

# NATURAE & BIODIVERSITY 2.4



In 2002, the Strategic Plan from the Convention on Biological Diversity established 2010 as the target date for reducing the global loss of biodiversity. The EU had already committed to stopping this loss in its own territory in 2001. During this period Spain has begun to adopt measures to meet this goal, some of which can be assessed using the indicators discussed herein.

One very important initiative was the approval of Act 42/2007, of 13 December, on Natural Heritage and Biodiversity, which includes several instruments that are currently being developed.

The developments introduced by this Act include the concept of Marine Protected Area, the creation of the Catalogue of Habitats in Danger of Disappearance, the List of Wild Species under Special Protection and the Spanish Catalogue of Endangered Species (SCES). Other important instruments created by this Act include the Spanish Natural Heritage and Biodiversity Inventory and the Spanish Strategic Plan for Natural Heritage and Biodiversity.

In light of the results of the indicators considered herein, it should be noted that wooded areas continue to increase year after year and the phytosanitary status of these areas continues to improve.



INDICATOR	META	TREND
Protected nature areas	Increase and conserve the area protected to preserve Spain's natural wealth	Spain's protected area and the size of the Natura 2000 Network are increasing
Forest defoliation	Quantify forest defoliation and identify its causes	Damage to forests appears to be starting to decrease
Woodland surface area	Increase the surface area and quality of woodlands and other forest formations	Forest area is increasing in all Spain's Autonomous Regions
Cataloguing of endangered species in Spain	Include in the SCES those endangered species in greatest need for action to be taken	Taxons of groups containing the most emblematic species, such as mammals and birds, have largely been catalogued. Others (fish, amphibians and flora) have not yet received sufficient attention.
Trends in common bird populations	Determine trends in Spanish bird populations	Populations of common birds in woodlands are increasing, whereas those in agricultural environments are decreasing
Environmental monitoring	Prevent damage to the environment and reduce environmental offences	A decrease in the number of administrative offences has been noted

The area covered by the Natura 2000 Network increased slightly in 2007, mainly due to an increase in marine protected areas. Internationally, the inclusion of the Atlantic Islands of Galicia National Park in the network of Marine Protected Areas established by the OSPAR Convention (1992) for the protection of the NE Atlantic marine environment should be noted. As regards the inclusion of marine areas as Specially Protected Areas of Mediterranean Importance (ZEPIM), nine of the 21 such areas belong to Spain.

Seventy six percent of endangered mammal species are included in the SCES, which means that active measures are being taken to conserve them. The proportion for flora, invertebrates and other vertebrates, such as fish and amphibians, is lower. It has been noted that bird populations in agricultural environments have decreased, due above all to loss of habitat as increased agricultural use leads to more homogeneous surroundings.

As for the progress of the Spanish National Wetlands Inventory, it was established in 2006 with 23 wetlands in the Community of Madrid (BOE no. 275, of 17 November 2006) and in 2009 a further 117 wetlands from Andalusia were included (BOE no. 39, of 14 February 2009), which means that it currently contains 140 wetlands (118,253.59 ha). Inclusion proposals submitted by La Rioja (50 wetlands), the Basque Country (30 wetlands) and Extremadura (248 wetlands) are currently being considered, although it should be noted that the effective inclusion of these sites in the National Inventory is not immediate and various technical aspects must be agreed upon before inclusion.

# Protected natural areas

## Protected nature areas accounted for 11.63% of Spain's total land area in 2008

PNA'S AS A PROPORTION OF SPAIN'S TOTAL AREA (%)

1990	1994	1998	2001	2003	2004	2005	2007	2008
4.38	5.75	7.34	7.90	8.80	8.93	9.16	9.22	11.63

Source: Directorate General for the Environment and Forestry Policy. MARM.

PROTECTED SURFACE AREAS ACCORDING TO PROTECTION CATEGORY, 2008

PROTECTED AREA	PNA AND NATURA NETWORK 2000	PNA	NATURA NETWORK
Protected surface area [land] (ha)	13,767,118.64	5,888,346.19	13,490,396.74
Protected surface area [sea] (ha)	835,042.47	255,610.24	793,780.67
Total protected surface area (ha)	14,602,161.11	6,143,956.43	14,284,177.41
% Protected surface area [land]	27.20	11.63	26.65

Source: MARM.

