trento; Parco Regionale Alto Garda Bresciano.
Lago di Posta Fibreno	Regione Lazio - Direzione Infrastrutture, Ambiente e Politiche abitative/ Riserva Naturale Lago di Posta Fibreno
Lago di Scanno	Parco Nazionale d'Abruzzo, Lazio e Molise Regione Abruzzo Comunità Montana Peligna (Organisation responsible for the Natura 2000 site management)
Magra River	Autoritá di Bacino del Fiume Magra (Water basin authority) University of Genoa University of Florence Regional Park of Magra river / Centre for freswater ecosystem
Monte Arcosu	Regione Autonoma della Sardegna - Assessorato della difesa dell'ambiente - Servizio Tutela della Natura (Organisation responsible for the Natura 2000 site management)
Northern Sicily	Regione Sicilia; Parco dei Nebrodi.
Sesia Ticino	Parco del Ticino; Consorzio di bonifica Est Sesia; Regione Piemonte; Regione Lombardia.
Silaro and Alli	Regione Calabria – Dipartimento Politiche dell'Ambiente; Parco Naturale Regionale delle Serre.
Superiore Tevere	Simone Cianfanelli (RL assessor for Belgrandia bonelliana); Marco Bodon (RL assessor for Belgrandia bonelliana); AIIAD (Associazione Italiana Ittiologi Acque Dolci) for the fishes
Volturno	Parco Regionale del Matese Regione Campania, Assessorato all'Ecologia e alla Tutela dell'Ambiente, AGC 05, Settore Ecologia

La Esperanza spring at La Esperanza Municipal Natural park KBA shelter the Critically Endangered mollusc *Tarraconia gasulli*. ©MVHN

Annex III. Summary of the KBA Criteria and Thresholds (IUCN, 2016)

A. Threatened Biodiversity	***Biodiversity element at site***	***% global pop. size/extent***	***RU***[1]
A1: Threatened species	(a) CR or EN species	≥0.5%	≥5
	(b) VU species	≥1%	≥10
	(c) CR or EN species Threatened only due to population size reduction in the past or present	≥0.1%	≥5
	(d) VU species Threatened only due to population size reduction in the past or present	≥0.2%	≥10
	(e) CR or EN species	Entire global population size	
A2: Threatened ecosystem types	(a) CR or EN ecosystem type	≥5%	
	(b) VU ecosystem type	≥10%	
B. Geographically restricted biodiversity	***Biodiversity element at site***	***% global pop. size/extent***	***RU***
B1: Individually geographically restricted species	Any species	≥10%	≥10
B2: Co-occurring geographically restricted species	Restricted-range species: ≥2 species OR 0.02% of total number of species in taxonomic group, whichever is larger	≥1%	
B3: Geographically restricted assemblages	(a) ≥5 ecoregion-restricted species[2] OR 10% of the species restricted to the ecoregion, whichever is larger (b) ≥5 bioregion-restricted species[2] OR 30% of the bioregion-restricted species known from the country, whichever is larger (c) Part of the globally most important 5% of occupied habitat of each of ≥5 species within a taxonomic group	≥0.5%	
B4: Geographically restricted ecosystem types	Any ecosystem type	≥20%	
C. Ecological integrity	***Biodiversity element at site***		
	Wholly intact ecological communities	≤2 sites per ecoregion	
D. Biological processes	***Biodiversity element at site***	***% global pop. size***	
D1: Demographic aggregations	(a) Species aggregation during one or more key stages of its life cycle	≥1%	
	(b) Among the largest 10 aggregations known for the species		
D2: Ecological refugia	Species aggregations during periods of past, current or future environmental stress	≥10%	
D3: Recruitment sources	Propagules, larvae or juveniles maintaining high proportion of global population size	≥10%[3]	
E. Irreplaceability through quantitative analysis	***Biodiversity element at site***	***Irrepl. score***	***RU***
	Site has high irreplaceability measured by quantitative spatial analysis	≥0.90 on 0–1 scale	≥10 (or ≥5 for EN/CR sp)

[1] RU=reproductive units; [2] wtihin a taxonomic group; [3] refers to global population size rather than immature individuals produced.

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Core support to the IUCN Centre for Mediterranean Cooperation is provided by: