

Canary island biodiversity data base

A new approach to conservation

by Juan Carlos Moreno Moreno

The importance of nature in the Canary Islands

The Canary Island archipelago is exceptionally well endowed with natural wealth, with one of the greatest biodiversities of all the temperate region of the world in comparison with its tiny surface area. The large number of endemic species makes the Canary Islands a centre of biodiversity of the first order.

Our geographic location and rugged volcanic relief have given rise to a wide variety of landscapes and ecological habitats, and the fact that they are islands has propitiated processes of evolution that have originated animal and plant species that are exclusive to these islands and has conserved relict samples of species that had a far more extensive range in ancient times. But this natural heritage is highly vulnerable as, apart from the implicit ecological vulnerability of an island per se, the islands themselves are very small and very densely populated. Isolation, fragmentation

of the land mass, population density and the currently predominant economic model based on tourism, involving an intensive use of natural resources, represent a clear threat to the biodiversity of the Canary Islands, which is presently a strategic asset for our society.

This situation makes it essential to seek an alternative model of development capable of striking a sustainable balance between the tourist industry and an improvement in the living standards and quality of life of the people, on the one hand, and the conservation of natural resource on the other.

But a lack of suitable knowledge about some of the elements of Canary Island biodiversity could lead to the implementation of conservation policies that are, at best, ineffective. For these reasons, the Canary Island Government, through its Ministry of Regional Planning and the Environment, has embarked on a project aimed at studying and evaluating the status of Canary Island biodiversity. This initiative

has translated into the creation of the Canary Island Biodiversity Data Base, pursuant to the Order of the 1st of June 1999.

The Importance of the Data Base

We can now assess the results and applications obtained from the beginning very positively.

By implementing the "Biota-Especies" project, all the existing information on the biota of the islands has been selected and stored. To date, this amounts to 14,352 records of terrestrial species and sub-species belonging to the kingdoms of the Fungi, Plants and Metazoans, and a total of 5,232 marine species and 63 sub-species of Algae, Fungi, Plants and Animals. Each reference contains geographic information on two scales of accuracy: grid squares of 500 m x 500 m and grid squares of 5,000 m x 5,000 m. This information has been recorded with a very stringent and uniform process with the intervention of over one hundred experts in the different taxonomic groups.

Each of the registers entered in this Data Base is endorsed by a reference document that has been selected and validated by a supervising expert and compiled by a specialist in the relevant taxonomic group. So far, a total of 4,419 documents have been registered and their contents have been organised into the Data Base Documentary Archive. These are publications, reports, documents on plant and animal collections, catalogues of the species of very specific environments and notes and references made by experts.



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Data Base Applications

This initiative has enhanced our knowledge of some taxonomic groups and the geographic distribution of species, sub-species and populations. Previously, this information was highly biased and scattered. There is a very wide range of applications that can be used with the Data Base.

Drafting official lists of taxa

The Data Base has been established as an official register of Canary Island species.

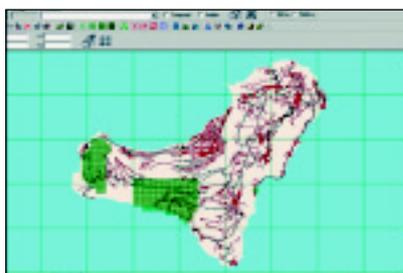
All of the species and sub-species known in the Canary Islands have been recorded in the data base, indicating their taxonomic position, their island location and whether they are endemic or introduced.

All this information has been published in two books: the Canary Island list of Wild Species and the Canary Island List of Marine Species. These works include a chapter with all the biodiversity facts and figures by islands and by taxonomic groups. Furthermore, the List of Marine Species also includes a statistics chapter that analyses the distribution of species by depth, the historic evolution of taxonomic discoveries and the current status of knowledge on each group.

Reports on selected zones

• Sectorial Plans and Territorial Plans.

The inventories of flora and fauna included in sectorial and territorial plans are compared with the information on the area in question stored in the Biodiversity Data Base. Common examples of this are the natural spaces plans, which before they are finally approved, are sent to the Biodiversity Service where the accuracy of the information on the biota is checked.



• Environmental impact study

In the case of environmental impact studies, the same consultation process as the one used in the sectorial and territorial plans is used.

the Canary Island Catalogue of Endangered Species, applying the new cataloguing criteria published in the ORDER of the 25th of September 2003.

During the evaluation process, the Data Base analysis module has been used. This provides information on changes in the distribution of species over a period of time.

Analysing Biodiversity as a whole

Biodiversity analysis can evaluate threats and the causes of biodiversity loss, help to enhance our knowledge of biological diversity as a whole and assess its conservation as a strategic resource. In this sense, applied studies have been carried out, the results of which have been circulated to the Island Cabildos (Island Councils) involved in the management of the affected areas. One of these studies addresses a strategy to make areas of land on the island of Tenerife part of the island heritage. The Terrestrial Data Base analysis module has been used to determine the zones of greatest biological wealth on



Selection of SPAs from the Natura 2000 network

Using the BIOTA analysis module, the wealth of bird life present in the area proposed for extending the Canary Island network of SPAs has been studied, with a view to having it included in the Natura 2000 network.

the island that are not currently protected as Protected Natural Areas and which contain an important number of endangered species.

This study provides a list of important sites from the point of view of conservation, and recommends where the Tenerife Island Cabildo should establish priorities for their conservation and management measures to safeguard biodiversity. This way, preferences are set for private lands that could be acquired by the Cabildo, in order to protect a wide range of representative biodiversity.

