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Conservation status of freshwater habitats and aquatic species of Community interest

In response to the degradation of biodiversity, the European Commission adopted the Habitats Directive in 1992. The directive aims to ensure the protection and management of wild species and natural habitats “of Community interest” because they are considered to be the most threatened, vulnerable, rare or endemic. In particular, the directive requires¹ the application of conservation measures and regular reporting on the status of these habitats and species.

These assessments serve to direct the actions to be implemented to ensure or restore good conservation status for habitats and species of Community interest, update the network of “Natura 2000” sites in which these habitats and species are found, and assess the effectiveness of national and European environmental policies. For the 2007-2012 reporting period, only 26% of the assessments performed in France reported favourable conservation status for all habitats and species of Community interest, and the situation is even more concerning for freshwater habitats and aquatic species (just 15%).

A directive aimed at preserving biodiversity in Europe

Biodiversity, and more specifically the ecological functions of ecosystems, is responsible for a number of services in daily life, including climate regulation, crop production, water purification, etc. However a number of threats, some of which go beyond borders and are exclusively linked to human activities, are affecting ecosystems: the fragmentation and destruction of natural environments, over-exploitation of

wild species, introduction of invasive alien species, (industrial, agricultural, etc.) pollution and climate change.

The Habitats Directive² and the Birds Directive³ were the first main nature conservation instruments within the European Union (apart from overseas territories, since France did not transpose the directive for these areas). These texts are essential components of the EU strategy adopted in 2011, which aims to halt “the loss of biodiversity and the degradation of ecosystem services in the EU by 2020 [and restore] them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss.”⁴

1. Each Member State can be prosecuted by the European Court of Justice if it does not comply with its commitments. This occurred for France with its failure to adequately designate sites and provide an insufficient impact assessment system.
2. Council Directive 92/43/EEC of 21 May 1992, on the conservation of natural habitats and of wild fauna and flora.
3. Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds.
4. EU Biodiversity Strategy to 2020, European Union, 2011.

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More specifically, the Habitats Directive aims to promote the maintenance of biodiversity by defining a common framework for management and conservation of natural land-based, aquatic or marine habitats and species of fauna and flora of Community interest, while taking account of economic, social and cultural requirements and regional and local specifics. Through this directive, Member States undertake, for these habitats and species to:

- > regularly report on their conservation status;
- > implement conservation actions;
- > create a network of sites, called the "Natura 2000" network, where these species and sites are found;
- > set up a system for assessing the impacts of projects associated with them.

Member States must also report on their action to the European Commission so that it can assess progress.

The concept of habitats and species of Community interest meets the need to identify priority ecosystems with regard to their status, to threats encountered and the need to quickly implement conservation measures. Therefore:

- > habitats of Community interest are those considered to be endangered in their natural range, or with a reduced natural range, or offering remarkable examples of characteristics belonging to one or more of the eleven biogeographical regions. Of the 233 habitats listed in Europe, categorised into 9 major types of environment (coastal habitats; dunes; freshwater; heath & scrub; grasslands; rocky habitats; forest; bogs, mires & fens; marine habitats), France is home to 132;
- > species of Community interest include endangered species or vulnerable species (considered likely to become endangered in the near future if the factors causing the threat persist), rare species (small population, and although not currently endangered or vulnerable, at risk of becoming so) or endemic species (unique to a specific area). Of the thousand animal and plant species identified in Europe and categorised into 9 taxonomic groups (mammals, reptiles, amphibians, fishes, arthropods, molluscs, vascular plants, non-vascular plants, other species), 312 are present across France.

Habitats or species of Community interest are listed in the Directive's Annex. The Habitats Directive differentiates between species of Community interest that need to be conserved by implementing specific measures, such as by being identified as Natura 2000 sites (Annex II), those needing strict protection across the entire territory (Annex IV) and those whose taking in the wild and exploitation may be subject to specific regulations (Annex V). Habitats that need to be conserved by implementing specific measures (for the Natura 2000 network) are also listed (Annex 1).

Categorisation of habitats and species as per the Habitats Directive



Natural habitats

- requiring specific measures (Annex 1)



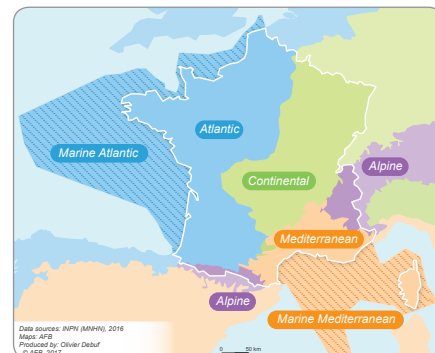
Animal and plant species

- requiring specific measures (Annex II)
- requiring strict protection (Annex IV)
- likely to be subject to management measures (Annex V)

The Directive also requires the designation of Special Areas of Conservation (SACs – Annex III) in order to restore or maintain favourable conservation status for the habitats listed in Annex I and the species listed in Annex II. Together with the sites created under the "Birds" Directive, they form the Natura 2000 network.

Habitats and species of Community interest are distributed across the European Union's eleven land-based and seven marine biogeographical regions. These areas have been defined according to their vegetation, climate and geology, and each area has a uniform distribution of habitats and species.

Biogeographical regions in France



France has:

- > four land-based regions: Atlantic (coastal areas in Western Europe with flat lands, cliffs and large estuaries), Alpine (high-altitude mountain ranges with a cold and hostile climate, forests, rocky peaks, including the Alps and Pyrenees), Continental (heart of Europe, primarily agricultural), Mediterranean (warm and dry Southern European regions, characterised by mountains, grasslands, islands and long coastlines);
- > two marine regions: Marine Atlantic (North-East Atlantic and North Sea), Marine Mediterranean (Mediterranean Sea).

The regions were defined by the European Commission's working groups and have changed over time to take into account improved knowledge and new countries which have joined the European Union. The list of species of Community interest expected to be found in the biogeographical regions has also changed, e.g. to take into account changes to species distribution and improved knowledge. This means that reference lists for habitats and species need to be updated before each report.



Implementation of the Habitats Directive in France

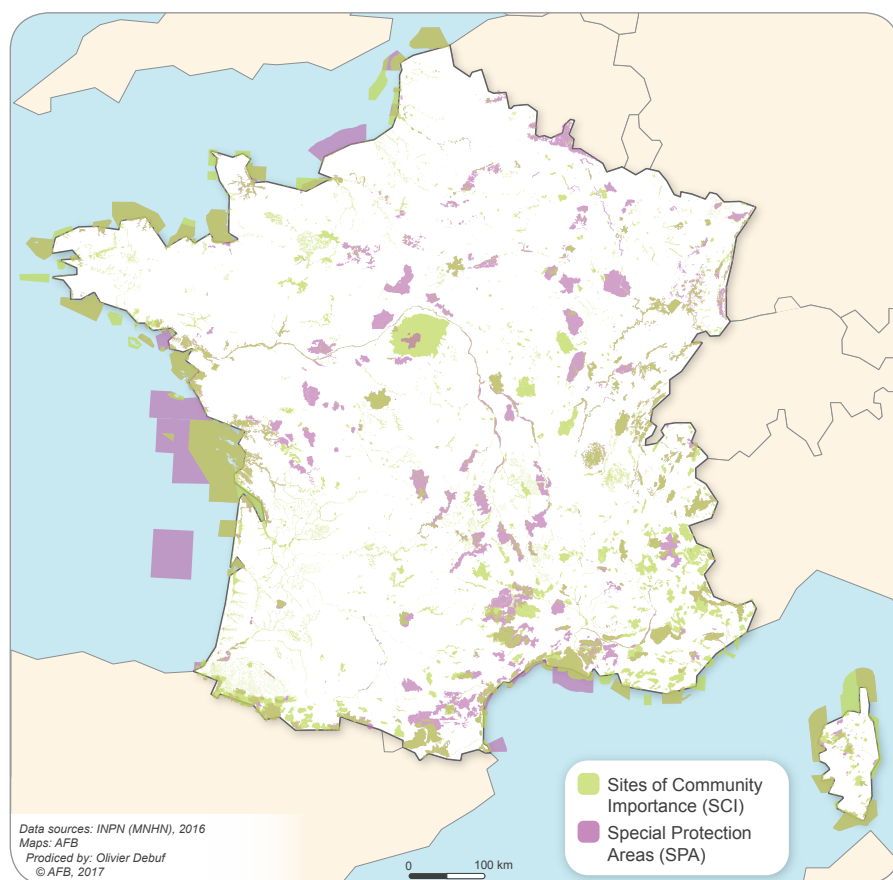
The “Natura 2000” network of sites with habitats and species of Community interest was created in order to identify territories that need to be conserved. Sites were identified to protect a sufficient proportion of wild species and habitats of Community interest. This proportion varies depending on their conservation status in the biogeographical region. The worse the status of a habitat or species, the more the network needs to protect a large proportion of the area or population. The approach used is based on the analysis of various parameters, including the structures and functions of the type of natural habitat concerned, the area of the type of habitat nationally, and the size and density of the species population compared to the population present across the country⁵.

