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DIRECTOR

Foreword

While the Royal Belgian Institute of Natural Sciences, together with its Museum, already has a long history behind it, its missions are constantly diversifying. This evolution is due in equal measure to the growing demands of society and to the will and creativity of the staff of the institution.

With the passage of time, the Institute has become the largest of the State scientific establishments, under the control of the department of federal science policy. In the course of its some 150-years' existence, it has retained the same fundamental scientific objective: to compile the inventory of all forms of life, past and present, but its scope has been steadily broadened to include the study of ecosystems and its applications for the protection of biodiversity.

Today its expertise is placed at the disposal of both public and private bodies in order to lend scientific help to their decision making and to offer innovative services in such sensitive areas as the protection of the environment.

It preserves our precious heritage, seeks to enrich it by scientific means and, above all, to enhance its potential for the public good.

It is the most important centre for the dissemination of knowledge about natural sciences in Belgium, and this through permanent and temporary exhibitions, publications and events which combine interactivity, pedagogical objectives and leisure activities for the largest possible audience.

It is an active participant, even a pioneer, in issues of scientific and museological cooperation, both at the European level and on a global scale, in a field where progress would be impossible without the existence of a network of knowledge and expertise.

Finally, it contributes, in keeping with other important federal institutions, to the positive image of Belgium abroad.

This brochure aims simply to show how, in a concrete way, the Royal Belgian Institute of Natural Sciences and its Museum meet –and will continue in the future to rise to– these many challenges.



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A long history already – with more to come...

Since 1802, the particular emphasis placed from time to time on the collections, sometimes on research and sometimes on the exhibitions, has left its mark on the history of the museum and lent a certain rhythm to its evolution.

Museum, Institute

Three fundamental elements characterise a museum :

- its collection
- its scientific research
- its exhibitions

The *Royal Belgian Institute of Natural Sciences* is without doubt a museum, although it is not actually called one.

Admittedly, quite a few journalists still use its old name, the *Royal Natural History Museum of Belgium*, and taxi drivers, as well as young children and their teachers, refer to us as the *dinosaur Museum*.

Today the title *Museum of Natural Sciences* is gradually gaining currency.

From private collection to royal museum

Originally, it was the *Physical and Natural History Collection* of Charles of Lorraine, who was governor of the Austrian Netherlands in the second half of the eighteenth century. After some trials and tribulations, the remnants of this collection of curiosities, together with a library and a collection of paintings and antique objects, came to form the *Museum of Brussels*. That was in 1802, in the Palace of Nassau, near Place Royale.

The young Belgian State bought the collections from the city of Brussels and founded the *Royal Natural History Museum of Belgium*, run by Bernard du Bus de Gisignies (Director from 1846 to 1867). He was a keen ornithologist and devoted himself to expanding and classifying the collections. In particular, he called on Belgian diplomats stationed in distant lands to obtain rare species to enrich his museum.

The Birth of a modern museum

His successor Edouard Dupont (Director from 1868 to 1909) carried out a thorough reform of the museum. As a geologist, he had established a sound scientific reputation for himself excavating for evidence of prehistory in caves in the Lesse valley. When he applied to become Director, he said that the museum needed to become an instrument for exploring Belgian soil. The natural wealth of Belgium was to be assembled and studied.

This demanded that, in order that the collections should grow, fieldwork of the highest scientific standards be undertaken. At the same time, the idea was gaining acceptance that a museum had to be of use to society, incorporating our modern-day concept of "service provision". This policy of systematic enrichment was given a further boost when, on 28th February 1878, like a gift from the mists of time, the mines in Bernissart yielded up the bones of some iguanodons and it became necessary to find a new site to house these treasures. The museum bade farewell to Place Royale, and took over the buildings, originally intended as a monastery, at the highest point of Leopold Park. The new museum was inaugurated on 22nd July 1891.

