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CONVENTION ON THE CONSERVATION OF EUROPEAN WILDLIFE
AND NATURAL HABITATS

**Bern Convention Group of Experts
on the Conservation of Invertebrates**

/

**Groupe d'experts de la Convention de Berne
sur la conservation des invertébrés**

Tirana, Albania (23-24 September 2013)

/

Tirana, Albanie (23-24 septembre 2013)

Relevant actions on Invertebrates

/

Mesures appropriées concernant les Invertébrés

**National reports and contributions /
Rapports nationaux et Contributions**

*Compilation prepared by
the Directorate of Democratic Governance*

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Progress in the conservation of invertebrates in Austria, 2008-2013

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Matters of nature conservation remain the concern of Provincial, rather than National Government in Austria.

The Provincial Government of Burgenland reports:

A number of conservation projects involving butterflies have been completed, including mapping the distributions of species listed in Annex II of the Habitats Directive (HD) within Burgenland Natura 2000 sites and establishing the appropriate management requirements, establishing management of meadows in the Raab valley as habitat for blue butterflies (Lycaenidae), establishing management of semi-arid grasslands at the edge of the Leithagebirge hills for protecting threatened butterfly species. There is also on-going work to record the past and present distribution of Fenton's wood white (*Leptidea morsei*) in Burgenland.

Work involving other insect groups includes mapping the distributions of selected threatened Orthoptera species in N. Burgenland, mapping the distribution of the ground beetle *Carabus variolosus* (HD Annex II species) in the Mattersburg area and mapping the distributions of selected insects occurring in the lakeside meadows of the Neusiedler See.

The distribution of Desmoulin's horn snail (*Vertigo moulinsiana*), an HD Annex II-listed species, has been investigated in the areas of Güssing and the Neusiedler See.

Protection measures continue to be implemented for endemic freshwater mussel species such as *Unio crassus*, including situations of threat from hydraulic engineering and water management disturbances.

Protection measures continue to be implemented for endemic freshwater crayfish species including situations of threat from hydraulic engineering and water management disturbances and also from competition with the invasive signal crayfish, *Pacifastacus leniusculus*.

The Provincial Government of Lower Austria reports:

A Forestry Management Plan for the Krems valley has been developed and includes recording the species of xylophilous beetles present and recognising their needs for dead wood, old trees etc. This information may help provide a basis for a protection and management strategy that could potentially also encompass aspects of ecosystem service provision.

All available existing data on the distributions of HD Annex II beetle species within Natura 2000 areas has been consolidated and a deficit-analysis conducted. Rectifying gaps in present knowledge of distributions will allow an appropriate monitoring strategy to be developed and implemented.

A number of butterfly conservation projects have been undertaken, including determining the distribution and identification and implementation of appropriate protection measures for the mountain alcon blue (*Phengaris (Maculinea) rebeli*) and its foodplant *Gentiana 3larkia3*, improving the protection and increasing the amount of suitable habitat for the southern festoon (*Zerynthia polyxena*) within vineyard landscapes in the area of Langenlois, and providing further support for the protection and growth of populations of HD Annex II butterfly species in grassland habitats across Lower Austria.

Most of the above initiatives were undertaken within the framework of the Austrian Rural Development Plan. Also, the implementation of the Austrian Agri-Environment Programme includes measures for the protection of butterflies and other invertebrates.

The Provincial Government of Upper Austria reports:

A pilot project has been undertaken to elucidate the basic requirements for the protection of threatened species from selected insect groups including beetles of the families Lucanidae, Melandryidae, Scarabaeidae, Tenebrionidae and wasps of the families Vespidae and Sphecidae. The project will provide a template for further such work on groups for which there is presently little information available.

A longer term study of freshwater pearl mussels (*Margaritifera margaritifera*) was begun in 2011 to document present populations and also identify other areas of potentially suitable habitat with the long-term aims of reintroduction and recolonisation of the species in such areas.

Work was begun in 2012 to improve knowledge of the distribution of the thick-walled river mussel (*Unio crassus*) in Upper Austria and to develop a long term sustainable strategy for the protection of the species.

Work has been undertaken to ensure the stability of existing populations of the European crayfish (*Astacus astacus*) and facilitate its recolonisation in selected areas representing the main large-scale landscape areas in Upper Austria.

The Provincial Government of Salzburg reports:

Continued effort to make inventories and record distributions of selected species or groups of invertebrates, such as HD Annex II Odonata and Lepidoptera in Salzburg Province and carabid beetles of the Gaisberg Nature Reserve.

Conservation management measures for selected species or groups of invertebrates within Protected Areas, including management for Orthoptera in the Taugelgries Natura 2000 site, alpine pasture management plan for selected endemic invertebrate species in the Gerzkopf Natura 2000 site, management for the protection of the scarce fritillary butterfly *Hypodryas maturna* in the Untersberg foothills Natura 2000 site, and retaining dead wood resources for the beetle *Cucujus cinnaberinus* in the floodplain forests of the Salzach river.

Further promotion and development of measures to reduce the adverse effects of light pollution on nocturnal invertebrates, particularly insects. The use of sodium vapour lighting is preferred over the old, mercury vapour lights as highlighted in the 2006 report to this Group of Experts. Most recently, “warm white” LED sources have been identified as having even less attractive effect on night-active insects and are thus the most invertebrate-friendly. In addition, light casings of blinkered design should be used to prevent unwanted brightness escaping upwards or sideways and fitting ultra-violet filters to halogen lights reduces their disturbance to nocturnal invertebrates. Implementing such measures is important for all external lighting systems at football pitches, ski slopes, buildings etc.

Protected status has been given to a seasonally ephemeral pond in Salzburg city and is probably the first ever successful conservation intervention focussed on 4larkia diversity. The small pond was found to contain at least 150 ciliate taxa, with 8 species new to science. The pond has been made a local “Natural Monument” for ciliated Protozoa.

The Provincial Government of Vorarlberg reports:

The implementation of various habitat and other land or water management initiatives may have positive influences on the conservation of invertebrates. Examples include the implementation of management strategies in some Natura 2000 areas, restoration of freshwater habitats through the EU Water Framework Directive and the Austrian Water Management Programme, the claiming, since 2008, of almost 1000 ha of land as new Protected Areas under the Austrian Agri-Environment Programme (OPÜL) and the now annual “Meadow Management Championships” in which there is competition to find the biologically/ecologically “best” meadows of the area. The category “unfertilised meadows” is of particular relevance to invertebrate conservation. [Note from Expert:

these “championships” are also now held in some of the other Austrian Provinces, including Salzburg].

Distribution studies have been undertaken for a variety of insects. [No further details provided].

The Provincial Government of Vienna reports:

Activities concerning the conservation of insects include recording the presence and status of the cerambycid beetle *Rosalia 5larki* in the Lainzinger Tiergarten Nature Reserve, with suggestions for management measures, and recording the presence and threat status of species of underwing moth *Catocala* spp, (Noctuidae) in Vienna. Information publications aimed at a general audience include new editions of the butterflies in Vienna and the wild bees in Vienna information folders (both 2011), a new information folder on the giant peacock moth (*Saturnia pyri*) in Vienna (2013) and publication of the first volume of a new series of books about “Insects in Vienna”.

An inventory has been made of the species of snails of the genus *Vertigo* occurring in the Vienna part of the Donau-Auen National Park.

An investigation has been carried out to determine the present status of freshwater mussels and crayfish species listed in the HD Annexes and/or in the Vienna Nature Protection Order. This study was completed in 2007, but not reported at the last (2008) meeting of this Group of Experts. A new edition of the information folder on snails of the family Helicidae in Vienna was published in 2010.

New “green areas” for insects and other invertebrates have been established in different parts of the city, including a butterfly meadow at the Europaplatz in Vienna’s 6th District, “nectar islands” in Süssenbrunn and other “green oases” in Vienna.

No information from the other regional government offices in Austria has been made available.

CROATIA / CROATIE**Republic of Croatia****Report to the Bern Convention Group of Experts on Invertebrates**

Prepared by the State Institute for Nature Protection, September 2013

Report period: 2008-2013**Changes in legislative framework and related activities**

The Ministry of Environmental and Nature Protection is responsible for the nature protection in Croatia. Under Nature Protection Act (Official Gazette 80/2013), threatened species according to the National Red List, stenoendemic species and species protected by the EU legislation or international conventions are strictly protected in Croatia. It is forbidden to deliberately disturb, catch, collect, kill strictly protected species and degrade or destroy its breeding and resting areas. Keeping, transport, selling, exchange and offering for sale or exchange of strictly protected species is also forbidden.

Natura 2000

As one of the obligations as a member state of the European Union, Republic of Croatia had to proclaim the areas important for conservation of threatened European species and habitats that will become part of the Natura 2000 Ecological Network. Regulation on the Ecological Network is in the process of adoption. According to the Croatian proposal, sites that will become part of Natura 2000, world largest ecological network, are occupying more than 30 percent of the land territory. 31 invertebrate species listed on the ANNEX II of the Habitats Directive are present in Croatia. Priority species are: *Osmoderma eremita*, *Rosalia 6larki*, *Nymphalis vaualbum*, *Callimorpha quadripunctaria* and *Austropotamobius torrentium*. There are 33 invertebrate species from ANNEX IV, and seven from ANNEX V (**Table 1.**). There are 180 Ecological Network sites designated for the conservation of invertebrate species.

Table 3. List of invertebrate species from annexes of the Habitat Directive, present in Croatia

GROUP	SPECIES	HD II	HD IV	HD V
BIVALVIA	<i>Congerius kuscieri</i>	X	X	
	<i>Lithophaga lithophaga</i>		X	
	<i>Pinna nobilis</i>		X	
	<i>Unio crassus</i>	X	X	
COLEOPTERA	<i>Carabus variolosus</i>	X	X	
	<i>Cerambyx cerdo</i>	X	X	
	<i>Graphoderus bilineatus</i>	X	X	
	<i>Leptodirus hochenwarti</i>	X	X	
	<i>Lucanus cervus</i>	X		
	<i>Morimus funereus</i>	X		
	<i>Osmoderma eremita</i>	X	X	
	<i>Rosalia alpina</i>	X	X	
CRUSTACEA	<i>Astacus astacus</i>			X
	<i>Austropotamobius pallipes</i>	X		X
	<i>Austropotamobius torrentium</i>	X		X
	<i>Scyllarides latus</i>			X
ECHINODERMATA	<i>Centrostephanus longispinus</i>		X	
GASTROPODA	<i>Anisus vorticulus</i>	X	X	

	<i>Helix pomatia</i>			X
	<i>Vertigo angustior</i>	X		
	<i>Vertigo moulinsiana</i>	X		
GORGONACEA	<i>Corallium rubrum</i>			X
HIRUDINEA	<i>Hirudo medicinalis</i>			X
LEPIDOPTERA	<i>Callimorpha quadripunctaria</i>	X		
	<i>Coenonympha oedippus</i>	X		
	<i>Eriogaster catax</i>	X	X	
	<i>Euphydryas aurinia</i>	X		
	<i>Euphydryas maturna</i>	X	X	
	<i>Leptidea morsei</i>	X	X	
	<i>Lopinga achine</i>		X	
	<i>Lycaena dispar</i>	X	X	
	<i>Phengaris arion</i>		X	
	<i>Phengaris nausithous</i>	X	X	
	<i>Phengaris teleius</i>	X	X	
	<i>Nymphalis vaualbum</i>	X	X	
	<i>Papilio alexanor</i>		X	
	<i>Parnassius apollo</i>		X	
	<i>Proserpinus proserpina</i>		X	
	<i>Zerynthia polyxena</i>		X	
	Proterebia afra dalmata – Croatian amendment of Annexes of the Directive	X	X	
ODONATA	<i>Aeshna viridis</i>		X	
	<i>Coenagrion ornatum</i>	X		
	<i>Cordulegaster heros</i>	X	X	
	<i>Leucorrhinia caudalis</i>		X	
	<i>Leucorrhinia pectoralis</i>	X	X	
	<i>Lindenia tetraphylla</i>	X	X	
	<i>Ophiogomphus cecilia</i>	X	X	
ORTHOPTERA	<i>Saga pedo</i>		X	
Grand Total		31	33	7

Review of activities in the period of 2008 to 2013

Research

From the last report on conservation of invertebrates, there was a significant positive trend in the research of invertebrates. Although there are many taxonomic groups for which there are no experts, there are more and more young biologists interested in the research of invertebrates, engaged by various institutions (Faculty of Science, Croatian Natural History Museum, State Institute for Nature Protection, NGO's, etc.). Besides increasing international cooperation and EU funded projects, certainly large impulse contributing to the research and conservation of invertebrates is engagement of young researchers in gathering faunistic data for the proposal of the Natura 2000. Currently, a large, internationally funded project is in progress, through which it is planned to engage eminent taxonomic experts for collecting and revising all existing literature data and data from museum

collections and performing research for collecting new data on priority taxonomic groups, which will be included in the faunistic database of the Nature Protection Information System.

Action plans for the conservation of invertebrates

Currently, only Action plan for the conservation of the Alcon Blue butterfly is under development.

Red lists

From 2003 State Institute for Nature Protection has published 16 Red Lists of threatened species, out of which seven are for invertebrates (sea anemones, butterflies, ground beetles, stoneflies, dragonflies, terrestrial and freshwater snails and underground fauna). Nine Red Books are published, out of which two for invertebrates (dragonflies and cave fauna), with Red Book of butterflies in preparation. All the Red Lists are available on the Internet web site of the State Institute for Nature Protection (<http://www.dzrp.hr/vrste/crveni-popis-biljaka-i-zivotinja-rh/crveni-popis-biljaka-i-zivotinja-republike-hrvatske-146.html>).

According to the national Red List of threatened taxa, there are currently more than 400 threatened invertebrate species in Croatia.

National Nature Protection Information System

In order to improve the compilation, classification and availability of biodiversity data, which will serve as a basis for efficient implementation of the Natura 2000, especially in the segment of monitoring the Natura 2000 network and conducting analyses in line with Article 6 (3, 4) of the Habitats Directive, the project *IPA 2007 Establishment of fauna and speleological databases (CRO fauna and CRO speleo) as part of the National Nature Protection Information System (NNPIS)* was carried out. A special goal of the project was to develop the fauna database (CRO-fauna) and speleological database (CRO-speleo). The databases are in the final stage of development.

Educational activities

Educational activities related to invertebrate conservation are conducted continuously, including numerous lectures, publishing various publications and other educational material.

Related to the promotion of nature conservation and raising awareness among the interested public, the Ministry of Environmental and Nature Protection has established a new web portal for nature protection www.zastita-prirode.hr to provide the public with easy access to information on nature protection issues in Croatia. As part of an educational and awareness raising campaign, State Institute for Nature Protection has established the new website on IAS www.invazivnevrste.hr. This website should become a part of the Croatian early warning and rapid response system on IAS and contains lots of information about IAS in the Republic of Croatia.

CZECH REPUBLIC / RÉPUBLIQUE TCHÈQUE

CONSERVATION OF INVERTEBRATES IN THE CZECH REPUBLIC (2012-2013)

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The progress in the invertebrate conservation should be illustrated in four separate fields.

e. Red List

The last (first completed) published Red List of invertebrates (Farkač, Král & Škorpík, 2005) is still mostly regarded as valid and useful source of information. Although several attempts of its actualisation appeared (e.g. Orthopterans with new proposed list in Kočárek & al., 2013) most of the groups are regarded as validly assessed even today.

The Red List covers all the invertebrate groups, following the IUCN categories (criteria are documented only generally in spiders) and is a very important data source to the future.

2. Grid Atlases & Distributional Databases

From the period of 2011-2013 no new and printed distributional atlas of invertebrates appeared. The list of groups with atlases is therefore stable: butterflies (Beneš & Konvička, 2002), earthworms (Pižl, 2002), water molluscs (Beran, 2002), spiders (Buchar & Růžicka, 2002), cerambycid beetles (Sláma, 1998), carabid beetles (partial atlas; Skoupý (2004)), dragonflies (Dolný, Bárta and al., 2008), and also distributional study of mayflies and stoneflies based on river system mapping (Soldán et al., 1998). The distributional atlas of elateroid beetles (Elateridae, Throscidae, Melasidae, Lissomidae, Cerophytidae) is in on-line form and permanently actualized (Mertlik, 2013).

Grid maps of particular species or smaller groups of invertebrates are also published in scientific papers. Preparation of concise distributional atlases of other groups: moths ("Macrolepidoptera") (Konvička, pers. Comm.), terrestrial molluscs (Juříčková, pers. Comm.), meloid beetles, and branchiopod crustaceans are still not finished. New atlas of Orthopterans is also planned.

The on-line mapping project of grid mapping of selected species of invertebrates at the www.biolib.cz is still continuing. Through this project, designed for the public recording, is surveyed (and immediately published) distribution (on the basis of grid mapping) of beetles (e.g. *Lucanus cervus*, *Cucujus cinnaberinus*, *Oryctes nasicornis*, *Polyphylla fullo*, *Gnorimus* spp., *Oxythyrea funesta*, *Protaetia aeruginosa*, *Calosoma* spp., *Chalcophora mariana*, complete genus *Carabus*), orthopteroid insects (*Psophus stridulus*, *Gryllotalpa gryllotalpa*, *Mantis religiosa*), dragonflies, crayfish species, medicinal leech (*Hirudo medicinalis*), hymenopterans and spiders.

As the example of elateroid beetle distribution data or Biolib project shows, the trend of on-line maps is coming into praxis. The printed distributional atlases are coming slightly out of fashion due to the technological progress and large scale databasing. The largest national database of occurrence data, the **Species Occurrence Database**, held by Nature Conservation Agency of the CR is a robust source of information and in online form has been built from 2007. Today it holds over 13 millions of georeferenced records of plants and species (among these: 700 thousands records of Lepidoptera, 250 thousands of Coleoptera, 140 thousands of spiders, 110 thousand of dragonflies and 54 thousands of molluscs). As the database has centralized all the data, on which atlases of these groups were based, it holds nowadays the most complete online distributional atlas of them.

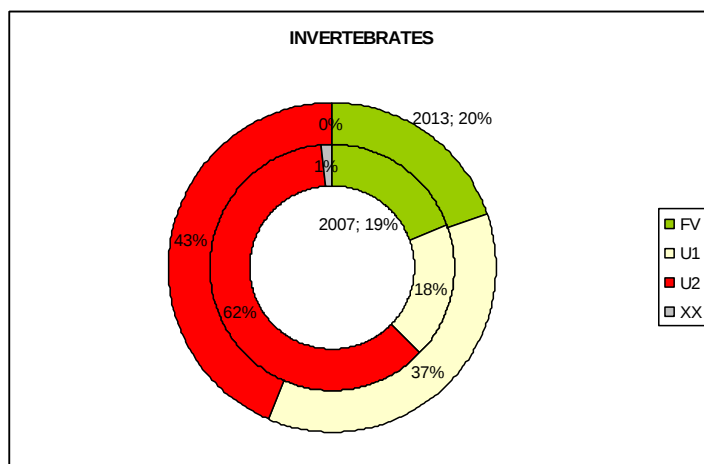
The grid maps are published via specific application "Karty druhů" (Species Cards; portal.nature.cz, under "Karty druhů"; newly form 2012). The grid maps are generated each day on

the actual data, so they represent a living grid atlas of all the biota with known occurrence in Czechia. On the card, also the available published atlas is digitalized and shown for comparison. As the specific grid data set is regarded also the distributional data from the reports under Article 17 of the Habitats Directive, covering also the Bern Convention invertebrate species (see below). The data from both terms of reporting (2007 and 2013) are published separately on these sites.

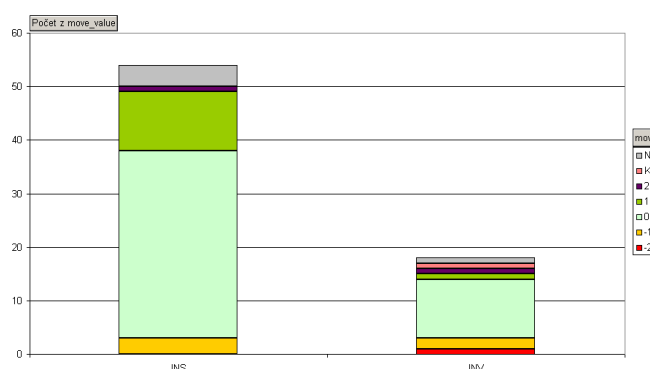
3. Legal framework (Natura 2000 , surveillance and reporting)

The status of invertebrates in the scope of national law (Nature Conservation Act, No. 114/1992) has not been changed. The last change (relevant to invertebrate conservation) was the Ministerial Decree No. 175/2006, which added the the IV-annex species into list of legally protected species. Widened, actualized and expert based list of protected species is still in the state of proposal (as reported previously).

The Natura 2000 sites designation process is finalized after the bilateral seminar in May 2011, the most of species of invertebrates were assessed as sufficiently covered. The annex species are subject of complex surveillance monitoring following standard methods aiming to the FCS statements. This surveillance is based to fulfil the requirements of obligatory reporting in six-year cycle. The year 2013 was the term of second reporting and therefore it enables to compare the results of the assessment in these two terms.



Comparison of assessments of the conservation status of invertebrate species listed in Habitats Directive (biogeographic region assessments separately, N=72) in 2007 and 2013.



Summary of status changes, among listed insects and non-insect invertebrates. The status „0“ is stable (same in 2007 and 2013), „1“ means improved, „2“ improved (from U2 to FV). Minus values mean worsened assessment.

One species was found new in CZ: *Cordulegaster heros*. One species in one region, *Carabus hungaricus* in continental region was assessed as former determination error and therefore missing.

The worsened status was assessed in 3 species, mostly due to the improved knowledge (*Callimorpha 4punctaria*, *Vertigo* spp.), the improved status was found e.g. in crayfish, hermit, *Saga pedo*, *Coenagrion ornatum* or *Anisus vorticulus*. Generally, slight general improvement was discovered. The reasons are probably biologically based or more or less result of better data correcting former sceptical expert opinions.

4. Action plans and recovery programs

Action plans are legally and formally complicated issue in the Czech Republic. In the past there were prepared more proposals of action plans for critically endangered butterfly species. Only one species – *Euphydryas maturna* was selected to the official (by ministry) agreement, the others were not although they have begun to be partially implemented in praxis. So as a result, together with long time running action plan – for *Margaritifera margaritifera* just two invertebrate action plans are agreed and officially valid. Both plans were widely commented in the last report.

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FRANCE / FRANCE

Actions menées en France pour la conservation des Invertébrés (2008-2013)

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Ce rapport concernant les Invertébrés est principalement centré sur les Insectes car c'est sur ce groupe que la vision des programmes mis en place est la plus précise. Cependant, des actions ont également été menées sur les autres invertébrés. On peut notamment citer le Plan national d'actions sur les Margaritifera (voir paragraphe 2.1.1) et l'inventaire en cours sur les Mollusques continentaux de France, coordonné par le MNHN depuis 2004.