The Natura 2000 network is made up of SACs designated under the Habitats

Directive, and Special Protection Areas (SPAs) aimed at conserving wild bird species (or used as mating, moulting, hibernation or stopover areas for migrating birds) under the “Birds” Directive.

SAC designation requires several stages:

- > each Member State uses the criteria outlined in Annex III of the Habitats Directive to draw up a list of sites that are home to natural habitats and wild animal and plant species listed in Annexes I and II of the Habitats Directive;
- > after discussions with Member States, particularly via specific seminars for each biogeographical region, the European Commission uses these national lists to determine⁶ a list of Sites of Community Importance (SCIs) in each region. This list may not exclude sites for socio-economic reasons;
- > within six years of a site being identified as an SCI, the Member State must establish the site as a SAC and implement measures to maintain or restore favourable conservation status.

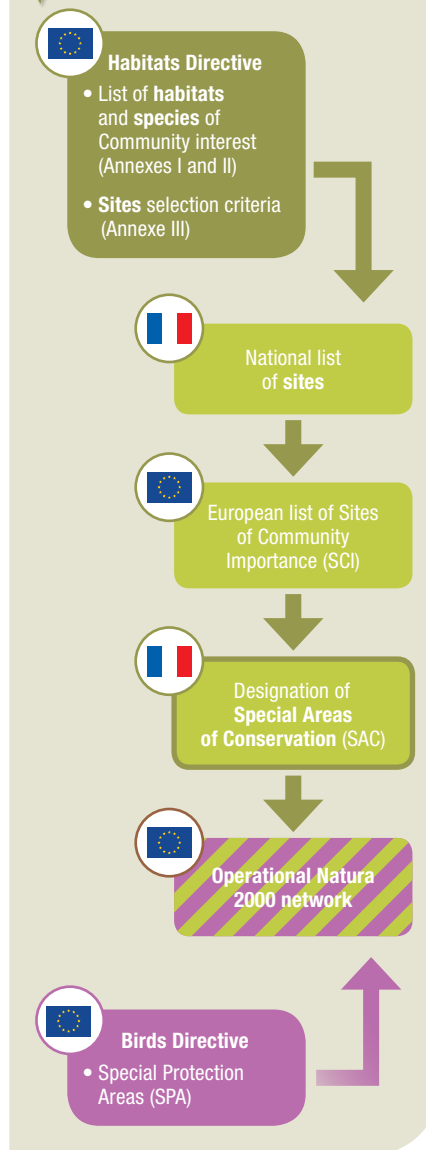


5. Based on Annex III of the Habitats Directive.

6. Following approval from the “Habitats” Committee, made up of Member State representatives and chaired by a European Commission representative.

7. See INPN.

SAC designation stages



The list of sites is not fixed and must take into account periodic assessments carried out every six years in each biogeographical region. It is revised and added to regularly and annually (generally involving corrections to site areas, following precise mapping carried out when drawing up site management documents). For land-based areas in France, the list is considered complete as the network is deemed sufficient.

In September 2016, France had 1,369 Sites of Community Importance⁷, of varying nature (wetlands, marine and coastal areas, agricultural and pasture lands, rocky, wooded and marine areas) and size (from a few hectares to thousands of hectares).

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For each Natura 2000 network site in France, a DOCUMENT of OBJECTIVES (DOCOB) must define the appropriate management measures to be implemented to avoid habitat degradation and disruption to species. These measures are based on a report of the site's natural heritage, including an inventory and mapping of habitats and species, and on socio-economic diagnostics of human activities and their effects. These DOCOBs are drawn up by a steering committee that brings together all stakeholders across a given territory (public State bodies, environmental associations, users, etc.). The committee is chaired by a local authority, or if not possible for land-based sites and

systematically for marine sites, by a State representative. Technical production is entrusted to a designated organisation.

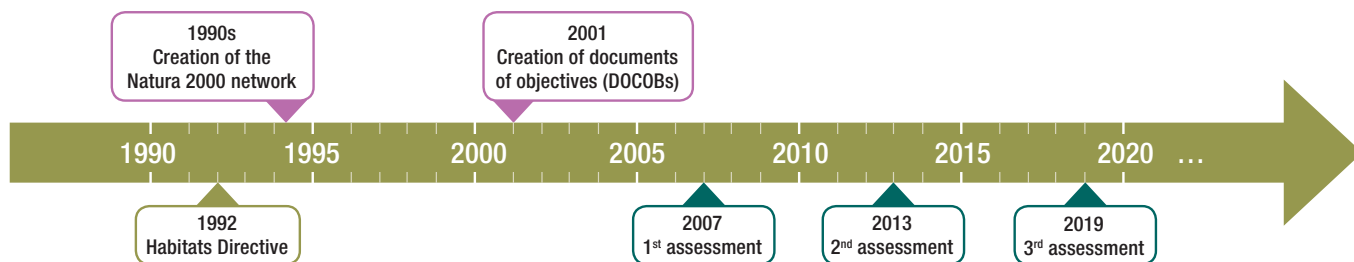
An impact analysis system checks that projects authorised by the public authorities do not damage habitats and species of Community interest. In this instance, only projects in the public interest may be authorised according to strict avoidance, reduction or mitigation rules⁸.

Finally, the Directive requires Member States to assess the conservation status of habitats and species of Community interest across their territory every six years for each Natura 2000 site and then perform a consolidated assessment for

each biogeographical region (including Natura 2000 sites). This information is used to establish the health of part of the biodiversity (habitats and species of Community interest) and help implement appropriate protection and management policies.

These assessments must be returned to the European Commission. France transposed the Habitats Directive into national law in 2001⁹ and has already carried out two assessments. The first report was published in 2007 for the 2001 - 2006 period. The second was completed in 2013 for the 2007 - 2012 period. The next report will be published in 2019 for the 2013 - 2018 period.

Stages for implementation of the Habitats Directive in France



Reporting on the assessment of the conservation status of habitats and species of Community interest

Member States must produce a report every six years on the application of the measures taken under the Directive, and submit it to the European Commission. The report includes an assessment of the conservation status of the habitats and species in question, the conservation measures implemented and an assessment of the impact of said measures. In return, the Commission writes a summary report using the documents submitted by the Member States and assesses progress made since the Habitats Directive came into effect.

This system ensures that:

> the European Commission can assess the extent to which EU regulations are implemented, make recommendations or take new measures or review laws for greater effectiveness;

> the European Environment Agency (EEA) can improve knowledge of the environment across Europe;
 > Member States can check that the Directive is properly implemented and assess the effectiveness of their national policies and any conservation measures taken;
 > citizens can be informed of the status of biodiversity and any actions carried out.

These reports must be published¹⁰. In France, it is the National Museum of Natural History (MNHN)¹¹ which publishes them on the INPN website¹². The European Commission also publishes the results for the European public¹³. Data from the reports is used in the French landscapes and data information system (SINP) and vice versa.

8. See the French Environment Code.

9. Ordinance 2001-321 of 11 April 2001 pertaining to the transposition of EU directives and the implementation of certain provisions of EU law concerning the environment. The terms of this transposition are stated in Articles L. 414-1 and 2 (and following) of the French Environment Code.