During this period, it was decided that the museum needed a new wing. Plans drawn up by architect Emile Janlet were inspired by the scientific and museological views of Edouard Dupont. According to Dupont and Janlet, two new wings were needed for the old monastery: on the south side, a wing dealing with the exploration of the national soil of Belgium and, on the north side, a wing dealing with exploration of the colonies. The old monastery wing was to contain reference collections. But these plans were thwarted by the first colonial exhibition in Tervuren, in 1897, which brought the construction of the *Congo Museum* in its wake. Only the south wing was built, inaugurated in 1905.

The work of Dupont and Janlet received a great deal of attention in Belgium and abroad. Specimens were exhibited according to the scientific principles they illustrated and not simply because they were rare or exotic. The public also appreciated the many explanatory texts and bilingual descriptions which replaced for good the Latin versions.

A LONG HISTORY
ALREADY

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A LONG HISTORY
ALREADY



A LONG HISTORY
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The rise of scientific research

Dupont's reforms were continued by his successors. Oceanographer Gustave Gilson (Director from 1909 to 1925) carried out the first scientific explorations of the North Sea. He also added the finishing touches to the exhibition halls in the Janlet Wing.

Under Victor Van Straelen (Director from 1925 to 1954) the museum went from strength to strength: research was expanded to cover the whole world, and the number of staff mushroomed (from 41 employees in 1925 to 135 in 1940). The library, the museum's own publications and the collections were reorganized and expanded. The Educational Service was founded in 1931. Under Van Straelen's direction the national parks were established in Congo as well as the first nature reserves in Belgium. He enjoyed tremendous prestige and undisputed authority, as well as the moral and financial support of captains of industry and businessmen.

Their continuing expansion meant that the collections once again needed new premises. In 1930, this project was entrusted to the modernistic architect Lucien De Vestel. Van Straelen and De Vestel devised a grandiose programme that would occupy the entire top end of Leopold Park. But lack of funds and the war meant that only one tower was built: the present-day De Vestel Building; and even that was not completely finished. After 1945, Van Straelen was on bad terms with successive governments and never received the necessary funds for the completion of the new wing. This was only finally achieved in 1982; the building had been left under construction for over 40 years.

In an ivory tower

The government's lack of interest affected not only the De Vestel building, but also the other wings. It did not, however, prevent a change of name and in 1948 the museum became the *Royal Belgian Institute of Natural Sciences* (RBINS), doubtless to lay emphasis on its scientific nature.

But the lack of investment seriously affected the museum: the maintenance of the buildings was neglected, to the extent that the newspapers wrote "It's raining on the iguanodons", while the public no longer came to visit the increasingly ageing exhibition halls. These started closing one after the other. The staff admitted defeat and concentrated on research. There were only 30,000 visitors a year to the few halls still open.

By the end of the 1970s, the Institute reached its lowest ebb...

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As we were saying, it was raining on the iguanodons...

So, at the end of the 1970s, the Belgian Buildings Agency drew up a wide-ranging plan, to finish, expand and renovate the existing premises. As the work advanced, exhibition halls were restored and reopened, but unfortunately with inadequate funds. At the end of 1987, a partnership was set up with a large Belgian bank, which would prefinance the income from admission to the exhibitions. This gave the Institute more funds to fit out the museum more ambitiously.

From 1988 onwards, a start was made on organising large temporary exhibitions, which were an immediate success. The museum saw its annual visitor numbers increase tenfold in comparison with 1980, now reaching in the region of 300,000 per year.

The start of the renovation

After the State reforms of 1980, politicians began to turn their attention to our fate – along with that of the other scientific institutions that remained at national level. Various reforms were introduced which breathed new life into these 'dinosaurs' from the pre-federal era. In 1987 they were granted considerable management autonomy, which meant that they could use the funds available more efficiently. When the powers and responsibilities for education were handed over to the Communities in 1988, these institutions came under the supervision of a single federal minister. This put an end to their joint management by a Dutch-speaking and a French-speaking minister, which had often led to delays and stalemate.

Finally, in 1994, they were transferred to the department for federal science policy, which would enable them to operate in a more favourable administrative climate.