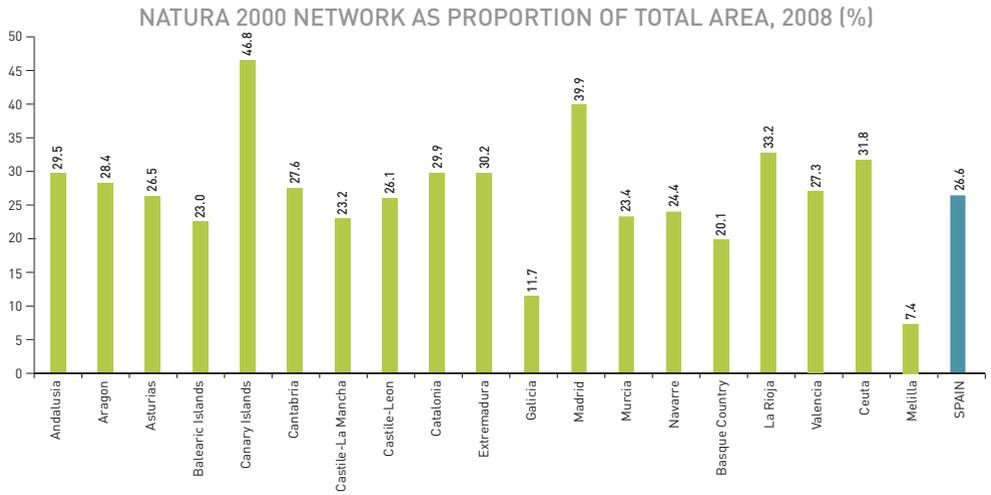
The number of Protected Nature Areas (PNA) reached 1513 in 2008, covering a total area (land and marine) of 6,143,956 ha. This means that the proportion of PNA's with respect to total land area increased to 11.6%, although it should be noted that regions not included in previous years, such as the PNA's belonging to Catalonia's Areas of Natural Interest Plan (PEIN), have been included this year.

In 2008 27.2% of Spain's land area was protected as either a PNA or by inclusion in the Natura 2000 network. It should be noted, however, that a large part of the area declared as PNA also forms part of the Natura 2000 network, therefore the total protected area cannot be calculated simply by adding the two figures. It is also important to note that the area of the Natura 2000 network also does not correspond to the sum of the areas of the sites of community importance (SCI) and the special bird protection areas (SBPA) as there is also some overlap between these regions.

Thus, in 2008 the number of SCI's reached 1434, with a total surface area of 12,386,991 ha (11,605,544 on land and 781,447 at sea), with the land area accounting for 22.93% of the total for Spain; these figures are similar to those for the previous year.

Several new zones were designated as SBPA's in 2008 and the area of others was increased, thus making an important contribution to compliance with the requisites of the Birds Directive. In 2008 there were a total of 569 SBPA's covering 9,831,544 ha (9,604,863 on land and 226,681 at sea), which is 18.97% of the total land area.

A breakdown by Autonomous Region shows that those with the highest proportion of their territory included in the Natura 2000 network are, once again, the Canary Islands, with 46.8%, followed by Madrid (39.9%) and the Rioja (33.2%), whereas Galicia, with 11.65%, the Basque Country (20.10%), the Balearics (22.95%) and Castilla-La Mancha (23.16%) have the least.



Source: Subdirecatorate General for Biodiversity, Directorate General for the Environment and Forestry Policy. MAR M

Note: The SBPA "ES0000085, RIBADEO" is shared by Galicia and Asturias, with Galicia being assigned 28% of the total surface area and Asturias the rest (72%).

**NOTES**

- The Natura 2000 Network is a European network of biodiversity conservation areas. It includes Special Areas of Conservation (SAC), designated in accordance with the Habitat Directive (Dir. 92/43/EEC), in addition to Special Bird Protection Areas (SBPA) established under the terms of the Birds Directive (Dir. 79/409/EEC). Its purpose is to ensure the long-term survival of Europe's most endangered species and habitats, thereby helping to halt biodiversity loss resulting from adverse human impact. Establishment of SACs requires an administrative process which begins with proposal of Sites of Community Importance (SCIs) by Member States, which, following assessment by the EU, may then be declared SACs.
- Under Spanish legislation, the Natural Heritage and Biodiversity Act 42/2007, of 13 December 2007, defines Protected Areas as "...any areas within Spain's national territory, including inland and marine waters (...) that meet at least one of the following requirements and are declared as such:
  - a) Contain natural elements or systems that are representative, unique, fragile, endangered or of special ecological, scientific, natural, geological or educational interest.
  - b) Are specifically intended to protect and maintain biological diversity, geodiversity and associated natural and cultural resources."