10. Pursuant to the Aarhus convention on access to information, public participation in decision-making and access to justice in environmental matters in the EU.

11. Since 2017, by the mixed research unit PatriNat, which includes the National Center for Scientific Research (CNRS) and MNHN, and soon the French agency for biodiversity (AFB).

12. inpn.mnhn.fr

13. europa.eu



Principles for assessing the conservation status of species and habitats

The methodology for assessing the conservation status of habitats and species of Community interest was developed for the whole of Europe¹⁴, and then applied and adapted to France by the National Museum of Natural History (MNHN).

The conservation status of a species or habitat is assessed for each of the biogeographical regions where the species or habitat exists. So if a species is present in Alpine, Continental and Mediterranean regions, three distinct assessments are performed. The four parameters used for calculating conservation status are as follows:

- > for a species: natural range, population status, habitat status and future prospects;
- > for a habitat: natural range, area, structure and specific functions, and future prospects.

Conservation status assessment therefore includes diagnostic information on the current status, as well as future prospects and potential changes to the status, based on threats that can be predicted and assessed.

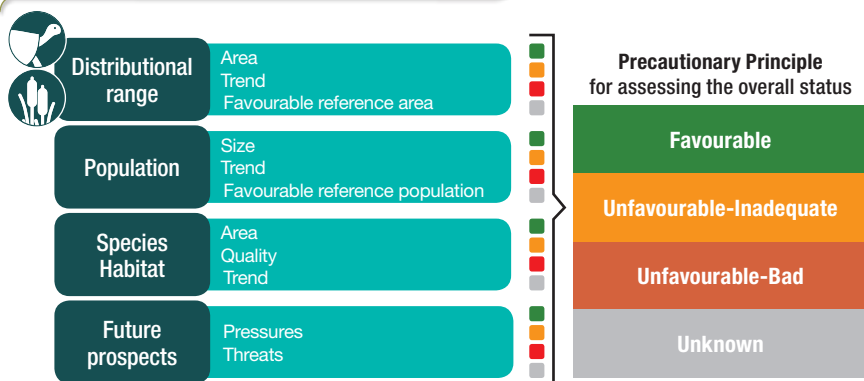
Conservation status is assessed for each of these parameters. It may therefore be:

- > “favourable”: the habitat or species is prospering (in both qualitative and quantitative terms), the future prospects for the vitality of species populations or habitat structures and functions are favourable, and conditions (ecological, climatic, etc.) are favourable for species or habitats. Favourable conservation status is the overall goal to be achieved and maintained for all types of habitats and species of Community interest;
- > “unfavourable-inadequate”: habitats and species are not endangered, but management and policies need to change for the habitat or species to return to favourable status;
- > “unfavourable-bad”: habitats or species are in serious danger of extinction, at least within the region;
- > “unknown”, e.g. lack of adequate knowledge.

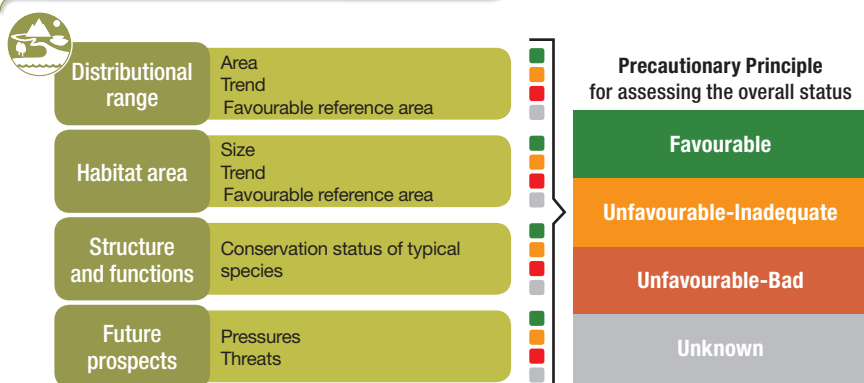
A decision on overall conservation status then depends on a precautionary principle whereby the worst conservation status for the four parameters applies.

The trend is also estimated between two reporting periods for unfavourable assessments. This gives a conservation status that is therefore improving, declining, stable or unknown. It is determined either based on monitoring data, the opinion of an expert, or by combining the comparison of assessment results between two periods and the opinions of qualified individuals. This does not necessarily imply a change in class between two assessment periods, since a species can present an improving trend but a status that remains unfavourable.

Species conservation status assessment rules



Habitat conservation status assessment rules



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14. Habitats Committee, *Note to the Habitats Committee - Assessment, monitoring and reporting of conservation status – Preparing the 2001-2007 report under Article 17 of the Habitats Directive* (DocHab-04-03/03 rev.3). European Commission, DG Environment, 2005.

EVANS D. & ARVELA M., *Assessment and reporting under Article 17 of the Habitats Directive. Explanatory notes and guidelines for the period 2007-2012*. Final Draft, European Topic Centre on Biological Diversity, 2011.

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Methods for performing assessments in France

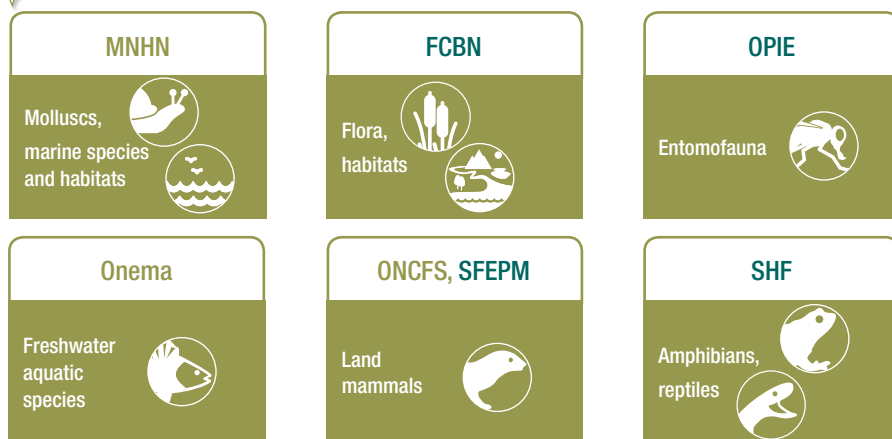
In order to perform national assessments for the 2007-2012 period, France organised a large-scale programme of work coordinated by the Ministry of the Environment, and run by the MNHN's natural heritage service (SPN). This assessment, performed in partnership with a number of organisations drew on a large number of qualified individuals, scientists and natural space management bodies (Federation of National Botanical Conservatories - FCBN, National agency for hunting and wildlife board - ONCFS, French national agency for water and aquatic environments - Onema, National agency for insects and their environment - OPIE, French agency for study and protection of mammals - SFEPM, National herpetological agency - SHF) organised into thematic expertise groups. The National Council for the Protection of Nature (CNP) was also consulted.

In order to facilitate the assessment work, MNHN also provided some other tools in addition to those distributed across Europe¹⁵, including a methodological guide adapted to the French context¹⁶ on the basis of the European explanatory report, an IT application for online data entry to facilitate report drafting, and a database

compiling all the information collected and analysed¹⁷.

The 2007-2012 assessment took place in several stages between 2010 and 2012: creation of a network of partners and information meetings, preparation of tools, data collection, performance of assessments and proofreading, approval.

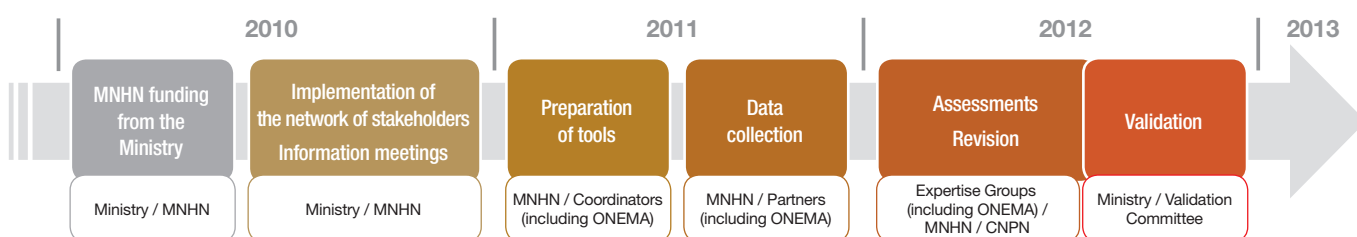
Contribution of different stakeholders to the 2007-2012 assessment in France



Public Institution - Association

Nota bene: in 2017, some bodies merged to form the French agency for biodiversity - AFB (e.g. Onema and FCBN), and a mixed research unit was created by MNHN and CNRS (and soon AFB), called UMS Patrinat.

