

## The Red List of Italian animals

### Biodiversity in Italy

Italy has a rich biodiversity due to its distinctive geographic, climatic and historical characteristics. In particular, there is an enormous variety of endemic species, i.e. those plant and animal species that can be found exclusively in a given territory.

In Italy, we can find approximately one third of the European animals and one half of the plants, even though its surface area is not so vast, when compared to the whole of Europe. The Italian sea has an even more rich biodiversity, because most of the species that are typical of the Mediterranean Sea live in its waters. All this makes Italy a “hot spot” for biodiversity, which is recognized all over the world.

### The Red List

The International Union for Conservation of Nature (IUCN) is an international organization that is concerned with the conservation of biodiversity and has introduced the Red Lists. The Red Lists, therefore, are able to assess the risk of extinction of the species, and can, consequently carry out the correct actions to contrast the factors that threaten the loss of biodiversity.

672 species of vertebrates (576 terrestrial and 96 marine) have been assessed, out of which 6 species have become extinct in recent times. It has been assessed that 28% of the species are threatened with extinction, 138 terrestrial species and 23 marine species). Instead 50% of the species of Italian vertebrates are not in imminent risk of extinction. According to recent studies it appears that the marine species are declining more rapidly than the terrestrial species. The main causes of danger for the terrestrial species are the loss of their habitat and pollution, while for the marine species the main threat is accidental death as the species that were examined do not have a great commercial value.

### Endangered Categories

On a global scale, many IUCN categories of risk of extinction have been identified. The categories range from a minor threat of extinction to the maximum level of extinction in the short or medium term.

- Not Applicable (NA)
- Data deficient (DD)
- Least Concern (LC)
- Near Threatened (NT)
- Vulnerable (VU,)
- Endangered (EN,)
- Critically Endangered (CR)
- Extinct in the Region (RE)

The species with a priority for conservation belong to categories VU, EN and CR. Without specific interventions, for these species, extinction is not a possibility but it is a certainty. The results indicate that 49% of the Italian vertebrates belong to category LC, i.e. Least Concern, 12% to Data Deficient (DD), 10% to Near Threatened (NT), 14% Vulnerable (VU), 9% Endangered (EN), 5% Critically Endangered (CR) and last, 1% are Extinct in the Region (RE).

## Italian vertebrates

In Italy there are 97 species of fresh water fish, 44 amphibians, 56 reptiles, 267 nesting birds and 126 mammals, for a total of 590 species and 76 species of cartilaginous fish, such as sharks, ray fish and ghost sharks. With the exception of cartilaginous fish and birds, which are considered species that can cross the Italian boundaries, all the other vertebrates are recorded as endemic, i.e. species that are distributed exclusively in Italy, in particular 31% of the amphibians is endemic.

## Endangered Italian sharks

Cartilaginous fish or chondrichthyes (sharks, ray fish and ghost sharks) are very sensitive to human impact due to:

- their slow growth,
- the limited number of their offspring, that they give birth to after very long pregnancies or incubation;
- the habit, of many species, to aggregate in large groups in the reproductive period (which makes them the target of fishing activities).
- the presence of “nursery areas” (where the sharks give birth to their young), that are susceptible to environmental degradation and pollution .

All these characteristics of their biology and their behaviour, contribute to making this group of fish, that have survived millions of years of history, into a group of endangered animals. In the Italian seas 76 species of cartilaginous fish have been pointed out, of which about ten are considered occasional visitors.

Data are deficient for many species, however some have been classified Critically Endangered. This category includes nine species of cartilaginous fish: the common thresher, school shark, guitarfish or violinfish; angelsharks, white rays and common spinefish dogfish. The Maltese ray and longnose spurdog instead, have been classified as Near Threatened. Among the anthropic activities, fishing has the greatest impact on populations of cartilaginous fish. In particular trawling nets and longline fishing, which accidentally also capture cartilaginous fish that are thrown back into the sea or sold at a low cost. Another threat is the degradation caused by humans in the environments that are important for the life of these fish.

In Italy, there are no specific regulations to promote the protective actions that are already foreseen by international agreements and by Community regulations for some species. It is useless to add that a regulation that decreases the threats of fishing cartilaginous fish is urgently needed and that “sensitive” areas must be identified in order to protect the species.

## Caviar nearing extinction

In Italy, the industrial revolution led to a substantial change in the distribution of a number of species of freshwater fish. A remarkable case is that of the beluga sturgeon *Huso huso*. It is the largest of all the sturgeons. and the most valued for its meat and caviar, and its presence in the waters of the Adriatic Sea and in the Po river has been noted since the Seventies, but it has now been declared extinct. This species is an anadromous migrator, i.e. fish of this species live most of the time in salt water, but they reproduce in fresh water. The beluga sturgeon swims upstream to lay its eggs in spring, and less frequently in autumn. Notwithstanding the number of eggs per female can be very big, up to 7,700,000, the presence of dams that prevent the fish from swimming upstream, pollution and killing of females in order to extract their eggs (the well-known caviar) have led to the extinction of this species. The same destiny has also affected the common sturgeon *Acipenser sturio* which has become extinct since the last thirty years, while the Adriatic sturgeon *Acipenser naccarii* is classified Critically Endangered. Other ten species, which are mainly endemic, are classified as being in a critically endangered situation. Among these is the entire group of running water salmonids that are endangered mainly by the progressive impoverishment of the water and the numerous and consistent restocking of

Atlantic salmonids. In general the threats for these species are the extensive urbanization of the territory, anthropic changes in the course of the rivers and the continuous impoverishment of the water resources. Pollution, climate change, birds of prey and the introduction of allochthonous species are often a consequence of the anthropization of the territory. For the future of freshwater fish in Italy, we hope in the European directives that will protect the water resources, in particular the EU Water Framework Directive 2000/60/EC, hoping that it will bring a substantial change from a cultural point of view, because till today this category has been considered "minor fauna" while it should be considered a fundamental indicator of the quality of our waters, indispensable for the survival of human beings.