**SOURCES**

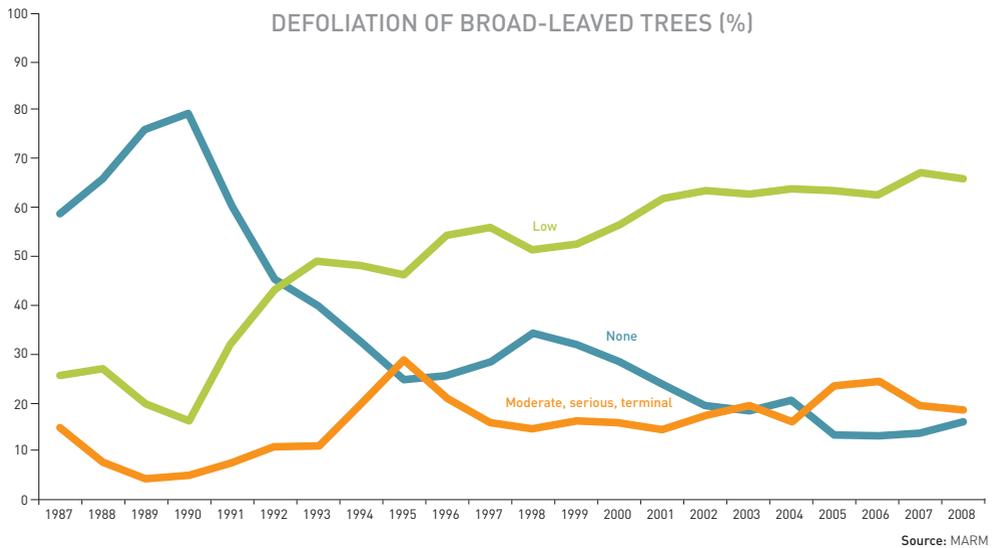
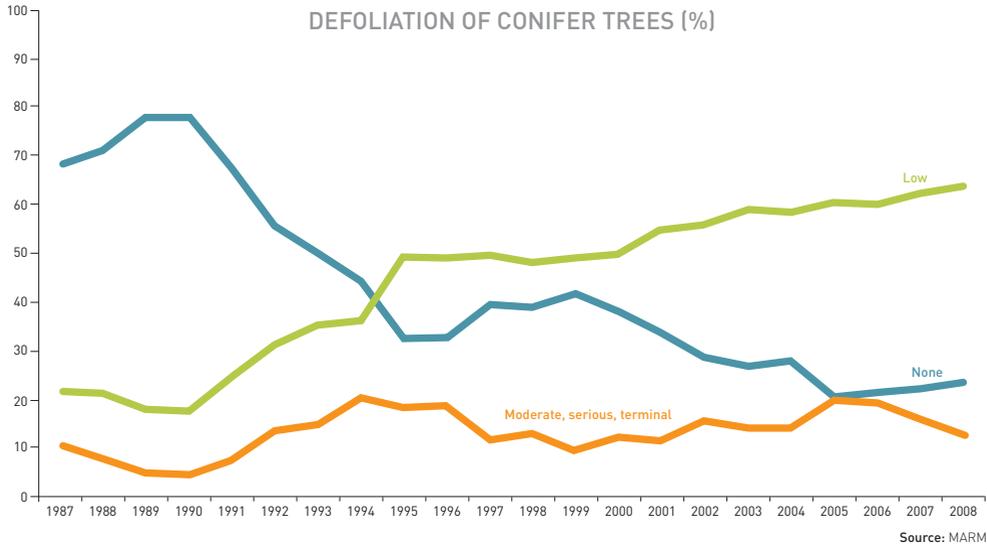
- PNA: Biodiversity Database. Subdirectorato General for the Natural Heritage and Biodiversity Inventory. Directorate General for the Environment and Forestry Policy. MARM.
- Natura 2000 network: Subdirectorato General for Biodiversity. Directorate General for the Environment and Forestry Policy. MARM.

**MORE INFORMATION**

- <http://www.marm.es>

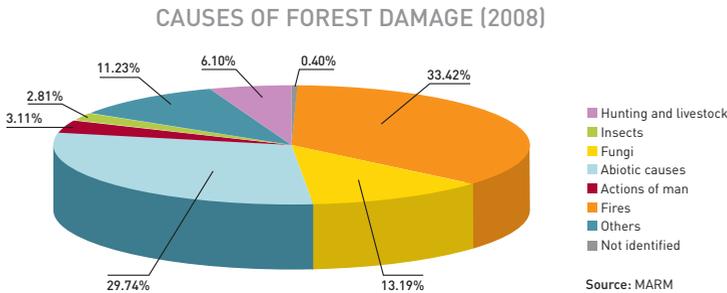
# Woodland defoliation

The recent improvement in the general state of woodlands continues



An analysis of the data for Spain from the European Forest Monitoring Network shows that the state of those forests at points belonging to the Level I network continued to improve. This improvement was particularly evident in 2008 in coniferous woodland, with the proportion of measurements showing no or only slight defoliation increasing at the expense of those measurements showing moderate, severe or terminal defoliation,

which were at their lowest levels since 2002. For broad-leaved trees, the proportion of measurements showing no defoliation has increased and those showing moderate, severe or terminal defoliation have decreased.