Stages of the 2007-2012 assessment in France



15. Available from the European Environment Agency.

16. BENSETTITI F., PUISSAUVE R., LEPAREUR F., TOUROULT J. & MACIEJEWSKI L., *Évaluation de l'état de conservation des habitats et des espèces d'intérêt communautaire – Guide méthodologique – DHFF article 17, 2007-2012*, MNHN, 2012.

17. Available on the INPN website.



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Reading warning

The results presented below pertain to the assessments performed for biogeographical regions. They focus solely on habitats¹⁸ and species¹⁹ in freshwater aquatic environments in land-based biogeographical regions. It is important to take into account the limitations of these results:

- > using different analysis methods (measurements, expert opinions) sometimes makes it hard to compare results;
- > the assessment rules are inspired by the precautionary principle, i.e. if just one parameter is bad, the overall conservation status for the species or habitat will be bad;
- > the complexity of the concept of “trends”, due in part to the fact that it can be estimated in different ways (expert opinions, monitoring data, etc.)

and also to the fact that it does not necessarily correspond to a change in conservation status class (a species can present an improving trend between two reporting periods but maintain unfavourable status);

- > the “future prospects” assessed are sometimes determined depending on forecast information, such as climate change;
- > the list of species of Community interest for each biogeographical region can change between two reporting periods following changes to species classifications or changes in the distribution or knowledge of some species;
- > the value of some parameters change not due to actual developments, but due to the use of different assessment methods or improved knowledge since the last report.

Species selected for this analysis:

Group	Latin species name	Vernacular species name
Bivalves	<i>Margaritifera margaritifera</i>	Freshwater pearl mussel
	<i>Margaritifera auricularia</i>	Spengler's freshwater mussel
	<i>Unio crassus</i>	Thick shelled river mussel
	<i>Unio elongatulus</i>	-
Insects	<i>Leucorrhinia caudalis</i>	Lilypad whiteface
	<i>Macromia splendens</i>	-
	<i>Ophiogomphus cecilia</i>	Green snaketail, green gomphid
	<i>Leucorrhinia albifrons</i>	Dark whiteface
	<i>Stylurus flavipes</i>	Yellow-legged club-tailed dragonfly
	<i>Oxygastra curtisii</i>	Orange-spotted emerald
	<i>Leucorrhinia pectoralis</i>	Large white-faced darter
	<i>Coenagrion mercuriale</i>	Southern damselfly, or yellow-spotted whiteface
	<i>Gomphus graslinii</i>	-
	<i>Graphoderus bilineatus</i>	-
	<i>Carabus nodulosus</i>	-
	<i>Coenagrion ornatum</i>	-
Crustaceans	<i>Astacus astacus</i>	Noble crayfish
	<i>Austropotamobius pallipes</i>	Freshwater white-clawed crayfish
	<i>Austropotamobius torrentium</i>	Stone crayfish
Fishes	<i>Petromyzon marinus</i>	Sea lamprey
	<i>Lampetra planeri</i>	Brook lamprey
	<i>Lampetra fluviatilis</i>	European river lamprey, river lamprey
	<i>Acipenser sturio</i>	Sturgeon
	<i>Alosa alosa</i>	Allis shad
	<i>Alosa fallax</i>	Twaite shad
	<i>Salmo salar</i>	Atlantic salmon
	<i>Thymallus thymallus</i>	Grayling
	<i>Chondrostoma toxostoma</i>	South-west European nase
	<i>Leuciscus souffia</i>	Vairone
	<i>Rhodeus sericeus amarus</i>	European bitterling
	<i>Barbus meridionalis</i>	Mediterranean barbel
	<i>Misgurnus fossilis</i>	Weatherfish
	<i>Cobitis taenia</i>	Spined loach
	<i>Aphanius fasciatus</i>	Mediterranean banked killifish
	<i>Zingel asper</i>	Apron
	<i>Cottus petiti</i>	-
	<i>Cottus gobio</i>	Bullhead
	<i>Coregonus lavaretus</i>	Common whitefish, Powan
	<i>Barbus barbus</i>	Barbel
	<i>Salmo cettii</i>	Mediterranean trout
Amphibians	<i>Bufo viridis</i>	European green toad
	<i>Bufo calamita</i>	Natterjack toad
Mammals	<i>Lutra lutra</i>	European otter
Gastropods	<i>Anisus vorticulus</i>	Ramshorn snail
Total number: 44		



Nota Bene : 45 species are concerned. However the asp, mentioned in the Habitats Directive and assessed for the 2001-2006 report was considered an “introduced species”, and was therefore not assessed in the 2007-2012 report. That leaves 44 species that were analysed.

Habitats selected for this analysis:

Category	Habitat name
Standing water	Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)
	Oligotrophic waters containing very few minerals generally on sandy soils of the West Mediterranean, with <i>Isoetes</i> spp.
	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or the <i>Isoeto-Nanojuncetea</i>
	Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.
	Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation
	Natural dystrophic lakes and ponds
	Mediterranean temporary ponds
Running water	Alpine rivers and the herbaceous vegetation along their banks
	Alpine rivers and their ligneous vegetation with <i>Myricaria germanica</i>
	Alpine rivers and their ligneous vegetation with <i>Salix elaeagnos</i>
	Constantly flowing Mediterranean rivers with <i>Glaucium flavum</i>
	Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation
	Rivers with muddy banks with <i>Chenopodion rubri p.p.</i> and <i>Bidention p.p.</i> vegetation
	Constantly flowing Mediterranean rivers with <i>Paspalo-Agrostidion</i> species and hanging curtains of <i>Salix</i> and <i>Populus alba</i>
	Intermittently flowing Mediterranean rivers of the <i>Paspalo-Agrostidion</i>
Total number: 15	



18. In the prioritised list of habitats of Community interest (Appendix I of the Habitats Directive) under “Freshwater Habitats”.

19. According to SPN, TAXREF v9.0, *référentiel taxonomique pour la France : méthodologie, mise en œuvre et diffusion*, MNHN, 2015: the species of Community interest in the “Freshwater habitats”, “Marine and Freshwater”, and “Continental (land-based and freshwater)”. Species from the “Continental (land-based and/or freshwater)” are not taken into account in the analysis.

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A concerning situation for standing water

Of the 132 types of habitats assessed in France during the 2007-2012 period, fifteen fell within the “freshwater habitats” category:

> 7 in standing water such as lakes or ponds;

> 8 in running water such as permanent or intermittent rivers.

These habitats were the subject of 39 assessments spread fairly evenly across the four biogeographical land-based regions: 31% for the Mediterranean region, 26% for the Alpine region, 23% for the Continental region and 20% for the Atlantic region.

Their distribution demonstrates rich diversity in the Mediterranean and Alpine

regions, characterised by specific habitats such as temporary Mediterranean ponds, alpine rivers and intermittent rivers.

Located at the crossroads of a host of biogeographical areas, France (along with Italy) has the widest range of habitats to be assessed in the European Union. It therefore accounts for the most habitat assessments (10% of 3,117) and freshwater habitat assessments (10% of 405), ahead of Italy and Spain.