## Frogs and snakes in Italy

Italy is the country in Europe that has the greatest herpetological biodiversity, with 44 species of amphibians and 56 species of reptiles. This high level of biodiversity can be explained by the particular geographic position of Italy and also because during the glacial eras, Italy was a zone where many species took refuge. Its isolation during the cold periods enabled the survival of a large number of endemic species of the Italian peninsula, with 14 species of amphibians and 5 species of reptiles.

From the studies carried out on Italian amphibians and reptiles, the Aeolian wall lizard (*Podarcis raffoneae*) is the species that is most endangered (CR), in fact its natural habitat is less than 10 square kilometres, as it can be found only in the Aeolian islands, fragmented in four isolated stations that are relatively distant from one another, situated in fragmented areas of Vulcano Island and on three small islands: Strombolicchio (a rocky part of Stromboli Island), La Canna (Filicudi) and Scoglio Faraglione (Salina). It is estimated that its population is about a thousand specimens and the decrease in its natural habitat is due to its competition with the common Italian wall lizard *Podarcis sicula*, probably introduced by man around the year 7,000 B.C. The two species live together at present only on Vulcano Island. It is not difficult to imagine that even a small change in the environment could make the species become extinct.

Among the Endangered species (EN) there are 4 species of amphibians and 5 species of reptiles. The amphibians are specially endangered because of the disappearance and the changes in the natural habitat in the humid areas, that are essential for their reproduction and due to the introduction of allochthonous fish and prawns, and the onset of a pathology called chytridiomycosis which can kill almost all the amphibians. European pond turtles of the *Emys* genus have been decimated by land reclamation and changes in the humid areas. Also for terrestrial reptiles, the principal threat comes from altered and fragmented natural habitats, also caused by wildfires.

## Birds flying close to extinction

Following the studies that were carried out, it was noted that 2% of the species of birds that were analysed were classified Critically endangered (CR), 9% Endangered (EN) and 18% Vulnerable (VU). Among the species classified Critically Endangered are four species of the Falconiformes order: Bearded vulture, Egyptian vulture, Griffon vulture and Bonelli's Eagle and two of the Passeriformes order, the Sedge warbler and the Barred warbler. Furthermore all three species of vultures present in Italy are Critically endangered, in fact, for this species which feeds on the carcasses of dead animals, for centuries survival was tied to the presence of livestock, reared on free-range farms. Recently livestock farming has changed and the animals reared on free-range farms have decreased, furthermore veterinary regulations require that the carcasses be removed, and this determines a drop in food resources for these delicate species of birds.

It must be added that poaching is still a threat, as still today the newly hatched young birds are taken from the rare Bonelli's eagle nests, and are then sold illegally to foreign falconers at prices that can even reach 15,000 euros!

However all three species of vultures have been the object of reintroduction projects. The few specimens of Bearded vulture that have been reintroduced have successfully survived in a natural manner, due to the presence of some wild ungulates. The Griffon vulture instead has decreased 96.9% from the 1930s to 2005, and in order to live it depends on feeding grounds that are regularly stocked with meat. With regard to the Egyptian vulture, these birds continue to decrease and no cases of reproduction among the birds that have been released have been noted. From 1970 to 2007 the population dropped from 71 couples to 7-8.

The threats for bird fauna in Italy therefore are mainly from the transformation of the habitat and the changes in agriculture and in the livestock farms, from climate change that influences the migrating species and unfortunately also poaching. Consequently, to protect the Italian birds it is important to protect their habitat, specially the Mediterranean area and the agricultural areas and forests, and to stop poaching and prohibit hunting the endangered species.

## Italian mammals

With regard to Italian mammals, apparently the situation is improving. In fact many known species, such as the deer, roe deer, fallow deer, wild boar and steinbock have remarkably increased in numbers and have also extended their habitat. Wolves have actually doubled in number, they have settled in the Western Alps and now are trying to conquer the Central Alps too.

Bears have increased in the Trentino region, however their number is stable in the Abruzzo region, and they are still too few to be able to safely say they are out of danger. Also otters are extending their habitat in Central Italy.

In general, Italian mammals are in decidedly better conditions than 30 years ago, and even better compared to one century ago. What is surprising is that the populations of these species continue to increase notwithstanding the general conditions of their habitats have decidedly declined. This can be explained because these are opportunist and generalist species, and therefore are able to adapt to the different conditions, and in particular they have been able to repopulate the mountains and hills that have been abandoned by humans.

However, many specialized species of mammals, and in particular bats, are strongly affected by the decrease in the number of their prey and the changes in their habitat. The deterioration of the environment affects the Po valley in particular, due to the intensive agriculture that deteriorates the soil, water and air, while the habitats on the coastlines have almost completely disappeared. Sea mammals, in particular, continue to decrease due to the deterioration of the marine environment, decreased food resources and the increase in anthropic interference.

The dangers for the preservation of Italian mammals, therefore, do not refer to a precise anthropic action, but to a general deterioration of all the natural habitats. In order to face the problem, therefore, it is necessary to requalify agriculture with methodologies that are more sustainable for the environment. The illegal and criminal practice of using poisonous baits for animals of prey, which also indiscriminately affect most of the wild animals and in particular, they exterminate species of a high conservation value, such as bears and wolves, should be stopped immediately. Action should also be taken to limit the number of stray dogs and cats which strongly affect the health of wild fauna, spreading diseases like distemper.

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