The causes of forest damage in 2008 were similar to those observed in 2007 and were found in the same order of importance, with insect damage accounting for 33%, abiotic causes 29% and fungal attack 13%.

**NOTES**

- Forest defoliation is the process by which a plant species loses its leaves as a result of pathological or climatic stress that provokes the premature or abnormal fall of its leaves. The degree of forest defoliation indicates a forest's state of health. It is analysed in terms of foliage loss from the tree crown at a series of sampling points, with the results being classified into the following categories:

**Loss of needles/leaves**

- 0 – 10%
- 10-25%
- > 25%

**Degree of defoliation**

- None
- Low
- Moderate, serious or terminal

- Under the International Co-operative Programme on the Assessment and Monitoring of Air Pollution Effects on Forests, the European ICP Forests (Level I) network is an international large-scale systematic network consisting of more than 5700 monitoring points distributed on a 16 x 16 km grid covering all of Europe which was begun in 1986 from a randomly chosen starting point. This network analyses the health status of woodlands, and the main factors that act negatively on it, on an annual basis. The Spanish network currently includes 620 sampling points. Furthermore, and within the framework of the previous Forest Focus EC Regulation and the current Life+ financial instrument, its design allows for monitoring of other issues, such as the effects of climate change on forests, sustainable management and preservation of forest biodiversity.

**SOURCES**

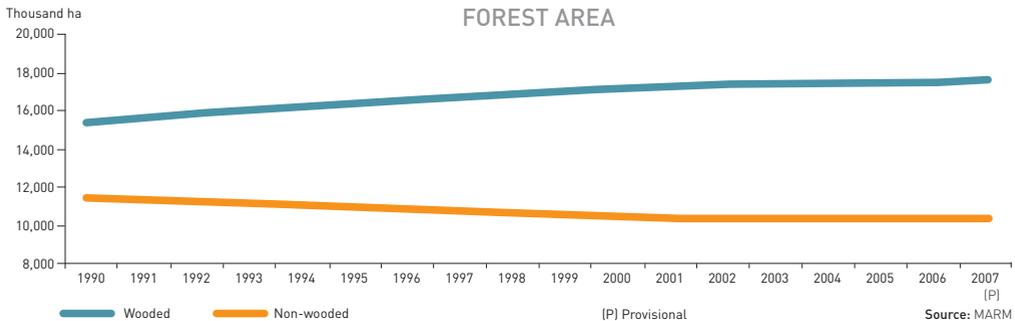
Protection Against Harmful Agents Service Data Centre (CENDANA). Directorate General for the Environment and Forestry Policy. MARM.

**MORE INFORMATION**

- Forest Health Yearbook 2007. Protection of Mountains Against Harmful Agents Service. Directorate General for the Environment and Forestry Policy. MARM, 2008.
- <http://www.marm.es>
- <http://www.icp-forests.org>

## Woodland surface area

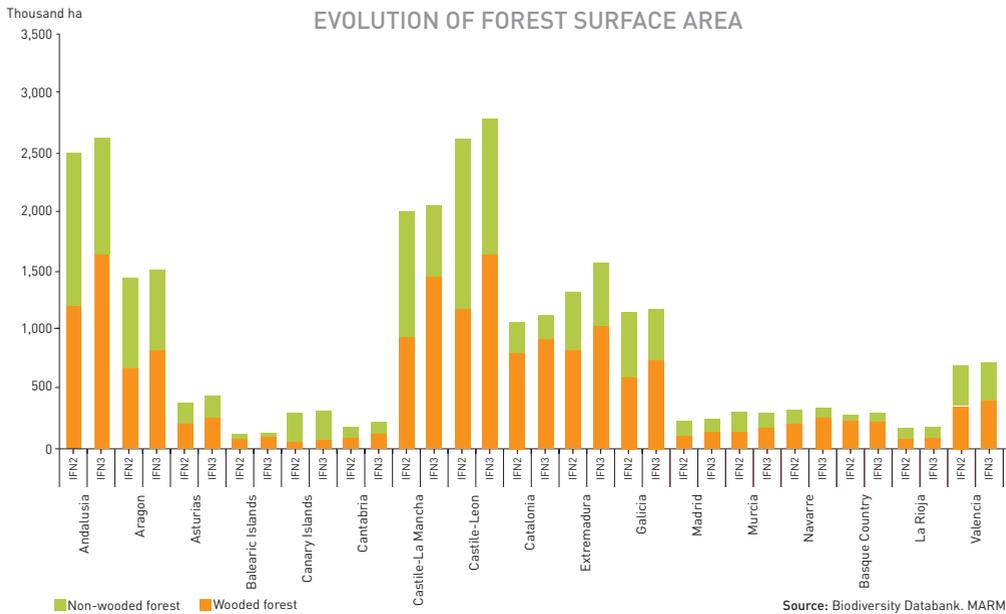
Spanish woodland continues to increase. The wooded surface area, which consists of forests and unforested mountains, could account for 56% of Spanish territory by 2010