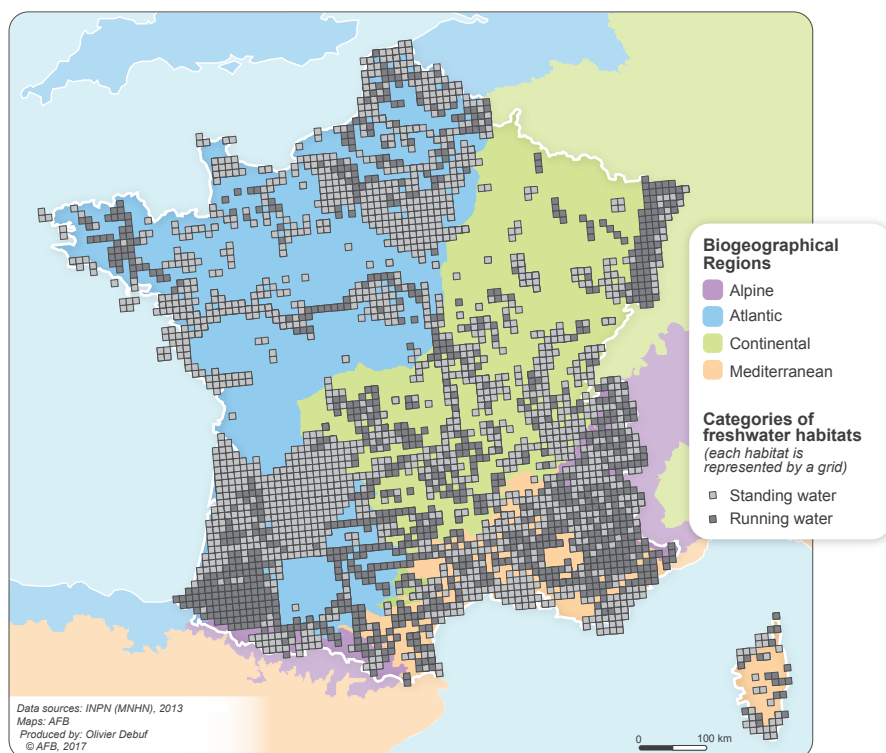
Freshwater habitats assessed in France in 2007-2012

	Habitats	Assessments
All habitats	132	302
Freshwater habitats	15 (i.e. 11%)	39 (i.e. 13%)
 Standing water	7	20
 Running water	8	19

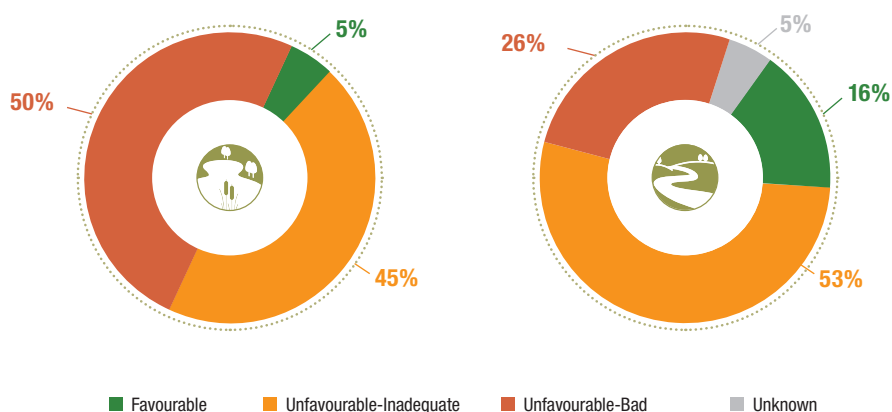


During the 2007-2012 period, half the assessments of standing water habitats had an unfavourable-bad conservation status, especially in Mediterranean and continental regions, and with respect to the area and future prospects parameters. Only one assessment reported good conservation status, in the Atlantic region. This concerned natural eutrophic lakes, characterised by high levels of nutrients in the water (mainly phosphorus and nitrogen), due to the geological and geomorphological context.

The situation is less critical for habitats in running water, as one quarter of the assessments reported an unfavourable-bad status. The parameters leading to unfavourable statuses are mainly the structure, specific functions and future prospects. The most-well preserved habitat is water courses of plain to montane levels (approx. 1,500 m altitude) with the *Ranunculus fluitantis* and *Callitriche-Batrachion* vegetation.



Overall conservation status of freshwater habitats of Community interest for 2007-2012

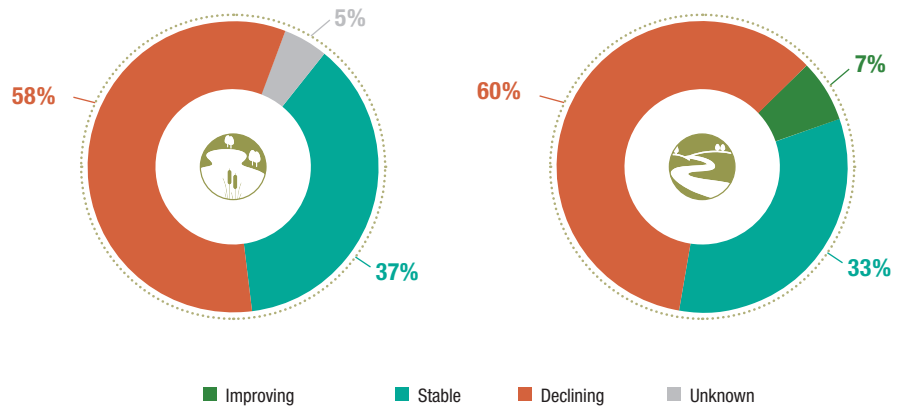




Just over half of the assessments showed a change in status between 2001-2006 and 2007-2012. Of these, 55% were upgraded from an unfavourable-bad to an unfavourable-inadequate status. However, this does not necessarily reflect real improvements. The changes are generally due to the acquirement of new knowledge (more accurate data, taxonomic review) or the use of different assessment methods (e.g. change in thresholds).



Unfavourable conservation status trends for freshwater habitats of Community interest between 2001-2006 and 2007-2012



The unfavourable assessments of the various types of habitats generally reflect an overall decline. This is the case for 58% of the 19 unfavourable assessments for

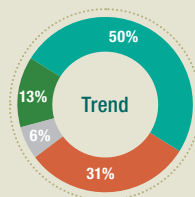
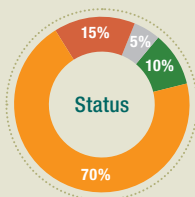
standing water and 60% of the 15 unfavourable assessments for running water. Alpine rivers seem to be the only habitat showing improvement.



Conservation status of alpine rivers

These water courses are found at medium and high altitude (Jura, Alps, Pyrenees, Cevennes) and are characterised by fast-moving waters. The habitat is periodically affected by strong currents and is very sensitive to changes in the hydrological regime, mainly due to anthropogenic causes (dams, containments, gravel pits)²⁰.

70% of the assessments in the 10 European countries show an unfavourable-inadequate status with half of the results showing a stable trend. In France and its cross-border regions (Germany, Spain and Italy) the results are the same, with a few exceptions - the Spanish Mediterranean region has favourable status, and while the Italian Alpine region shows a declining trend, the French Alpine region is showing improvement.



20. BENSETTITI F., GAUDILLAT V. & HAURY J., *Cahiers d'habitats Natura 2000. Connaissance et gestion des habitats et des espèces d'intérêt communautaire. Tome 3 - Habitats humides*, Ministry of the Environment/MNHN, 2002.

