# Managing a Nature Reserve – the Domaine de la Palissade (IB Option G)

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# Managing a Nature Reserve – the Domaine de la Palissade (Camargue).

## Teacher's Notes

This visit gives students an insight into the complexities of nature reserve management. Whilst the Eagles Nest field centre is in the heart of one of the biggest nature reserves in France, the Cevennes National Park, the issues involved with the management of this enormous site are clouded by the size of the reserve. By visiting a small and self-contained nature reserve, students can grasp the issues involved in nature reserve management, including control of invasive species, monitoring and conservation of protected species, control of hunting, the management of visitors, and education.

The Domaine de la Palissade is in the south-eastern corner of the Camargue Regional Nature Reserve. It is owned and managed by the Conservatoire du Littoral, a French conservation organisation who own and manage a considerable number of sites of conservation significance around the French coastline. The visit to the reserve is conducted in French by one of the reserves guides. Discovers group leaders will translate and field questions for the group. The guided walk lasts approximately 2 hours and visits three of the Camargue ecosystems en route, finishing with a stop at a bird hide to view birds which may be present. The success of any bird watching will depend on the time of year and the interest and patience of the group. We have been rewarded with excellent sightings of flamingos, egrets, herons, bittern, grebe and even coypu. Binoculars are available for hire at reception. The visit costs 31EUR for the group (up to 20 people) 20 people. There is also an excellent visitor centre on site, which has an audio-visual presentation and many displays. It is advised that you photocopy the question resources at the end of this pack to guide student's note-taking during their visit.

The case study combines well with the "Primary Succession on Sand Dunes" unit, and takes students through some of the Camargue's most stunning scenery. To get to the reserve involves a drive through the largest salt producing area in Europe (and the fourth largest in the world), les Salins de Giraud.

## Key Syllabus Areas

Option G: Ecology and Conservation

G3 Impacts of humans on ecosystems

List three examples of the introduction of alien species that have had significant impacts on ecosystems;

Discuss the impacts of alien species on ecosystems;

G4: Conservation of Biodiversity.

G4.3 Outline the biogeographical features of nature reserves that promote conservation of biodiversity;

G4.4 Discuss the role of active manage techniques in conservation;

G4.5 Discuss the advantages of in situ conservation of endangered species (terrestrial and aquatic nature reserves);

## Bibliography

Blondel, J. and Aronson, J. (1999) Biology and Wildlife of the Mediterranean Region. Oxford University Press.

www.conservatoire-du-littoral.fr

## Introduction

Conservation of the environment is organised on an international, continental, national, regional and local scale and is actionned by statutory and non-statutory bodies. Here is a summary of the major statutory and non-statutory conservation organisations operating at the different scales:

## Conservation at the International level.

Environmental issues that know no country borders must be managed and resolved at an international level. It requires the concerted actions of many nations – the resolution of the greenhouse effect and global warming leading to climate change will require co-operation between the major industrial nations. The preservation of species that migrate between countries and those which live in the oceans will require international governmental agreements to ensure their preservation. Organisms that are traded must be protected across national borders.

### (1) United Nations Environment Programme (UNEP)

This was established in 1972 following a UN conference on the environment in Stockholm. UNEP works with governments to promote environmentally sound forms of development without destruction of the environment and has a series of conventions to which member nations sign up, including:

- ✓ Bonn Convention on migratory species (1979);
- ✓ Agreement on the conservation of African-Eurasian migratory water birds (Ramsar);
- ✓ United Nations framework convention on climate change;
- ✓ Vienna Convention for the protection of the ozone layer (1985);
- ✓ Regional seas Conventions;
- ✓ United Nations Convention to combat desertification;
- ✓ Convention on biological diversity (1992);
- ✓ Convention on international trade in endangered species of wild flora and fauna (CITES) (1973).
- ✓ Convention on Biological Biodiversity.