The forested surface area in Spain covered by forests and other woodland formations is estimated to reach 27,747,680 ha by 2010, according to the methodology used by the Ministry of the Environment and Rural and Marine Affairs to calculate the forested surface area year on year. This methodology uses both the Forest Map of Spain and the National Forest Inventory along with the annual repopulation and forest fire figures.

In 15 years (1995-2010), the forested surface area or that covered by woodland has increased by 6.55% at the expense of both unforested mountains, whose surface area decreased by 2.86%, and the surface area dedicated to agriculture and livestock farming.

According to the results of the Third National Forest Inventory (IFN 3), all Autonomous Regions experienced an increase in their forested surface area, with this increase being particularly significant in Extremadura (19%) and the Canarias (16%) with respect to the Second National Forest Inventory (IFN 2). Only Murcia showed a decrease in forest surface area, particularly non-wooded forest. As for the wooded forest area, the increases observed in Castilla-La Mancha (57%) and the Balearics (52%) in IFN 3 with respect to IFN 2 are significant.



**NOTES**

- The Spanish National Forest Inventory is a statistical survey intended to obtain the maximum amount of information possible about the status, ownership, protection, nature, legal circumstances, probable evolution and productive capacity of Spain's forests. It operates at a provincial level and, as it is a continuous inventory, the same measurements are taken across the whole country every 10 years.
- The First Spanish National Forest Inventory (IFN 1) was taken over the period 1966-1975. The Second Spanish National Forest Inventory (IFN 2) was taken between 1986 and 1996 and produced higher quality, more extensive and more user-friendly results than its predecessor. The Third Spanish National Forest Inventory (IFN 3) 1997-2007 is almost complete, with provisional figures available for all of Spain's Autonomous Regions except Andalusia.

**SOURCES**

- Spanish National Forest Inventory. Subdirectorato General for the Natural Heritage and Biodiversity Inventory.
- Directorate General for the Environment and Forestry Policy. MARM.

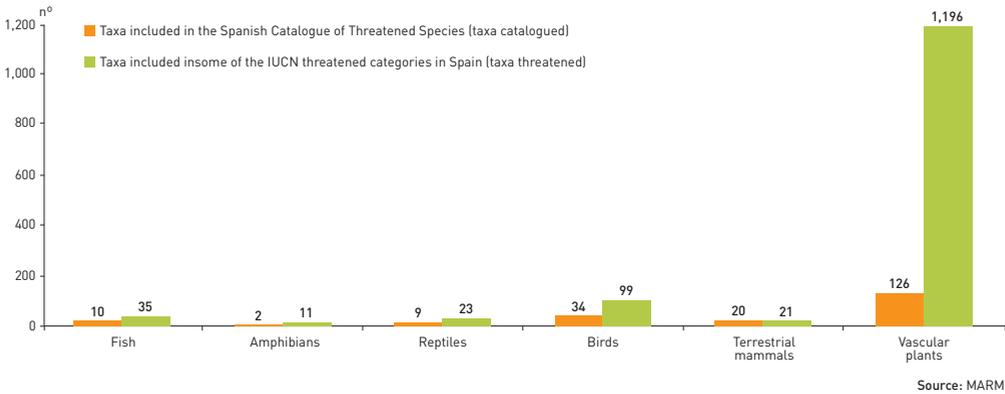
**MORE INFORMATION**

- <http://www.mma.es/portal/secciones/biodiversidad/inventarios/ifn>

# Cataloguing of threatened species in Spain

Of the taxa considered to be endangered, 76% of the mammals, 25% of the fish, 18% of the amphibians and 10% of the flora are now included in the SCES

THREATENED AND CATALOGUED TAXONS (2008)



THREATENED VERTEBRATE TAXA IN SPAIN (2007)

