

THE ENVIRONMENT

in the Principality of Monaco

2013



Gouvernement Princier
PRINCIPAUTÉ DE MONACO

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Preface

The year 2013, declared International Year of Water Cooperation by the United Nations, was the occasion for HSH Prince Albert II to honour of His presence multiple initiatives across the world.

As Head of State and President of the Prince Albert II of Monaco Foundation, the Sovereign continued throughout the year His steadfast commitment to the environment and sustainable development.

Whether in Marseille for the 40th edition of the CIESM Congress, at the University of Louvain in Belgium, or in Tangier at the 5th Meeting of the Parties at ACCOBAMS, HSH Prince Albert II continued to spread the “message of Monaco”, initiated in 2012, in favour of a sustainable management of the oceans and the seas.

In 2013, the Sovereign was keen to travel to the Republic of Palau, with HSH Princess Charlene, and meet the highest state officials to discuss important issues such as the preservation of biodiversity, the protection awareness of endangered animal species, or the conservation of protected areas such as marine areas and coral reefs.

The Sovereign also addressed topics related to environmental protection during His trips to Israel and Brazil.

Finally, during the official visit of the French President in the Principality, agreements on environmental issues have been signed between these two countries, in presence of François Hollande and HSH Prince Albert II.



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Conference of the Parties to the Washington Convention on International Trade

The Principality of Monaco participated at the 16th Conference of the Parties to the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora - CITES - which celebrated its 40th anniversary. The high point was the inclusion of several species of sharks which will now be protected by the CITES provisions (entry into force 14/09/2014).



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Managing the natural heritage: a priority

The four pillars of the Principality of Monaco's sustainable development policy are based on managing the natural heritage; implementing the Energy Climate Plan; a range of actions to promote a sustainable city and involving the Monegasque community.

Managing the natural heritage involves conserving marine and terrestrial biodiversity, but also managing water resources, monitoring the environment and pollution control.

Biodiversity: a priority

The Government of the Principality strengthened its policy with regard to environmental conservation and protection by becoming a signatory to the relevant

International Conventions, including the Convention on Biological Diversity, the Washington Convention (CITES) and the Barcelona Convention. The latter convention is specific to the challenges of the Mediterranean basin. In fact, despite a small, densely urbanised territory, the Principality of Monaco is particularly proactive in preserving its biodiversity, which is surprisingly rich.

Understanding

The first component of this policy consists of knowledge building. Species and habitat inventories are knowledge and awareness building tools, but also help the State make decisions when implementing its strategy for biodiversity monitoring and protection as well as its territorial development policy.

Beyond these systematic inventories, monitoring selected groups of species and setting up species and environment indicators, help understand the changes in the health of ecosystems. Each year, the Department of the Environment produces inventories and maps and conducts monitoring programmes of the marine and terrestrial fauna and flora, throughout the territory of Monaco. This knowledge helps fine tune the necessary management measures to maintain and protect biodiversity.

Protecting and managing

The policy of sustainably managing coastal resources conducted by the Principality is based on creating two Marine Protected Areas (Larvotto Reserve and Reserve des Spélugues). The aim of creating these protected areas is to both maintain the ecosystems in their entirety and protect species. In 1908, the first steps were taken to protect of the marine area of Larvotto beach and, in 1978, this led to the creation of Monaco's first marine reserve.

This marine reserve, with an area of 33 ha, has a strengthened protected status. The only activities

permitted are swimming, scientific research, scuba diving and under certain conditions, water sports. A part of the reserve area is listed as a site under the RAMSAR Convention (Convention on Wetlands of International Importance).

Half of the Larvotto Reserve is a herbarium of posidonia. The Posidonia, a spermatophyte that is endemic to the Mediterranean, is regarded as an indicator species of the overall quality of coastal waters. Monitored regularly for over thirty years, the vitality and stability of the posidonia herbarium in the Larvotto Reserve reflects the quality of coastal waters in Monaco.

More than 450 pen shells have also been found in just one third of this protected area. This population is monitored over time to evaluate its growth and state of health. Sensitive to the quality of the water, this species is a good indicator of the quality of the marine environment.

In 1986, a second marine reserve was created: the Reserve of Spélugues. This area of approximately 2 ha near the entrance to the Port Hercule, contains a site that is unique in an urban setting: a coralline drop off,



Insect hotel for pollinating insects in the Jardins Saint Martin

The Department for Urban Amenities has installed an insect hotel for pollinating insects in the Jardins Saint Martin in partnership with the French National Forestry Department.