At the 1992 Earth Summit in Rio de Janeiro, world leaders agreed on a sustainable strategy for sustainable development – meeting our needs while ensuring that we leave a healthy and viable world for future generations. The Convention on Biological Diversity was adopted at this conference. Its goals are to conserve biological diversity, to use its components in a sustainable fashion and to ensure the fair and equitable sharing of benefits from its genetic resources. The Convention on Biological Diversity is an international treaty that identifies a common problem and sets overall goals, policies and obligations, and organises technical and financial co-operation.

Biodiversity is affected by private landowners, businesses, fishermen and farmers. Governments of the individual nations set the rules that govern the use of natural resources. Individual governments are required to develop national biodiversity strategies and action plans and to integrate these into broader national plans for the environment and development. The treaty commits governments to:

- ✓ Identify and monitor important components of biodiversity that need to be conserved and used sustainably (ie. carry out surveys);
- ✓ Establish protected areas to conserve biodiversity while promoting environmentally sound development in the areas around them;
- ✓ Rehabilitate and restore degraded ecosystems;
- ✓ Respect, preserve and maintain traditional knowledge of the sustainable use of biodiversity with the involvement of indigenous peoples and local communities;
- ✓ Prevent the introduction of and eradicate and control alien species that could threaten ecosystems, habitats or species;
- ✓ Control the risks posed by organisms modified by genetic technology;
- ✓ Promote public participation and educate and raise awareness about the importance of biodiversity and the need to conserve it;
- ✓ Report on its progress (at conferences of the parties).

CITES

Because the trade in wild animals and plants crosses international borders, the effort to regulate it requires international co-operation to safeguard certain species from over-exploitation. CITES provides varying degrees of protection to over 30 000 species of plants and animals as live specimens, fur coats, reptile skins or dried herbs. Member countries volunteer to join CITES – over 150 parties (countries which have signed up to CITES) are members. It is one of the largest conservation agreements in existence. No species protected by CITES have become extinct as a result of over-exploitation.

### (2) The United Nations Educational, Scientific and Cultural Organisation (UNESCO)

Man and the Biosphere programme. Launched in 1970, there are 408 World Biosphere Reserves in 94 countries, areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. They are internationally recognised, nominated by national governments and remain under sovereign jurisdiction of the states where they are located. Biosphere Reserves serve as 'living laboratories' for testing and demonstrating integrated management of land, water and biodiversity. Each biosphere reserve is intended to fulfil three basic functions:

- ✓ A conservation function – to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- ✓ A development function – to foster economic and human development which is socio-culturally and ecologically sustainable;
- ✓ A logistic function – providing support for research, monitoring, education and information exchange related to local, national and global conservation and development issues.

### (3) The World Conservation Union (IUCN)

Founded in 1948, the IUCN brings together states, government agencies and a diverse range of non-governmental organisations (NGO's) in a unique world partnership – over 800 members in all, spread across 125 countries. As a union, the IUCN seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of the world's natural resources is

equitable and ecologically sustainable. The union has helped many member states to prepare National Conservation Strategies.

Amongst many aspects of its programme, the IUCN co-ordinates the Red Data List – the definitive list of the population status of plants and animals around the world. It also administers the Ramsar Convention on Wetlands (1971). This is an intergovernmental treaty covering all aspect of wetland conservation and wise use, recognising wetlands as ecosystems that are extremely important for biological conservation in general and for the well-being of human communities. This convention has 124 contracting parties. More that 1070 wetlands have been designated for inclusion in the list of wetlands of international importance, covering over 81 million hectares.

### (4) World Wildlife Fund (WWF)

Founded in 1961, WWF is the world's largest non-statutory international conservation organisation, with over 5.2 million members and 28 national and associate organisations in all continents. WWF's mission is the protection of genetic, species and ecosystem biodiversity, pollution control and promoting sustainable use of natural resources.

WWF operates through fieldwork, policy development and lobbying, education and training, public awareness campaigns and support for other organisations.