Pour plus de renseignements : <http://inpn.mnhn.fr/espece/inventaire/I203>

1. Inventaires, cartographie et acquisition de connaissances.

1.1 Echelle nationale

L'inventaire et la cartographie des invertébrés rentrent dans le cadre du programme de L'Inventaire National du Patrimoine Naturel (INPN). Ce programme a été élaboré pour centraliser, gérer et diffuser des informations de référence métropolitaines et ultra-marines, sur les espèces, les habitats naturels, les espaces protégés et le patrimoine géologique, terrestre et marin. L'INPN, visualise et diffuse les répartitions des espèces selon plusieurs niveaux de synthèse : maillage 10 x 10 km (grille nationale ou européenne), secteur marin, département, commune et espace protégé. Ce programme est placé sous la responsabilité scientifique du Muséum National d'Histoire Naturelle (MNHN) (article L 411.5 du code de l'environnement). L'INPN est un élément central de l'Observatoire National de la Biodiversité (ONB) et du Système d'Information sur la Nature et les Paysages (SINP). Il s'appuie fortement sur le référentiel taxonomique national pour la faune, la flore et la fonge de France métropolitaine et d'outre-mer (TAXREF) élaboré par le MNHN. Depuis 2008, la mise à jour taxonomique et nomenclaturale de ce référentiel pour les invertébrés se poursuit en s'appuyant sur l'amélioration des connaissances scientifiques (notamment en phylogénie moléculaire). Cette mise à jour est une priorité en ce qui concerne les groupes pour lesquels un programme d'inventaire est en cours ou en préparation.

Pour en savoir plus :

<http://inpn.mnhn.fr>

<http://www.naturefrance.fr/>

e.I.3. Odonates

Le programme INVOD (INventaire national des Odonates), mis en place en 1985 par la Société française d'Odonatologie a été remplacé en 2005 par le programme Cilif (Complément à l'inventaire des Libellules de France) afin d'avoir des données plus précises que des données basiques de répartition (une date/un observateur/une espèce/des coordonnées géographiques). Il permet notamment d'avoir une meilleure caractérisation des sites et des micro-habitats et d'acquérir des données complémentaires orientées principalement sur l'autochtonie des espèces. Ce programme se poursuit et permet chaque année de rassembler dans une base de données complète et homogène les observations des odonatologues français (amateurs et professionnels). Cette base regroupe actuellement plus de 620 000 données.

À partir de cette base de données, un travail a été engagé pour élaborer la Liste rouge nationale des Odonates en suivant les recommandations de l'UICN. Pour cela un appel à contribution a été lancé pour recueillir toutes les données qui pouvaient ne pas être dans la base Cilif. Les analyses et les réunions du groupe d'experts se feront fin 2013. Cet important travail est porté et coordonné par la Société française d'Odonatologie et l'Opie.

Pour plus de renseignements : <http://www.libellules.org>

Afin de suivre l'évolution des populations de libellules en France, le Steli (Suivi temporel des Libellules), coordonné par la Société française d'Odonatologie, l'Opie, le Conservatoire d'espaces naturels du Nord et du Pas-de-Calais et le MNHN (Vigie-Nature) a été lancé en 2011. Le concept du protocole ne repose plus sur la récolte de données d'abondance très standardisées (transect, maillage aléatoire, ...) comme il est pratiqué traditionnellement pour des protocoles de suivi, mais sur des données de type inventaire récoltées de manière répétée sur les sites choisis par les observateurs. Cette approche beaucoup plus en adéquation avec les pratiques habituelles de relevés, paraît susciter une adhésion plus importante des réseaux naturalistes. D'abord testé dans la région Nord-Pas-de-Calais, il est maintenant déployé plus largement et des formations sont proposées pour que les gestionnaires d'espaces naturels puissent le mettre en œuvre.

Pour plus de renseignements : <http://odonates.pnaopie.fr/steli>

1.1.2. Éphémères, Plécoptères et Trichoptères

L'inventaire des Ephémères, des Plécoptères et des Trichoptères de France se poursuit. Celui-ci est coordonné par l'OPIE Benthos. La participation active des 299 bénévoles, entomologistes professionnels ou amateurs, a permis de dépasser les 60 000 données pour l'ensemble de ces trois ordres, et d'enregistrer des résultats remarquables : description d'une nouvelle espèce de Trichoptères, découvertes de plusieurs espèces nouvelles pour la France, approche des 10 000 points de collectes (stations) sur l'ensemble du territoire national métropolitain.

Pour plus de renseignements : <http://www.opie-benthos.fr>

1.1.3. Lépidoptères

Un inventaire national sur les Lépidoptères Rhopalocères et Zygènes de France métropolitaine est en cours d'élaboration. Il est coordonné par le Service du Patrimoine Naturel (SPN) du MNHN. Il s'appuie sur un réseau de partenaires en région et au niveau national ainsi que sur les déclinaisons régionales du SINP. Le comité de pilotage de l'inventaire s'est réuni en 2011 et 2012. Il renferme des représentants de chaque partenaire et des experts nationaux. Une informatisation des données d'un ancien inventaire piloté par le MNHN dans les années 1970/1980 a été réalisée. Une importante mise à jour taxonomique et nomenclaturale a été réalisée à l'échelle spécifique et infra-spécifique¹. Le prochain comité de pilotage aura lieu au cours du dernier trimestre 2013 et devra valider le vadémécum de l'inventaire qui définit notamment les actions prioritaires à mettre en place (protocole d'acquisition et de validation des données, interopérabilité des bases de données, aide à la détermination d'espèce ou de lignée infra-spécifique dont le statut reste posé, ...). Ce document définit aussi les conditions liées aux flux de données entre partenaires de l'inventaire. Pour suivre la progression de cet inventaire, on consultera le site de l'INPN.

Une collaboration entre le MNHN et un groupe d'experts sur les microlépidoptères regroupés au sein de l'association *oreina*, a été mise en place en 2013. L'objectif est une mise à jour du référentiel TAXREF pour les familles appartenant à ce groupe (plus de 4 000 espèces) afin de faciliter l'acquisition et la gestion de ces données dans les bases informatisées. Cette mise à jour a été faite pour la famille des Ptérophoridae.

Pour plus de renseignements :

<http://inpn.mnhn.fr/espece/inventaire/I007>

¹ Dupont, Drouet, Demergès & Luquet, 2013.- Révision taxinomique et nomenclaturale des Rhopalocera et des Zygaenidae de France métropolitaine. Conséquences sur l'acquisition et la gestion des données d'inventaire. Service du patrimoine naturel, Muséum national d'histoire naturelle, Paris, 191 p.

<http://www.oreina.org/>

Ce site recense de plus toutes les initiatives régionales actuelles sur les Lépidoptères.

La Liste rouge des Papillons de jour de France métropolitaine a été produite en 2012. Ce travail a été mené par le MNHN et le Comité français de l'UICN en collaboration avec l'Opie et la Société entomologique de France. Ce travail a également bénéficié de la contribution de l'Association des lépidoptéristes de France et de l'appui de l'association Noé Conservation.

Pour plus de renseignements : <http://www.uicn.fr/Liste-rouge-papillons-de-jour.html>

1.1.4. Coléoptères

L'Inventaire national des Coléoptères saproxyliques (SAPROX) est porté conjointement par le MNHN-SPN et l'Opie, ce programme a pour objectif de mettre en place un dispositif fédérateur visant à regrouper et à améliorer les connaissances sur la répartition d'un ensemble de plus de 2000 espèces de Coléoptères liées au bois mort (souches, chandelles, branches à terre, cavités d'arbres, champignons lignivores...), mais également des prédateurs qui leur sont associés. L'un des premiers objectifs à court terme est de faire une compilation des connaissances disponibles puis d'en établir une répartition par département afin d'identifier les lacunes. Une répartition plus précise est envisagée à moyen terme.

Ce programme d'inventaire qui s'adresse en premier lieu à des spécialistes, permettra de développer la connaissance faunistique et une meilleure prise en compte de ce groupe clé dans le fonctionnement de l'écosystème forestier à travers les politiques publiques de conservation de la nature. Les valorisations sont envisagées au travers de l'Inventaire national du patrimoine naturel et de contributions à des programmes particuliers d'atlas. Le lancement de ce projet national bénéficie du soutien de la région Île-de-France.

Un premier comité de pilotage s'est réuni en octobre 2012 afin de lancer le projet. Animé par le MNHN et l'Opie, il a rassemblé un important panel de près d'une trentaine de spécialistes régionaux issus d'organismes et d'associations reconnus pour leur expertise sur le sujet. Le référentiel taxonomique associé à l'inventaire s'appuie sur le travail d'expertise coordonné par Christophe Bouget (IRSTEA) pour la mise en place du Système d'Information sur l'Ecologie des Coléoptères Saproxyliques Français (French Information System on Saproxylic Beetle Ecology, FRISBEE) : un outil écologique et taxonomique pour l'évaluation de l'état de conservation des forêts. Les principaux experts nationaux ayant contribué à cette liste sont les suivants : Christophe Bouget (IRSTEA), Hervé Brustel (ESA-PURPAN), Pierre Zagatti (Opie) et Thierry Noblecourt (ONF).

Pour plus de renseignements :

http://www.insectes.org/opie/pages_dyna.php?idpage=813

<http://frisbee.nogent.cemagref.fr/index.php/fr/>

<http://inpn.mnhn.fr/espece/inventaire/I134>

Le programme FRISBEE décrit précédemment est bien avancé mais n'a pu être terminé faute de moyens. Les différents partenaires sont toujours à la recherche d'une solution pour pouvoir finaliser ce travail.

1.1.5. Acquisition de connaissances sur des groupes d'espèces par l'intermédiaire de programme de sciences participatives

De nombreux projets nationaux de sciences participatives sont regroupés au sein du programme Vigie-Nature piloté par le MNHN (<http://vigienature.mnhn.fr>). Plusieurs programmes sont ciblés sur les invertébrés :

Le Suivi Temporel des Rhopalocères de France (STERF) est un programme qui a été lancé en 2006 à l'initiative du Muséum national d'histoire naturelle. L'objectif est de pouvoir suivre l'évolution de la faune sur l'ensemble du territoire national, aussi bien dans les « milieux ordinaires » que dans les « milieux protégés ». Le protocole est similaire au « Butterfly Monitoring Scheme » mis

en place dans plusieurs autres pays d'Europe. Ce programme se poursuit et actuellement 120 sites sont suivis en France. Les résultats sont intégrés dans une base de données européenne gérée par *Butterfly Conservation Europe*. Ces données contribuent au calcul d'un indicateur de suivi de la biodiversité à l'échelle européenne concernant les espèces de Rhopalocères liées aux formations herbacées².

Pour plus de renseignements : <http://vigienature.mnhn.fr/page/suivi-temporel-des-rhopaloceres-de-France>

Le Suivi Photographique des Insectes POLLinisateurs (SPIPOLL) est un programme initié en 2010 par le MNHN, la Fondation Nicolas Hulot pour la Nature et l'Homme, la Fondation Nature & Découvertes et l'Opie. Ce programme, soutenu par le Ministère en charge de l'écologie, a pour but d'obtenir des données quantitatives à grande échelle sur les insectes pollinisateurs et/ou floricoles en mesurant les variations de leur diversité et celles de la structure des réseaux de pollinisation, sur l'ensemble de la France métropolitaine. Le SPIPOLL consiste en l'application d'un protocole simple et attrayant, reposant sur des photographies d'insectes butinant. Les collections d'images réalisées, déposées sur le site Internet dédié et identifiées par les participants, contribueront à enrichir l'analyse des scientifiques face au déclin des pollinisateurs sauvages constaté par certaines études. On dénombre actuellement 1007 participants et 11 300 collections regroupant 103 300 photos. Ce programme a déjà permis plusieurs publications dont une de rang A (Deguines *et al.*, 2012)³.

Pour plus de renseignements : <http://www.spipoll.org>

L'Observatoire des Papillons des Jardins (OBJ) est un programme initié par l'association Noë Conservation en partenariat avec le MNHN et la Fondation pour la Nature et l'Homme. À terme, c'est un véritable réseau de surveillance des espèces communes de papillons de jour qui sera mis en place, permettant de suivre l'évolution des populations et de mieux comprendre les dynamiques écologiques, en lien avec les changements climatiques par exemple.

Pour plus de renseignements : <http://www.noiconservation.org>

Un Collectif national des Sciences participatives – Biodiversité (Collectif national SPB) a été créé. Il coordonne et anime les acteurs qui portent des dispositifs de sciences participatives en France. Il est le partenaire du SINP et de l'ONB pour développer une contribution accrue de ces démarches à la mobilisation de la connaissance et est animé par la FNH et l'UNCPIE.

<http://www.naturefrance.fr/sciences-participatives/le-collectif-national-sciences-participatives-biodiversite>

1.1.6. Acquisition de connaissances sur des espèces inscrite à l'annexe II de la Convention de Berne

Deux enquêtes nationales de sciences participatives ont été initiées en 2011 sur *Lucanus cervus* et *Eriogaster catax*. L'objectif est d'améliorer la connaissance de leur répartition et de mieux évaluer leur état de conservation.

L'enquête sur *L. cervus*, grâce à son identification aisée est tournée principalement vers le grand public. Actuellement, plus de 2 300 contributeurs ont fournis 10 601 données sur tout le territoire, ce qui permet d'obtenir une carte de répartition cohérente avec la connaissance des experts, alors qu'elle était très lacunaire auparavant.

L'enquête sur *E. catax* était plutôt destinée aux naturalistes avertis à cause de la discrétion de l'espèce et de son identification plus délicate. Deux phases d'observations ont été proposées (d'avril à

² Van Swaay, C. a. M., Van Strien, A. J., Harpke, A., Fontaine, B., Stefanescu, C., Roy, D., Maes, D., Kühn, E., Ōunap, E., Regan, E., Švitra, G., Heliölä, J., Settele, J., Petterson, L. B., Botham, M., Musche, M., Titeux, N., Cornish, N., Leopold, P., Julliard, R., Verovnick, R., Öberg, S., Collins, S., Goloshchapova, S., Roth, T., Brereton, T. & Warren, M. S. 2012. The European Butterfly Indicator for Grassland species 1990-2011. Report VS2012.019, De Vlinderstichting, Wageningen: 1-31.

³ Deguines N., Julliard R., de Flores M., Fontaine C., 2012. The Whereabouts of Flower Visitors: Contrasting Land-Use Preferences Revealed by a Countrywide Survey Based on Citizen Science. *PLoS ONE* 7(9): e45822.

juin pour repérer les chenilles et leurs nids communautaires, puis de septembre à novembre pour observer les adultes pendant leur période de vol). 174 données ont ainsi été recueillies, dont 96 inédites, améliorant nettement la connaissance de cette espèce.

Pour plus de renseignements : http://www.insectes.org/opie/pages_dyna.php?idpage=741

1.2. Echelle biogéographique du domaine méditerranéen.

L'Observatoire Naturaliste des Ecosystèmes Méditerranéens (ONEM) est une association, portée par un réseau de naturalistes bénévoles, née en 2004 avec pour objectifs la mise en place d'un travail collaboratif autour de la nature méditerranéenne. Des enquêtes sont développées pour améliorer la connaissance de la répartition de certaines espèces incluant des invertébrés (espèces menacées, espèces mal connues, espèces invasives...). Ainsi, suite aux premiers inventaires visant *Zerynthia polyxana* et *Saga pedo*, d'autres enquêtes ont vu le jour : des groupes d'espèces (les ascalaphes, les branchiopodes, les cigales, les escargots méditerranéens, les sauterelles cavernicoles), ou des espèces particulières (*Vespa velutina*, *Lestes macrostigma*, *Trithemis annulata*, *Paysandisia archon*, *Scolopendra cingulata*, *Buthus occitanus*). Pour toutes ces enquêtes, un portail de saisie en ligne et d'affichage des cartographies est accessible à tous.

Pour plus de renseignements : <http://www.onem-france.org>

1.3. Echelle régionale ou départementale.

Des programmes d'atlas sont développés dans de nombreuses régions. En ce qui concerne les Lépidoptères Rhopalocères et Zygènes, ces initiatives se font en partenariat avec l'inventaire national. Parmi toutes ces initiatives, on peut notamment citer :

- L'Atlas des Libellules et Papillons de jour du Languedoc-Roussillon, lancé en 2012 en partenariat entre le Conservatoire d'espaces naturels de Languedoc-Roussillon, les Écologistes de l'Euzière et l'Opie. Un portail internet permet la saisie en ligne des données et l'affichage dynamique des cartes de répartition. Pour plus de renseignements : <http://www.libellules-et-papillons-lr.org/>
- En Midi-Pyrénées également, un atlas des papillons de jour et zygènes, coordonné par le Conservatoire d'espaces naturels de Midi-Pyrénées, a vu le jour en 2008. Pour plus de renseignements : <http://atlaspapillonsmidipyrenees.myspecies.info/>
- En Bretagne, l'association Bretagne Vivante a lancé depuis plusieurs années un atlas des invertébrés. Plusieurs groupes sont concernés : papillons diurnes, libellules, orthoptéroïdes, gastéropodes terrestres, longicornes. Pour ce dernier groupe, l'atlas, coordonné par le Groupe d'étude des Invertébrés armoricains (Gretia) a vu en 2011 la publication d'un ouvrage papier synthétisant les connaissances accumulées pendant les 6 années de l'inventaire.
- Le Gretia est très actif sur le Massif armoricain et produit régulièrement des faunes, des clés de détermination et des synthèses. Pour plus de renseignements : <http://gretia.org>
- En Provence-Alpes-Côte d'Azur, un atlas des papillons de jour (Rhopalocères et Zygènes) a été publié en 2011 par l'Opie-PACA et l'association Proserpine suite à une compilation de données menée depuis 2004. Une dynamique de saisie en ligne portée par le site Faune-PACA existe pour les Odonates, Rhopalocères et Orthoptères. Par ailleurs, un atlas des Libellules de la région est coordonné par la SfO-PACA. Les deux programmes devraient arriver à trouver un moyen de mutualiser leurs ressources. Pour plus de renseignements : <http://odonates-paca.org>
- En Nord-Pas-de-Calais, un atlas préliminaires des Lépidoptères Rhopalocères a été réalisé par Groupe de travail sur les « Rhopalocères » du Nord-Pas-de-Calais et du Groupe ornithologique et naturaliste du Nord-Pas-de-Calais (GON) (Haubreux, 2011)⁴.

⁴ Groupe de travail sur les « Rhopalocères » du Nord - Pas-de-Calais - Groupe ornithologique et naturaliste du Nord - Pas-de-Calais

- En Franche-Comté, un atlas des Orthoptères est disponible en 2013. Un atlas des Lépidoptères Rhopalocères en commun avec la Bourgogne a été coordonné par l'Opie-Franche-Comté et la société d'Histoire Naturelle d'Autun. Cet atlas est en cours d'impression. Une Liste Rouge des espèces de Rhopalocères a été réalisée en 2013. Pour plus de renseignements : <http://www.conservatoire-botanique-fc.org>

Le Parc national du Mercantour a lancé un inventaire généralisé en 2009 en partenariat avec le MNHN. Des spécialistes de tous groupes entomologiques et de tous horizons ont travaillé à sa réussite. L'Opie, par le biais de son groupe Opie-Benthos, a été particulièrement impliqué dans l'inventaire des insectes aquatiques des zones humides superficielles du parc. Pour plus de renseignements : <http://www.mercantour.eu/index.php/grandes-operations/atbi>

Des travaux d'élaboration de Listes rouges régionales sont également développés dans plusieurs régions. Ainsi, pour les Odonates, 9 régions bénéficient d'une Liste rouge régionale. Pour plus de renseignements : <http://odonates.pnaopie.fr/ressources/bibliographie/listes-rouges>

2. Gestion conservatoire des espèces et des habitats.

2.1. Espèces

2.1.1. Plans Nationaux d'Actions

Le Ministère de l'Ecologie, du Développement Durable et de l'Energie (MEDDE) met actuellement en œuvre quatre plans nationaux d'actions en faveur d'invertébrés :

- **PNA Maculinea** (*M. arion*, *M. alcon* « écotype *alcon* », *M. alcon* « écotype *rebeli* », *M. nausithous* et *M. teleius*). Ce plan établi pour la période 2011-2015 concerne vingt et une régions françaises. A ce jour, les déclinaisons régionales du PNA ont été validées et font (ou feront très prochainement) l'objet d'une animation dans les régions suivantes : Auvergne, Centre, Franche-Comté, Languedoc-Roussillon, Corse, Champagne-Ardenne, Lorraine et Basse-Normandie. Pour plus de renseignements : <http://maculinea.pnaopie.fr/plan-national/objectifs/>
- **PNA Odonates**. Ce plan établi pour la période 2011-2015 concerne toutes les régions françaises. Il est axé sur les Odonates protégés en France : toutes les espèces inscrites à l'annexe II de la Convention et présentes en France sont prises en compte. Dix régions ont leur plan régional d'actions validé et sont maintenant en phase opérationnelle. Neuf autres en sont à la phase de rédaction. La plaquette de synthèse du PNA a été éditée et diffusée aux correspondants régionaux au printemps 2013. La liste rouge des Odonates de France métropolitaine sera finalisée en 2013, ainsi qu'un guide technique de gestion conservatoire. La détermination des priorités spatiales pour la gestion conservatoire est très liée aux démarches Schémas Régionaux de Cohérence Ecologique (SRCE) et Stratégies de création d'aires protégées (SCAP) en cours dans les régions. Pour plus de renseignements : <http://odonates.pnaopie.fr/plan-national/objectif/>
- **PNA Mulette perlière** (*M. margaritifera*). Ce plan établi pour la période 2012-2017 concerne neuf régions. L'Auvergne a décliné le plan au niveau régional. Un rapport propose notamment des préconisations pour la prise en compte de l'enjeu « espèces menacées » dans le cadre de l'entretien de cours d'eau et des travaux en milieux aquatiques : exemples de la Loutre d'Europe et de la mulette perlière.
Pour plus de renseignements : http://www.auvergne.developpement-durable.gouv.fr/IMG/pdf/guide_preconisations_entretien-ce_biodiversite_121212_cle0ac667.pdf
- **PNA Grande mulette** (*M. auricularia*) Ce plan établi pour la période 2012-2017 concerne quatre régions. Des inventaires vont être effectués sur des stations potentielles nouvelles dans les vallées de la Creuse et de l'Indre.

Deux autres plans sont en projet :

- **PNA Helix de Corse** (*Helix ceratina*), 2013-2017, en fin de procédure, il pourra être mis en œuvre d'ici la fin 2013.

- **PNA insectes pollinisateurs sauvages** : le projet de PNA est en cours de rédaction et devrait être mis en œuvre au premier semestre 2014.

2.1.2. Plan Régionaux de Restauration

Un Plan Régional d'Actions concernant le Damier du Frêne, *Euphydryas maturna* (Linnaeus, 1758) a été rédigé en 2013. Le porteur du projet est l'association Forestiers du Monde avec l'appui de la Société d'Histoire Naturelle d'Autun et de la DREAL Bourgogne.

Pour plus de renseignements : <http://www.forestiersdumonde.org/index.php/faunes-et-flores-sauvages/les-inventaires-naturalistes/157-le-plan-regional-d-actions-en-faveur-du-damier-du-frene-euphydryas-maturna-en-bourgogne-france>

2.1.2. Evaluation de l'état de conservation des espèces

Conformément à l'article 17 de la Directive Habitats-Faune-Flore, la France a réalisé le deuxième état des lieux de la conservation des espèces et des habitats des annexes de cette directive. Ce travail important, coordonné par le MNHN, s'est déroulé en 2012 et 2013. La partie sur les insectes a été réalisée sous la coordination de l'Opie. Pour cette évaluation, un travail de fond de récolte de données et d'information auprès des experts nationaux et régionaux a permis de synthétiser la connaissance disponible.