This partitioned structure reproduces the habitat of certain species, such as wild bees, and is aimed at encouraging these pollinating insects to nest.

The insect hotel has been created for three reasons: to provide a home for these insects, to study and follow the life of pollinating insects, such as the wild bees, and to observe their life, which is often little understood.

thirty feet deep. This natural feature promotes the growth of red coral colonies, an iconic species in the Mediterranean.

These protection measures were strengthened, in 1993, by banning the fishing of the brown grouper, a placid species, which is very appreciated for its flesh. The level of protection for this endangered species has proved effective in the Principality, with a strong increase in the number of fish in the Monegasque waters over the last twenty years.

Enhancing

Since 2010, the Department of the Environment has initiated a project to place artificial reefs along the shores of the Principality. This programme, a marine biodiversity management tool, is aimed at promoting the biological diversity of some seabeds off the Monegasque coastline.

Using 3D bathymetry to precisely identify the nature of the seabed, several areas with a strong ecological potential have been identified, including an important colony of corallene located in the east of the Principality. These areas will be the subject of specific studies in coming years.

The regular inventories of marine fauna have led to the identification of 224 fish species in the Monegasque waters, spanning 87 families with notably an increase in the population of brown grouper since 1998,

demonstrating the effectiveness of protection measures put in place since 1993.

The land inventories carried out, covering wild flora, insects and birds have revealed an exceptional rich biodiversity.

The inventory of entomofauna (insects) produced very interesting results by counting not less than 330 species of coleoptera (beetles) and 101 species of heteroptera, and by discovering two species of coleoptera which are entirely new to science.

For land flora native to the Principality's territory, 346 species and subspecies have been identified, including 6 endemic species and 18 species of significant scientific interest. *Acis nicaeensis* (Nice Snowflake), a rare and very endangered species, endemic to the Nice region has been found at 4 sites in the Principality.

These results confirm the remarkable biodiversity of the Monegasque territory. The cliffs of the Rock, with their island habitat in a marine environment, provide the richest biodiversity.

Furthermore, since 2011, the Principality has joined the "Bee, sentinel of the Environment" programme of the *Union Nationale de l'Apiculture Française* (National Union of French Beekeepers) (UNAF). Bees play an important role in pollinating more than 80% of our plant species. More than 20,000 threatened plant species have been saved thanks to them, while

40 per cent of the human food (fruit, vegetables, oilseeds, etc.) depends on their work. Six hives have been installed on the roof-terrace of the *Musée des Timbres et des Monnaies* (Museum of stamps and coins) in Fontvieille. In addition, in partnership with the National Office of Forests (NFB), an insect hotel has been set up in the Saint Martin gardens. By reproducing the specific habitat for certain species, such as wild bees, this installation, the lives of these pollinating insects can be studied and monitored. These programmes are made possible by managing urban open space ecologically, eliminating the use of pesticides and creating nectar-filled flower beds.

A framework partnership agreement between the Government of the Principality, the Mercantour National Park, the Natural Park Alpi Maritime and the Prince Albert II of Monaco Foundation, was signed in 2008. These two parks which have outstanding natural ecosystems are today threatened, particularly due to the effects of climate change.

This cooperation is intended to improve the knowledge and understanding of biodiversity evolution in this natural area, promote exemplary management, particularly in terms of sustainable tourism, and encourage experiences to be shared internationally.

One of the projects in this partnership is to carry out one of the most ambitious systematic inventories of

the living world ever undertaken, since it covers the entire territory of two natural environments, in other words, nearly 2450 square kilometres. This inventory, initiated in 2008, relies specifically on hosting and managing international teams of scientists, but also local naturalists, who have some of the most site-specific knowledge. This knowledge of the living world could lead to the creation of "biodiversity reservoirs", places where natural and especially forest environments can be monitored and managed naturally.

This Framework agreement also includes a tourist component entitled "Accessing nature without destroying it". The Government of the Principality, together with the Mercantour National Park have committed to a programme of redeveloping visitor centres in the mountains to create information and discussion centres.