## Conservation at the European level.

### The European Union (EU)

The European Union has legislative measures and procedures for activities within the EU, including agriculture, culture, development, energy, fisheries, humanitarian aid, public health, sport, transport and the environment.

The EU Environment Ministry controls legislation relating to, amongst others, sustainable development, waste management, pollution, water protection and management and protection of nature and biodiversity. It is informed by legislation laid down by the UN, through the World Conservation Monitoring Centre (which provides information for policy and action to conserve the living world) and provides the European policy framework within which the member countries must operate.

The EU member nations subscribe to the international conventions: the Bonn Convention; CITES; and Convention on biological diversity. In addition, specific EU environmental legislation for the protection of nature and biodiversity includes:

EU Council Directive on the conservation of wild birds. [To protect, manage and regulate all bird species living naturally in the wild within Europe, including their eggs, nests and habitats; regulate the exploitation of these species];

Bern Convention on the conservation of European wildlife and natural habitats (1979). [To promote national policies for the conservation of wild flora, fauna and natural habitats. To integrate the conservation of wild

flora and fauna into national planning, development and environmental policies. To promote education and disseminate information on the need to conserve flora and fauna and their habitats];

Biodiversity Action Plan for the Conservation of Natural Resources (2001). [To conserve wild flora and fauna (habitats and birds directives, Natura 2000 sites, and the production of biodiversity action plans for specific habitats and species under threat). To prevent biodiversity loss related to management of water, soils, forests and wetlands. To reverse the current trend of biodiversity loss across the whole territory; to conserve biodiversity worldwide.

**Conservation at the National level.**

Ministere de l' Amenagement du Territoire et de l' Environnement

In France, protection of the environment and conservation are the responsibility of the Ministere de l' Amenagement du Territoire et de l' Environnement. Within this ministry, the Department of Nature and Landscapes (DNP) is responsible for the preservation and restoration of nature, landscapes and biological diversity, fitting with the wider European and international framework. The reporting and statistics department of the Ministry of the Environment is the Institute Francais de l' Environment (IFEN), co-ordinating the work of the Ministry with that of the EU, UN and other international bodies in:

- Defining, organising and monitoring the protected network;
- Monitoring and preserving wild flora and fauna;
- The integration of environmental factors in regional development decisions and the management of rural and urban areas.

These missions are achieved at the national level by:

- ✓ Carrying out inventories of the 'wealth of national assets'. 14 755 areas of interest to the environment, flora and fauna have been inventoried. A data bank has been assembled by the DNP and National Museum of Natural History listing the geographical co-ordinates and major observations of flora and fauna, allowing for monitoring of habitat areas and the updating of endangered species lists. This serves as the foundations of subsequent conservation measures;
- ✓ Protected areas. DNP monitors 7 National Parks, 132 Nature Reserves, 45000 Ha of land under the authority of Conservatory of Coastal areas and Lakeside Shores (Conservatoire du Littoral) , 32 Regional Nature Parks managed by regional and local authorities, 2600 Conservation Areas, 5 000 Listed Sites, and all land owned by the Office National des Forets;
- ✓ Wildlife protection programmes. The DNP, assisted by the National Museum, operates programmes for the preservation of wild species. These programmes monitor population trends to ensure the strict protection of 644 species of fauna and 573 species of flora, and the monitoring of culling. It has a botanical conservatory for the preservation of wild plant species, and monitors conditions in zoos;
- ✓ The DNP makes sure that the environment is taken into account in regional planning and infrastructure decisions. It is involved in the investigation of proposed power transmission and telecommunication lines. The DNP plays a role in urban planning, town planning and tourism policies and regional planning for rural farm and forest areas;

- ✓ Protection without borders. DNP plays a role in global campaigns for preserving species or ecosystems, including the embargo on the elephant ivory trade, protection of the Antarctic and the establishment of a whale sanctuary in the southern seas;
- ✓ Landscape conservation. DNP acts to preserve the quality of sites of national and international importance. It develops partnership approaches with local authorities by drafting "landscape plans" and places sites of conservation importance on a national heritage list. It also restores protected sites and deteriorated sites that could with care go onto the sites list.

