

SUSTAINABLE RIPARIAN ZONES

A management guide



RIPIDURABLE

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Riparian zones are habitats of huge importance for most European mammal species (Mitchell-Jones *et al.*, 1999; O'Connell *et al.*, 1993). This significance is strengthened in Mediterranean environments, where hot and dry summers put the survival strategies of mammals occurring in these regions to the test.

For species with a semi-aquatic way of life, like the European Mink (*Mustela lutreola*), Otter (*Lutra lutra*), Iberian Desman (*Galemys pyrenaicus*), water shrews (*Neomys anomalus* and *N. fodiens*), Eurasian Beaver (*Castor fiber*) and water voles (*Arvicola sapidus* and *A. amphibious*), riparian areas are key habitats. In fact, these species often feed and breed on them and move for preference along riparian corridors.

The Iberian Desman mainly inhabits small mountain rivers with clean, oxygenated waters, generally associated with riparian vegetation that provides shelter and nesting places. Its global population is decreasing, the main cause being habitat loss and degradation (Palomo and Gisbert, 2002). In Europe it has recently been classified as Near Threatened (NT) in accordance with the IUCN Red List Categories and is legally protected, figuring in annexes II and IV of the Habitats Directive (92/43/CEE).

Water shrews occur in a broad range of wetland habitats, both freshwater and coastal. However, riparian woodlands are among the most significant for both species, which often live their entire life cycle in this kind of environment. *N. fodiens* presents a wide distribution and stable population trend in Europe. However *N. anomalus*, a species with a more Mediterranean distribution, may be declining in some areas of its range.

Many European populations of the Eurasian Beaver are now increasing due to the implementation of conservation programmes in several parts of their range. Beavers can occupy many kinds of freshwater environments; however, they usually prefer aquatic habitats embedded in a woodland matrix where they can construct their burrows or lodges.

Water voles inhabit a wide range of freshwater habitats, including streams, rivers, irrigation ditches, ponds, lakes and marshes. However, their presence at these sites depends on the existence of a tall, dense grassy layer and/or shrubs in the margins, to provide

cover, food and nesting sites. The global population trend of *Arvicola sapidus*, the Mediterranean species, is decreasing.

The Otter (figure 2.5.1) is a semi-aquatic carnivore that occupies a variety of aquatic environments, including lakes, marshes, rocky coastal areas and rivers. However, in most parts of its range otter occurrence is dependent on the existence of riparian vegetation. In these areas, otter breeding sites are often associated with the presence of dead trunks and cavities among tree roots, and the availability of these may be a limiting factor for riverbank occupation and breeding.



Figure 2.5.1 The Otter: an important species of European wetlands (Photo: Marco Caetano).

The European Mink lives in densely vegetated banks of rivers, streams and marshlands and is rarely seen away from freshwater environments. It is one of the most threaten European mammals, being classified as Critically Endangered (CR) in the European Union.

The Otter and the European Mink are included in annexes II and IV of the Habitats Directive.

For all the species mentioned above, changes in riparian habitats due to anthropogenic activities are the main cause of local or global population declines. Habitat loss and degradation resulting from clearing vegetation to channelize streams, water extraction, diffuse pollution from agriculture and acute water quality degradation from industry and other human activities are the major factors acting negatively on the populations of semi-aquatic European mammals.

Habitat fragmentation through dam and reservoir construction is also a major problem for species conservation, since it promotes the isolation of some already small populations. Restoring connectivity between fragmented populations through riparian corridor recovery is a major action that needs to take place in order to invert the negative population trends.

However, other mammal species living in different types of habitat may also depend on riparian zones to complete their life cycles or, at least, to facilitate part of this cycle. In fact, the presence of water and shade provide microhabitats and microclimates that promote higher plant and insect diversity and biomass. Many small mammal species, including the wood mouse, the Algerian mouse and the common shrew, can take advantage of these extra resources, so they concentrate at these sites, attracting predators like weasels, polecats, genets and foxes to riparian areas.

Nonetheless, the higher humidity and high abundance of insects may be a limiting factor for wild rabbit establishment in riparian zones. In fact, besides being ecologically poor for rabbits these conditions promote the spread of diseases like myxomatosis and haemorrhagic fever. These diseases are the main

factor contributing to rabbit decline in many parts of Europe.

The milder climate conditions of riparian zones when compared with the surrounding habitats (particularly important during the Mediterranean summer) and the availability of refuges (hollows in tree trunks and among roots; stones, dead wood and debris) make them good areas to rest and shelter for some arboreal bats and carnivorous mammals, which tend to use these habitats intensively.

The accumulation of sediments and litter offers suitable soil conditions for fossorial and semi-fossorial species. In some places moles (*Talpa* spp.) and pine voles (*Microtus* spp.) find soft soil with depth enough to construct their underground galleries and in regions with a Mediterranean climate they tend to concentrate in these areas in summer.

The usually linear forms of riparian areas make them natural corridors for the dispersion of most mammalian species and the main paths of genetic exchange. Consequently, their role as routes of connectivity among populations is of incomparable ecological value for biodiversity conservation at all levels.

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