Pour plus de renseignements : <http://www.natura2000.fr>

2. 2.

Habitats2.2.1. La

Trame Verte et Bleue.

La mise en œuvre de la Trame verte et bleue s'appuie sur 5 critères permettant une cohérence nationale des Schéma régionaux de cohérence écologique (SRCE). L'un d'eux est basé sur les espèces. Pour cela, une liste d'espèces appartenant à trois ordres d'insectes (Odonates, Rhopalocères et Orthoptères) a été réalisée en 2011 par l'Opie selon une méthode de sélection élaborée par le MNHN. Un rapport explicitant les critères de choix ainsi que l'intérêt des insectes pour la Trame verte et bleue a été produit et est disponible sur le portail internet TVB. Dans la continuité de ce travail, des fiches de synthèse bibliographique ont été réalisées pour 18 des espèces de cohérence nationale et pour plusieurs vertébrés. Ces fiches rassemblent la connaissance disponible concernant les traits de vie des espèces, leurs exigences écologiques ainsi que leurs capacités de déplacements et leur besoins de continuité paysagère. Ces fiches sont également disponibles en ligne et doivent aider à une meilleure prise en compte des insectes dans la mise en œuvre de la Trame verte bleue.

Pour plus de renseignements :

Rapport de synthèse : <http://www.trameverteetbleue.fr/documentation/references-bibliographiques/definition-listes-insectes-pour-coherence-nationale-trame>

Fiches de synthèses bibliographiques : <http://www.trameverteetbleue.fr/documentation/cote-recherche/syntheses-bibliographiques-especes>

2.2.2. L'évaluation de l'état de conservation des habitats.

Le ministère en charge de l'écologie a confié au Muséum national d'Histoire naturelle (MNHN) la mise en place des méthodes pour évaluer l'état de conservation des habitats d'intérêt communautaire dans les sites Natura 2000, afin de répondre à l'obligation réglementaire de l'article R.414-11 du Code de l'environnement. Un guide technique a été réalisé pour les habitats agropastoraux⁵. Des critères concernant la faune des Lépidoptères Rhopalocères et des Coléoptères coprophages ont été inclus dans l'évaluation.

⁵ Maciejewski L., Seytre L., Van Es J., Dupont P. et Ben-Mimoun K., 2013.- État de conservation des habitats

2.2.3. Aires protégées

La Stratégie de Création d'Aires Protégées terrestres métropolitaines (SCAP) constitue un des chantiers prioritaires des politiques de l'environnement, repris par la conférence environnementale de 2012. La loi du 3 août 2009 confirme l'impulsion d'une dynamique ambitieuse de développement du réseau des aires protégées, avec l'objectif de placer d'ici 10 ans, 2% au moins du territoire terrestre métropolitain sous protection forte. Le MNHN-SPN a été sollicité par le Ministère en charge de l'écologie pour coordonner le volet scientifique, en élaborant notamment la méthodologie de mise en œuvre et de suivi de la stratégie terrestre métropolitaine⁶. Dans ce cadre méthodologique, les invertébrés sont pris en compte en fonction notamment de leur présence sur les annexes II et IV de la Directive Habitat-Faune-Flore, sur une Liste Rouge et de leur degré d'endémisme. Dans ce programme, les invertébrés ont été le groupe numériquement le plus représenté dans le diagnostic du réseau d'aires protégées (174 espèces végétales, 195 invertébrés, 166 vertébrés).

3. Indicateurs nationaux.

L'ONB a développé des indicateurs de biodiversité pour évaluer au cours du temps l'impact de la nouvelle Stratégie Nationale pour la Biodiversité. Parmi ces indicateurs, on peut noter le suivi de l'hétérogénéité des cortèges d'espèces. Ce dernier, permet de suivre l'évolution de l'indice de spécialisation moyenne des communautés (CSI) de différents groupes d'animaux par rapport aux différents types d'habitats présents en France. Ce jeu d'indicateurs est récent et les données disponibles sur le long terme concernent essentiellement les oiseaux. Les suivis de sciences participatives sur les invertébrés et notamment le programme SPIPOLL sur les pollinisateurs, apporteront dans le futur une « vision invertébrés » de l'évolution de la biodiversité en France.

4. Espèces exotiques envahissantes.

Les espèces exotiques envahissantes sont aujourd'hui considérées comme l'une des plus grandes menaces pour la biodiversité. Présente au sein de la [Stratégie nationale pour la biodiversité](#), la lutte contre les espèces exotiques envahissantes correspond également à un engagement fort du Grenelle de l'Environnement ([voir l'article 23 de la loi Grenelle du 3 août 2009](#)). Actuellement, on dénombre 24 espèces d'invertébrés envahissantes en France (source INPN). Un suivi du front de colonisation du Frelon asiatique (*Vespa velutina* Lepeletier, 1836) est réalisé au MNHN. Les données sont continuellement mises à jour sur l'INPN.

Pour plus de renseignements : http://inpn.mnhn.fr/espece/cd_nom/433589

5. Mobilisation des connaissances au sein de la sphère scientifique.

Engagés depuis de nombreuses années dans un partenariat technique et scientifique de qualité, l'Office national des Forêts (ONF) et l'Opie ont concrétisé le 07 décembre 2011 un projet mûri de longue date : mutualiser leurs moyens respectifs sur le terrain de l'entomologie forestière en créant un laboratoire partagé : le Pôle national d'entomologie forestière. C'est une initiative originale de mise en commun des moyens d'un acteur public et d'un acteur associatif au profit d'un même objectif.

agropastoraux d'intérêt communautaire, Méthode d'évaluation à l'échelle du site. Guide d'application. Version 2. Service du patrimoine naturel, Muséum national d'histoire naturelle, Paris, 179 p.

⁶ Coste S, 2012.- Stratégie de Création d'Aires Protégées. Note de cadrage pour l'analyse des modifications proposées. Service du patrimoine naturel, Muséum national d'histoire naturelle, Paris, 14p.

La Société entomologique de France organise les 15 et 16 novembre 2013 un colloque appelé « L'Entomologie en France : son utilité publique ». L'objectif est de débattre des domaines de l'entomologie utiles à l'amélioration des rapports de la société humaine avec la nature, à l'heure où la biodiversité et sa défense revêtent une importance essentielle pour notre avenir. Dans ce but, le colloque abordera dans ses tables rondes la découverte de la biodiversité, son suivi à l'échelle des territoires et le partage des connaissances. Entomologistes amateurs et professionnels, chercheurs et acteurs de la vie publique seront réunis afin de dégager les pistes les plus prometteuses pour le développement de l'entomologie au service de tous. Les actes du colloque seront publiés et largement diffusés.

Pour plus de renseignements : <http://www.lasef.org>

6. Education, formations et vulgarisation des connaissances

6.1. Formations entomologiques

L'Opie a fortement développé son secteur de formations professionnelles en entomologie. En 2012, 11 thématiques ont été abordées, totalisant 511 heures de formations auprès de 157 stagiaires dont 122 agents de terrain, gestionnaires d'espaces et agents institutionnels ou associatifs qui composent le secteur des métiers de l'environnement. La Société Française d'Odonatologie continue à organiser chaque année des stages de formation et d'autres structures en proposant aussi. Si l'offre s'est diversifiée, elle reste néanmoins insuffisante aux vues des besoins et des enjeux.

Pour plus de renseignements : <http://www.insectes.org/formations/entomologiques-professionnelles.html>

6.2. Information sur les espèces de l'annexe IV de la directive habitats

L'objectif de cette action consiste à présenter ces espèces et leurs milieux de façon claire afin d'accompagner de façon positive les discussions et les courriers rappelant les contraintes administratives impliquées par une protection stricte, tant à l'extérieur qu'à l'intérieur des zones Natura 2000. Ainsi des fiches de présentation des espèces ont été diffusées en 2007. Suite au rapportage DHFF de 2013, l'Opie a proposé de mettre à jour ces fiches en publiant un document largement accessible rendant compte de l'avancée des connaissances. Faute de moyens en 2013, ce projet est pour le moment ajourné.

6.3. Vulgarisation

L'Opie a un secteur pédagogique très actif et dispense de nombreuses animations, notamment dans les écoles et centres de loisirs. Ainsi, en 2013, un peu plus de 4 500 personnes (dont ¼ d'adultes) en ont bénéficié. De nombreuses autres associations sensibilisent le public sur les insectes.

La thématique principale de la Fête de la Nature 2013 était les « petites bêtes » avec une place de choix pour les insectes.

NETHERLANDS / PAYS-BAS

THE PRESENT STATE OF THE BCI INVERTEBRATES IN THE NETHERLANDS

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INTRODUCTION

For a description of the general pressures on the natural environment in the Netherlands I refer to the introductory remarks in the report presented at the last meeting (Kongsvoll 2008). The Netherlands remains a country where the economic developments are thought to be of paramount importance, followed by integration of new immigrants, health care, educational system and prevention of traffic jams. Nature conservation, landscape, rural development and the care for flora and fauna are on the agenda too, but that all environmental interests are placed under the supervision of the minister of Economic Affairs is a clear signal of the weight and the way of thinking about this subject. I repeat what I said at Kongsvoll in 2008: *Homo sapiens* Linnaeus, 1758 clearly is the best protected species in the Netherlands.

GOVERNMENTAL ACTIVITIES

National Ecological Network

A long term initiative, the establishment of the National Ecological Network through the Netherlands seems to be an never ending problematic enterprise. The initiative originally was a national task but it has been reallocated to the provincial level recently. Since a former Cabinet planned to stop the development of the network completely the present government does not make available the necessary funding to the provinces and the process has come more or less to a standstill. There is growing resistance from agricultural side to offer land for this purpose. The network should be completed by 2018 but it is generally expected that this deadline will be passed.

Other initiatives

The then Ministry of Agriculture, Nature and Food Quality established a Data Authority in 2007. It is the national centre for registration of plant and animal species in a central database. It is based upon cooperation between the national NGO's and the government. The Data Authority runs the National Databank for Flora and Fauna and a service point which should serve the demands of all construction and road building companies when they have to apply for exemption of the Flora and Fauna Act for plants or animals that are in their way. The Ministry had reserved 20 million Euro for setting up and exploiting this database. The intention of earning the equivalent amount of money to cover the necessary expenses has failed. Contractors and developers hire specialized bureaus to collect the necessary data on fauna and flora instead of using the governmental National Databank for Flora and Fauna, the latter being too expensive. These developments may lead to closing down the National Databank and withdrawal of governmental support for this important instrument.

Habitat approach

Some years ago, the species protection efforts of the past were replaced by a new strategy, the Habitat Approach. The Habitat Approach aims both at protecting and conserving species and at making room for economic development. The approach targets habitat areas and the groups of species they support, instead of concentrating on individual species. The habitat approach requires integration into other nature policies, particularly into the National Ecological Network. The habitat approach combined with the National Ecological Network and Natura 2000 forms a complete battle plan in the struggle to conserve plant and animal species. For this purpose 300 target species were selected.

BERN CONVENTION INVERTEBRATES

General situation

All BCI's that occur naturally in the Netherlands are included in the Habitats Directive and because of that in the Fauna and Flora Act in the Netherlands. This officially necessitates to designate Natura 2000 sites. The Netherlands are lagging behind in establishing sites but if compared to other European countries we are not extremely slow (according to a spokesman of the Ministry of Economic Affairs). A new Nature Act is under construction but the discussions have stalled.

In general biodiversity in the Netherlands is – as reported in previous years – under continuous threat. The human population is ever increasing, the economic activities get priority and necessitate more and new infrastructure for transport. Agricultural industry is a very important economic motor despite the present crisis and is one of the main contributors to the export. There is a strong tendency to intensify farming with all the negative influences on the flora and fauna of areas used for agriculture.

A former Cabinet, in power from October 2010 up to November 2012, proved to be a complete disaster. Protection of nature and nature itself was foremost looked upon as a hindrance to economic development and international trade. A delegation even went to Brussels to plea for deleting species from the Annexes of the Habitats Directive and soften the rules for protecting species and stop the obligation to designate Natura 2000 areas. Obviously they were sent back to the Netherlands without much discussion.

The present Cabinet is slightly more willing to accept nature and environment as an inescapable duty. Governmental tasks and duties are housed in the ministry of Economic Affairs. The present financial crisis forces government to be extremely frugal and cut down again on environmental activities in favor of health care, education, and transport infrastructure.

Present state of the BCI's

Most of the invertebrates of the National Fauna and Flora Act are monitored in national programs. There are hardly any changes in their threat status to be mentioned. See table 1. A new Redlist for Odonata in the Netherlands was produced in 2012. A Redlist for Orthoptera in the Netherlands appeared in 2012.

Decapoda

Astacus astacus is now restricted to a single site. The possibilities for introduction into nearby suitable sites are considered, but the initiative seems to have stalled. The species is under threat because of its occurrence on only one site. It is unlikely that exotic invasive crayfish species will reach that site naturally, but unexpected human actions may disturb the site.

Coleoptera

A continuous monitoring program is carried out for the Stag Beetle *Lucanus cervus* which has restricted but stable populations in the eastern part of the country.

Graphoderus bilineatus is less rare than usually assumed but still is classified as vulnerable.

Dytiscus latissimus was rediscovered in the northeastern part of the country in 2007 and now is regularly monitored. It appears to have stable populations in four fens.

Lepidoptera

All Lepidoptera are monitored by the Dutch Butterfly Society. This year the butterfly population in general is in severe decline. This is thought to have been caused by bad breeding results in 2007 when there was an early warm period but a cold summer, an unfavorable climatic condition for this group.

Three species of Appendix II are extinct since many decades, viz. *Coenonympha hero*, *Hypodryas aurinia*, and *Maculinea arion*.

Lycaena dispar – Populations stable or slightly increasing

Maculinea nausithous – reintroduced in 1990 at one selected locality, from which it disappeared again. The species appeared at another site through colonization from a nearby site in Germany. Slightly in decline in 2011 and 2012 but in much better condition this year.

Maculinea teleius – reintroduced in 1990 at one selected locality. The reintroduction was successful and the population maintains itself very well although there are very high population dynamics because of lack of suitable habitat in the near surroundings.

Odonata

All dragonflies are monitored yearly. The group is popular and well-studied by amateurs and professionals. A new Redlist for Odonata in the Netherlands was produced in 2012.

Aeshna viridis – Stable populations at localities where the Soldierplant (*Stratiotes aloides*) occurs, a plant with dynamic distribution depending on water quality.

Coenagrion 25larkia25r – observed in 2011 but not seen in the following years; probably at the margin of the distribution range of the species.

Gomphus flavipes – reasonably common along our larger rivers, best monitored by counting the exuviae.

Leucorrhinia albifrons – Reappeared in the Netherlands but is about to disappear again from the country because the site has become unsuitable as habitat.

Leucorrhinia caudalis – Extinct since 1970.

Leucorrhinia pectoralis – growing populations

Ophiogomphus 25larkia – increasing in numbers of individuals and populations.

Oxygastra curtisii – extinct since 1982 (?).

Sympecma paedisca – still vulnerable but steadily increasing in number of populations and individuals.

Gastropoda

Helix pomatia – stable populations at most sites some of which are introductions.

Hirudinea

Hirudo medicinalis – no recent information available. The species probably was introduced in the Netherlands long ago when it was raised and exploited for medical purposes.

Table 1. BCI's occurring in the Netherlands, their present status and activities. V = vulnerable, E = endangered, CE = critically endangered.

	<i>Taxon name</i>	<i>Bern</i>	<i>Status</i>	<i>Remarks</i>
Decapoda	<i>Astacus astacus</i>	BC III	nearly extinct	local introduction prepared
Coleoptera	<i>Cerambyx cerdo</i>	BC II	extinct	
	<i>Dytiscus latissimus</i>	BC II	CE	stable on four sites
	<i>Graphoderus bilineatus</i>	BC II	V	monitored
	<i>Lucanus cervus</i>	BC III	Rare	monitored
	<i>Osmoderma eremita</i>	BC II	extinct	since 1946
Lepidoptera	<i>Coenonympha hero</i>	BC II	extinct	monitored
	<i>Hypodryas aurinia</i>	BC II	extinct	monitored
	<i>Lycaena dispar</i>	BC II	V	monitored
	<i>Maculinea arion</i>	BC II	extinct	monitored
	<i>Maculinea nausithous</i>	BC II	CE	monitored
Odonata	<i>Maculinea teleius</i>	BC II	CE	monitored
	<i>Aeshna viridis</i>	BC II		monitored
	<i>Coenagrion 26larkia26r</i>	BC II	extinct	since 1955
	<i>Gomphus flavipes</i>	BC II	V	monitored
	<i>Leucorrhinia albifrons</i>	BC II	CE	monitored
	<i>Leucorrhinia caudalis</i>	BC II	extinct	since 1970
	<i>Leucorrhinia pectoralis</i>	BC II	V	monitored
	<i>Ophiogomphus 26larkia</i>	BC II	V	monitored
	<i>Oxygastra curtisii</i>	BC II	extinct	since 1982 (?)
Ephemeroptera	<i>Sympecma paedisca</i>	BC II	V	monitored
	<i>Palingenia longicauda</i>	BC II	extinct	
Gastropoda	<i>Helix pomatia</i>	BC III		restricted distribution
Unionoida	<i>Margaritifera auricularia</i>	BC II	extinct	
Hirudinea	<i>Hirudo medicinalis</i>	BC III	Rare	no information available

SLOVAK REPUBLIC / RÉPUBLIQUE SLOVAQUE

CONSERVATION STATUS OF SELECTED INVERTEBRATES IN SLOVAKIA BERN CONVENTION REPORT FOR THE PERIOD 2008 – 2012

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e. Introduction

The Slovak Republic is situated in the middle of Europe on the boundary line of the Pannonian and Carpathian regions that creates conditions for very rich animal species diversity. There are more than 934 species of spiders (*Araneae*), more than 386 species of *Crustacea*, 118 species of *Orthoptera*, 801 species of *Heteroptera*, more than 6,500 species of beetles (*Coleoptera*), more than 5,779 species of *Hymenoptera*, more than 3,500 species of butterflies (*Lepidoptera*) or more than 4,620 species of *Diptera* living in the Slovak Republic.

2. Legal Protection

Protection of invertebrate species on the national level is assured by these legal tools:

- Act No. 543/2002 Coll. On Nature and Landscape Protection as amended (valid since January 1st, 2003),
- Order No. 24/2003 Coll. Which is executing the Act No. 543/2002 Coll. As amended (valid since February 1st, 2003) and

The relevant international legal tools (including the Bern Convention and the EU Habitats Directive (92/43/EEC) have been transposed to the above national law. 32 species protected under the Bern Convention have been reported up to now in Slovakia (see Table 1), all of them are included in

the red lists of the Slovak fauna and majority (except of *Palingenia longicaudata*) are listed in the annexes of the above Order (amended in by the Order No .492/2006 Coll.).

Slovakia has not developed a national strategy on invertebrate species yet. Their protection and implementation of the European Strategy for the conservation of Invertebrate Animals are assured by the valid legislation and strategies including the network of protected areas.

1. Since 2004 the Natura 2000 network has been developed (the first round in 2004 with 381 sites of Community importance; the second round in 2011 with 97 sites). Actually the third round of sites of Community importance is in a preparatory process. Many of these localities were designated for the protection of rare and endangered invertebrates: 20 (2 added since the previous report) for the protection of *Leucorrhinia pectoralis*, 15 sites for *Ophiogomphus 28larkia*, 71 sites (9 added since the previous report) for *Cerambyx cerdo*, 84 sites (6 added since the previous report) for *Rosalia 28larki*, 2 sites for *Graphoderus bilineatus*, 115 sites (9 sites added since the previous report) for *Lucanus cervus*, 61 sites (8 sites added since the previous report) for *Cucujus cinnaberinus*, 19 sites (4 sites added since the previous report) for *Osmoderma eremita*, 7 sites (3 sites added since the previous report) for *Hypodryas maturna*, 1 site for *Hypodryas aurinia*, 81 sites (23 sites added since the previous report) for *Lycaena dispar*, 22 sites (4 sites added since the previous report) for *Maculinea nausithous*, 27 sites (5 sites added since the previous report) for *Maculinea teleius*, 32 sites (6 sites added since the previous report) for *Eriogaster catax* and 5 sites (3 sites added since the previous report) for *Austropotamobius torrentium*.

e. Distribution

Extinct species in the Slovak Republic: *Dytiscus latissimus* – only historical findings in the Hron and the Hornad River basins, *Coenagrion 28larkia28r* – only three historical findings in Podunajská nížina lowland near the Danube River (Brtek & Rotschein 1964, probably mistake in determination).

Very rare species, only in a few isolated localities: *Hypodryas aurinia*, *Hypodryas maturna*, *Coenonympha hero*, *Parnassius 28larki*, *Lopinga achine*, *Leucorrhinia pectoralis*, *Ophiogomphus 28larkia*, *Palingenia longicaudata*, *Saga pedo*, *Graphoderus bilineatus*, *Carabus hungaricus*, *Austropotamobius torrentium*, *Hirudo medicinalis*.

Threatened species with a wide distribution area, but insufficient data about their distribution in Slovakia: *Cerambyx cerdo*, *Rosalia 28larki*, *Lucanus cervus*, *Cucujus cinnaberinus*, *Osmoderma eremita*, *Lycaena dispar*, *Maculinea nausithous*, *Maculinea teleius*, *Maculinea arion*, *Zerynthia polyxena*, *Parnassius 28larkia28r*, *Eriogaster catax*, *Proserpinus 28larkia28ra*, *Callimorpha quadripunctaria*, *Helix pomatia*, *Astacus astacus*

Data on invertebrate species protected under the Bern Convention are collected in Slovakia by a new monitoring system (since 2013) aimed mainly at species and habitats of the European importance. Data collection (mapping in 2007 and 2008) of respective species preceded the monitoring and were used for preparation of distribution maps and for setting the permanent monitoring plots for single species.

In the Annex to the Report a short description of selected invertebrate species (if data is available) is provided with distribution maps based on current knowledge. At the beginning of 2013 a detailed monitoring started of all invertebrate species protected under the Bern Convention apart from extinct species (Ex) and *Palingenia longicauda*. In 2015 a detailed assessment of the population and area size, and assessment of the state of single species will be realized.

4. Threats and pressures

During last years an increasing negative tendency may be observed in Slovakia with respect to the habitats of threatened invertebrate species, including those protected by international legal instruments.

1) Rare xylophilous and saproxylophilous beetles (*Osmoderma eremita*, *Cerambyx cerdo*, *Cucujus cinnaberinus*, *Lucanus cervus*, *Rosalia 28larki*) are endangered by losing their natural habitats (loss of habitats by unsuitable forest management practices (felling of host trees), elimination of bankside

vegetation, elimination old trees in alleys or parks, deforestation for mining of raw materials or development of built-up areas, use of different chemical agents (insecticides) in forest ecosystems.

2) Main threats and pressures on invertebrates of the non-forests habitats (*Maculinea* sp., *Lycaena dispar*, *Lopinga achine*, *Hypodryas maturna*, *Hypodryas aurinia*, *Parnassius 29larki*, *Parnassius 29larkia29r*, *Saga pedo*) (meadows, xerothermic habitats) are:

- abandonment of traditional land use (cease of grazing, mowing) or unsuitable management of the meadows,
- appearing of succession communities of different shrub species and natural seeding of invasive herb or tree species,
- afforestation of steppe and steppe-forest sites often by non-native tree species,
- mining of raw materials,
- development and constructions,
- use of different chemical agents (insecticides).