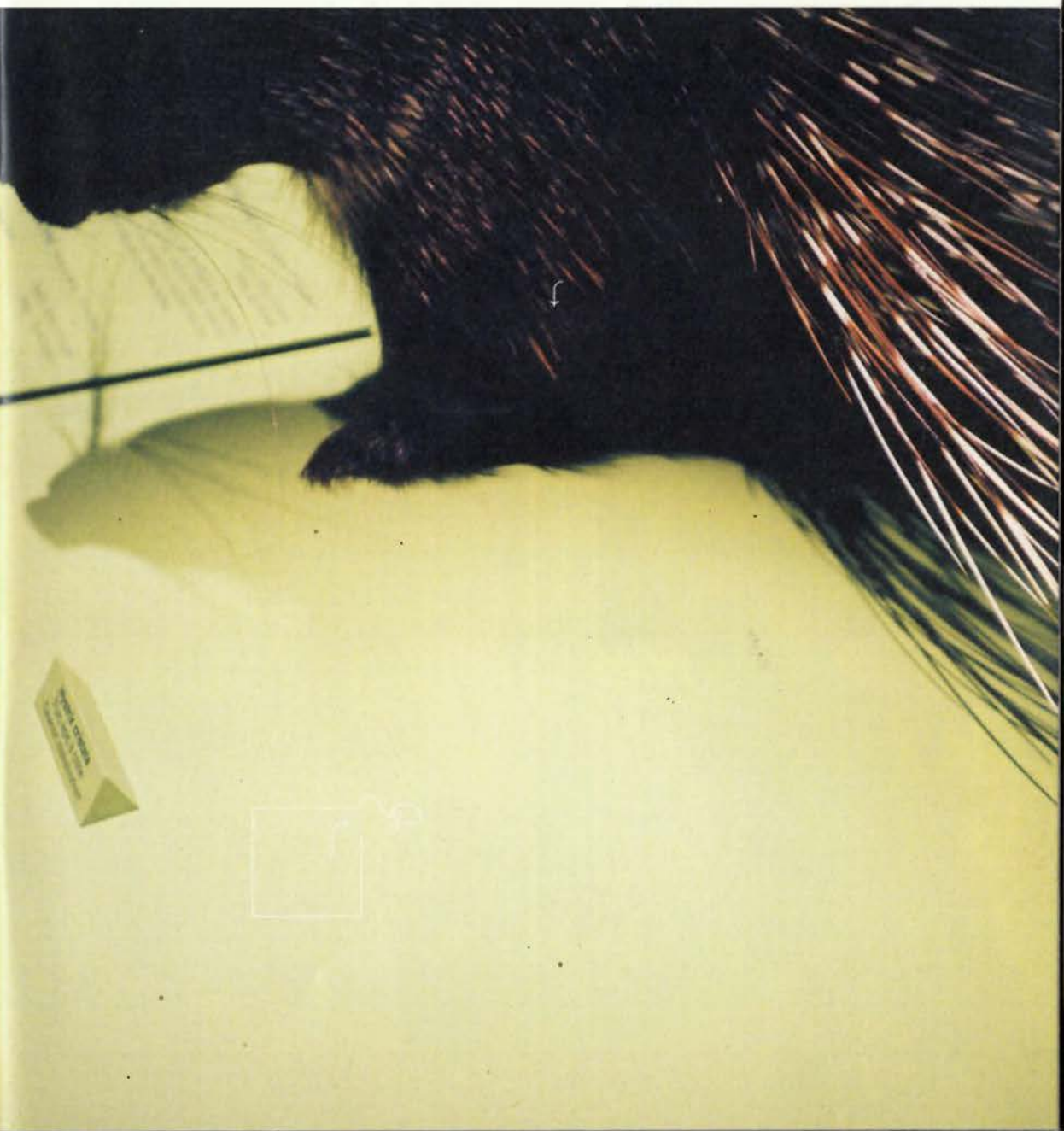
At the same time, the Scientific Council evaluated the research activities and proposed various measures for restructuring. In particular, the researchers were urged to take part in programmes with external funding, which put them in competition with other scientists at national and international level. The success that they achieved led to better quality work and publications, and offered greater opportunities for attracting young researchers, ultimately breathing new life into management and its approach. The scientific equipment was modernized and the Institute became involved in European and international scientific networks.