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Declining trend for crustaceans and stable trend for some fish species

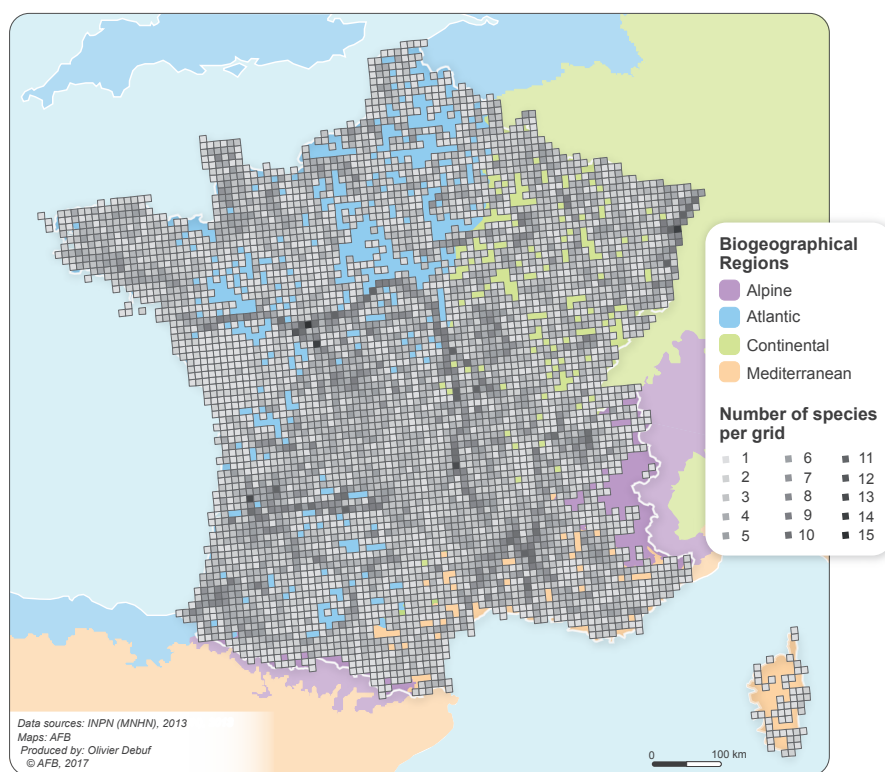
Among the 1200 or so plant and animal species in the Habitats Directive annexes, 312 have been identified and assessed in France, including 44 that are dependent on freshwater habitats, at least for part of their life cycle. Of these 44 species, the most commonly found groups are

fish (48%), insects (27%), bivalves (9%) and crustaceans (7%). The other groups (amphibians, gastropods and mammals) only have 4 species. The natural diversity of France that comes from its range of habitats is demonstrated by the highest number of assessments in Europe (707²¹ of 7,350).

Species dependent on freshwater habitats were the focus of 110 assessments across Metropolitan France: 33% in the Continental region, 29% in the Atlantic region, 24% in the Mediterranean region and 14% in the Alpine region.

Freshwater species assessed in France in 2007-2012

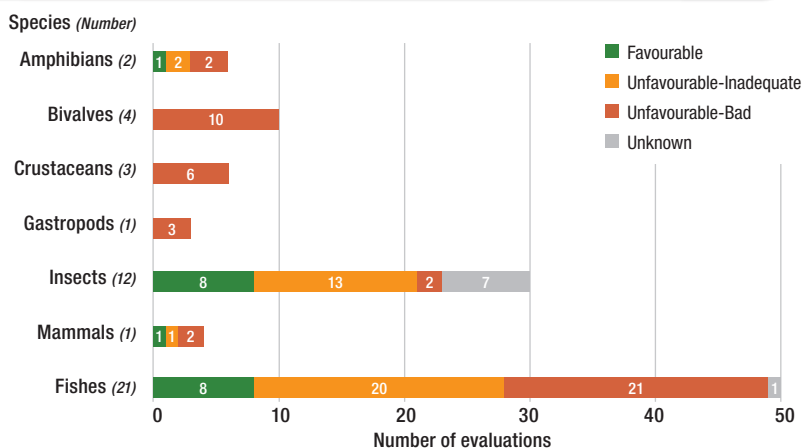
	Species	Assessments
All species	312	707
Freshwater species	44 (i.e. 14%)	110 (i.e. 16%)
 Amphibians	2	6
 Bivalves	4	10
 Crustaceans	3	6
 Gastropods	1	3
 Insects	12	30
 Mammals	1	4
 Fishes	21	51



Over the 2007-2012 period, 43% of the assessments of these species reported an unfavourable-bad conservation status. This mainly concerned assessments of bivalves (mussels), crustaceans (crayfish) and gastropods (Ramshorn snail).

The conservation status is considered favourable in some biogeographical regions for three species of dragonfly (orange-spotted emerald, yellow-legged club-tailed Dragonfly, and the green snake-tail), five species of fish (barbel, Amur bitterling, spined loach, common whitefish and the bullhead), the otter and European green toad.

Overall conservation status of freshwater species of community interest for 2007-2012



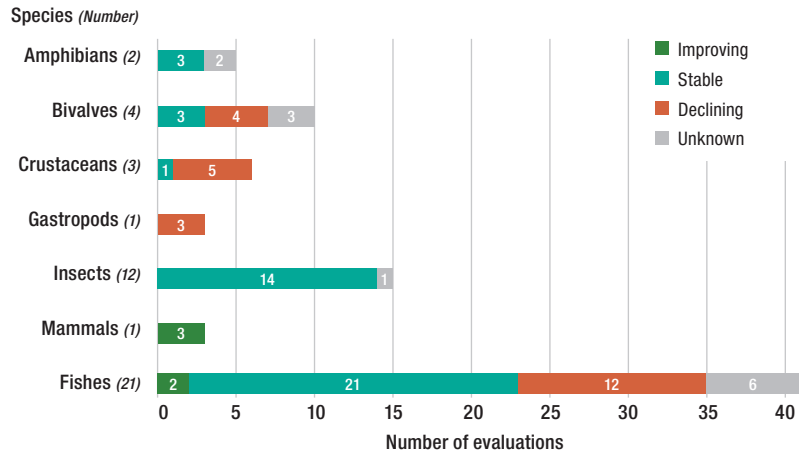
21. One assessment was not reported as it concerns a species deemed extinct (*Coenonympha hero*).



Status changes were observed for 40% of the assessments, 33% were considered real changes. 32 result from increased availability of information or the use of a different method.

As for unfavourable statuses, the ramshorn snail, crustaceans and bivalves saw their conservation status deteriorate and some insects, amphibians and fish species stabilised. The situation improved for the otter and, mainly in the Mediterranean region, for the twaite shad and Mediterranean killifish.

Unfavourable conservation status trends for freshwater species of Community interest by group between 2001-2006 and 2007-2012



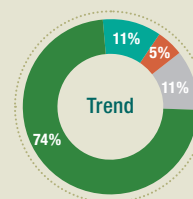
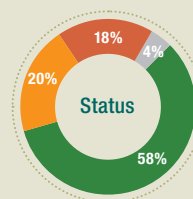
Conservation status of the European otter (*Lutra lutra*)

The European otter is a semi-aquatic mammal previously found throughout metropolitan France (excluding Corsica). Today it is primarily observed in the *Massif Central* and along the Atlantic coast. The factors affecting its decline have been hunting (banned since 1972), road kill and habitat loss.

In Belgium and Luxembourg, for example, it is protected by the same LIFE project²². In France, it is legally protected²³ and no longer endangered. It has started to recolonise some of its former territories, particularly through measures implemented under a national action plan²⁴. This plan particularly provided²⁵ more information on the distribution of the species in France and issues associated with its conservation through standardised data collection. It also helped determine the areas favourable to its establishment, provide training for road management authorities and create road crossings in order to reduce road-related mortality.

Finally, the plan improved cohabitation conditions with the aquaculture sector by implementing information campaigns and developing protection systems for fish farms to prevent otters from taking farmed fish.

Of the 25 European countries concerned, 58% of the assessments reported a favourable status, and 74% of the unfavourable assessments showed improvement. In France, its conservation status is favourable in the Atlantic region for both periods (2001-2006 and 2007-2012), as well as in all of Spain and the Italian Mediterranean region for 2007-2012. On the other hand, it had an overall unfavourable status in the Continental biogeographical region, especially in France and its bordering countries (Belgium, Luxembourg and Germany). However, there is an improving trend in these territories.



22. Life Otter Projet.

23. Ordinance of 23 April 2007 establishing the list of land mammals protected across France and protection methods, consolidated on 7 October 2012.

24. KUHN R., *Plan national d'actions en faveur de la loutre d'Europe Lutra lutra 2010-2015*, Ministry of the Environment/SFEPM, 2009.

25. *Agir pour la Loutre d'Europe - Retour sur 5 ans d'actions 2010-2015*, Ministry of the Environment, 2016.