3) A major problem for aquatic environment as habitat for threatened invertebrate species (*Coenagrion 29larkia29r*, *Stylurus flavipesis*, *Leucorrhinia pectoralis*, *Ophiogomphus 29larkia*, *Palingenia longicaudata*, *Dytiscus latissimus*, *Graphoderus bilineatus*, *Hirudo medicinalis*) is the water quality of the water bodies, drainage of wetlands, decreasing of the groundwater level, elimination of macrophytes, intensive aquaculture. The most drainage canals in Slovakia are situated in lowlands in south-west, south and south-east of Slovakia. Many of the wetland reserves are isolated from their surroundings and from the nearest wetlands.

5. Management measures

- **Monitoring of threatened species from Appendices of the Bern Convention:** in 2013 the State Nature Conservancy of the Slovak Republic has started systematic monitoring for all species of the Community interest (within the project on Complex information system financed by the EU funds). The purpose of the monitoring project is the assessment of the conservation status on local and national levels. Detailed data are collected by a group of experts in the field based on the approved methodology and following the guidelines for the frequency of the monitoring. The results of the detailed monitoring will be available in 2015.

- **Projects for relevant species:** The project “Improvement of the conservation status of butterflies of the *Maculinea* genus” (in the period from 1st January 2010 till 31th December 2012) was aimed on conservation and management of five endangered butterfly species of the *Maculinea* genus, which occurs in Slovakia (*Maculinea nausithous*, *Maculinea teleius*, *Maculinea alcon*, *Maculinea rebeli*, *Maculinea arion*). Three of them (*Maculinea nausithous*, *Maculinea teleius* and *Maculinea arion*) are protected under the Bern Convention.

Main activities of the project were:

- practical management of sites of occurrence
- monitoring of the population state and sites of occurrence, data analysis
- reintroduction of the species
- cooperation with experts and public
- awareness raising (informational leaflets etc.). Details are provided in the Table 1.

There is a critical situation in the most of the sites where the *Maculinea* genus species occur. Woody vegetation succession lowers the quality of sites suitable for the species and they can disappear from the sites in the near future. Therefore management measures were implemented in selected sites in the period 2010-2012 (mowing, elimination of natural seeding) in the total area of 106,99 ha in the operational area of the Tatra National Park (NP), Pieniny NP, Muránska planina NP,

Poloniny NP, Strážovské vrchy Protected Landscape Area (PLA), Dunajské luhy PLA, Východné Karpaty PLA, Biele Karpaty PLA and Malé Karpaty PLA Administrations.

Inventory and assessment of the conservation status of populations in selected sites, the state of particular sites and also verification of occurrence of the species in supposed sites and evaluation of effectiveness of taken management measures were made during the project.

Table 1 Results of the *Maculinea* genus mapping

Species	Nutritive plant	Year*	Mapped sites	Number of sites with occurrence of nutritive plant	Number of sites with occurrence of the species	Number of adults/eggs
<i>Maculinea nausithous</i>	<i>Sanguisorba officinalis</i>	2010	111	65	22	243/-
		2011	16	16	1	10/-
		2012	10	10	2	79/-
<i>Maculinea teleius</i>	<i>Sanguisorba officinalis</i>	2010	111	65	49	544/-
		2011	16	16	11	122/-
		2012	10	10	10	68/-
<i>Maculinea arion</i>	<i>Thymus</i> sp., <i>Origanum vulgare</i>	2010	16	15	11	36/-
		2011	205	188	57	393/-
		2012	159	159	66	173/-

*Year – highlighted year, in which the main mapping of the relevant species and nutritive plant was realized, additional mapping of the particular species was realized in 2012.

6. Conservation status

In 2007 Slovakia submitted the reporting according to the Article 17 of the EU Habitat Directive including the conservation status of 29 invertebrate species, which are also protected under the Bern Convention. The overview is given in the Table 2 (the area of Slovakia is situated within two bioregions, Alpine and Pannonian ones therefore some species are stated twice).

Status according to the actual Red list is given in the Table 3.

Table 2 conservation status assessment (according to the 2004-2006 report under the Article 17 of the EU Habitats Directive).

Species	Bioregion	Range	Population	Habitat of the species	Future prospects	Overall conservation status
<i>Astacus astacus</i>	PAN	XX	XX	XX	XX	XX
<i>Astacus astacus</i>	ALP	U1	U1	U1	U1	U1
<i>Austropotamobius torrentium</i>	ALP	U1	U2	FV	U1	U2
<i>Callimorpha quadripunctaria</i>	ALP	FV	FV	FV	FV	FV
<i>Callimorpha quadripunctaria</i>	PAN	FV	FV	FV	FV	FV
<i>Carabus hungaricus</i>	PAN	U2	XX	U2	XX	U2
<i>Cerambyx cerdo</i>	ALP	XX	XX	XX	XX	XX
<i>Cerambyx cerdo</i>	PAN	XX	XX	XX	XX	XX
<i>Cucujus cinnaberinus</i>	PAN	XX	XX	XX	XX	XX
<i>Eriogaster catax</i>	ALP	FV	FV	FV	FV	FV
<i>Eriogaster catax</i>	PAN	FV	FV	FV	FV	FV
<i>Euphydryas aurinia</i>	ALP	U2	U2	U1	U2	U2
<i>Graphoderus bilineatus</i>	ALP	XX	XX	U2	XX	U2
<i>Graphoderus bilineatus</i>	PAN	XX	XX	U2	XX	U2
<i>Helix pomatia</i>	PAN	FV	FV	FV	FV	FV
<i>Helix pomatia</i>	ALP	FV	FV	FV	FV	FV
<i>Hirudo medicinalis</i>	PAN	U1	U1	U1	U1	U1
<i>Hypodryas maturna</i>	PAN	FV	FV	FV	FV	FV
<i>Hypodryas maturna</i>	ALP	FV	U1	FV	U1	U1
<i>Leucorrhinia pectoralis</i>	PAN	FV	U1	FV	U1	U1
<i>Leucorrhinia pectoralis</i>	ALP	U2	U2	U1	U1	U2
<i>Lopinga achine</i>	PAN	U2	U2	U1	U2	U2
<i>Lopinga achine</i>	ALP	U2	U2	FV	U1	U2
<i>Lucanus cervus</i>	ALP	FV	FV	FV	FV	FV
<i>Lucanus cervus</i>	PAN	FV	FV	FV	FV	FV
<i>Lycaena dispar</i>	PAN	FV	FV	FV	FV	FV
<i>Lycaena dispar</i>	ALP	FV	FV	FV	FV	FV
<i>Maculinea arion</i>	ALP	FV	U1	U1	U1	U1
<i>Maculinea arion</i>	PAN	FV	U1	U2	U1	U2
<i>Maculinea nausithous</i>	PAN	U1	U1	FV	U1	U1
<i>Maculinea nausithous</i>	ALP	U2	U1	XX	XX	U2
<i>Maculinea teleius</i>	PAN	FV	FV	FV	FV	FV
<i>Maculinea teleius</i>	ALP	FV	FV	FV	FV	FV
<i>Ophiogomphus cecilia</i>	ALP	U2	U1	FV	U1	U2
<i>Ophiogomphus cecilia</i>	PAN	U1	U1	U1	U1	U1
<i>Osmoderma eremita</i>	ALP	XX	XX	XX	XX	XX
<i>Osmoderma eremita</i>	PAN	XX	XX	XX	XX	XX
<i>Parnassius apollo</i>	ALP	U1	U1	U1	U1	U1
<i>Parnassius mnemosyne</i>	PAN	FV	FV	FV	FV	FV
<i>Parnassius mnemosyne</i>	ALP	FV	FV	FV	FV	FV
<i>Proserpinus proserpina</i>	ALP	XX	XX	XX	XX	XX
<i>Proserpinus proserpina</i>	PAN	XX	XX	XX	XX	XX
<i>Rosalia alpina</i>	PAN	FV	FV	FV	FV	FV
<i>Rosalia alpina</i>	ALP	FV	FV	FV	FV	FV
<i>Saga pedo</i>	PAN	U1	U1	U1	U1	U1
<i>Saga pedo</i>	ALP	U1	U1	U1	XX	U1
<i>Stylurus flavipes</i>	PAN	U2	U1	XX	FV	U2
<i>Zerynthia polyxena</i>	ALP	FV	FV	FV	FV	FV
<i>Zerynthia polyxena</i>	PAN	FV	FV	FV	FV	FV

Conservation status: FV – Favourable, U1 – Unfavourable inadequate, U2 – Unfavourable bad

XX – Unknown

Table 3 List of species of invertebrates from the Bern Convention – II and III means IInd and IIIRD Appendix of the Convention; Slovak Red Data Book: (CR, VU, EN etc. categories of threat according to the IUCN)

No.	Group of Invertebrates	Species	Bern Convention (Appendix)	Slovak Red List of Animals – Invertebrates
1.	Odonata	<i>Coenagrion mercuriale</i>	II	Ex
2.	Odonata	2. <u>Stylurus (Gomphus) flavipes</u>	II	VU
3.	Odonata	<i>Leucorrhinia pectoralis</i>	II	EN
4.	Odonata	<i>Ophiogomphus cecilia</i>	II	EN
5.	Ephemeroptera	<i>Palingenia longicaudata</i>	II	CR
6.	Orthoptera	<i>Saga pedo</i>	II	EN
7.	Coleoptera	<i>Cerambyx cerdo</i>	II	LR:nt
8.	Coleoptera	<i>Rosalia alpina</i>	II	VU
9.	Coleoptera	<i>Dytiscus latissimus</i>	II	Ex
10.	Coleoptera	<i>Graphoderus bilineatus</i>	II	VU
11.	Coleoptera	<i>Lucanus cervus</i>	III	LR:lc
12.	Coleoptera	<i>Cucujus cinnaberinus</i>	II	LR:nt
13.	Coleoptera	<i>Osmoderma eremita</i>	II	EN
14.	Coleoptera	<i>Carabus hungaricus</i>	II	EN
15.	Lepidoptera	<i>Coenonympha hero</i>	II	CR
16.	Lepidoptera	<i>Hypodryas maturna</i>	II	CR
17.	Lepidoptera	<i>Hypodryas aurinia</i>	II	CR
18.	Lepidoptera	<i>Lycaena dispar</i>	II	VU
19.	Lepidoptera	<i>Maculinea arion</i>	II	VU
20.	Lepidoptera	<i>Maculinea nausithous</i>	II	CR
21.	Lepidoptera	<i>Maculinea teleius</i>	II	EN
22.	Lepidoptera	<i>Zerynthia polyxena</i>	II	VU
23.	Lepidoptera	<i>Parnassius apollo</i>	II	EN
24.	Lepidoptera	<i>Parnassius mnemosyne</i>	II	VU
25.	Lepidoptera	<i>Lopinga achine</i>	II	EN
26.	Lepidoptera	<i>Eriogaster catax</i>	II	LR:nt
27.	Lepidoptera	<i>Proserpinus proserpina</i>	II	EN
28.	Lepidoptera	<i>Callimorpha quadripunctaria</i>	II	-
29.	Mollusca	<i>Helix pomatia</i>	II	-
30.	Crustacea	<i>Astacus astacus</i>	III	-
31.	Crustacea	<i>Austropotamobius torrentium</i>	III	EN
32.	Annelida	<i>Hirudo medicinalis</i>	III	VU

7. Cooperation with other Contracting Parties

Border protected areas in Slovakia (national parks and protected landscape areas) cooperate with neighbouring protected areas in the Czech Republic, Hungary, Poland and Ukraine. This cooperation is based on official cross-border cooperation agreements realized every year by common annual plans with various kinds of activities. Particular activities concerning invertebrate species are aimed mainly on collecting and exchange of data about their occurrence, distribution and management. If it is possible, the projects are prepared and carried out which help to strengthen cross-border cooperation and exchange of data, e.g. the project “Improvement of the conservation status of butterflies of the *Maculinea* genus” realized in the period from 1st January 2010 till 31th December 2012 (more information in Chapter 5 above). This project has helped to improve cooperation between Pieninsky

National Park in Slovakia and Pieniński Park Narodowy in Poland and gives opportunity to continue in this cooperation in future.

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Annex (separate document)

SPAIN / ESPAGNE

PROGRESS IN THE CONSERVATION OF INVERTEBRATES IN SPAIN, 2008 – 2013

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The Ministry of Agriculture, Food and Environment is responsible for nature conservation in Spain, although, as previously reported, many of its powers have been transferred by law to the 17 Autonomous Regional Governments, plus the 2 Autonomous Cities of Ceuta and Melilla. In relation to the Bern Convention, it is those powers that deal with species conservation and management that are particularly relevant.

In the framework of the European Strategy for the Conservation of Invertebrates of the Bern Convention, Spain presents the developments that have occurred during the implementation period 2008-2013. To do so, it shall address the following issues:

- Advances in legal protection
- Progress on the inventory of invertebrates and knowledge of their conservation status
- Progress on “in situ” conservation

e) **Advances in legal protection**

Spain has a legislation that protects all wildlife. Thus, invertebrates are included in this general legal framework. This regulatory framework is expressed by Article 52.3 of Law 42/2007, of 13th December, on the Natural Heritage and Biodiversity.

It is prohibited to kill, to damage, to harass or to disturb wildlife deliberately whatever the method or the stage of their life cycle. This prohibition includes the keeping and live capture, destruction, damage, collecting and retention of their nests, their young or their eggs, the latter even if empty, as well as the possession, transport, trade and commerce of live or dead or their remains, including international trade.

This general protection does not apply in cases with specific regulation, particularly in the legislation of forestry, hunting, agriculture, inland fisheries and sea fisheries. In addition to this protection, which has not changed in the period 2008-2013, the Law also determines the possibility of additional protection for species that are most threatened, by the creation of the List of Wild Species with a Special Protection Regime and the Spanish Catalogue of Endangered Species (Articles 53 and 55 of Law 42/2007).

Species included in these instruments may not be hunted or fish, are subject to regular monitoring and, in the case of those included in the catalogue, require the development of recovery plans.

The Royal Decree 139/2011, of 4th February, for the development of List of Wild Species of Special Protection Regime and the Spanish Catalogue of Endangered Species was approved in 2011. It listed the following species as protected in Spain:

		NOMBRE CIENTÍFICO	POBLACIÓN REFERIDA	CATEGORÍA DEL CATÁLOGO
Crustacea		<i>Austropotamobius pallipes</i>		Vulnerable
		<i>Munidopsis polymorpha</i>		En peligro de extinción
		<i>Panulirus echinatus</i>		En peligro de extinción
		<i>Candelacypris aragonica</i>		Vulnerable
		<i>Speleonectes ondinae</i>		En peligro de extinción
Insecta	Coleoptera	<i>Buprestis splendens</i>		Vulnerable
		<i>Carabus (Mesocarabus) riffensis</i>		Vulnerable
		<i>Cerambyx cerdo</i>		
		<i>Chasmatopterus zonatus</i>		Vulnerable
		<i>Dorysthenes (Opisognathus) forficatus</i>		
		<i>Cucujus cinnaberinus</i>		En peligro de extinción
		<i>Limoniscus violaceus</i>		Vulnerable
		<i>Lucanus cervus</i>		
		<i>Osmoderma eremita</i>		Vulnerable
		<i>Pimelia granulicollis</i>		En peligro de extinción
		<i>Rhopalomesites euphorbiae</i>		En peligro de extinción
		<i>Rosalia alpina</i>		
		<i>Halophiloscia canariensis</i>		En peligro de extinción
	Lepidoptera	<i>Eriogaster catax</i>		
		<i>Euphydryas aurinia</i>		
		<i>Graellsia isabelae</i>		
		<i>Hyles hippophaes</i>		
		<i>Lopinga achine</i>		
		<i>Lycaena helle</i>		
		<i>Maculinea arion</i>		
		<i>Maculinea nausithous</i>		Vulnerable
		<i>Parnassius apollo</i>		
		<i>Parnassius mnemosyne</i>		
		<i>Polyommatus golgus</i>		En peligro de extinción
		<i>Proserpinus proserpina</i>		
	Mantodea	<i>Apteromantis aptera</i>		

	Odonata	<i>Coenagrion mercuriale</i>		
		<i>Gomphus graslinii</i>		
		<i>Leucorrhinia pectoralis</i>		
		<i>Lindenia tetraphylla</i>		En peligro de extinción
		<i>Macromia splendens</i>		En peligro de extinción
		<i>Ophiogomphus cecilia</i>		En peligro de extinción
		<i>Oxygastra curtisii</i>		Vulnerable
	Orthoptera	<i>Acrostira euphorbiae</i>		En peligro de extinción
		<i>Baetica ustulata</i>		Vulnerable
		<i>Saga pedo</i>		
Arachnida	Araneae	<i>Macrothele calpeiana</i>		
	Opiliones	<i>Maioresus randoi</i>		En peligro de extinción
Mollusca	Gastropoda	<i>Ranella olearia</i>	Mediterráneo	
		<i>Charonia lampas lampas</i>		Vulnerable
		<i>Charonia tritonis variegata</i>	Mediterráneo	
		<i>Cymbula nigra</i>	Mediterráneo	
		<i>Dendropoma petraeum</i>		Vulnerable
		<i>Elona quimperiana</i>		
		<i>Erosaria spurca</i>	Mediterráneo	
		<i>Geomalacus maculosus</i>		
		<i>Luria lurida</i>	Mediterráneo	
		<i>Mitra zonata</i>	Mediterráneo	
		<i>Nucella lapillus</i>		
		<i>Patella candei candei</i>		En peligro de extinción
		<i>Patella ferruginea</i>		En peligro de extinción
		<i>Patella ulyssiponensis</i>		
		<i>Schilderia achatidea</i>	Mediterráneo	
		<i>Theodoxus velascoi</i>		En peligro de extinción
		<i>Tonna galea</i>	Mediterráneo	
		<i>Vertigo angustior</i>		
		<i>Vertigo moulinsiana</i>		
		<i>Zonaria pyrum</i>	Mediterráneo	
	Bivalvia	<i>Lithophaga lithophaga</i>	Mediterráneo	
		<i>Pholas dactylus</i>	Mediterráneo	
		<i>Pinna nobilis</i>		Vulnerable

		<i>Pinna rudis</i>	Mediterráneo	
		<i>Margaritifera auricularia</i>		En peligro de extinción
		<i>Margaritifera margaritifera</i>		
		<i>Unio tumidiformis</i> (antes <i>U. crassus</i>)		
Echinoderma	Asteroidea	<i>Asterina pancerii</i>		
	Echinoidea	<i>Centrostephanus longispinus</i>		
	Asteroidea	<i>Ophidiaster ophidianus</i>	Mediterráneo	
	Asteroidea	<i>Astroides calycularis</i>		Vulnerable
Bryozoa	Stenolaemata	<i>Errina aspera</i>	Mediterráneo	
Cnidaria	Anthozoa	<i>Savalia savaglia</i>	Mediterráneo	
Bryozoa	Stenolaemata	<i>Hornera lichenoides</i>	Mediterráneo	
Porifera	Demospongiae	<i>Asbestopluma hypogea</i>	Mediterráneo	
		<i>Axinella cannabina</i>	Mediterráneo	
		<i>Axinella polypoides</i>	Mediterráneo	
		<i>Geodia cydonium</i>	Mediterráneo	
		<i>Sarcophagus pipetta</i>	Mediterráneo	

(*) Included in Annex II of the Bern Convention

All species, subspecies or populations abovementioned are included in the List of Wild Species in Special Protection Regime, and some of them, are also listed in the Spanish Catalogue of Endangered Species.

In this way, the most endangered species are protected and the provisions made by Council Directive 92/43/EEC on the conservation of habitats and by international conventions such as Bern, CMS or Barcelona, are also taken into account. This legislation was adopted in 2011, but it is still in force today.

e. Progress on the inventory of invertebrates and knowledge of their conservation status

During the reporting period, there has been progress in increasing the knowledge of the distribution and conservation status of Spanish invertebrates, with special mention of the most endangered and protected species.

A relevant initiative at national level since 2008 was launched in 2009 by the Ministry of Agriculture, Food and Environment as a follow up of the project leading to the Red Book of Invertebrate species in Spain (2006). It led to the development of the first Atlas of Threatened Invertebrates in Spain, referring to the Endangered and Critically Endangered species (applying the IUCN categories), with the collaboration of numerous experts on each taxonomic group, coordinated by Verdú & Galante (2009).



http://www.magrama.gob.es/es/biodiversidad/temas/conservacion-de-especies-amenazadas/invertebrados/ieet_invert_amenazados_atlas.aspx

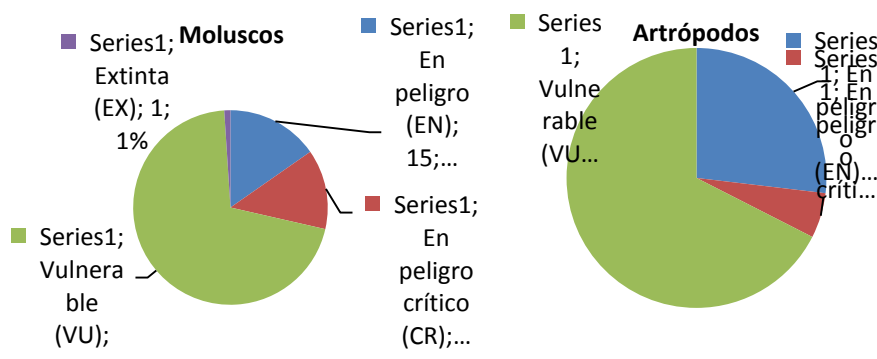
The contents of this Atlas were completed in 2011 with the publication of the “Atlas and Red Data Book of Threatened Invertebrates in Spain: Vulnerable Species” (Verdú & Galante, 2011).



http://www.magrama.gob.es/es/biodiversidad/temas/inventarios-nacionales/inventario-especies-terrestres/inventario-nacional-de-biodiversidad/ieet_invert_vulne_atlas.aspx

This new work addresses terrestrial and freshwater arthropods and molluscs and allows complement the knowledge on the distribution and conservation status of the most endangered invertebrate species that began to be developed with the Atlas of Species Critically Endangered and Endangered. The new work also updated the Red List of Spanish invertebrates. The data and texts were compiled, elaborated, tested and 391arkia39 by scientist experts on each taxonomic group. In total, it includes results for 213 species of the category “Vulnerable” and 19 species of invertebrates of “Community interest” in Spain. The results include an analysis of the population status, the distribution maps and a review of the current status of the habitats and threats to each species. It includes maps of potential habitat and potential distribution maps for 37 molluscs, 78 arthropods and 7 invertebrates for Macaronesia. It sums 124 species at all.

On the other hand, the update of the Red List of Threatened Invertebrates includes a total of 523 species, of which 258 species qualifies for endangered categories as categorized by IUCN. The following figure shows the distribution of the categories of the 523 species:



The Red List can be consulted at http://www.magrama.gob.es/es/biodiversidad/temas/inventarios-nacionales/lista_roja_invertebrados_tcm7-187739.pdf

The webpage of the Ministry also provides wide information about other databases, publications, and ongoing projects. For instance, in collaboration with experts, it has released new data sheets on preliminary Ecological basis for the conservation of invertebrate species of Community interest living in Spain (http://www.magrama.gob.es/es/biodiversidad/temas/espacios-prottegidos/red-natura-2000/bei_bases_eco_invertebrados.aspx)

The Ministry of Economy and Competitiveness is in charge of the I+D+I National Plan. It continues financing the Fauna Ibérica research project and as a result of the research carried out, the *Fauna Iberica* series has already published 36 monographs on different animal groups. The project maintain a databank, Iberfauna (<http://www.iberfauna.mncn.csic.es>) aimed to compile academic information on nomenclatorial aspects as well as detailed information on species distribution. Currently is under renovation to facilitate higher useability and interoperativity with other European databases.