Evaluation of the catalogued species

A review is currently being done of the state of conservation of the species that appear in





Biota Application in the Region of Macaronesia

Based on the Canary Island Biodiversity Strategy, consideration has been given to the creation of a biodiversity study and analysis centre devoted to the study of the archipelagos of Azores, Madeira, the Salvagem Islands, Canary Islands and Cape Verde. On the other hand, in the context of specific European policies for the so-called “ultra-peripheral” or remote regions of the European Union, the European Commission has created an initiative called Interreg III-B Azores – Madeira – Canary Islands for the period 2000-2006, with a view to fostering trans-national co-operation between the authorities of these islands to promote a greater degree of regional integration. Two projects have recently been approved for these archipelagos, one is called “The Development of a Macaronesian Biodiversity Data Base”, known as “ATLANTICO”, and the other is entitled “Monitoring and Planning Endangered Species of Macaronesia”, or “CENTINELA”.



INTERREG III B
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The objectives of “ATLANTICO” are:

- To identify the genetic structure of the populations of Canary Island species. This knowledge will provide greater effectiveness for biodiversity diagnoses and decision making in the field of conservation. This is especially important for the recovery of Canary Island species. That is why the project will give priority to the species listed in the Canary Island Catalogue of Endangered Species.
- To create a Biodiversity Data Base in Cape Verde. Following the model used in the Canary Islands, the project will create a system to store all existing information on references to species in Cape Verde. The aim, therefore, is to work exclusively with the taxonomic part of the biodiversity of Cape Verde.
- To disseminate the Biodiversity Data Base, which will include the publication of the taxa lists of the Canary Island and Cape Verde Data Bases and to host and maintain web sites where Biodiversity Data Base information will be available.

“CENTINELA”

includes four main lines of work:

- Monitoring of endangered species
- Planning the necessary actions for keeping threats under control
- Maintaining habitats and their populations in a favourable state of conservation
- The dissemination of issues related to the implementation of the project.

For the area of the Canary Islands, all the scheduled actions are related to the Catalogue of Endangered Species of this geographic region.

Internet Applications (www.gobierno.decanarias/medioambiente)

Atlantis is a computer programme with two main modules that can be run; on the one hand the functions of loading and updating data and, on the other, to deal with consultations and information analysis.

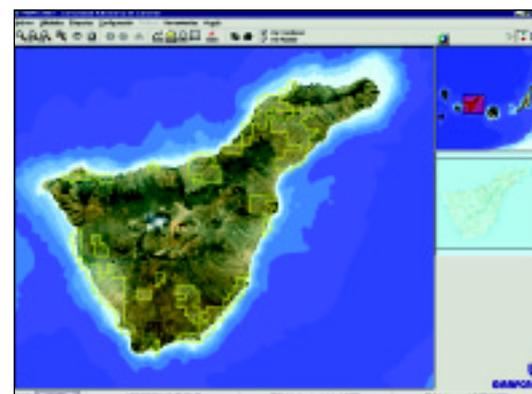
In order to provide access to the information to a wide range of users, an Internet application has been designed to provide access to the contents of the Data Base. This contains a range of digital mapping consultation tools (reference co-ordinates, orthophotography, grid squares, zoon and image transfer). There are two forms of search for consulting the information:

- Generating information about different aspects of the species
- Lists of species located in a specific site in the islands



The Atlantis Contribution to the “Mapa” Software

“Mapa” is a geographic viewer that enables users to consult regional information about any point in the Canary Islands. This computer application has several tools and functions, including, for example, consultation of alpha-numeric data, place name search,



geo-referencing of information, etc. The data, which is sourced from different public administrations, is organised in “views”. The catalogue of “Views” is an ample one, but, as far as Biodiversity is concerned, one can consult information on Sites of Community Interest (SCIs), Special Protection Areas for Birds (SPAs) and several different analyses of Atlantis.

Building for the future

The creation of the Biodiversity Data Base has represented a quantitative and qualitative leap forwards in the study of Canary Island Biodiversity. Taking the present moment in time as a reference, we can predict that advances in this field will continue to grow exponentially. This initiative has provided a solid scientific foundation for Environmental Conservation Policy in the Canary Islands. The Data Base is a high precision tool whose functions are to provide information on the applicable regimen and conservation status of any component of our biodiversity, facilitate regional planning and decision making for planning and for ecological impact assessments and to provide the necessary information for decision making in the management and monitoring of biodiversity status.

On the other hand, it has also been a starting point in international co-operation for the conservation of the Biodiversity of the Macaronesia region. Thus, it provides greater cohesion for strategies aimed at guaranteeing the future of one of Mankind’s greatest assets.

International Projection

The Data Base is a state-of-the-art tool in its field. Its applications have started to be used internationally, becoming a benchmark that several European and ultra-peripheral countries have placed their trust in. This can be seen from the interest shown by all the countries that make up the region of Macaronesia; all these archipelagos have joined the project first embarked upon by the Canary Island Government, resulting in a range of different projects encompassed in the Community Initiative Programme Interreg III B (Cape Verde, Azores, Madeira and the Canary Islands), some of which have already been dealt with in this chapter.

On the other hand, the European Commission’s European Fauna data base has also

shown an interest in applying the operative dynamics of the Canary Island data base.

This fact *per se* is a tribute to the Canary Island Government’s new line of action. The success reaped by the Biodiversity Data Base is due to the stringent scientific standards applied and the enormous effectiveness in the registering, consultation and analysis of the existing information on Canary Island biodiversity.

I believe that this initiative has placed the first cog in a system that will enhance our knowledge of biodiversity at the service of mankind, and I think other data bases will be incorporated in the near future to generate a complex framework that will push out the frontiers of our knowledge of the biodiversity of the planet.