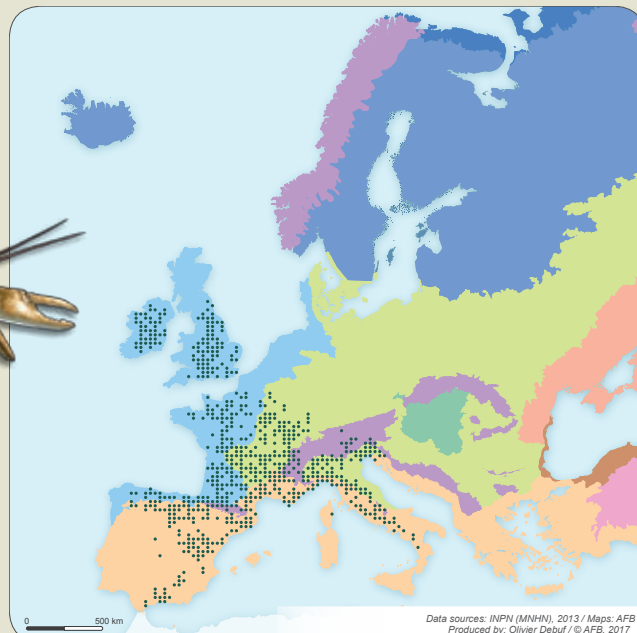
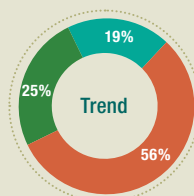
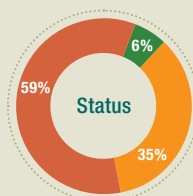


Conservation status of the Freshwater white-clawed crayfish (*Austropotamobius pallipes*)

The white-clawed crayfish is a native freshwater crustacean that lives in rivers, streams, canals and lakes, and that used to be present in large numbers across France. Populations degenerated due to habitat deterioration and the introduction of invasive alien species²⁶, some of which carried the deadly aphmanomyces disease (crayfish plague).

It is protected by the Order of 21 July 1983²⁷ preventing the deliberate alteration and deterioration of its environment. It can, however, be fished in France, but measures are in place to regulate fishing conditions (gear, number of days, size).

Of the 9 European countries concerned, 59% of the assessments reported an unfavourable-bad status, and 56% of them showed a declining trend. France and its cross-border regions report the same, to an even greater extent.

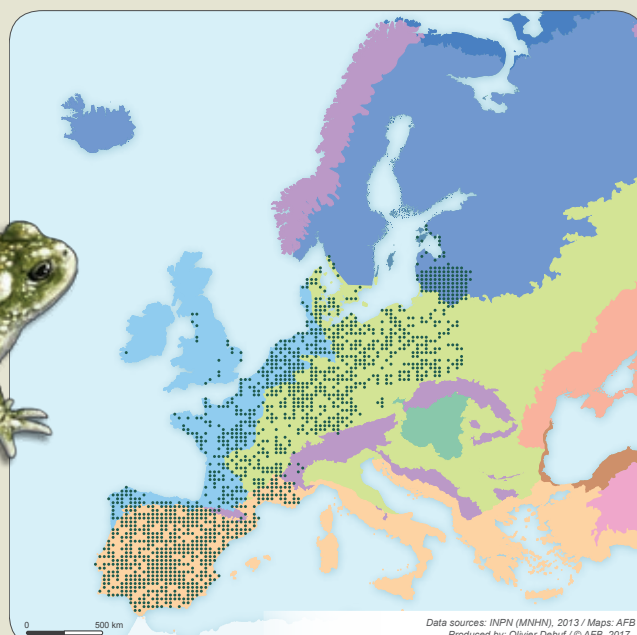
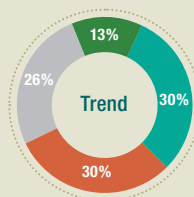
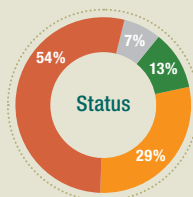
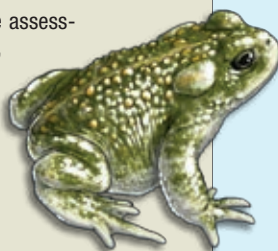


Conservation status of the natterjack toad (*Bufo calamita*)

The natterjack toad is a nocturnal species that lives in diverse environments (grass, meadows, etc.) and reproduces in temporary pools of water (ditches, puddles). It is found across France, especially in the South, and is on the list of amphibians legally protected by the Order of 19 November 2007²⁸.

Natterjack toads are affected by pressure from agricultural activities (inputs, fertilisation), which potentially damage spawning sites, as well as road traffic during Spring migration.

Of the 17 European countries concerned, 83% of the assessments reported an unfavourable-bad status. However, trends seem to vary. The conservation status is generally unfavourable in France and neighbouring regions (except in Spain, where its status is favourable in the Mediterranean and Atlantic regions) for the two periods (2001-2006 and 2007-2012). However, the status seems to have stabilised in the Mediterranean and Continental regions (except Belgium), but is unknown in the other French regions.



26. MAGNIER J. & PETIT K., *L'enquête nationale sur les écrevisses*, OIEau/Onema, 2013.

27. Ordinance of 21 July 1983 on the protection of native crayfish (amended in 2000 and included in the Environmental Code).

28. Ordinance of 19 November 2007 establishing the list of amphibians and reptiles protected across France and protection methods.



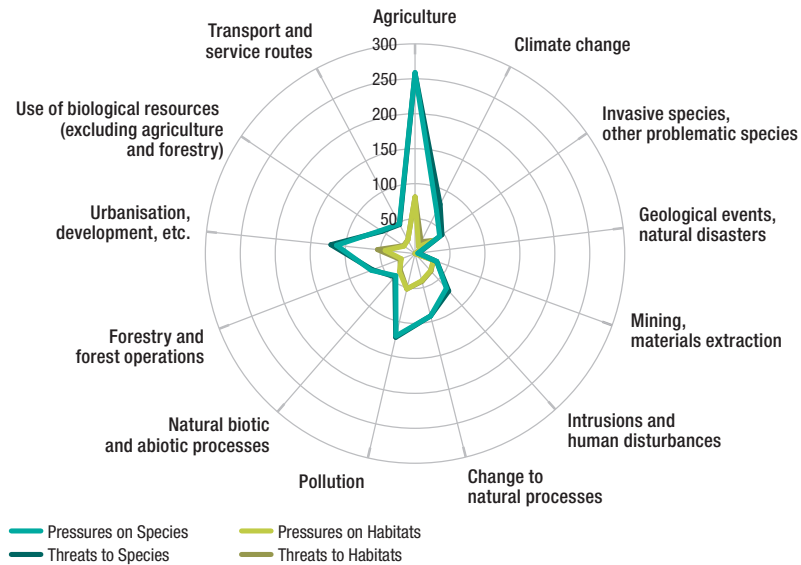
Factors influencing conservation status

To understand the causes of the poor conservation status of habitats and species, each assessment is accompanied by information on past or current natural or anthropogenic pressures/influences and future or foreseeable natural or anthropogenic threats/influences that have or could have a combined or individual effect on the medium- or long-term sustainability of the species or habitat. However, since little data is available, the list and pressure and threat levels are mostly assessed based on extrapolation or the opinions of qualified individuals.

For habitats, the primary problems cited are agriculture (especially soil fertilisation), pollution (of surface water) urbanisation and human-induced changes to hydraulic conditions (e.g. drainage, recalibration, filling). If threats and pressures of "high importance" are considered, the introduction of invasive species can be added to the list.

For species, the general findings are the same, with a clear dominant influence of agriculture. Fishes, crustaceans and bivalves are and will also be impacted by climate change. Amphibians, insects and gastropods are particularly affected by land development and urbanisation (housing, road infrastructure, etc.).

Pressures and threats cited for 2007-2012



Nota bene: Level 1 categories only (2 available categories), including all levels of importance are shown.

The actions and measures implemented to preserve and protect habitats and species can be communicated in the assessment. For habitats, the measures most frequently cited are initiatives to restore water quality and the hydrological regime, followed by those related to wetlands and changes to agricultural practices.