This dynamic process also ensured that new departments were attached to the Institute, which expanded the range of skills and responsibilities. In 1997, the Management Unit of the North Sea Mathematical Model (known by the acronym MUMM) was transferred to the RBINS. This department creates models of the operation of the marine ecosystem and monitors the environment of the North Sea. In 2001, after 116 years of separation, the Geological Survey of Belgium, responsible for the geological mapping of Belgium, was again attached to the Institute.

Our researchers became accomplished at exploiting their scientific expertise, and were increasingly called on by the authorities either to provide scientific underpinning for policy, or for tasks such as representing the State at international meetings. In short, they succeeded in developing a range of scientific services that they could provide.

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A LONG HISTORY
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The RBINS and its Museum in the 21st century

**To reinforce our strengths and overcome our difficulties:
these are our objectives.**

Strengths and challenges

The RBINS can pride itself on having competent, experienced and committed staff. The number of articles, often in specialist international journals, bears witness to the quality of our research. The federal state, the communities and the regions are entrusting a variety of tasks to the Institute for its scientific service provision. Our impressive collections place us among the leading natural history museums of the world. The museum organizes exhibitions whose value and success speak for themselves. Families and young people in particular appreciate our exhibitions, visiting them in huge numbers.



But we have, above all, challenges to rise to and many projects to realise!

Making our structure more dynamic

The present structure of the RBINS reflects the practice of "pure" scientific research. The nomenclature of the animal kingdom (vertebrates, invertebrates, insects) is used as the basis for the division of the Institute into departments and units. Researchers are thus compartmentalised within their own specialist field, scarcely encouraging the interdisciplinary approach so necessary for scientific advance. The group of staff members with a university background is almost entirely composed of researchers, whereas those responsible for museum work and services to the public practically all fall outside this category.

The challenge is clear. The RBINS must be restructured into larger, more coherent units, which are each assigned a mission or a specific activity. Museologists, conservators of collections, attendants, guides, organisers, educationalists, computer scientists and administrators, all need to be fully-fledged members of our team.

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Computerising our collections

The time and effort researchers spend in managing the collections is often felt by them to be a brake on their scientific career. It is nothing of the sort. A specimen without a label has no scientific value! Describing a specimen is much more than simply giving it a name and a place of origin; it is also a matter of recording detailed information about the environment, climate and circumstances of its collection. Millions of pieces of biological information to be rendered accessible and exploitable and, in order for that to be achieved, to be encoded in the relational data base, whilst at the same time respecting the rules of taxonomy and bibliometry. An investment of global proportions!

Whilst the computerising of our collections puts us on the world scientific map, in addition it meets the new demands for transparency. From now on part of our collections can be viewed on the Internet.

In the future, these data bases will be linked with those of other museums.

The Institute must commit itself to assigning a large share of its resources to the realisation of this ambitious project.