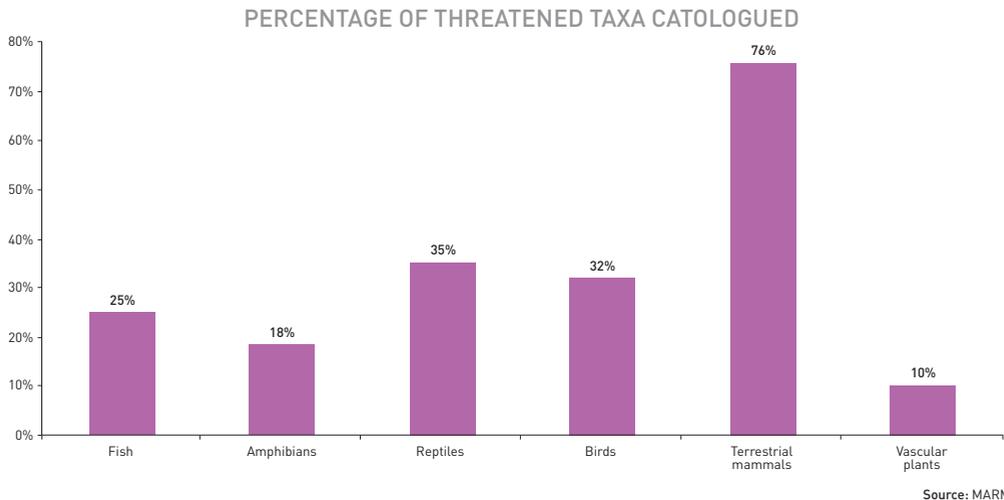
	NO. THREATENED TAXA	NO. THREATENED AND CATALOGUED TAXA
Fish	35	9
Amphibians	11	2
Reptiles	23	8
Birds	99	32
Terrestrial mammals	21	16
Vascular plants	1,196	123
TOTAL	1,385	190

Threatened taxa: Threatened taxa according to IUCN category (2001).

Threatened and catalogued taxa (2008) Threatened taxa according to IUCN category (2001) also included in the SCES.

Spanish catalogue of Threatened Species

Source: MARM.



The Act 42/2007, of 13 December, regarding Natural Heritage and Biodiversity, established the legal framework to ensure the conservation of wild native species in Spain and the specific protection measures for those wild species which require special attention and protection, which are to be included in the List of Wild Species Under Special Protection. This list establishes the Spanish Catalogue of Threatened Species, which puts the taxa or populations in two categories: “In danger of extinction” or “Vulnerable”. The aim of including a taxon in this catalogue is to be able to adopt active measures to help it overcome the threat to it.

Other instruments of a more scientific nature also provide information regarding conservation status. The most relevant of these are the Red Lists and Books. These are drawn up on the basis of internationally recognized and used quantitative criteria proposed by the International Union for the Conservation of Nature (IUCN), which allow the different threat levels to taxa to be classified. These criteria have been applied to the different taxonomic groups in Spain at a national level and the results published in the form of Red Books by the Ministry for the Environment and Rural and Marine Affairs as part of the National Biodiversity Inventory.

This indicator jointly considers the conservation status and cataloguing of vertebrate and vascular plant taxa in Spain and notes the percentage of those threatened species, sub-species and populations (in other words those included in any of the IUCN categories “critically endanger”, “endanger” or “vulnerable) which are included in the Catalogue in any of the three categories still in force in 2008, namely “in danger of extinction”, “sensitive to habitat change” and “vulnerable”.

The results obtained allow a superficial assessment of the actual protection status of threatened species to be made at a national level. Excluding the terrestrial mammals,

the percentage of threatened taxa included in the Spanish Catalogue varies between 10% and 35%. This figure is very low for vascular plants (10%), as are the figures for fish and amphibians (25% and 18% respectively), especially considering the need to conserve these groups due to the large number of endemisms. Birds and reptiles account for approximately one third of the threatened taxa catalogued. Finally, the percentage of threatened species catalogued is the most satisfactory for mammals (76%). The above clearly shows that, for the most part, those taxonomic groups containing emblematic species (mammals and birds) have been catalogued more than others such as vascular plants or amphibians.

Knowledge concerning the conservation status of invertebrates is still very patchy, therefore it has not proved possible to assess this status despite the Spanish Catalogue of Threatened Species currently including 42 species of invertebrates.

### NOTES

- When interpreting this indicator it should be noted that some species are included in the SCES but not in the Red Lists or Books, and vice versa.
- Furthermore, when including taxa in the different threat categories on the basis of IUCN criteria, all taxonomic groups contain taxa that have not been assessed, as assessments have always been performed on those taxa for which evidence exists that they are the most threatened.
- The Red Lists and Books are drawn up on the basis of the IUCN categories 2001, version 3.1, which can be found at <http://www.iucnredlist.org>