To carry out these missions, the Ministry of the Environment relies on a number of agencies. Some have national jurisdiction, including the National Museum of Natural History, the National Forestry Office, the National Hunting Office and the Conservatory of Coastal Areas and Lakeside Shores. Others have territorial jurisdiction, including the Water Agencies, the National Park Agencies. There are 7 National Parks that are administrative public corporations. Their mission is to protect nature, landscapes and natural sites, maintain the biological diversity of the areas they manage, keep the parks open to the public and promote respect for nature and natural balances.

**Conservation at the Regional level.**

The Ministry of the Environment delegates down to the regional level – for example, to Languedoc Roussillon. The Regional Environmental Departments mission is to improve knowledge concerning the natural environment, relying on data collection networks, inventories and surveys. They work to ensure that environmental considerations are included in regional development plans and that regulations governing nature conservation, protected sites and landscapes are applied. The regional Departments of the Environment also maintain inventories on important sites for nature conservation, including Mont Lozere.

**Conservation at the Local level.**

In Lozere, there are a small number of local environmental associations. This includes the Association Lozerian pour l' etude et la Protection de l' Environnement (ALEPE), which records local wildlife on a grid square basis throughout the Departement. There are also local Federations for hunting, fishing and walkers.

Specific Information

The Camargue is protected at a number of levels in conservation terms. It is recognised at international level as a Ramsar site under the UNEP Agreement on the Conservation of African-Eurasian Migratory Water Birds (Ramsar). This means that the site is internationally recognised for its importance to breeding birds and especially water fowl. It is also a UNESCO World Biosphere Reserve in which the unique habitats and inhabitants of the Camargue are celebrated. Within Europe, it is a Natura 2000 site, giving it special protection from development. This is in recognition of its importance to the pan-Mediterranean population of flamingos which have a permanent breeding population in the Camargue. In France, it is a Parc Natural Regional – the equivalent of the National Parks in the UK. Finally, the Domaine de La Palissade is recognised in its own right as a Nature Reserve, owned and managed by the Conservatoire du Littoral.

The reserve, Domaine de La Palissade is owned by the Conservatoire du Littoral, the Conservatory of Coastal areas and Lakeside Shores. This public body was created by an Act of Parliament on 10th July,

1975 in order to protect coastal and lakeshore sites which are threatened by development. It owns sites in 22 regions of France, covering 47 departements and 1 145 communes containing coastal or lakeside beaches. The Conservatoire has three principal criteria in selecting sites. They must be:

- Under threat from urbanisation, inappropriate river channel management (eg. straightening, removing meanders, etc.), or division into smaller land parcels;
- Degraded and in need of a programme to ensure their rapid recovery;
- Currently closed to the public and suitable to be opened for public access.

The Conservatoire will acquire land with the amicable agreement of the current landowner of possible, should the land become available for sale. However, it is also empowered to confiscate or compulsorily purchase land which is of significant value to conservation and under serious threat.

The management of the site is generally given over to a local conservation body, in some cases formed with the explicit purpose of managing the site. In the case of wooded sites, this responsibility automatically falls to the Office National des Forets. Where ever possible and if compatible with the nature of the site, its current use (traditional or not) by locals and tourists, is retained within the management plan for the site. When the Conservatoire acquires sites, every effort is made to improve the ecological stability of the site. Sand dunes will be stabilised, reforestation will take place where necessary and the natural hydrology of the site will be re-established – this may involve major reconstruction work such as river channel modifications or the removal of dykes and levees. Part of the management plan will be to improve public access to the site and this may involve the construction of footpaths, the construction of bird hides, the installation of information panels and the production of leaflets.