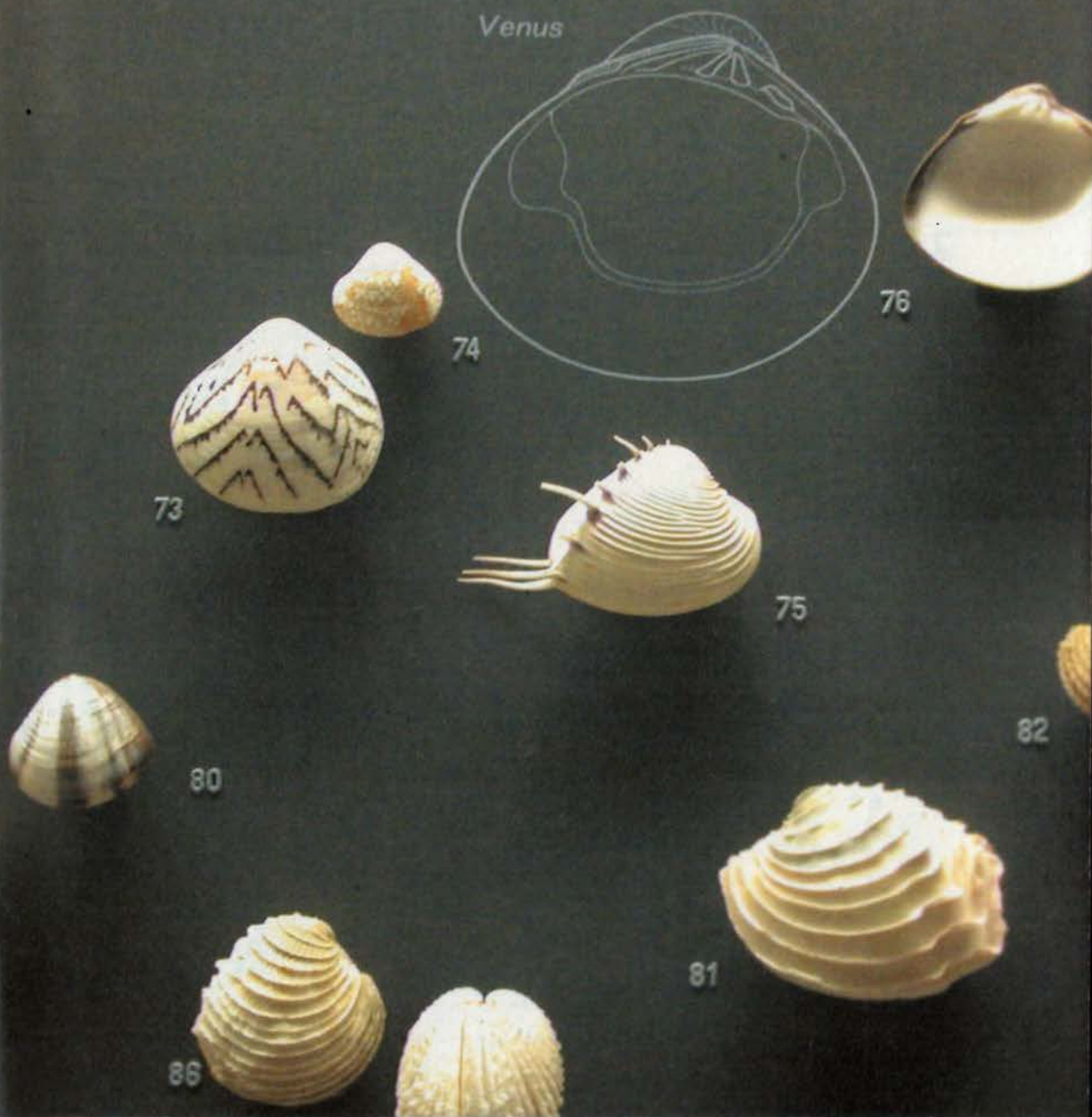
Renovating the permanent exhibition halls

Recently, another wing of our building was shrouded in scaffolding. Ninety-eight years after the official opening, the renovation of the Janlet Wing is now under way. This is the start of a new modernization of the museum's permanent exhibition halls. Major investment is needed because science is changing fast, as are means of communication and public expectations. Furthermore, partnerships between the public and private sector are necessary to carry out this ambitious programme within a reasonable timeframe.

www.naturalsciences.be/science/collections

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The co-production of our exhibitions

Our temporary exhibitions have become a must for the public. A large number of visitors come back for each of them. However these events are costly, whether we produce them ourselves or contract them out. Depending on the technology required, and whether interactive media are used are not, the price can quickly reach €1500 to €2500 per square metre. And that does not include the cost of promotion. This greatly exceeds the museum's own resources.