### SOURCES

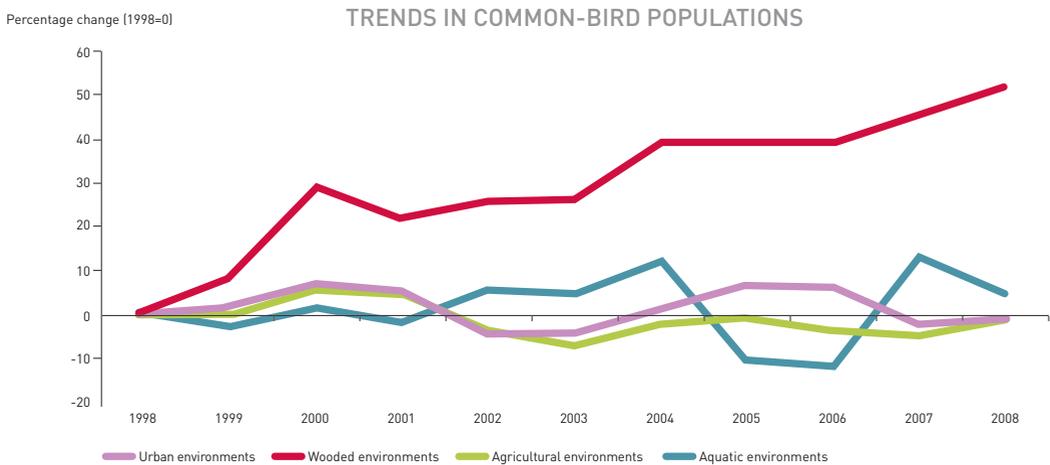
- Spanish National Biodiversity Inventory. Subdirectorato General for Biodiversity. Directorate General for the Environment and Forestry Policy. MARM.
- Spanish Catalogue of Threatened Species. Subdirectorato General for Biodiversity. Directorate General for the Environment and Forestry Policy. MARM.

### MORE INFORMATION

- Atlas and Red Books for the flora and fauna in Spain.  
<http://www.mma.es/portal/secciones/biodiversidad/inventarios/inb/index.htm>
- IUCN World Red List. <http://www.iucnredlist.org>
- Spanish Catalogue of Threatened Species.  
[http://www.mma.es/portal/secciones/biodiversidad/especies\\_amenazadas/catalogo\\_especies/](http://www.mma.es/portal/secciones/biodiversidad/especies_amenazadas/catalogo_especies/)

## Trends in common-bird populations

The trend in bird populations in a forest environment shows a moderate increase, whereas those in agricultural environments have suffered a moderate decrease



Source: MARM and SEO/Birdlife

The trends in common-bird populations in Spain have been monitored for the past 10 years. Demographic data for more than a hundred breeding bird species are obtained for most of the country using a standardized census methodology. Detailed results are available for each species, which allows those species which share characteristics, such as presence in a certain type of habitat, migratory behaviour or trophic ecology, to be grouped together. This gives trend indicators which allow the conservation status of bird communities to be assessed and provide valuable information regarding the environments they inhabit.

Therefore, as shown in the graph below, the trend observed during the past decade can be summarized, depending on the type of environment where the birds live, using aggregate indices. Thus, it can be seen that urban bird populations have remained stable during this decade.

Woodland bird communities, however, have experienced a statistically significant increase in both Mediterranean (sclerophyllous) and Euro-Siberian (deciduous) woodland. This could be due to better forestry management together with their recovery in many regions due to the abandonment of agricultural land.

In contrast, the trend is negative for birds linked to agricultural environments, which have experienced a small but statistically significant decrease. It is interesting to note that this downward trend is also observed when the bird communities from the Mediterranean steppes (cereal crops), northern pasturelands and wooded agricultural environments (olive groves) are considered separately. These trends arise especially due to the intensification which has taken place in the agricultural world to increase the sector's competitiveness. This manifests itself as a homogenization of the environment and the loss of traditional land uses, with the subsequent increase in *inputs* (herbicides and fertilizers) to the fields. Thus, the birds lose habitat and trophic resources. Fragmentation has had a significant effect on the communities living on natural steppes.

Bird populations which live in aquatic environments have remained stable, which is a sign that the new guidelines and uses are correcting past mistakes which affected these environments and birds negatively.

Finally, it should be noted that the analysis of other aggregate indices shows that the populations of non-migratory and migratory (both pre- and trans-Saharan) have also remained stable. Analysis of the communities by feed type shows that insectivorous birds have remained stable, whereas granivorous birds have experienced a moderate but significantly significant decline.