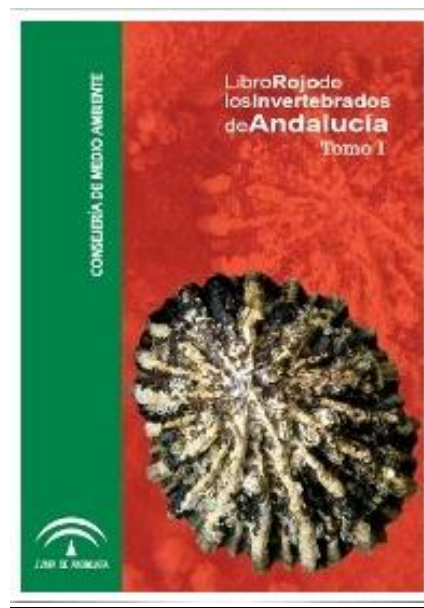
Although progress has been made in the knowledge of the conservation status of invertebrates in Spain, it should be noted that in this country it has been estimated the presence of 60,000-80,000 different species. Therefore, it can be said that there is still much work to do in this area.

The regional governments are actively promoting inventories of their biodiversity as well as other projects to publish protection lists or “red” lists, including invertebrate species or are preparing their red lists or catalogues or complementing their legislation to include invertebrates. Most of these initiatives, publish books and relevant information are accessible at their webpages. All the regions are collaborating with the Global Biodiversity Information Facility Spanish node (GBIF-España) (<http://www.gbif.es>) and contributing the compiled information to the GBIF databases.

One example of a wide and biodiversity rich region is Andalucía that is promoting many projects on Invertebrates in close collaboration with the scientific community. Some of the results on invertebrates include:

The Red Book of Invertebrates of Andalusia (2008): It consists of four volumes containing 394 species or subspecies (when necessary) of 10 different phyla, qualified according to the IUCN categories: 222 of them are endangered (CR EN VU), and the rest NT LC or DD. 307 are continental and 87 marine invertebrates. The book considers species whose distribution areas include endangered population living in Andalusia. It can be consulted at:

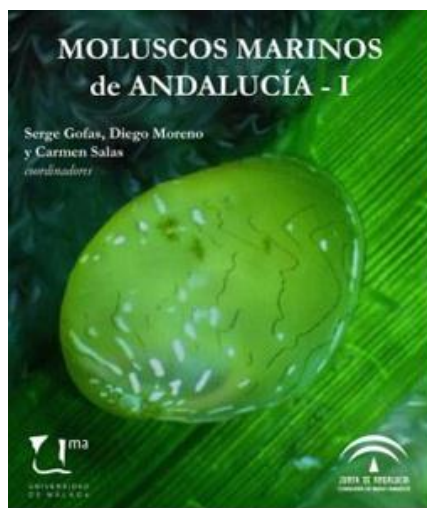
<http://www.juntadeandalucia.es/medioambiente/site/portalweb/menuitem.7e1cf46ddf59bb227a9ebe205510e1ca/?vgnextoid=0d8e968e15636310VgnVCM1000001325e50aRCRD&vgnextchannel=4b2fa7aaaf4f4310VgnVCM2000000624e50aRCRD>



- The process of adopting an Andalusian Strategy of Integrated Management of Biodiversity started in 2010. Its overall objective is to halt the loss of biodiversity of Andalusia and to conserve it and improve management to achieve and maintain the proper functioning of its ecosystems. All citizens had the opportunity to express their views and make suggestions. The final document was approved on September 27, 2011 by the Governing Council.



From the research Community supported by the Government of Andalusia, the book *Moluscos Marinos de Andalucía*, has been published in 2012. It consists of two volumes with encyclopedic character addressed to provide an inventory and information on the culture, conservation and distribution of around 1,200 species with colour photographs of all of them.



Other examples combining biodiversity inventories and atlases reviewing the conservation status of invertebrate species, usually have been developed in close collaboration with research organizations and carried out by experts. Among them:

- The Atlas and Red Data Book of the Mollusks of Castilla-La Mancha (Bragado et al.2010), carried out by researchers of the Museo Nacional de Ciencias Naturales (CSIC) with financial support of Castilla-La Mancha. Autonomous region.
- The Aquatic invertebrates of the Biosphere Reserve of La Mancha wetland (Araujo, 2011)

3. Progress on “in situ” conservation

During the period 2008-2011, the protected surface in Spain has increased, primarily due to the completion of the Natura 2000 network. Although, in most cases, the conservation of invertebrates was not the purpose of the declaration of natural areas, no doubt, this group of wildlife has been benefited from it. Thus, currently 27% of the surface of Spain is protected within the Natura 2000 network, and 8% of the country's area is protected through the networks of protected areas in the different Autonomous Communities. However, it was found that a significant number of threatened or rare species have not yet populations in protected areas (in the “Atlas and Red Data Book of Threatened Invertebrate Spain. Vulnerable Species” there is an analysis of the situation). The application of the figure of micro-reserve for the protection of specific areas has been implemented in Spain for the conservation of plant populations, and on rare occasions, for specific populations of invertebrates. This is another of the lines that should be advanced in the future to improve the situation of invertebrates.

Moreover, conservation strategies for two species of invertebrates: *Patella ferruginea* and *Margaritifera auricularia*, were adopted in 2007 and 2008, respectively. In addition, the Strategy for the control of zebra mussel (*Dreissena polymorpha*) in Spain was passed in 2007. Since 2008, there has not been approved any new conservation strategy affecting invertebrates in Spain, although it has worked on the application of these strategies, both in research as in management, including important advances in captive breeding for the case of *Margaritifera auricularia*.

In relation to Bern Convention naiad species, some regions are working on LIFE projects as:

- Margal-Ulla LIFE+Nature and Biodiversity (LIFE09 NAT/ES/000514, 2010-2015), managed by XUNTA DE GALICIA with the objective of recover the populations of *Margaritifera margaritifera* in the Ulla river. The project is developed in collaboration of Santiago de Compostela University.

- “Estany projects” *Improvement of 43larkia43 and species in the Natura 2000 network in Banyoles* (LIFE08 NAT/E/00078, 2010-2013), managed by Porqueres and Banyoles municipalities (supported by several official organizations of Catalonia). The naiad species living there is *Unio elongatulus* (currently consisting of two species *Unio ravoisieri* + *U. mancus*).

Other Bern Convention species that have LIFE projects are:

- Biodiversidad y Trasmochos (LIFE08 NAT/E/000075, 2010-2015). *Management and conservation of Osmoderma eremita, Rosalia alpina and other saproxylic 43larkia43 of Community interest in Gipuzkoa*. The main objective of this 43larkia is to support the conservation status of saproxylic (dead 43lar) coleopteran (beetle) populations in Gipuzkoa forests, particularly the priority species *Osmoderma eremita* and *Rosalina alpina*. This will be achieved by improving the availability and quality of 43larkia43 for saproxylic coleopteran populations in Gipuzkoa forests with the aim of achieve information for the preparation of management plans for these species in the Basque Country.

In the last years a vast amount of new genus and species of prosobranch hydrobiids are been discovered and described, some of them close to extinction. This rich fauna and the highly diverse habitats in which they live are seriously threatened by human activities. Urgent measures should be taken, especially at national and regional levels to preserve this biodiversity.

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SWEDEN / SUÈDE

REPORT ON INVERTEBRATE CONSERVATION IN SWEDEN 2009–2013

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Species Action Plans

Some 250 Species Action Plans, covering roughly 390 species, are currently under implementation in Sweden and much governmental resources are allocated into these (www.naturvardsverket.se). The action plans include 198 invertebrate species:

(*Acmaeops marginatus* (Fabricius, 1781), *Aesalus scarabaeoides* (Panzer, 1794), *Agonopterix atomella* (Denis & Schiffermüller, 1775), *Agonopterix bipunctosa* (Curtis, 1850), *Agrilus mendax* Mannerheim, 1837, *Ampedus cardinalis* (Schiodte, 1865), *Ampedus nigerrimus* (Lacordaire, 1835), *Anacampsis fuscilla* (Eversmann, 1844), *Andrena argentata* Smith, 1844, *Andrena batava* Pérez, 1902, *Andrena bimaculata* Kirby, 1802, *Andrena gelriae* van der Vecht, 1927, *Andrena humilis* Imhoff, 1832, *Andrena labialis* Kirby, 1802, *Andrena marginata* Fabricius, 1776, *Andrena morawitzi* Thomson, 1872, *Andrena nycthemera* Imhoff, 1868, *Anoplius aeruginosus* (Tournier, 1890), *Anoplodera sexguttata* (Fabricius, 1775), *Anthophora plagiata* Illiger, 1806, *Anthophora retusa* Linné, 1758, *Anthrenochernes stellae* Lohmander, 1939, *Apalus bimaculatus* (Linnaeus, 1761), *Aphodius arenarius* (Olivier, 1789), *Aphodius merdarius* (Fabricius, 1775), *Aphodius quadriguttatus* (Herbst, 1783), *Aradus angularis* J. Sahlberg, 1886, *Aradus aterrimus* Fieber, 1864, *Aradus laeviusculus* Reuter, 1875, *Aradus signaticornis* R. F. Sahlberg, 1848, *Astacus astacus* (Linnaeus, 1758), *Atralata albofascialis* (Treitschke, 1829), *Baptia tibiale* (Esper, 1790), *Bellardia vespillio* (Fabricius, 1794), *Bembidion cruciatum* Dejean, 1831, *Biastes 44larkia44r* Nylander, 1848, *Biphylus lunatus* (Fabricius, 1792), *Bledius atricapillus* (Germar, 1825), *Boros schneideri* (Panzer, 1795), *Bothrideres contractus* (Geoffroy, 1785), *Buprestis novemmaculata* Linnaeus, 1767, *Buvatina stroemella* (Fabricius, 1779), *Calitys scabra* (Thunberg, 1784), *Calosoma auropunctatum* (Herbst, 1784), *Calosoma reticulatum* (Fabricius, 1787), *Canthophorus impressus* (Horváth, 1881), *Carphoborus cholodkovskyi* Spessivstev, 1916, *Cassida ferruginea* Goeze, 1777, *Cassida murraea* Linnaeus, 1767, *Cerambyx cerdo* Linnaeus, 1758, *Cerambyx scopoli* Fuessly, 1775, *Ceruchus chrysomelinus* (Hochenwarth, 1785), *Cerylon impressum* Erichson, 1845, *Chalcophora mariana* (Linnaeus, 1758), *Cheiracanthium pennyi* O.Pickard-Cambridge, 1873, *Cheiridium museorum* (Leach, 1817), *Chesias rufata* (Fabricius, 1775), *Chlorophorus herbstii* (Brahm, 1790), *Chortodes morrisii* (Dale, 1837), *Cicindela 44larkia44* Latreille & Dejean, 1822, *Clivina collaris* (Herbst, 1784), *Cochlicopa nitens* (Gallenstein, 1848), *Coelioxys conoidea* Illiger, 1806, *Coelioxys obtusispina* Thomson, 1872, *Coleophora albella* (Thunberg, 1788), *Coleophora conyzae* Zeller, 1868, *Coleophora genistae* Stainton, 1857, *Coleophora scabrida* Toll, 1959, *Conisania leineri* (Freyer, 1836), *Copris lunaris* (Linnaeus, 1758), *Corticaria cucujiformis* Reitter, 1881, *Corticeus fraxini* (Kugelann, 1794), *Corticeus longulus* (Gyllenhal, 1827), *Cryptophagus lysholmi* Munster, 1932, *Cucujus cinnaberinus* (Scopoli, 1763), *Cyrtopogon luteicornis* (Zetterstedt, 1842), *Denticollis rubens* Piller & Mitterpacher, 1783, *Depressaria nemolella* Svensson, 1982, *Digitivalva arnicella* (von Heyden, 1863), *Digitivalva valeriella* (Snellen, 1878), *Diplocoelus fagi* Guérin-Ménéville, 1844, *Dircaea australis* Fairmaire, 1856, *Dromaeolus barnabita* (Villa, 1838), *Dufourea halictula* Nylander, 1852, *Dufourea inermis* Nylander, 1848, *Dysauxes ancilla* (Linnaeus, 1767), *Dyschirius laeviusculus* Putzeys, 1846, *Elater ferrugineus* Linnaeus, 1758, *Emus hirtus* (Linnaeus, 1758), *Enicmus brevicornis* (Mannerheim, 1844), *Ennearthron pruinolum* (Perris, 1864), *Eresus sandaliatus* (Martini & Goeze, 1778), *Ethmia dodecea* (Haworth, 1828), *Etorofus pubescens* (Fabricius, 1787), *Eublemma minutata* (Fabricius, 1794), *Eucosma scorzonera* (Benander, 1942), *Euheptaulacus sus* (Herbst, 1783), *Euphydryas aurinia* (Rottemburg, 1775), *Euphydryas maturna* (Linnaeus, 1758), *Eupoecilia sanguisorbana*

(Herrich-Schäffer, 1851), *Euroleon nostras* (Fourcroy, 1785), *Exocentrus adpersus* Mulsant, 1846, *Gnorimus variabilis* (Linnaeus, 1758), *Halictus leucaheneus* Ebmer, 1972, *Halictus quadricinctus* Fabricius, 1776, *Harpalus autumnalis* (Duftschmid, 1812), *Harpalus flavescens* (Piller & Mitterpacher, 1783), *Harpalus hirtipes* (Panzer, 1797), *Hormopeza 45larkia45ra* Zetterstedt, 1838, *Hyphoraia aulica* (Linnaeus, 1758), *Ips sexdentatus* (Börner, 1776), *Ischnomera sanguinicollis* (Fabricius, 1787), *Laemophloeus monilis* (Fabricius, 1787), *Larca lata* (H. J. Hansen, 1884), *Leiopus punctulatus* (Paykull, 1800), *Lepturalia nigripes* (De Geer, 1775), *Lithostege farinata* (Hufnagel, 1767), *Lithostege griseata* (Denis & Schiffermüller, 1775), *Lopinga achine* (Scopoli, 1763), *Lycaena helle* (Denis & Schiffermüller, 1775), *Lytta vesicatoria* (Linnaeus, 1758), *Maculineaalcon* (Denis & Schiffermüller, 1775), *Maculinea arion* (Linnaeus, 1758), *Margaritifera margaritifera* (Linnaeus, 1758), *Megachile lagopoda* Linné, 1761, *Melandrya dubia* (Schaller, 1783), *Melitaea britomartis* Assmann, 1847, *Melitta melanura*, *Melitta tricineta* Kirby, 1802, *Meloe brevicollis* Panzer, 1793, *Mesosa curculionoides* (Linnaeus, 1761), *Mesosa nebulosa* (Fabricius, 1781), *Mirificarma lentiginosella* (Zeller, 1839), *Myrmeleon bore* (Tjeder, 1941), *Nemophora cupriacella* (Hübner, 1819), *Nemophora minimella* (Denis & Schiffermüller, 1775), *Nomada argentata* Herrich-Schaeffer, 1839, *Nomada armata* Herrich-Schaeffer, 1839, *Nomada facilis* Schwarz, 1967, *Nomada fuscicornis* Nylander, 1848, *Nomada integra* Brullé, 1832, *Nomada similis* Morawitz, 1872, *Nomada stigma* Fabricius, 1804, *Oberea linearis* (Linnaeus, 1761), *Oidaematophorus vafradactylus* Svensson, 1966, *Omphiscola glabra* (O. F. Müller, 1774), *Onthophagus illyricus* (Scopoli, 1763), *Orthotomicus longicollis* (Gyllenhal, 1827), *Osmia 45larkia45* Friese, 1885, *Osmoderma eremita* (Scopoli, 1763), *Panurgus banksianus* Kirby, 1802, *Parnassius 45larkia45r* (Linnaeus, 1758), *Pedostrangalia revestita* (Linnaeus, 1767), *Philodromus fallax* Sundevall, 1833, *Phyllodrepoidea crenata* (Gravenhorst, 1802), *Phytoecia nigricornis* (Fabricius, 1781), *Plagionotus detritus* (Linnaeus, 1758), *Platynus longiventris* Mannerheim, 1825, *Platysoma lineare* Erichson, 1834, *Plebejus argyrognomon* (Bergsträsser, 1779), *Podalonia luffii* Saunders, 1903, *Poecilium pusillum* (Fabricius, 1787), *Prolita solutella* (Zeller, 1839), *Prostomis mandibularis* (Fabricius, 1801), *Pseudocleonus grammicus* (Panzer, 1789), *Pseudoptilinus fissicollis* (Reitter, 1877), *Pseudoterpna pruinata* (Hufnagel, 1767), *Psophus stridulus* (Linnaeus, 1758), *Pytho kolwensis* Sahlberg, 1833, *Ropalopus femoratus* (Linnaeus, 1758), *Scolitantides orion* (Pallas, 1771), *Scopula 45larki* (Scopoli, 1763), *Scopula virgulata* (Denis & Schiffermüller, 1775), *Scotopteryx luridata* (Hufnagel, 1767), *Scotopteryx mucronata* (Scopoli, 1763), *Scythris crypta* Hannemann, 1961, *Solva marginata* (Meigen, 1820), *Sphecodes cristatus* von Hagens, 1882, *Sphex funerarius* Gussakovskij, 1934, *Stauroderus scalaris* (Fischer-Waldheim, 1846), *Stenagostus rhombeus* (Olivier, 1790), *Stephanopachys linearis* (Kugelann, 1792), *Stephanopachys substriatus* (Paykull, 1800), *Stictoleptura scutellata* (Fabricius, 1781), *Stratiomys chamaeleon* (Linnaeus, 1758), *Synchita separanda* (Reitter, 1881), *Syncopacma suecicella* (Wolff, 1958), *Tasgius globulifer* (Geoffroy, 1785), *Tebenna bjerkanarella* (Thunberg, 1784), *Tetratoma desmarestii* Latreille, 1807, *Tragosoma depsarium* (Linnaeus, 1767), *Triaxomasia caprimulgella* (Stainton, 1851), *Unio crassus* Philipsson, 1788, *Upis ceramboides* (Linnaeus, 1758), *Vertigo geyeri* Lindholm, 1925, *Vertigo moulinsiana* (Dupuy, 1849), *Xyletinus tremulicola* Y.Kangas, 1958, *Xylomya czezanovskii* Pleske, 1925).

Reporting on invertebrates species according to Article 17 in the Species- and Habitat Directive

Following the EU Habitats Directive the Member States have an obligation to preserve the listed species and habitats. It also obliges the Member States to assess the conservation status of all species and habitats of Community interest every sixth year. This obligation is formulated under Article 17 of the Habitats Directive. The Swedish assessment was reported to the European Commission in June 2013 by the Swedish Species Information Centre on commission by the Swedish Environmental Protection Agency. Here, range, population size, habitat and future prospect were assessed for each species in each of the biogeographic regions (i.e. Alpine, Boreal and Continental region) in which they occur.

The conservation status of several species and populations are still not in a favourable condition. In comparison with the status reported in 2007, most changes are due to better knowledge, rather than improved conditions.

Many species are threatened and fail to reach a favourable conservation status due to small or decreasing range and quality of habitat, in conjunction with small population sizes. Therefore, the long-term survival of many species is dependent on conservation actions. The situation is especially serious for listed butterflies and woodland insects. Butterflies and some other insects that thrive in traditionally managed, semi-natural grasslands suffer from the abandonment of traditional agricultural practises as well as the transformation of grasslands into woodland. Several beetles also suffer from lack of dead wood and old forest, however, prescribed burning of woodland in central and northern Sweden has improved the situation for several beetle species associated with fire and burnt wood.

The Species Observations System & The Swedish LifeWatch

The Species Observations System (Artportalen: <http://artportalen.se>; <http://artportalen.se/birds>; <http://artportalen.se/bugs>; <http://artportalen.se>) is an Internet-based reporting system for observations developed and hosted by the Swedish Species Information Centre on commission by the Swedish Environmental Protection Agency. Its content is transferred every night to GBIF and to the Species Observation Service of Swedish LifeWatch. The Observation system is used by amateur biologists, the skilled general public, the governmental monitoring programs, firms of consultants, scientists and others. Currently, it encompasses c. 38 million observations of >25,000 different species. Out of these, >2.7 million are invertebrates, covering >17,000 different species. It is also possible to upload pictures at the Species Gateway in order to verify the identity of the report. Today there are c. 200,000 pictures of invertebrates. Everybody have open access to the observations, pictures, maps, etc., with the exception of a few species that are regarded as particularly sensitive. The system for validation of reports are currently being updated and improved.

Within the Swedish LifeWatch ([www.](http://www.lifeWatch.se))

Base-line inventory of Species listed in the Habitats Directive

During 2004-2009 Sweden conducted inventories of Protected and Natura 2000 areas of all invertebrate species listed on Annex 2 and Odonata species listed in Annex 4 of the EU Habitats Directive. All results were entered into and available in the Swedish Species Observation System (see below), though the occurrence of a few sensitive species are not shown in detail for the general public. In parallel, guidelines for reaching favourable conservation status of these species have been produced.

Since 2010 large scale monitoring programs for the listed species have been developed and are currently in progress. The programs aim to follow the status of populations and known sites for the species and also to discover new localities. The programs cover the entire biogeographical regions, i.e., also outside of Natura 2000 areas.

The Saproxylic Database – Biodiversity in dead wood

Together with Norway Sweden has constructed a database with ecological information about some 7000 species dependent on dead wood. Out of these some 4000 are invertebrates.

www.saproxylic.org -> Username: sapro; password: leave empty -> Logg on.

The Red List of Swedish species

In 2010, Sweden published The 2010 Red List of Swedish Species. Here, 12,794 invertebrate species were assessed against the IUCN Red List Criteria, out of which 2,256 (17.6%) were classified as red-listed and 909 (7.1%) as threatened, respectively. The evaluation process for the 2015 Red List started in 2013.

The Swedish Taxonomy Initiative

ArtDatabanken (The Swedish Species Information Centre) was 2002 commissioned by the government to find and to make revisions and developing keys for the identification of all Swedish multicellular organisms, some 50.000 species. This project has now run for eleven years and resulted in a considerable improvement of the knowledge of invertebrate fauna and also the infrastructure of Swedish taxonomy. See: <http://www.slu.se/en/collaborative-centres-and-projects/artdatabanken/the->

[swedish-taxonomy-initiative/](#). Unfortunately, the project got a substantial budget cut in 2013 and onwards, which will affect all parts mentioned below, and in particular n. 3 and 4.