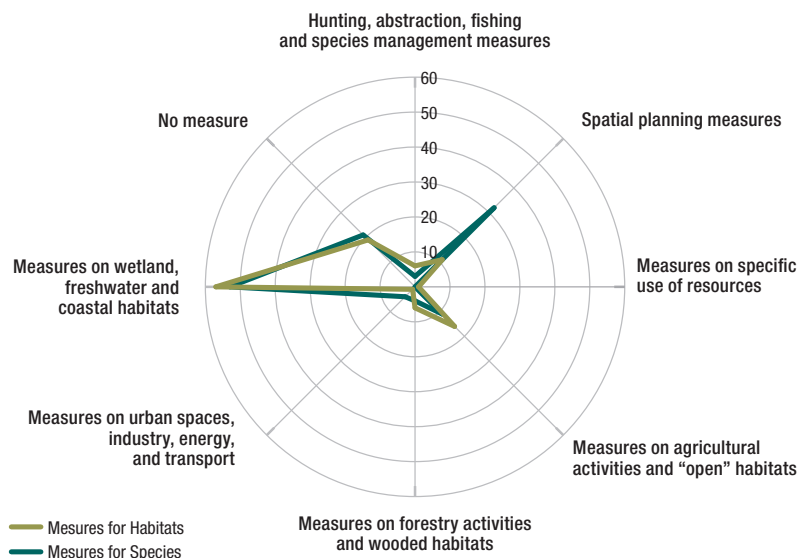
For species, only measures for insects, mammals and fishes are given. These mainly correspond to initiatives to restore

water quality and the hydrological regime, legally protect habitats and species, and create protected areas.

In general, very few precise assessment tools on the actual effectiveness of measures have been put in place, which is a real challenge for the implementation of the Natura 2000 policy in France in the years ahead. This is essential for making the connection with the assessments carried out and summarised in this report.



Conservation measures cited for 2007-2012



May 2017

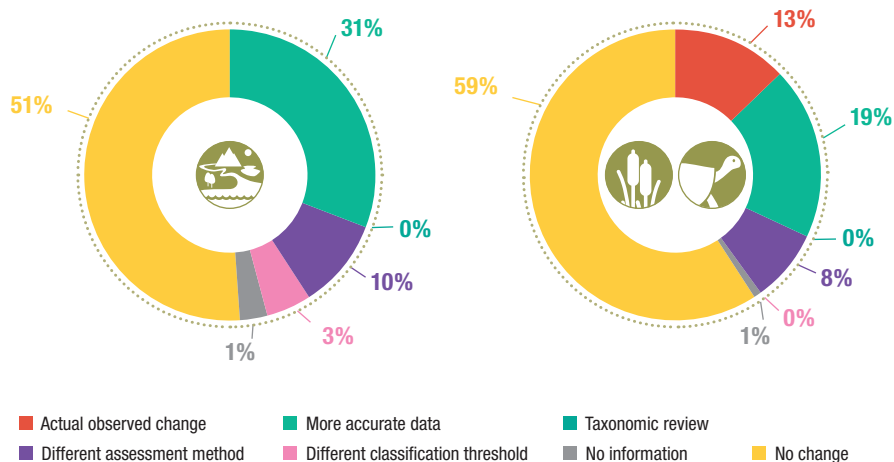
Efforts to be continued to improve knowledge

The assessments submitted to the European Commission also include an assessment of the changes made between the different reporting periods. Organisations may specify whether the changes observed are real changes to the conservation status of habitats or species, or if the observed changes are mainly due to different reporting conditions (e.g. more accurate data, a taxonomic review, different methods - in particular changes in thresholds for classification calculations).

Between the 2001-2006 and 2007-2012 reporting periods, over half the assessments (51% for habitats, 59% for species) showed no change. For the remaining assessments, the improvement of knowledge, (the opportunity to use more accurate data) and changes to assessment methods (the use of a protocol or different classification thresholds) are the most cited changes (15% for habitats and 8% for species – but this particularly applies to gastropods and insects).

It seems very important for this assessment, which was carried out on a biogeographical level and relied partially on expert opinions, to be based on a well-organised long-term monitoring system. This is somewhat the case for aquatic environments and related species thanks to the contribution of the French Water Information System (SIE), although it needs to be improved and widely implemented for land and marine environments.

Type of changes in conservation status cited for 2007-2012



A system that assesses the effectiveness of implemented measures and policies also needs to be broadly developed on a site-wide scale. Patrinat UMS²⁹ is currently heading up reflection into this focusing on different scales, including biogeographical regions, sites and plots. It could use the approach already implemented for marine sites³⁰.

These tools are recommended by the latest inspections³¹ and will allow the most effective measures to be taken and their effects to be monitored in order to respond to the conservation status changes observed. This could mark a major turning point for the Natura 2000 network's management system in France.

This mission will contribute to the revision of the French National Strategy for Biodiversity which will be coordinated by the French agency for biodiversity (AFB)³² in partnership with various stakeholders.



29. Combining MNHN and the CNRS (and soon AFB).

30. *Marine Protected Area Dashboard*, AAMP, 2016.

31. ALLAG DHUISME F., BARTHOD C., DOMALLAIN D., JOURDIER G., REICHERT P. & VELLUET R., *Analyse du dispositif Natura 2000 en France*, CGEDD/CGAAER, 2015.

32. AFB was created on 1 January 2017 by the French Act of 8 August 2016 for the recovery of biodiversity, nature and landscapes. It was formed by merging four pre-existing organisations into a single institution, all working for biodiversity and the quality of marine, aquatic and plant environments and outstanding protected areas - the French national agency for water and aquatic environments (Onema), the French agency for marine protected areas (AAMP), National Parks for France (PNF) and the Pole of resources and skills for nature (Aten).



Note on methods

The figures and map-related information come from French assessment databases on the conservation status of fauna, flora and habitats of Community interest (2007 version and 2013 version and European datasets).

The results presented are from the assessments carried out in the various biogeographical regions. They focus only on the habitats³³ and species³⁴ of freshwater aquatic environments in the land-based biogeographical regions. No assessments were carried out in overseas territories.

Analysis of assessment data revealed several limits:

- > depending on the extent of knowledge on species and habitats, different analysis methods were used (complete quantitative data, extrapolation of sampling data, opinions of qualified individuals), which

sometimes makes the results difficult to compare;

- > the assessment rules are inspired by the precautionary principle, i.e. if just one parameter is bad, the overall conservation status for the species or habitat will be bad;
- > future prospects are determined based on current pressures on species and habitats, and threats that could compromise their future sustainability. These threats can be wide-ranging and include the context of climate change. Therefore, in some cases, future prospects are classified as “unfavourable-inadequate” or “unfavourable-bad” due to anticipated climate change;
- > the list of species of Community interest for each biogeographical region can change between two reporting periods following changes to species classifications or

changes in the distribution or knowledge of some species;

- > changes in conservation status category observed between two reporting periods do not always stem from a change in the biological situation of the species or habitat in question. For the most part, these modifications relate to improved knowledge rather than a real change in the conservation status of species and habitats³⁵. Changes in methodology made between two periods also could have influenced the conservation status findings;

- > finally, measuring the change in overall conservation status between two reporting periods is difficult, especially due to the assessment method. The overall conservation status is based on an assessment of four distinct parameters evaluated for each species or habitat.

33. In the prioritised list of habitats of Community interest (Annex I of the Habitats Directive), under “Freshwater Habitats”.

34. According to SPN, *TAXREF v9.0, référentiel taxonomique pour la France : méthodologie, mise en œuvre et diffusion*, MNHN, 2015: the species of Community interest in the “Freshwater habitats”, “Marine and Freshwater”, and “Continental (land-based and freshwater)”. Species from the “Continental (land-based and/or freshwater)” are not taken into account in this analysis.

35. BENSETTITI F. & PUISSAUVE R., *Résultats de l'état de conservation des habitats et des espèces dans le cadre de la directive Habitats-Faune-Flore en France, Rapportage « Article 17 », Période 2007-2012*, Ministry of the Environment/ MNHN-SPN, 2015.

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This document was drafted under the national master plan for water data and was submitted to the relevant water information system partners for consultation.

For more information

Data on the assessment of the conservation status of species and habitats of Community interest can be found at:

<https://inpn.mnhn.fr/programme/rapportage-directives-nature/presentation?lg=en>

Find this document on the Internet at:

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