Every year, over 15 million visitors are welcomed to Conservatoire sites around France. Some sites have completely open public access whilst other more sensitive sites have more controlled public access, and have recognised footpaths, a visitor centre, etc. The Conservatoire has only 50 permanent employees across France. Most of the reserves are self-financed and also take on a large number of volunteers to help with conservation work and to run their public education programmes. The total land holding of the Conservatoire in France is now 58 000Ha, covering 42 sites and 780km of coastline and lake side.

The Domaine de La Palissade was acquired by the Conservatoire on 4th May 1976 – making it one of the first purchases of the Conservatoire. The land was ancient private hunting land which had never been farmed intensively. The site is linear, covering an area of 702Ha on the right bank of the Grand Rhone. It also falls within the boundaries of the Parc Naturel Regional de Camargue. The Conservatoire owns over 2 000Ha of land in the Camargue in total. The site is special in that along its length, the Rhone has never been confined within dykes. Therefore, during the spring and autumn, the river frequently bursts its banks and floods out across the land. The hydrological cycle for this site is much more natural for the Camargue, now very much a land of controlled water levels, drainage and river dykes and levees. Depending on the tides, the land can be inundated by salt or brackish water.

The site supports many of the natural ecosystems typical of this part of the Mediterranean – riparian (riverside) woodland, fresh and salt water marshes, coastal salt meadows (the sansoire), small dunes and

prairies. The Reserve is an excellent place to introduce students to a range of Mediterranean ecosystems. Students will be taken through several of these on the guided walk:

Riparian woodland: This woodland is present in the south east corner of the reserve where it runs along side the Grande Rhone. Tree species include alder and ash, which are able to tolerate the seasonal flooding which affects this Reserve. Tamarisk are also present, a tree which is able to tolerate the slightly saline soils a little further from the waters edge;

Sansoire: Typical of much of the scenery of the Camargue, Sansoire is salt-meadow, where the soil is influenced by the presence of high salt concentrations. The land is often flooded in the winter and dry as a bone in summer. Trees do not thrive here due to the permanent presence of a salt pan on the surface of the soil. Plants which can survive these conditions, and in fact thrive here are called halophytes. Sansoire is dominated by glasswort, Salicornia europaea, sea purslane, Halimione portulacoides, sea lavender, Limonium vulgare;

Marais: Fresh and brackish water marshes. Two-thirds of the reserve is covered by these marshes. The edges of these areas are dominated by the giant reed, Arundo donax and common reed, Phragmites communis. The biodiversity of the Camargue is largely attributed to the marshes it contains.

The reserve is not specifically a bird reserve, but the Reserve, because of the protection that it offers, does support a high proportion of the bird species, both resident and migrant which have been recorded on the Camargue – over 200 species have been recorded on the Reserve. The Reserve is home to a 15 mammal species – wild boar and foxes, rabbits and hares, polecats, coypu, rodents, hedgehog and bats which thrive along the edge of the river Rhone. The Reserve also boasts 40 species of fish (due to the presence of fresh, salt and brackish water), and thousands of insect species.

As its mission statement, the reserve has that it will ‘Assure the conservation of the many natural habitats of which it is made, and open the site to the public within the limits compatible with the preservation of the site’.

As a result, not all of the reserve is accessible to visitors. Visitors are managed towards the less sensitive areas of the reserve and are obliged to stick to footpaths.

Summary of the management of the Domaine de La Palissades.

- The sansoire and prairies are grazed by bulls and horses which are allowed onto the Reserve at intervals;
- Introduced species, including North American salt bush, Baccharis halimifolia, Uruguayan pampas grass, Cortaderia sollana and Florida water primrose, Lugwigia species are controlled on the Reserve by a combination of hand pulling, grazing and watering with a hyper-saline solution;
- Bird counts of key species (ducks) take place each year and results are maintained on a data base;
- Hunting is strictly prohibited on the Reserve;
- Visitors are to keep to way-marked footpaths and are encourages to take part in guided walks, provided by the Reserves naturalists;
- Bird hides are positioned around the Reserve and approaches to the hides are screened to avoid disturbing the birds. Visitors are asked to behave appropriately when in proximity of the hides.