**NOTES**

- Trend indicators are used internationally in the framework of the Biological Diversity Agreement and have been adopted by the EU in its SEBI 2010 programme to assess compliance with the 2010 target date (in other words, to stop loss of biodiversity within the EU and reduce this loss on a global scale by 2010).
- In this case it is a multi-species indicator regarding the size evolution of bird populations associated with urban, woodland, agricultural and aquatic environments expressed in terms of relative abundance.
- Within each group, the annual relative abundance index is calculated for each species, which allows its population between 1998 and 2008 to be determined. The multi-species index is obtained from the average of the relative abundances of the species weighted according to the frequency of their appearance during sampling.
- This sampling is performed annually on the basis of 10x10 km UTM grids for both the mainland and Balearics. There are currently more than 800 such grids, which cover 7-8% of the country's surface area.
- Grouping of bird communities whose population trends are monitored using this indicator:

By habitat	Urban	
	Woodland	Eurosiberian Mediterranean
	Agricultural	Grain Northern Arboreal
	Aquatic	
By migratory behaviour	Non-migratory birds	
	Migratory birds	Pre-Saharan Trans-Saharan
By food type	Granivorous birds	
	Insectivore birds	

**SOURCES**

- Subdirectorato General for Biodiversity. Directorate General for the Environment and Forestry Policy.
- SEO/Birdlife.

**MORE INFORMATION**

- <http://www.seo.org>
- <http://www.marm.es>

# Environmental surveillance

In 2008 there were a reduction in the number of administrative offences was reported, although criminal offences increased by 7,9% in relation to the previous year

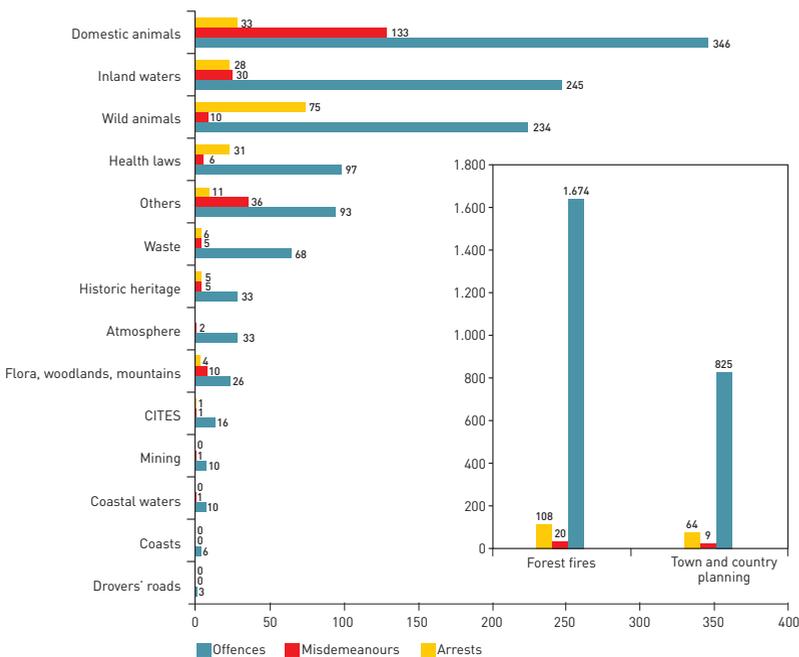
ENVIRONMENTAL OFFENCES REPORTED BY THE CIVIL GUARD

		2003	2004	2005	2006	2007
Offences	Criminal	3,047	3,358	5,028	3,701	3,993
	Administrative	150,218	164,118	157,492	150,151	131,472
Arrests		386	465	883	930	366

Source: Produced on the basis of data obtained from SEPRONA  
 Note: Only actions related to the environment are included.

The number of administrative offences reported by the Civil Guard's Nature Protection Service (SEPRONA) has been dropping since 2004, with the decrease between 2006 and 2007 being 12.4%. Criminal offences increased slightly in 2007 with respect to 2006.

ENVIRONMENTAL CRIMES AND ARRESTS, 2006



Note: "Others" refers to environmental actions not undertaken by SEPRONS.

Source: Produced on the basis of data obtained from SEPRONA

Forest fires continue to head the list of most committed offences, a long way ahead of land-use planning offences in second place. Third place is occupied by offences against domestic animals, just ahead of those committed in inland waters and against wild animals.

When assessing these figures it should be noted that inspection campaigns are occasionally undertaken in certain areas, which inevitably leads to an increase in offences recorded in these areas.

The number of arrests made in 2007 decreased by 60% with respect to 2006. This significant decrease is due in large part to the drop in arrests due to land-use planning offences, which have decreased from 337 in 2006 to 64 in 2007.

#### NOTES

- To calculate this indicator, in this edition only those actions by the Civil Guard related to the environment have been included; SEPRONA's actions unrelated to the environment have been omitted.

#### SOURCES

- Civil Guard Public Information Office. Directorate General for the Police and Civil Guard. Ministry of the Interior.
- Nature Protection Service (SEPRONA). Directorate General for the Police and Civil Guard. Ministry of the Interior.

#### MORE INFORMATION

- <http://www.guardiacivil.org>