This Convention also aims to support the work undertaken by the Parks following their inclusion on the UNESCO's World Heritage List, especially in order to strengthen their reputation based on the exemplary management of this natural environment. This exceptional cross-border area is already included on UNESCO's Tentative List, and the candidacy of cross-border parks Alpi-Maritime and Parc Naturel de Mercantour to the UNESCO World Heritage was submitted in November 2013.



Monitoring environments and controlling pollution

Maintaining biodiversity is closely linked intrinsic quality of the (marine and terrestrial) environment, hence the special vigilance when setting up the monitoring networks.

The quality of coastal waters

The Principality monitors the physical and chemical quality of coastal waters, based on repeated measurements of all elements in the marine environment (water masses, sediment and biota), but also through the knowledge of activities or natural and anthropogenic inputs likely to affect the quality of the environment.

In addition to this local monitoring, the Department of the Environment participated in the RINBIO campaign (*Réseau d'Intégrateur BIOlogiques*) organised every 3 years by the *Agence de l'Eau Rhône - Méditerranée et Corse* and IFREMER (*Institut Français pour la Recherche et l'Exploitation de la MER*).

This study is based on the use of biological accumulators (muscles) which by their presence, their demographic, morphological and physiological behaviour characterise an environment and its evolution. This network has the advantage of providing homogeneous data of observed contamination levels in the Western Mediterranean (MYTILOS European programme).

Finally, the health of the waters are monitored by determining of the quality of sea water for bathing. This regulatory monitoring is carried out from early May to end September with swimming areas being tested on a weekly basis.

Since 2007, a monitoring programme, combining health and environmental monitoring with preventive management for risks due to the presence of the algae *Ostreopsis ovata* has been implemented around the coves at Larvotto beach.

Managing water resources

In some regions of the world, fresh water has become a major problem due to its rarity, its uneven geographic distribution, or increasing demographic



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The Principality of Monaco participates in IMPAC3

A delegation from Monaco, led by HSH Prince Albert II, participated in 3rd International Congress of Marine Protected Areas (IMPAC3) held in Marseille and Corsica in October 2013.

The first event was organised in 2005 in Australia and the second in 2009 in the United States, this new congress has brought together more than 1,000 representatives from 90 countries.

This year, many issues were discussed including:

- The need to take collective responsibility for the oceans, with a special focus on the Mediterranean;
 - The science and knowledge needed to manage MPAs;
 - The necessary tools to effectively manage and improve MPAs;
 - Governance, through partnerships and industry involvement;
 - Regional approaches through initiatives, environmental and regional networks.
- Finally, at the Ministerial Meeting in Ajaccio, which closed the conference, HSH Prince Albert II Monaco and the French Minister for Ecology, Sustainable Development and Energy jointly announced the creation of a trust fund for the Mediterranean MPAs.



pressure. Monaco's sustainable policy for managing water began in the second half of the nineteenth century, by installing perimeter protection at drinking water springs.

On average, 75% of the water used in the Principality comes from France (Vésubie and Roya valleys), and the remaining 25% comes from local springs (Alice, Mary, Testimonio, Fontdivina and Ingram springs).

The Société Monégasque des Eaux (SMEaux), via a concession from the State, manages the treatment and quality control of this water, before it is injected into the supply network. The streamlining and reduction in water use is still one of the major challenges in sustainably managing the resource. Over the past ten years the water consumption has decreased by an average of 1 per cent per year, thanks to the efforts of the private sector and residents and the actions carried out by the State, such as using valley water to clean roads, and an optimised management for watering gardens.

Waste water treatment

All the waste water from the Principality and the town of Beausoleil, as well as a part of the water from the municipalities of Cap d'Ail and La Turbie are collected into the Monegasque sewerage system and taken to treatment plants for purification.

All this waste water is taken to the waste water pre-treatment plant (UPTER), which physically treats the effluent: removing large objects, screening, removing grit and sand, removing fat and grease. With a treatment capacity of 2000 l/s, it can handle all the waste water collected. Once preprocessed at UPTER, the waste water is taken to the Residual Water Treatment Plant (UTER), located in the basement of an industrial building in Fontvieille which handles primary and secondary treatment of the water.

The purified water is then discharged into the sea by an outfall, located 800 metres off the Fontvieille breakwater at a depth of approximately 100 metres. A special feature of the treatment system in Monaco is that most of the sewage sludge is directly treated, along with household waste, by a waste to energy plant.



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