It includes four parts:

1. Inventories, where we hitherto have conducted two large-scale projects, one utilizing Malaise-traps targeting Hymenoptera, Diptera and other insects, and one targeting marine invertebrates. In the former an estimated 80 million specimen have been collected. So far, c. 800 invertebrate species new to science have been identified and another 1250 invertebrate species new to Sweden have been found.
2. Taxonomic revisions. Large groups of organisms, e.g., many fungi, worms, diptera and parasitic wasps, are currently so poorly known that extensive research is needed before any comprehensive identification keys can be produced. To that end, The Swedish Taxonomy Initiative has hitherto during the years 2002-13 granted c. 10 million Euro for taxonomic research on invertebrates.
3. Popular science presentation of all multicellular species that can be identified without advanced technology in the *Encyclopedia to the Swedish Flora and Fauna* (Nationalnyckeln till Sveriges flora och fauna). The majority of the text is in Swedish, but all keys are bilingual (Swedish and English) and there is a section with key facts in English for every species. In order to make the Encyclopedia attractive and useful to non-professionals, the majority of the species are illustrated with beautiful colour illustrations. So far 15 volumes, out of which 11 treat invertebrate groups, have been published. In October a volume on Echinodermata and Hemichordata will be published. Due to the budget cut, most probably only one more printed volume (on Bryophytes) will be published (in 2014). On the other hand, digital identification keys with description of poorly know invertebrates, will onwards be published on Internet by the project.
4. Support to the biological museums. During the years 2002-13 the biological museums have been subsidized with about 25 Million Euro through this venture. In particular, the museums have received subsidies for curating and digitizing their collections. Due to the budget cut, the support from 2014 and onwards will be reduced by 25%.

Conclusions

All above-mentioned activities have led to a dramatic improvement in knowledge about species status and species identification, as well as in accessibility to species data. However, the over-all conservation status of invertebrates is still unfavourable, due to, in particular, continuing conversion of marine, forest and agricultural landscapes.

SWITZERLAND / SUISSE



Status overview of the species of the Bern Convention in Switzerland

This table summarizes the national status of the species of the Bern Convention that have been recorded in Switzerland. It also shows which species have been chosen as target species for federal agricultural and forest policies; in other words it highlights which measures must be focused on to ensure the conservation of these species in agricultural and forest landscapes. Some of these species are already the subjects of national or regional action plans.

CLASS	ORDER	Species	Red List status	National responsibility	National trend	National priority	Target species for agricultural measures	Target species for forest measures	National (Nt) + regional (Rg) action plans
Bivalvia	Unionoida	Unio mancus	EN	1	→	3			
Gastropoda	Pulmonata	Helix pomatia	LC	1	→				
Insecta	Coleoptera	Cerambyx cerdo	2	2	→	2		X	Rg
Insecta	Coleoptera	Lucanus cervus	3	2	→	3		X	Rg
Insecta	Coleoptera	Osmoderma eremita	1	2	↘	1	X	X	Rg
Insecta	Coleoptera	Rosalia alpina	3	2	↗	3		X	Rg
Insecta	Coleoptera	Dityscus latissimus	1	1	D	2			
Insecta	Coleoptera	Graphoderus bilineatus	3	1	→	4			
Insecta	Lepidoptera	Coenonympha hero	CR	2	?	1			
Insecta	Lepidoptera	Coenonympha oedippus	CR	2	?	1	X		
Insecta	Lepidoptera	Erebia christi	VU	3	→	3			
Insecta	Lepidoptera	Erebia sudetica	VU	3	→	3	X		Nt
Insecta	Lepidoptera	Eriogaster catax	1	1	↘	2		X	Rg
Insecta	Lepidoptera	Euphydryas aurinia	EN	2	↘	2	X		Rg
Insecta	Lepidoptera	Graellsia isabellae	NE	0	IN				
Insecta	Lepidoptera	Hyles hippophaes	1	2	↘	1			
Insecta	Lepidoptera	Lopinga achine	EN	2	→	2		X	Nt
Insecta	Lepidoptera	Lycaena dispar	VU	1	↗	4			Nt
Insecta	Lepidoptera	Maculinea arion	NT	2	→	3	X		Rg
Insecta	Lepidoptera	Maculinea nausithous	EN	2	→	2	X		Nt
Insecta	Lepidoptera	Maculinea teleius	EN	2	→	2	X		Nt
Insecta	Lepidoptera	Parnassius apollo	NT	2	→	3	X		
Insecta	Lepidoptera	Parnassius mnemosyne	VU	2	→	2	X	(X)	
Insecta	Lepidoptera	Proserpinus proserpina	3	2	↘	3			
Insecta	Lepidoptera	Zerynthia polyxena	NE	0	IN				
Insecta	Odonata	Coenagrion mercuriale	CR	1	→	2	X		Rg
Insecta	Odonata	Gomphus flavipes	DD	0	?				
Insecta	Odonata	Leucorrhinia albifrons	CR	2	→	1			
Insecta	Odonata	Leucorrhinia caudalis	CR	2	→	1			
Insecta	Odonata	Leucorrhinia pectoralis	CR	2	↗	1			Rg
Insecta	Odonata	Ophiogomphus cecilia	EN	2	→	2			
Insecta	Odonata	Oxygastra curtisii	EN	1	→	3			
Insecta	Odonata	Sympecma paedisca	CR	2	→	1			
Insecta	Orthoptera	Saga pedo	CR	2	→	1	X		
Malacostraca	Decapoda	Astacus astacus	3	3	↘	2			Nt
Malacostraca	Decapoda	Austropotamobius pallipes	2	3	↘	1			Nt
Malacostraca	Decapoda	Austropotamobius torrentium	2	3	↘	1			Nt

Red list status: CR (1): critically endangered; EN (2): endangered; VU (3): vulnerable; NE: not evaluated; DD: data deficient

National responsibility: between 0 (no responsibility) to 3 (high responsibility = sub-endemic species)

National trend: ↗ in expansion; → stable; ↘ : declining; IN: introduced; D: disappeared; ?: unknown

Frequency: dark grey: < 0.5%; grey : between 0.5 and 5%; light grey: ≥ 5%

National priority: between 1 (highest national priority) and 4 (lowest national priority); null: no priority

One species of Appendix 2 of the Bern Convention have already disappeared from Switzerland (*Dityscus latissimus*) and three others have been recently observed but only as isolated (erratic) individuals (*Coenonympha hero*, *C. oedippus*, *Gomphus flavipes*). The presence of viable populations of these three species in the country is very doubtful.

Nine species are in decline, the situation being especially critical for those that are already very rare (*Eriogaster catax*, *Osmoderma eremita*) or still quite common (*Astacus astacus*, *Austropotamobius pallipes*, *A. torrentium*) but threatened by the recent introduction of invasive alien species (especially *Pacifastacus leniusculus* and *Procambarus 49larkia*).

Nineteen species are (apparently) stable, eight of them being very rare and restricted to sensitive habitats (*Leucorrhinia albifrons*, *L. caudalis*, *Saga pedo*, *Sympecma paedisca*, *Unio mancus*) or confined to very small distribution areas (*Erebia 49larkia*, *E. sudetica*, *Oxygastra curtisii*).

Three species are in clear expansion, one (*Lycaena dispar*) remaining threatened due to the context in which it lives (intensive agricultural landscape) and two no longer or at least less threatened due to the positive evolution of their preferred habitats (*Rosalia 49larki* in aging beech forests and *Leucorrhinia pectoralis* in revitalized peat bogs).

One species was successfully introduced in the 1970's (*Graellsia isabellae*) in the pine forests of Wallis; one other species (*Zerynthia polyxena*) has been recorded but has never formed stable populations in Switzerland. These species are not considered indigenous and thus will not benefit from specific conservation measures.

Strategy for the national revision of red list status of species

The program of periodic revision (every 10 to 15 years) of national red lists according to the categories and criteria set forth by the IUCN began in 1999. Attribution of red list status to every concerned species is made after analysis of chorological data gathered in the field during the operational phase of every accepted project. This field work is based on sampling of never-before visited sites and re-sampling of already studied areas (squares kilometres). The main criteria used to evaluate the status of the species are the size and the evolution of the size of their area of occurrence and occupancy and the calculated trend in their population numbers. Invertebrates are the focus of the following projects:

Finished projects:

Odonata (running and standing waters); revised red list published in 2002

Orthoptera (scrubs, dry and humid grasslands); revised red list published in 2007

Aquatic insects (running and standing waters); revised red list of the Ephemeroptera and new red lists for Trichoptera and Plecoptera published in 2012

Mollusca (aquatic and terrestrial); revised red list published in 2012

Rhopalocera (scrubs, dry and humid grasslands); fieldwork, analysis of the data and redaction of the revised red list are complete; publication foreseen for 2013 or beginning of 2014

Projects in progress:

Saproxylic 50larkia50ran (Buprestidae, Cerambycidae, Lucanidae, Cetoniidae: forest, scrubs): fieldwork completed; analysis of the data in progress; publication of the new red list foreseen for 2014

Odonata (revision of the list of 2002); beginning 2013; field work until 2015; analysis of the data and redaction of the revised red list foreseen for 2016

Expected projects:

Field work has been done to test sampling methods and define sampling patterns for other important invertebrate groups such as **soil macroarthropods** (Coleoptera: Carabidae and Staphylinidae; spiders), **ants** (Hymenoptera: Formicidae) and **wild bees** (Hymenoptera: Apoidea).

These projects have yet to enter their operational phase but will remain on standby until the Federal Office for the Environment (FOEN) defines its new strategy for species monitoring and biodiversity surveillance. The outline of this strategy should be available in spring 2014.

National program for the designation of high priority species

In 2005, the FOEN initiated a federal program to define a national set of high priority species. In other words, the goal of the program was to designate candidate species for action plans at national and regional levels and for all regional policies (e.g. those concerning agriculture, forestry, water management). The main criteria used to define the level of priority for species are their level of threat, the responsibility of Switzerland for their conservation in Europe and the feasibility/efficiency of known conservation measures.

The first step of this program was done in collaboration with the Federal Office for Agriculture. The main result of this collaboration was the publication, in 2008, of a critical document (Environmental Objectives for Agriculture) containing a list of plants and animals (vertebrates and invertebrates alike) for which the agricultural sector has a serious responsibility. These species are yet used as target species for ecological networks and ecological compensation measures in agricultural landscape.

Another result of this program was the publication in 2010 of the “List of the species having priority at national level for conservation and promotion of biodiversity”. The species on this list may potentially be used by the cantons to develop action plans devoted to the conservation of those species that still have viable populations in their territory.

Action plans for high priority invertebrate species

Many action plans has been launched in Switzerland for high priority invertebrate species. Between 2001 and 2006 many cantons initiated a resampling of all known sites containing populations of fifteen high priority butterflies species (*Carcharodus lavatherae*, *Pyrgus onopordi*, *Pyrgus cirsii*, *Chazara briseis*, *Coenonympha oedippus*^{*7}, *Coenonympha tullia*, *Lopinga achine**, *Melitaea deione*, *Melitaea britomartis*, *Iolana iolas*, *Lycaena dispar**, *Maculinea alcon*, *Maculinea teleius**, *Maculinea nausithous**, *Plebeius argyrognomon*). The field work was completed in 2007 and the last report delivered in 2008.

If the conservation measures taken by the different cantons (above all extensive mowing or grazing of the colonised grasslands or marshes) have been successful for the majority of these species (including *P. onopordi* and *C. briseis*, two extremely localised species), some failures should also be mentioned: the probable extinction of *P. cirsii* in its last Swiss locality (canton of Geneva), that of *M. alcon* in western Switzerland and the significant decline of *C. tullia* in a large part of its recent distribution area.

In 2011 the FOEN launched another national action plan devoted to the three native crayfish species of Switzerland. If the degradation of the quality of their habitat is often linked to the

^{*7} species of Annexe II or the Bern Convention

rarefaction of their populations, the main reason for their significant decline is the recent introduction of very competitive invasive alien species, in particular, *Pacifastacus leniusculus* and *Procambarus 51larkia*, vectors of the plague disease. The main measures proposed to ensure the conservation of the Swiss native species are:

- habitat revitalisation,
- their reintroduction into revitalised habitats where their absence has been shown,
- isolation and confinement of the invasive species that are still localised (although this measure is too late for *Orconectes limosus*)
- eradication or control of local populations of invasive crayfish by intensive fishery.

Emerald network (network of areas of special conservation interest; part of the pan-European ecological network)

The main objective of this project, which began in 2000, is the designation, with the agreement of local authorities (cantons), of areas that could be candidates for the pan-European ecological network (PEEN).

The first step allowed for the designation of 37 sites that have been officially recognised by the Council of Europe in 2012. The Swiss emerald network is, however, far from complete and must be finalized before 2020.

The criteria actually used to choose new candidate sites is the presence in the candidate sites of

- habitats mentioned in the revised Annexe 1 of resolution 4 of the Bern Convention;
- species listed in the revised Annexe 1 of resolution 6 of the Bern Convention;
- species of high national priority (priority level 1 and 2).

The analysis of the available data is in progress and a first proposal of a complete (but virtual) network of potential sites, in other words a network of sites containing at least 35% of the surface of the concerned habitats and 35% of the populations of the concerned species, should be presented to the FOEN before the end of 2013.

If accepted, this virtual network will be a solid basis on which to enter into negotiations with the local authorities to build the real network of candidate sites for the PEEN.

National biodiversity monitoring

The program Biodiversity Monitoring Switzerland was launched by the FOEN in 2002. In the set of 33 indicators chosen to follow the evolution of national biodiversity, three directly concern invertebrates.

Indicator Z3: Species Diversity at National and Regional Level. The scale of the sampling is the biogeographical region and the number studied unit is six. This indicator is evaluated for butterflies, dragonflies and grasshoppers. The data gathered since 1997 shows no significant changes in Switzerland at this level.

Indicator Z7: Species diversity in landscape. The scale of the sampling is the square kilometre and the number studied unit is 510. This indicator is evaluated for butterflies. The data gathered since 2002 shows that the diversity of butterfly fauna is rather stable at this level in Switzerland except in the southern Alps, where a small decline has been detected.

Indicator Z9: Species Diversity in Habitats. The scale of the sampling is a plot of ten meters square and the number studied unit is 1580. This indicator is evaluated for terrestrial molluscs. The data gathered since 2002 shows a small increase in the diversity of the mollusc fauna in all of the studied habitat types except alpine pasture where the situation is stable.

The future of this program will be defined in the new strategy of the FOEN dealing with species monitoring and biodiversity surveillance.

TURKEY / TURQUIE

REPORT OF CONSERVATION OF INVERTEBRATES IN TURKEY

Turkey's invertebrate fauna, like any other species in Turkey, is very rich and that is why this excessive number of invertebrates is difficult to monitor. Currently, total number of invertebrates listed in Turkey is around 27000. Conservation of invertebrates in Turkey can be examined under 3 headings.

Legal Status

General Directorate of Nature Conservation and National Parks is the legal authority for the protection of biodiversity in Turkey. The legislation about nature and biodiversity protection consists of several acts like Land Hunting Law, National Parks Law, Forestry Law and Environment Law. One of the major acts which have detailed annexes of wildlife species is Land Hunting Law, dated 2003. Although there are some general provisions about the protection of wildlife and biodiversity in this law, no invertebrate species is specifically included in these annexes. The Ministry of Forest and Water Affairs has a plan to prepare a by-law about Enforcement of Bern Convention in general. Within the scope of this by-law, appendices of the Bern Convention will be revised. Invertebrates will be included in this by-law.

Studies Based on Existing Legislation

There are some efforts locally, based on the different regions' needs and priorities. For the last 15 years, 74 different projects which are supported by TUBITAK (The Scientific and Research Council of Turkey) have been conducted. However, one of the biggest problems is the lack of coordination in these studies. That is mainly because of the lack of communication between the Ministry, TUBITAK and the universities. Not all the data is accessible to public. To compensate for this lack, Noah's Ark Biodiversity Database was established in 2007. It is open to public but because of the general lack of awareness about invertebrates, that database is used mainly for mammal and bird species.

Most of the efforts are for some distinguished invertebrates like butterflies. Most of the butterfly species of Turkey have been identified and a booklet named Red List of Butterflies of Turkey has been published. The only existing red list study about Turkey's invertebrates is given in this book. According to this study, 10 % of all the butterfly species (381) is either threatened or near threatened.

There is no protected areas specifically set aside for the protection of invertebrates but there are local studies about invertebrate hot spots.

Currently, only one action plan for an invertebrate species, *Formica pratensis* is in preparation.

Future Studies

There was no methodical inventory study about invertebrates in Turkey until this year. But a 6-year-long project about the biodiversity of Turkey has begun. This project, Inventory and Monitoring of Turkey's Biodiversity, will be conducted by General Directorate of Nature Conservation and National Parks. Besides several other outputs, a detailed list of invertebrates will be compiled at the end of this project. Invertebrates will be prioritized according to their red list categories and action plans will be prepared for critically categorized species.

UKRAINE / UKRAINE

REPORT ON INVERTEBRATES CONSERVATION IN UKRAINE. STATUS 2013

Introduction

According to the National Report of Ukraine on Conservation of Biological Diversity (1997) around 45,000 species of animals are recorded in Ukraine. The vast majority of them (98%) are invertebrates. 542 species of animals are listed in the Red Data Book of Ukraine (2009) including 297 species (55%) of invertebrates.

Legislation

There are a number of legal acts in Ukraine which provides instruments for ensuring conservation of invertebrates.

Laws of Ukraine:

- “On Environmental Protection” (1992);
- “On the Animal Kingdom” (2001);
- “On the Red Data Book of Ukraine” (2002);
- “On Nature Reserve Fund” (1992);
- “Forest Code of Ukraine” (1994);
- “On Ecological Network of Ukraine” (2004);
- “Basic Principles (Strategy) on State Environmental Policy of Ukraine for the Period up to 2020”.

Decrees of the Cabinet of Ministers of Ukraine:

- “On Procedures of Management of State Cadastre of Animal Kingdom” (1994)
- “On the Level of Compensation for Illegal Catch, Destroying or Damaging of Animal and Plant Species listed in the Red Data Book of Ukraine as well as for Destruction or Worsening of their Habitats” (2012);
- “On Adoption of National Action Plan for Environmental Protection for 2011–2015” (2011);
- “On the Concept of the Conservation of Biological Diversity” (1997).

Ukraine is a Party to a number of international treaties relevant to the conservation of invertebrates:

- Convention of Biological Diversity (ratification in 1994);
- Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) (accession in 1999);
- Convention on the Protection of European Wildlife and their Habitats (ratification in 1996);
- Convention on Wetlands of International Importance, especially as Waterfowl Habitat (accession in 1996);
- Framework Convention on the Protection and Sustainable Use of Carpathians (Carpathian Convention) (ratification in 2004);
- Protocol on the Conservation and Sustainable Use of Biological and Landscape Diversity (ratification in 2009) to the Carpathian Convention;
- Protocol on the Conservation of Biodiversity and Landscapes of the Black Sea to the Bucharest Convention on the Protection of the Black Sea against Pollution (ratification in 2007).

Conservation measures and research

The following species of invertebrates are listed in the Red Data Book of Ukraine (2009):

	Species	Conservation status in Ukraine
	Coelenterata	
1.	<i>Moerisia maeotica</i> (Ostroumow, 1896)	Threatened with extinction
2.	<i>Olindias inexpectata</i> (Ostroumow, 1896)	Vulnerable
	Nemathelminthes	
3.	<i>Axonolaimus sera</i> Tchesunov, 1976	Vulnerable
4.	<i>Chromadorina bioculata</i> (Schultze, in Carus, 1857)	Threatened with extinction
	Annelida	
5.	<i>Eisenia gordeieffi</i> Michaelsen, 1899	Vulnerable
6.	<i>Archaeobdella esmonti</i> Grimm, 1876	Vulnerable
7.	<i>Batrachobdella algira</i> (Moquin-Tandon, 1846)	Vulnerable
8.	<i>Erpobdella stschhegolewi</i> (Lukin, 1929)	Vulnerable
9.	<i>Fadejewobdella quinqueannulata</i> (Lukin, 1929)	Vulnerable
10.	<i>Hirudo medicinalis</i> Linnaeus, 1778	Vulnerable
11.	<i>Hirudo verbena</i> Carena, 1820	Vulnerable
12.	<i>Trocheta subviridis</i> Dutrochet, 1817	Threatened with extinction
13.	<i>Trocheta bykowskii</i> Gedrouc, 1913	Vulnerable
3	Arthropoda	
	Crustacea	
14.	<i>Branchinecta ferax</i> (M. Milne-Edwards, 1840)	Poorly known
15.	<i>Branchinecta minuta</i> (S. Smirnov, 1948)	Rare
16.	<i>Branchinecta orientalis</i> G. O. Sars, 1901	Threatened with extinction
17.	<i>Branchipus schaefferi</i> (Fischer, 1834)	Rare
18.	<i>Tanimastyx stagnalis</i> (Linnaeus, 1758)	Vulnerable
19.	<i>Branchinella spinosa</i> (H. Milne Edwards, 1840)	Vulnerable
20.	<i>Branchinectella media</i> (Schmankewitsch, 1873)	Vulnerable
21.	<i>Drepanosaurus birostratus</i> (Fischer, 1851)	Vulnerable
22.	<i>Hemimysis anomala</i> Sars, 1907	Threatened with extinction
23.	<i>Hemimysis serrata</i> Bacescu, 1938	Threatened with extinction
24.	<i>Katamysis warpachowskyi</i> Sars, 1893	Threatened with extinction
25.	<i>Gmelina kusnetzowi</i> Sowinsky, 1904	Vulnerable
26.	<i>Gmelina pusilla</i> Sars, 1896	Vulnerable
27.	<i>Nifargoides intermedius</i> (Carausu, 1943)	Vulnerable
28.	<i>Iphigenella shablensis</i> (Carausu, 1943)	Vulnerable
29.	<i>Iphigenella acanthopoda</i> Sars, 1896	Threatened with extinction
30.	<i>Iphigenella andrusowi</i> (Sars, 1896)	Vulnerable
31.	<i>Lysmata seticaudata</i> Risso, 1816	Vulnerable
32.	<i>Astacus astacus</i> (Linnaeus, 1758)	Vulnerable
33.	<i>Upogebia pusilla</i> (Petagna, 1792)	Rare
34.	<i>Carcinus aestuarii</i> Nordo, 1847	Rare
35.	<i>Pilumnus hirtellus</i> (Linnaeus, 1761)	Not evaluated
36.	<i>Eriphia verrucosa</i> Forskall, 1755	Threatened with extinction
37.	<i>Xantho poressa</i> (Olivi, 1792)	Not evaluated
38.	<i>Pachygrapsus marmoratus</i> Fabricius, 1787	Rare
39.	<i>Potamon tauricum</i> (Czerniavsky, 1884)	Threatened with extinction
40.	<i>Smirnoviella reducta</i> (Monchenko, 1977)	Vulnerable
41.	<i>Colpocyclops dulcis</i> Monchenko, 1977	Vulnerable