## Aims

- To introduce the principals underlying species conservation and the protection of rare species, and the principals of biological conservation and maintaining the diversity of living organisms within habitats (in-situ conservation);
- To illustrate the significance of the EU Habitats Directive concerning the conservation of natural habitats and of wild fauna and flora and of Natura 2000, through local examples of programmes being carried out on the Camargue;
- To discuss the economic and ethical reasons for maintaining biodiversity;
- To provide case study material of successful in-situ conservation of habitats and species and discuss the advantages of in situ conservation of endangered species.
- To outline the management of nature reserves, including control of alien species, restoration of degraded areas, promotion of the recovery of threatened species and control of human exploitation;

## Equipment

Binoculars (if available)

Clipboard and note-making materials

Questions / prompt sheets included in this pack

## Method and Organisation of Study

A visit to the Domaine de La Palissade reserve at Salins de Giraud.

The visit needs to be booked by the Eagles Nest on your behalf, well in advance of your trip (3 weeks minimum). The cost of a guided tour around the reserve during which the guide will tell you about the history and background to the reserve and it management will be 31EUR. This includes a visit to a bird hide to observe the bird species present. The success of this part of the visit is dependent on the interest and patience of your group, as well as the season (March and April, and September are especially rewarding as migrants are particularly active), and the prevailing weather conditions. To aid students note taking, iphotocopy sheets included in this pack containing questions to prompt and direct them. Students need to be encouraged to ask the guide questions, and these can be translated for the guide by your group leader.

## Follow-up Activity

- Design a poster or panel (to be exhibited in the Domaine de La Palissade Visitor Centre), describing the efforts of the Conservatoire du Littoral and its partners in supporting species conservation at this site. Include:
- Details of the history of the Conservatoire du Littoral and the Reserve at Domaine de La Palissade;
- How the Reserve is managed. Give details of:
- Habitat management;
- Management of the hydrology of the Reserve – and why this is so critical at this Reserve;
- Control of introduced species;
- Monitoring of the effectiveness of the management plan – monitoring bird numbers, numbers of predators;
- Control of terrestrial predators and other species found on the Reserve.

## Discussion Points

Why is nature conservation important? Give examples of techno-centric and eco-centric arguments for conservation of habitats and species;

Has the Reserve been successful in its mission statement to ‘Assure the conservation of the many natural habitats of which it is made, and open the site to the public within the limits compatible with the preservation of the site’?

What is ‘in-situ’ conservation? Why is in-situ conservation preferable to ‘ex-situ’ conservation?

Can you suggest any ways in which the Reserve could be better managed?

What are the links between species conservation and the principals of biological conservation and maintaining the diversity of living organisms within habitats? How does one support the other?

What is a ‘flag-ship species’ – how can a high-profile threatened species be used as an umbrella to aid the conservation of the wider habitat?

Appendix 1.

Questions for structuring students note-taking: the management of the Domaine de La Palissade nature reserve, Camargue.

Why did the Conservatoire du Littoral acquire this site – what are the conservation assets of the site?

How are the visitors to the reserve managed? Are they free to roam around the reserve or are they controlled in any way?

How is the disturbance to the birds on the reserve by visitors kept to a minimum?

What introduced species are found on the site and how are introduced species controlled on the reserve?

How is the natural process of succession managed on the Reserve?

Is hunting allowed on the reserve?

How are the success of conservation measures and the reserve management plan monitored on this site? (Hint: Ask about bird counts;

How is the hydrology of the Reserve managed?

Is there any scientific monitoring of water quality on the reserve?

Has the reserve fulfilled its commitment to educating its visitors? How successful do you feel their efforts are – do you feel better informed about conservation on this site as a result of your visit? How could this have been better achieved?