	Species	Conservation status in Ukraine
42.	<i>Colpocyclops longispinosus</i> (Monchenko, 1977)	Vulnerable
43.	<i>Hemidiaptomus rylowi</i> (Charin, 1928)	Threatened with extinction
44.	<i>Speodiaptomus birsteini</i> Borutzky, 1962	Not evaluated
45.	<i>Euscorpius tauricus</i> (Koch, 1838)	Rare
46.	<i>Galeodes araneoides</i> (Pallas, 1772)	Rare
	Myriapoda	
47.	<i>Polydesmus montanus</i> Daday, 1889	Rare
48.	<i>Leptojuulus semenkevitchi</i> Lohmander, 1928	Rare
49.	<i>Scutigera coleoptrata</i> (Linnaeus, 1758)	Rare
	Collembola	
50.	<i>Tetradontophora bielensis</i> (Waga, 1842) Dunger, 1961	Threatened with extinction
51.	<i>Morulina verrucosa</i> (Borner, 1903)	Threatened with extinction
	Insecta	
52.	<i>Ecdionurus solus</i> Kłonowska-Olechnik, Prokopov & Godunko, 2007	Threatened with extinction
53.	<i>Heptagenia samochai</i> (Demoulin, 1973)	Vulnerable
54.	<i>Calopteryx splendens taurica</i> Selys, 1853	Vulnerable
55.	<i>Calopteryx virgo</i> (Linnaeus, 1758)	Vulnerable
56.	<i>Erythronia lindenii</i> (Selys, 1840)	Rare
57.	<i>Anax imperator</i> Leach, 1815	Vulnerable
58.	<i>Cordulegaster boltoni</i> (Donovan, 1807)	Vulnerable
59.	<i>Cordulegaster bidentata</i> Selys, 1843	Threatened with extinction
60.	<i>Ophiogomphus cecilia</i> (Fourcroy, 1785)	Vulnerable
61.	<i>Leucorrhinia albifrons</i> (Burmeister, 1832)	Threatened with extinction
62.	<i>Sympetrum pedemontanum</i> (Allioni, 1776)	Vulnerable
63.	<i>Empusa fasciata</i> (Brullé, 1836)	Vulnerable
64.	<i>Empusa pennicornis</i> (Pallas, 1773)	Vulnerable
65.	<i>Iris polystictica</i> (Fischer-Waldheim, 1846)	Rare
66.	<i>Bolivaria brachyptera</i> (Pallas, 1773)	Vulnerable
67.	<i>Poecilimon boldyrevi</i> Miram, 1938	Threatened with extinction
68.	<i>Poecilimon schmidtii</i> (Fieber, 1853)	Vulnerable
69.	<i>Poecilimon pliginskii</i> Miram, 1929	Threatened with extinction
70.	<i>Poecilimon ukrainicus</i> Bey-Bienko, 1951	Vulnerable
71.	<i>Saga pedo</i> (Pallas, 1771)	Rare
72.	<i>Callimenus multituberculatus</i> (Fischer-Waldheim, 1833)	Threatened with extinction
73.	<i>Anadrymadusa retowskii</i> (Adelung, 1907)	Vulnerable
74.	<i>Pseudomogoplistes buzantius</i> Gorochoy, 1995	Vulnerable
75.	<i>Bryodemella tuberculata</i> (Fabricius, 1775)	Threatened with extinction
76.	<i>Palingenia longicuada</i> (Olivier, 1791)	Threatened with extinction
77.	<i>Haploembia solieri</i> (Rambur, 1842)	Rare
78.	<i>Porphyrophora polonica</i> (Linnaeus, 1758)	Poorly known
79.	<i>Coranus griseus</i> (Rossi, 1790)	Rare
80.	<i>Oncocephalus paternus</i> Putschkov, 1984	Poorly known
81.	<i>Cephalota besseri</i> (Dejean, 1826)	Rare
82.	<i>Calosoma</i> (s. str.) <i>sycophanta</i> (Linnaeus, 1758)	Vulnerable
83.	<i>Carabus</i> (<i>Procerus</i>) <i>scabrosus tauricus</i> (Bonelli, 1811)	Vulnerable
84.	<i>Carabus</i> (<i>Pachystus</i>) <i>hungaricus</i> (Fabricius, 1792)	Vulnerable
85.	<i>Carabus</i> (<i>Tomocarabus</i>) <i>bessarabicus</i> (Fischer von Waldheim, 1823)	Vulnerable
86.	<i>Carabus</i> (<i>Tachycarabus</i>) <i>estreicheri</i> (Fischer von Waldheim, 1823)	Vulnerable

	Species	Conservation status in Ukraine
87.	<i>Carabus (Carabus) menetriesi</i> (Hummel, 1827)	Rare
88.	<i>Carabus (s. str.) stscheglowi</i> (Mannerheim, 1827)	Rare
89.	<i>Parazuphium chevrolati</i> (Castelnau, 1833)	Rare
90.	<i>Carterus (s. str.) dama</i> (Rossi, 1792)	Rare
91.	<i>Pseudophaenops jacobsoni</i> (Pliginsky, 1912)	Vulnerable
92.	<i>Taurocimmerites dublanskii</i> Belousov, 1998	Rare
93.	<i>Dytiscus latissimus</i> (Linnaeus, 1758)	Poorly known
94.	<i>Graphoderes bilineatus</i> (De Geer, 1774)	Poorly known
95.	<i>Emus hirtus</i> (Linnaeus, 1758)	Rare
96.	<i>Ocypus curtipennis</i> (Motschulsky, 1849)	Vulnerable
97.	<i>Tasgius pliginskii</i> (Bernhauer, 1915)	Vulnerable
98.	<i>Quedius transsylvanicus</i> (Weise, 1875)	Vulnerable
99.	<i>Scarabaeus sacer</i> (Linnaeus, 1758)	Threatened with extinction
100.	<i>Ceratophyus polyceros</i> (Pallas, 1771)	Vulnerable
101.	<i>Bolbelasmus unicornis</i> (Scrank, 1798)	Vulnerable
102.	<i>Protaetia (Cetonischema) speciosa speciosa</i> (Adams, 1817)	Vulnerable
103.	<i>Osmoderma barnabita</i> (Motschulsky, 1845)	Vulnerable
104.	<i>Lucanus cervus cervus</i> (Linnaeus, 1758)	Rare
105.	<i>Cerambyx cerdo</i> (Linnaeus, 1758)	Vulnerable
106.	<i>Rosalia alpina</i> (Linnaeus, 1758)	Vulnerable
107.	<i>Morimus funereus</i> (Mulsant, 1863)	Vulnerable
108.	<i>Purpuricenrus kaehleri</i> (Linnaeus, 1758)	Vulnerable
109.	<i>Dorcadion equestre</i> (Laxmann, 1770)	Vulnerable
110.	<i>Dorcadion mokrzechkii</i> (Jacobson, 1902)	Rare
111.	<i>Aromia moschata</i> (Linnaeus, 1758)	Vulnerable
112.	<i>Buprestis splendens</i> (Fabricius, 1774)	Extinct in Ukraine
113.	<i>Eurythyrea aurata</i> (Pallas, 1776)	Rare
114.	<i>Alaus parreyssi</i> (Steven, 1830)	Threatened with extinction
115.	<i>Neopristilophus depressus</i> (Coermar, 1822)	Rare
116.	<i>Cucujus cinnabarinus</i> (Scopoli, 1763)	Vulnerable
117.	<i>Cecchiniola platyscelidina</i> (Jacobson, 1908)	Threatened with extinction
118.	<i>Chrysolina carpatica</i> (Fuss, 1856)	Rare
119.	<i>Oreina plagiata</i> (Sufrian, 1861)	Rare
120.	<i>Oreina viridis</i> (Duftschmidt, 1825)	Threatened with extinction
121.	<i>Leucomigus candidatus</i> (Pallas, 1771)	Rare
122.	<i>Brachycerus sinuatus</i> (Olivier, 1807)	Not evaluated
123.	<i>Lixus canescens</i> (Fischer-Waldheim, 1835)	Rare
124.	<i>Liparus laevigatus</i> (Gyllenhal, 1834)	Rare
125.	<i>Libelloides macaronius</i> (Scopoli, 1763)	Vulnerable
126.	<i>Acanthaclisis occitanica</i> (Villers, 1789)	Threatened with extinction
127.	<i>Mantispa styriaca</i> (Poda, 1761)	Rare
128.	<i>Bittacus italicus</i> (Müller, 1786)	Vulnerable
129.	<i>Boreus westwoodi</i> Hagen, 1866	Not evaluated
130.	<i>Oxyethira flavicornis</i> (Pictet, 1834)	Vulnerable
131.	<i>Papilio machaon</i> (Linnaeus, 1758)	Vulnerable
132.	<i>Iphiclides podalirius</i> (Linnaeus, 1758)	Vulnerable
133.	<i>Zerynthia polyxena</i> ([Denis et Schiffermüller], 1775)	Vulnerable
134.	<i>Parnassius apollo</i> (Linnaeus, 1758)	Threatened with extinction
135.	<i>Parnassius mnemosyne</i> (Linnaeus, 1758)	Vulnerable
136.	<i>Zegris eupheme</i> (Esper, 1805)	Threatened with extinction
137.	<i>Euchloe ausonia</i> (Hübner, [1804])	Vulnerable
138.	<i>Colias palaeno</i> (Linnaeus, 1761)	Threatened with extinction

	Species	Conservation status in Ukraine
139.	<i>Libythea celtis</i> (Laicharting in Fuessly, 1782)	Rare
140.	<i>Hamearis lucina</i> (Linnaeus, 1758)	Vulnerable
141.	<i>Limenitis populi</i> (Linnaeus, 1758)	Vulnerable
142.	<i>Apatura iris</i> (Linnaeus, 1758)	Vulnerable
143.	<i>Nymphalis vaualbum</i> ([Denis et Schiffermüller], 1775)	Not evaluated
144.	<i>Hipparchia statilinus</i> (Hufnagel, 1766)	Rare
145.	<i>Pseudochazara euxina</i> (Kuznetsov, 1909)	Rare
146.	<i>Esperarge climene</i> (Esper, 1783)	Vulnerable
147.	<i>Erebia manto</i> ([Denis et Schiffermüller], 1775)	Rare
148.	<i>Proterebia afra</i> (Fabricius, 1787) (= <i>phegea</i> Borkhausen, 1788)	Vulnerable
149.	<i>Triphysa phryne</i> (Pallas, 1771)	Vulnerable
150.	<i>Coenonympha hero</i> (Linnaeus, 1761)	Vulnerable
151.	<i>Tomares nogelii</i> (Herrich-Schäffer, 1851)	Vulnerable
152.	<i>Tomares callimachus</i> (Eversmann, 1848)	Vulnerable
153.	<i>Agriades pyrenaicus</i> (Boisduval, 1840)	Vulnerable
154.	<i>Neolycaena rhymnus</i> (Eversmann, 1832)	Not evaluated
155.	<i>Plebeius pylaon</i> (Fischer von Waldheim, 1832)	Vulnerable
156.	<i>Polyommatus boisduvalii</i> (Herrich-Schäffer, [1843])	Threatened with extinction
157.	<i>Pseudophilotes bavius</i> (Eversmann, 1832)	Vulnerable
158.	<i>Acherontia atropos</i> (Linnaeus, 1758)	Rare
159.	<i>Marumba quercus</i> ([Denis et Schiffermüller], 1775)	Rare
160.	<i>Hemaris croatica</i> (Esper, 1779)	Rare
161.	<i>Hemaris tityus</i> (Linnaeus, 1758)	Rare
162.	<i>Sphingonaepiopsis gorgoniades</i> (Hübner, 1819)	Rare
163.	<i>Proserpinus proserpina</i> (Pallas, 1772)	Rare
164.	<i>Hyles nicaea</i> (De Prunner, 1798)	Rare
165.	<i>Saturnia pyri</i> ([Denis et Schiffermüller], 1775)	Vulnerable
166.	<i>Eudia pavonia</i> (Linnaeus, 1758)	Rare
167.	<i>Eudia spini</i> ([Denis et Schiffermüller], 1775)	Threatened with extinction
168.	<i>Aglia tau</i> (Linnaeus, 1758)	Vulnerable
169.	<i>Lemonia taraxaci</i> ([Denis et Schiffermüller], 1775)	Vulnerable
170.	<i>Lemonia ballioni</i> (Christoph, 1888)	Rare
171.	<i>Endromis versicolora</i> (Linnaeus, 1758)	Vulnerable
172.	<i>Catocala dilecta</i> (Hübner, 1808)	Rare
173.	<i>Catocala disjuncta</i> (Geyer, 1828)	Rare
174.	<i>Catocala diversa</i> (Geyer, 1828)	Rare
175.	<i>Catocala fraxini</i> (Linnaeus, 1758)	Vulnerable
176.	<i>Catocala sponsa</i> (Linnaeus, 1767)	Rare
177.	<i>Cucullia magnifica</i> (Freyer, 1840)	Rare
178.	<i>Cucullia splendida</i> (Stoll, 1782)	Rare
179.	<i>Cucullia argentina</i> (Fabricius, 1787)	Rare
180.	<i>Cucullia argentea</i> (Hufnagel, 1766)	Rare
181.	<i>Divaena haywardi</i> (Tams, 1926)	Rare
182.	<i>Staurophora celsia</i> (Linnaeus, 1758)	Rare
183.	<i>Euchalcia variabilis</i> (Piller & Mitterpacher, 1783)	Rare
184.	<i>Periphanes treitschkei</i> (Frivaldsky, 1835)	Rare
185.	<i>Periphanes delphinii</i> (Linnaeus, 1758)	Vulnerable
186.	<i>Zygaena laeta</i> (Hübner, 1790)	Threatened with extinction
187.	<i>Zygaena sedi</i> (Fabricius, 1787)	Rare
188.	<i>Pericallia matronula</i> (Linnaeus, 1758)	Vulnerable

	Species	Conservation status in Ukraine
189.	<i>Callimorpha dominula</i> (Linnaeus, 1758)	Vulnerable
190.	<i>Pleroneura coniferarum</i> (Hartig, 1837)	Threatened with extinction
191.	<i>Blasticotoma filiceti</i> Klug, 1834	Rare
192.	<i>Urocerus augur</i> (Klug, 1803)	Rare
193.	<i>Xiphidria picta</i> Konow, 1897	Vulnerable
194.	<i>Xiphidria markewitshi</i> Ermolenko, 1960	Threatened with extinction
195.	<i>Orussus abietinus</i> (Scopoli, 1763)	Rare
196.	<i>Pachycephus cruentatus</i> (Eversmann, 1847)	Threatened with extinction
197.	<i>Janus femoratus</i> (Curtis, 1830)	Vulnerable
198.	<i>Calameuta idolon</i> (Rossi, 1794)	Vulnerable
199.	<i>Cephus zahaikevitchi</i> (Ermolenko, 1971)	Vulnerable
200.	<i>Characopygus scythicus</i> Dovnar-Zapolskij, 1931	Threatened with extinction
201.	<i>Caenolyda reticulata</i> (Linnaeus, 1758)	Vulnerable
202.	<i>Megalodontes medius</i> Konow, 1897	Rare
203.	<i>Abia fulgens</i> Zaddach, 1863	Rare
204.	<i>Abia nitens</i> (Linnaeus, 1758)	Rare
205.	<i>Agre beckeri</i> (Tournier, 1889)	Rare
206.	<i>Siobla sturmi</i> (Klug, 1817)	Rare
207.	<i>Tenthredo propinqua</i> Klug, 1817	Not evaluated
208.	<i>Dolerus ciliatus</i> Konow, 1891	Rare
209.	<i>Dolerus subalatus</i> Kerensky, 1926	Vulnerable
210.	<i>Megarhyssa superba</i> (Schränk, 1781)	Rare
211.	<i>Megarhyssa perlata</i> (Christ, 1791)	Rare
212.	<i>Dolichomitus cephalotes</i> (Holmgren, 1859)	Rare
213.	<i>Archirilleya inopinata</i> Silvestri, 1920	Rare
214.	<i>Tetramesa punctata</i> Zerova, 1965	Rare
215.	<i>Ibalia rufipes</i> Cresson, 1879	Rare
216.	<i>Polochrum repandum</i> Spinola, 1805	Rare
217.	<i>Scolia maculata</i> (Drury, 1773)	Not evaluated
218.	<i>Scolia galbula</i> (Pallas, 1771)	Vulnerable
219.	<i>Colpa klugii</i> (Vander Linden, 1827)	Threatened with extinction
220.	<i>Discoelius zonalis</i> (Panzer, 1801)	Rare
221.	<i>Celonites abbreviatus tauricus</i> Kostylev, 1935	Vulnerable
222.	<i>Eumenes tripunctatus</i> (Christ, 1791)	Vulnerable
223.	<i>Onychopterocheilus pallasii</i> (Klug, 1805)	Threatened with extinction
224.	<i>Paravespa rex</i> (Schulthes, 1923)	Vulnerable
225.	<i>Cryptocheilus annulatus</i> (Lepeletier, 1845) = <i>C. annulatus</i> (Fabricius, 1798)	Rare
226.	<i>Cryptocheilus rubellus</i> (Eversmann, 1846)	Rare
227.	<i>Anoplius samariensis</i> (Pallas, 1771)	Rare
228.	<i>Ammophila sareptana</i> Kohl, 1894	Rare
229.	<i>Cerceris tuberculata</i> (Villers, 1787)	Rare
230.	<i>Sphex flavipennis</i> Fabricius, 1793	Rare
231.	<i>Sphex funerarius</i> Gussakovskij, 1934	Not evaluated
232.	<i>Larra anathema</i> (Rossi, 1790)	Not evaluated
233.	<i>Stizus bipunctatus</i> (F. Smith, 1856)	Rare
234.	<i>Stizus fasciatus</i> (Fabricius, 1781)	Rare
235.	<i>Stizoides tridentatus</i> (Fabricius, 1775)	Rare
236.	<i>Melitturga (Melitturga) clavicornis</i> (Latreille, 1806)	Vulnerable
237.	<i>Andrena (Melandrena) stigmatica</i> Moravitz, 1895	Rare
238.	<i>Andrena (Melandrena) magna</i> Warncke, 1965	Rare
239.	<i>Andrena (Euandrena) chrysopus</i> Pérez, 1903	Rare

	Species	Conservation status in Ukraine
240.	<i>Andrena (Poliandrena) ornata</i> Morawitz, 1866	Rare
241.	<i>Andrena (Didonia) stepposa</i> Osytsnjuk, 1977	Rare
242.	<i>Melitta (Gilissa) wankowiczi</i> (Radoszkowski, 1891)	Threatened with extinction
243.	<i>Dasypoda (Megadasypoda) spinigera</i> Kohl, 1905	Rare
244.	<i>Halictus (Argalictus) luganicus</i> Blüthgen, 1936	Rare
245.	<i>Megachile (Chalicodoma) lefebvrei</i> Lepeletier, 1841	Threatened with extinction
246.	<i>Megachile (Xanthosarus) giraudi</i> Gerstaecker, 1869	Rare
247.	<i>Hoplitis (Megalosmia) fulva</i> (Eversmann, 1852)	Rare
248.	<i>Trachusa (Archianthidium) pubescens</i> (Morawitz, 1872)	Rare
249.	<i>Stelis (Heterostelis) annulata</i> (Lepeletier, 1841)	Rare
250.	<i>Anthophora (Lophanthophora) atricilla</i> Eversmann, 1852	Rare
251.	<i>Anthophora (Lophanthophora) robusta</i> (Klug, 1845)	Rare
252.	<i>Cubitalia (Cubitalia) morio</i> Friese, 1911	Rare
253.	<i>Eucera (Synchalonia) armeniaca</i> (Moravitz, 1878)	Rare
254.	<i>Xylocopa (Xylocopa) valga</i> Gerstaecker, 1872	Rare
255.	<i>Xylocopa (Xylocopa) violaceae</i> (Linnaeus, 1758)	Rare
256.	<i>Xylocopa (Copoxya) iris</i> (Christ, 1791)	Threatened with extinction
257.	<i>Bombus (Bombus) muscorum</i> (Linnaeus, 1758)	Rare
258.	<i>Bombus (Subterraneobombus) fragrans</i> (Pallas, 1771)	Threatened with extinction
259.	<i>Bombus (Megabombus) argillaceus</i> Smith, 1854	Vulnerable
260.	<i>Bombus (Thoracobombus) armeniacus</i> Radoszkowski, 1877	Threatened with extinction
261.	<i>Bombus (Thoracobombus) pomorum</i> Panzer, 1805	Vulnerable
262.	<i>Bombus (Thoracobombus) laesus</i> Morawitz, 1875	Vulnerable
263.	<i>Bombus (Megabombus) ruderatus</i> (Fabricius, 1775)	Rare
264.	<i>Bombus (Thoracobombus) zonatus</i> Smith, 1854	Rare
265.	<i>Liometopum microcephalum</i> (Panzer, 1798)	Rare
266.	<i>Tapinoma kinburni</i> Karawajew, 1937	Rare
267.	<i>Ctenophora festiva</i> Meigen, 1804	Threatened with extinction
268.	<i>Satanas gigas</i> (Evesmann, 1855)	Vulnerable
269.	<i>Asilus crabroniformis</i> (Linnaeus, 1758)	Rare
270.	<i>Temnostoma meridionale</i> Krivosheina & Mamaev, 1962	Vulnerable
271.	<i>Merodon femoroides</i> Paramonov, 1925	Vulnerable
272.	<i>Merodon crassifemoris</i> Paramonov, 1925	Threatened with extinction
273.	<i>Merodon nigratarsis</i> Rondani, 1845	Rare
274.	<i>Pelecocera latifrons</i> Loew, 1856	Vulnerable
275.	<i>Callicera macquarti</i> Rondani, 1844	Threatened with extinction, possibly extinct
276.	<i>Psarus abdominalis</i> (Fabricius, 1794)	Threatened with extinction
277.	<i>Urophora dzieduszyckii</i> Frauenfeld, 1863	Rare
Mollusca		
Gastropoda		
278.	<i>Lymnaea clavata</i> Westerlund, 1885	Rare
279.	<i>Lymnaea pachyta</i> Westerlund, 1890	Rare
280.	<i>Turricaspia lincta</i> Milashevich, 1908	Rare
281.	<i>Oxychilus kobelti</i> (Lindholm, 1910)	Vulnerable
282.	<i>Granaria frumentum</i> (Draparnaud, 1801)	Rare
283.	<i>Serrulina serrulata</i> (L. Pfeiffer, 1874)	Vulnerable
284.	<i>Chondrina avenacea</i> (Bruguiere, 1792)	Rare
285.	<i>Peristoma merduenianum</i> Krynicki, 1833	Vulnerable
286.	<i>Prostenomphalia carpathica</i> Baidaschnikow, 1985	Vulnerable
287.	<i>Trochulus villosulus</i> (Rossmassler, 1838)	Vulnerable

	Species	Conservation status in Ukraine
288.	<i>Drobacia banatica</i> (Rossmassler, 1838)	Rare
289.	<i>Chondrula bielzi</i> (Kimakowicz, 1890)	Rare
290.	<i>Helix lucorum</i> Linnaeus, 1758	Not evaluated
291.	<i>Trochulus bielzi</i> (A. Schmidt, 1860)	Vulnerable
292.	<i>Plicuteria lubomirskii</i> (Slosarski, 1881)	Vulnerable
293.	<i>Pomatias rivulare</i> (Eichwald, 1829)	Vulnerable
294.	<i>Arianta aethiops</i> (Bielz, 1853)	Rare
	<i>Bivalvia</i>	
295.	<i>Ostrea edulis</i> Linnaeus, 1758	Vulnerable
296.	<i>Hypanis laeviuscula</i> (Milachevich, 1916)	Vulnerable
297.	<i>Hypanis plicata</i> (Milachevich, 1916)	Vulnerable

In 2012 the first phase of the project “Improvement of data collection mechanism on the animal species listed in the Red Data Book of Ukraine including their study and conservation in the environment” had been implemented. In the framework of the project the information available on all animal species listed in the Red Data Book including invertebrates had been analyzed and gaps identified. The results obtained provided a basis for planning and implementation of further research and conservation activities.

Starting from the year 2000 there have been ongoing work on the State Cadastre of Animal World funded by State Environmental Fund. According to the Law of Ukraine “On the Animal Kingdom” the State Cadastre of Animal World is a systematized set of data on geographical distribution of animal species (group of species), their numbers and state, characteristics of their habitats and current economic importance and other necessary data. Given to their great diversity the invertebrates comprise an essential portion of the Cadastre.

I.I. Schmalhausen Institute of Zoology of the National Academy of Sciences of Ukraine is a main institution which collects and analyzes data for Cadastre. A number of other scientific institutions through the relevant expert network are involved in the data collection for the Cadastre. Different research projects have been implemented in Ukraine focusing on various groups of invertebrates. Information on those projects can be found on <http://biomon.org> devoted to monitoring of biodiversity in Ukraine.

There are biodiversity monitoring schemes in protected areas of Ukraine which includes study of invertebrates.

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UNITED KINGDOM / ROYAUME-UNI

REPORT ON INVERTEBRATE CONSERVATION ACTIVITY IN THE UNITED KINGDOM

TERRESTRIAL INVERTEBRATE CONSERVATION IN ENGLAND

Natural England has three senior specialists working on terrestrial invertebrate conservation in England. This work is varied but some of the key work areas we have been involved with recently (over the past two years) are as follows:

a) Work on Bern Convention species

***Lucanus cervus* - Stag beetle**

This species shows preference for damp, decaying timber subterranean habitats up to 50cm underground, especially tree stumps, mainly but not exclusively of broadleaved timber. It will occasionally breed in decaying wood of artificial structures and even, very occasionally, other decaying plant matter such as compost heaps. The soil type is important with most populations breeding in timber on warm alluvial soils. Soils over chalk appear to be less favoured and stag beetles are absent from areas with extensive underlying chalk, with the exception of alluvial soils in river valleys cutting through chalk downs etc

Although Peoples Trust for Endangered Species have continued to run the “great stag hunt” and are doing so again in 2012, the key thrust of the work remains close to the end of the last reporting period, with no 2007-2012 analysis yet performed. Main threats as judged by casework referrals are all from small scale development works, be that fence replacements or tree removals in urban areas in SE England; the fate in the wider countryside is unknown, but removal of dying trees would seem sensible. However, persistence of records within the core hectads suggest some stability: 107 hectads had stag beetles recorded in them over each of the 4 survey periods, with another 15 having records over 3 surveys.

There have been no targeted stag beetle surveys across the SAC series as such, so, as a proxy, the number of animals recorded in the 3 principal counties has been used, demonstrating a large pool of animals; all the top saproxylic sites continue to have large volumes of deadwood and resilient and important saproxylic fauna, of which stag beetle is at the more catholic end in terms of habitat choice.

The apparent drop in the number of recorded squares between the historic survey and those founded in 2006-07 is almost certainly the result of a decline in public participation after the novelty of the 1st great Stag hunt took place. So, 1998 3,600 recorders took part, generating 9,381 records, whilst in 2007, only 1,471 recorders took part giving 3,058 records. Mapping the core distribution in the SE of England over the period shows a high degree of hectad stability which, at this scale, indicates some population stability though any losses at a local scale remain masked.

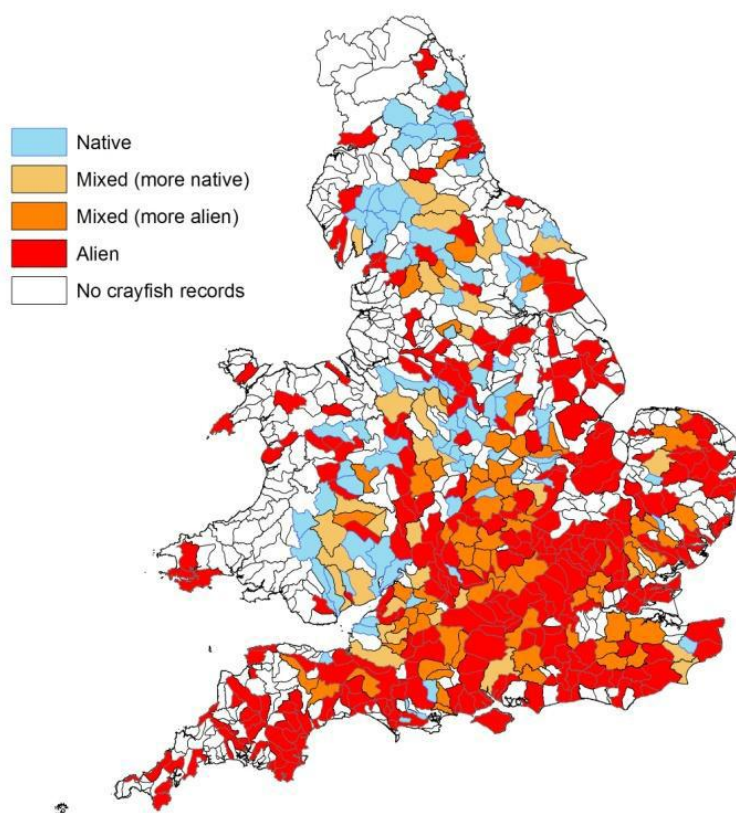
A 2011 Royal Society for the Protection of Birds membership survey of over 50,000 gardens reported that 1 in 50 had stag beetle, with up to 18% recording the species in the gardens of the London metropolis, again pointing to a core stability in that part of SE England.

***Austropotamobius pallipes* - White-clawed crayfish**

Much of the spatial focus has been on sub-catchment or catchment level, as this is core scheme the Environment Agency utilise. So, pre-1990, there were 187 sub-catchments holding native crayfish, this having dropped to 81 in the UK (Rogers & Watson, 2010). The attendant increase in the introduced signal crayfish range at the same time was from 96 sub-catchments in the UK pre-1990, to over 390 in 2010.

Conservation work for this species has mostly focused on populating Ark sites, the design and selection of which follows the guidelines as laid out at <http://www.buglife.org.uk/campaigns-and-our-work/uk-crayfish-website>

2002 - 2010



DISTRIBUTION DATABASE FOR CRAYFISH IN ENGLAND AND WALES

After David Rogers and Elizabeth Watson.

http://www.buglife.org.uk/Resources/Buglife/10_Distribution%20of%20crayfish%20in%20Engl and%20and%20Wales-.pdf

The principal threat remains signal crayfish spread, and associated crayfish plague and competition and replacement in the ecosystem. Despite some trials, the spread of the non-native crayfish is reasonably relentless. Disinfectant protocols are in place for works in water-courses to try and contain the spread of plague. The population of native crayfish in England could well be considered to be in free-fall, and could be largely extinct in many running water systems within the next 50 years, surviving only in Ark sites.

Hirudo medicinalis - Medicinal leech

The previous use of "population" as the basis for favourable reference population value holds well enough for isolated water bodies such as discrete ponds, but unravels in the complex of inter-connected ditch systems such as found in the English stronghold of the Romney marshes. This resulted in the marshes being described as a "major site", underplaying its spatial significance which is captured by recourse to a 1 km sq grid approach. Trapping both scales in the audit would seem sensible. At the start of this A17 reporting period, Medicinal leech was removed from the UK Priority species list in the face of more populations having been discovered, an action whose consequence has been a less focused and strategic recording effort.

Population is currently 15 1x km squares, with the strongest population around the Romney marsh wetland complex, though the resource in the Cumbrian tarns may well be significant. Rare elsewhere in England. Considered stable in the UK now overall, though remaining a rare species.

***Coenagrion mercuriale* - Southern Damselfly**

This species was reported from 38 1 km squares in England during the most recent Article 17 reporting period (2007-12), compared with 96 1 km squares during the last reporting period. However, this is believed to be due to incomplete data for this reporting period, rather than a genuine serious decline, for the following reasons.

During the previous reporting period (2001-06) the UK BAP Steering Group for Southern Damselfly coordinated a comprehensive survey of all GB populations, including an assessment of conservation requirements. In addition there were several research initiatives that ensured most GB populations were visited during this time. Together they provided an exhaustive survey of distribution in both England and Wales during that period.

In the current period there has been no systematic survey effort of all populations and whilst monitoring has taken place on SACs, during 2007-11 (data not yet available for 2012) distribution records outside these sites have arisen from casual surveys. Expert opinion is that there has been some decline in the number of occupied 1km squares; the extent of this decline is not quantifiable but is likely to be less than 1% per year. Therefore the apparent decline in the number of occupied 1 km squares is genuinely believed to be due to reporting discrepancies between the two reporting periods and does not represent a sharp decline in populations or number of colonies; as noted above, data from the colonies that have been monitored during this period indicate that such declines have not occurred widely – with one decline in Devon known to be due to adverse local factors (lack of grazing on-site). Some smaller populations seem to have been lost in England, particularly at the main New Forest site. Here the large and medium-sized populations are thought to be fairly stable, but some of the smaller populations may have been lost, possibly due to inappropriate habitat management; however, recent surveys of these small populations has been hampered by bad weather so it is not known for certain that they have disappeared.

***Euphydryas aurinia* - Marsh Fritillary**

Populations of this butterfly fluctuate greatly from year to year due to parasitism, annual management (e.g. burning) and other factors. Due to variable trends between sites it is perhaps not surprising that the long term increase in abundance is not significant. However, the apparent increase is highly encouraging given the historical large-scale decline in status across the UK. The attached pdf document summarises its current status.



Marsh Frit.pdf

from Ellis S, Bourn N A D and Bulman CR (2012) Landscape-scale conservation for butterflies and moths: lessons from the UK. Butterfly Conservation, Wareham, Dorset.

***Lycaena dispar* - Large Copper**

The British race (*dispar*) of this butterfly has been extinct in England since the 1940s. The Dutch race (*batavus*) has been introduced to fenlands in eastern England on a few occasions, most notably at Woodwalton Fen in Cambridgeshire, where several introductions occurred between 1927 and 1970 but none were truly sustainable. The 1927 introduction lasted until 1969 but the population required ‘topping up’ on several occasions. In the summer of 19768 a serious flood submerged all the larval foodplants and only four emerged the following year. Another reintroduction took place in 1970 but this also failed. Several other unauthorised introductions have occurred at various localities, but as far as we know none has persisted. To summarise, the English race is long extinct and we do not know of any extant populations of the Dutch race persisting in England.

b) Other Work Areas in Invertebrate Conservation in England:

Article 17 reporting – over the last year or so we have been reporting on the implementation of the EU Habitats Directive in England (required every six years under Article 17 of the Directive). In

total we reported on 15 terrestrial invertebrate species. This included five Lepidoptera, six molluscs and two beetles (Coleoptera), as well as crustacean, annelid and Odonata species. Our conclusions on their favourable conservation status was varied, and that at least satisfactory progress was being made on some of these species, with one (Jersey Tiger *Euplagia quadripunctaria*, Lepidoptera) increasing rapidly and no longer being restricted to Special Areas of Conservation in England. Fisher's Estuarine Moth (*Gortyna borelii*, Lepidoptera) now has established populations in Kent as well as Essex; the Kent populations are increasing and the Essex populations are stable but threatened by sea level rise - conservation measures are being implemented to deal with this. In contrast, the native White-clawed Crayfish (*Austropotomobius pallipes*, Crustacea) is in conservation free-fall, and may well become extinct as a riverine species in England in the next 50 years, and may only survive in a few conservation Ark sites. The snail *Vertigo moulinsiana* (Mollusca) is suffering from hydrological impacts of drought on some of its rivers, severely truncating the hydrosere it which is lives. Other species, such as Stag Beetle (*Lucanus cervus*, Coleoptera) still retains a strong population in the south-east of England, with a particular focus on Greater London, and seem to be stable.

England Species Recovery Programme for S41 species – this is work we have been doing on our Species Recovery Programme to implement the England Biodiversity Strategy, to further conservation and monitoring work on some of our most threatened invertebrate species listed on Section 41 of the Natural Environment and Rural Communities Act (2006). This can be summarised as follows:

‘The England Biodiversity Strategy (EBS) articulates ambitions to ‘halt overall biodiversity loss’, ‘see an overall improvement in the status of our wildlife’ and to ‘have prevented further human-induced extinctions of known threatened species’ in England by 2020. Section 41 of the 2006 NERC Act lists 943 species which ‘are of principal importance for the conservation of biodiversity in England’ and it is on these species that our conservation efforts must focus with greatest urgency and effect if we are to adequately address the EBS’s ambitions for species.’

We have several projects ongoing to progress conservation work for our S41 invertebrate species. Many of these are large-scale projects with key UK conservation partners (such as Butterfly Conservation and Buglife) established to work on several key species. There are also some smaller projects working specifically on single species (for example the Croston worm *Prostoma jenningsi*, Annelida and the Wart-biter Bush-cricket *Decticus verrucivorus*, Orthoptera). There is never sufficient funding to enable us to work on all species of course and we have begun to work with NE’s agri-environment staff to devise new options under the Common Agricultural Policy 2014 reform which will help further conservation work on a large number of S41 invertebrate species. As part of this work we have gone through the list of S41 invertebrate species to determine how many can be helped through large-scale habitat work (such as through the new agri-environment schemes) as opposed to requiring specific works to aid their recovery. Nearly half of all England’s S41 species (not just invertebrates) have agri-environment schemes flagged up as a key delivery mechanism for their recovery – this includes most of the butterflies and a large number of the moths, plus many other invertebrate species.

Invertebrate Status Reviews – Our invertebrate fauna is constantly changing of course, with many species continuing to decline and many others increasing their populations – this is due to natural factors such as climate change as well as through human factors. A major piece of work we are currently involved in (along with several key partner organisations) is undertaken regional IUCN compliant red listing for all the major invertebrate groups. This is ongoing but work is well underway for several groups of Coleoptera, plus Hymenoptera, Hemiptera, Myriapoda and more. This work will complement IUCN status reviews already published for Diptera, Odonata, butterflies (Lepidoptera) and water beetles (Coleoptera).

Terrestrial Biodiversity Group Commission work – As part of our delivery of UK Government’s Biodiversity 2020 Strategy, the Department of Environment, Food and Rural Affairs (Defra) have set up a Terrestrial Biodiversity Group (TBG) which Natural England chairs. Part of this commissioned work involves identifying delivery mechanisms for all S41 species and we have been working on the invertebrate species. The invertebrates are now completed with actions listed for all

species and additional analysis performed drawing together a number of the datasets into one mapped resource. This data has been shared with key partners and all known records for the S41 species have now been digitised allowing for a number of geographical approaches to be used across England - e.g. matching our S41 invertebrate species to our National Character Areas, the adopted geographical framework which covers all of England

Invertebrate Conservation on Protected Sites – we are involved with designation of Sites of Special Scientific Interest (SSSIs), the UK mechanism for protecting land of for geological and biological conservation, where there is invertebrate notified interest involved. This is an important work area and we are currently advising on two or three potential new SSSIs being notified partly for invertebrate interest. In addition, we run a rolling programme of the direct assessment of targeted invertebrate assemblages on selected sites to gauge site condition, and are currently updating and expanding our database which defines and enhances our understanding of invertebrate assemblages.

Control of invasive species - Oak Processionary Moth (OPM) – this is the invertebrate alien invasive species that we are currently most concerned with. We are working with the Forestry Commission in England and others to control OPM (*Thaumetopoea processionea*, Lepidoptera) at the main outbreak are in the West London parks. The policy here is now containment as OPM is very well established and eradication is now considered unfeasible. A second outbreak in Berkshire was discovered in 2012 and attempts are being made to eradicate this population – but it is not known yet if this has been successful. N.B. Although the two main outbreaks have been traced back to eggs imported on oaks, OPM does occur naturally (although rarely) as an immigrant on the south coast of England. This there appears to be potential for it to establish naturally in further areas at some stage in the near future.

Internal Staff Training – NE entomologists have been involved in developing the habitat mosaic idea, based on structural heterogeneity in key habitats increasing overall biodiversity in these habitats. Three training days were run over summer 2013 for our Land Management staff, and were based on exploring the way different invertebrates use different parts of the mosaic in three key habitats (chalk grassland, lowland heath and lowland raised bog). Training in previous years has been with Natural England's habitat specialists, and has focused on integrating invertebrate conservation into measures of good habitat condition

Pollinator Conservation - We have continuing involvement in the main pollinator conservation initiatives in the UK, attending the Knowledge Exchange fellowship panel on Pollination called by Cambridge University, and have been working with Bristol University and other research centres on projects designed to improve both our understanding and better delivery of pollinator conservation. We are also working closely with Defra on their new Pollinator Strategy, aimed at reversing declines in our insect pollinators.

CONSERVATION OF BERN CONVENTION INVERTEBRATES IN WALES

2009-2013

Wales supports populations of two invertebrate species listed on Annex II of the Bern Convention – the southern damselfly *Coenagrion mercuriale* and the marsh fritillary *Euphydryas aurinia*. Since the last meeting of the Group of Experts on the Conservation of Invertebrates in Norway, 2008, Natural Resources Wales (formerly the Countryside Council for Wales) has continued to focus conservation effort on these two species.

Coenagrion mercuriale – Southern Damselfly

The Southern Damselfly occupies c.40 square kilometres in southern and western Wales where it inhabits spring-fed waterbodies on heathland and calcareous grassland, although perhaps only one-tenth of this area represents breeding habitat. Most individual populations are small and dependent on appropriate grazing regimes to maintain habitat condition. In south-west Wales we have grant-aided the production of a review of management issues required to improve habitat condition (Install, C. 2012. *An Overview of the Management Requirements of the Southern Damselfly with Recommendations and Suggested Methodology for Habitat Improvement within and near to the*

Preseli SAC. British Dragonfly Society). Subsequently, grant-aid to the British Dragonfly Society has enabled their Conservation Officer to work with partners on practical action to increase habitat availability and elsewhere habitat management has been undertaken to clear encroaching scrub. On Anglesey the Anglesey and Llŷn Fens LIFE Project has restored substantial areas of overgrown seepage fen to improve connectivity between habitat patches. All but one of the Welsh southern damselfly populations are within SACs and hence are regularly monitored according to standard procedures. Indications are that there has been a slight decline in population abundance in recent years.

***Euphydryas aurinia* – Marsh Fritillary**

The Marsh Fritillary is widely distributed in Wales, with concentrations in the south and west. Currently there are between 100 and 150 populations present, many of which are small and prone to periodic extinction and colonisation. Extensive habitat quality surveys indicate that there are perhaps 34 square kilometres of suitable breeding habitat on unimproved grassland, although only 11.8% of this was considered to be in good condition. The extinction of isolated populations is continuing and conservation efforts are chiefly focused on the larger metapopulations that occupy in excess of 50 hectares of suitable habitat, including the instigation of landscape scale projects to address inappropriate grazing management. This has included the employment of a Project Officer for Mynydd Mawr SAC in Carmarthenshire (Sazer, D. 2010. *Mynydd Mawr Marsh Fritillary Final Report. Butterfly Conservation Report S10-06*) and the establishment of targeted projects in Glamorgan and Merioneth. The LIFE+ project on the Anglesey Fens also takes account of marsh fritillaries. Large complexes of occupied and unoccupied habitat for marsh fritillary metapopulations have been notified as Sites of Special Scientific Interest. At site level, many marsh fritillary populations are the subject of management agreements to address unsympathetic grazing levels.

The Mynydd Mawr SAC sits in an area of considerable development potential and planning issues affect many suitable fields on which marsh fritillaries can or could breed. Currently there are proposals for substantial expansion of an industrial estate and the building of a new by-pass, as well as residential applications. With Carmarthenshire County Council we have developed the use of GIS models to investigate permeability of the landscape. This has considerably enhanced our understanding of the configuration of the metapopulation and has helped focus attention on connectivity between satellite populations, with the aim of producing Supplementary Planning Guidance for the marsh fritillary *Euphydryas aurinia* SAC at Mynydd Mawr.

On the research front, a two-year project has been set-up with the University of Birmingham to elucidate the relationships between sub-populations across the range of the species in south Wales and hence to identify connectivity and metapopulations structure. Larval material was collected from over thirty populations and has been sent to Austin University, Texas, for DNA extraction. The results from this genetic study will be investigated in relation to environmental layers on GIS to identify patterns of connectivity and barriers to dispersal.

CONSERVATION OF BERN CONVENTION INVERTEBRATES

In Northern Ireland

Northern Ireland supports populations of only one invertebrate species listed on Annex II of the Bern Convention – *Euphydryas aurinia* - the marsh fritillary.

Statutory site designation plays a vital part in the conservation of marsh fritillary and it is currently listed as a selection feature on ten Areas of Special Scientific Interest (ASSIs). Five sites are also included in the UK list of candidate Special Areas of Conservation (cSACs). Marsh fritillary is also included as part of the ‘invertebrate assemblage’ selection feature on a number of ASSIs.

The status and distribution of the marsh fritillary in Northern Ireland is constantly being updated as new discoveries are made and monitoring of existing colonies is developed. In 1990, 58 colonies were presumed to be extant in Northern Ireland, but later work by Nelson (2001)¹ found only 8 sites with breeding colonies, suggesting that there had been a significant decline and/or that the previous

figure was an over-estimate. Since then a number of new colonies have been discovered, mostly in Fermanagh and west Tyrone and others undoubtedly remain to be found.

The first comprehensive study of the biology, ecology, distribution and genetics of the marsh fritillary in Ireland was undertaken for a PhD thesis by Emma Seale between 2005 and 2008². Seale studied a number of different colonies including several in Fermanagh and Tyrone, most of which were already or are now designated as Areas of Special Scientific Interest (ASSIs). Her work supported the theory that the species occurs in metapopulations and highlighted the importance of maintaining networks of suitable habitat across its range.

The results of Seale's genetic studies showed that from the samples taken the Irish population had no significant genetic variation across its range and that the genetics of Irish insects differ only marginally from British populations.

Seale also looked at the possible impacts of parasitism and predation on marsh fritillary populations. She concluded that in Northern Ireland parasitism by *Cotesia bignellii* was not responsible for driving population trends despite finding up to 50% of larval webs within a site being infected. Similarly predation by the shield bug *Picromerus bidens*, which was observed on a number of sites, was considered to have no significant impact on marsh fritillary populations.

The key conservation issues Seale identified were fragmentation of suitable habitat, under grazing, scrub encroachment and general agricultural change. Once formerly suitable habitat had descended into rank condition Seale considered it would be difficult to return it into good condition for marsh fritillaries. She considered that the patchwork of suitable and potentially suitable habitat present in Fermanagh and West Tyrone was of particular importance in a Northern Ireland context as the colonies in the East were becoming more and more isolated as suitable habitat was lost.

On-going surveys may identify a number of additional sites for considered for inclusion in the designated site network. The upgrading of the species to a selection feature in its own right rather than as part of any 'invertebrate assemblage' will also be considered in the light of new evidence. Marsh Fritillary is currently recorded from 62 1 x 1km squares in Northern Ireland.

¹ Nelson, B. (2001). The Distribution, Status and Habitat Preferences of the Marsh Fritillary *Eurodryas aurinia* in Northern Ireland. A Report to the Environment and Heritage Service.

² Seale E.G. (2010) The conservation biology and genetics of the marsh fritillary, *Euphydryas aurinia* (Rottemburg, 1775) (Lepidoptera, Nymphaliidae), in Northern Ireland. PHD Thesis, Queens University Belfast