Nevertheless, various natural history museums are working together to overcome this problem. An initial partnership between the museums of Brussels, Leiden and Paris will culminate in the exhibition "Fatal Attraction" being presented in the three cities between 2003 and 2006. Such co-productions are intended to cut costs and risks, and increase the prospects of profitable exhibitions, but they also lead to a wider dissemination of knowledge and skills.

Diversifying our public

Over 50% of our visitors are children, whether they come with a school party or independently. And when adults visit, it is often to accompany pre-school and primary school children. The museum must appeal to a highly-diversified audience. That is a part of its educational mission and its task of disseminating knowledge.

Various projects are in the pipeline:

- › A space which will present the latest scientific research by the Institute;
- › A look behind the scenes of the Institute, where a visitor is not normally allowed;
- › Meetings with scientists and researchers; in this way, we aim to explain the importance and the significance of research, collections and our other activities;
- › A positive policy of developing in young people an awareness of, and training for, research, to make them receptive to the idea of a scientific career. This policy must be aimed primarily at teenagers.



Leitmotiv

Our objective for the future is the joint, harmonious and ambitious development of the *institute* component, with its research and provision of scientific services, and the *museum* component, with its permanent halls, its temporary exhibitions, its events and its workshops.

This can only be achieved by a renewed attention to our collections, which are a key element of the world's scientific heritage.



The museum: an exercise in interdisciplinarity

MUSEUM

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Developing the museum – a collective process

**Museologists, scientists, educationalists,
artists, technologists – all are working to decode nature.**

Humanising our relationship with nature

Thousands of years of real or assumed civilisation have changed little that is fundamental: human beings are in nature and of nature. Anyone who studies natural sciences is looking at and into him/herself too.

A Museum of Natural Sciences creates, maintains, reflects and cultivates our link with nature. It informs the eye of the visitor and teaches him or her how to look at animals and observe nature in order to discover its countless facets. It is, admittedly, an imperfect, partial account of nature, but it also offers surprising possibilities: the visitor can glimpse extinct animals and ecosystems, as well as organisms that cannot normally be seen, because they are too small, too well hidden, or too far away. It shows details and reveals processes. It sheds light on the relationships and dynamics that bring ecosystems alive and without which it would be impossible to understand global evolution.

Everyone who visits the museum does so in their own way, with their personal questions and answers, experiences and discoveries. Their powers of observation become sharper, and their reasoning clearer. And their feelings become more humane.

The Muses of the museum

Building an exhibition, captivating the young in a workshop or writing a catalogue, all are acts of creation. We are constantly looking for new ways of bringing our science to our audience.

That's why we constantly keep track of what is happening in the arts, and we draw inspiration from theatre, fiction, the contemporary arts, cinema, literature, music, etc.

We have this freedom because we do not compromise over scientific accuracy.

Our scientists are the quality controllers of our imagination – and also the stimulus, because reality and nature are often more fantastic than our wildest dreams.

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A museum for all

Our museum is one of the driving forces that contributes, through culture and education, to keeping democracy alive.

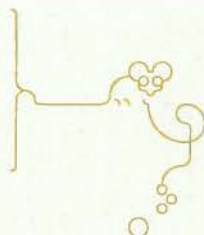
Scientific culture is everyone's business : and our aim is to bring it within everyone's reach. Taxpayers provide a substantial chunk of our revenue. We owe our existence to our public; it is to them that we must deliver.

Every visitor is treated to a warm welcome and given a fascinating time. Because nature, life, our environment cannot leave anyone unmoved. We were the first interactive museum in Belgium.

And we were among the first century-old museums in Belgium to be accessible to disabled visitors. Our opening hours and admission charges are tailored to our audience (special opening hours during the school holidays, family tickets, free admission on the first Wednesday of every month).

And above all, we pride ourselves in bringing science closer to the public, by disseminating readily intelligible material.

Website visited in 2002
by 500,000 surfers.
And that is only the start.



www.naturalsciences.be

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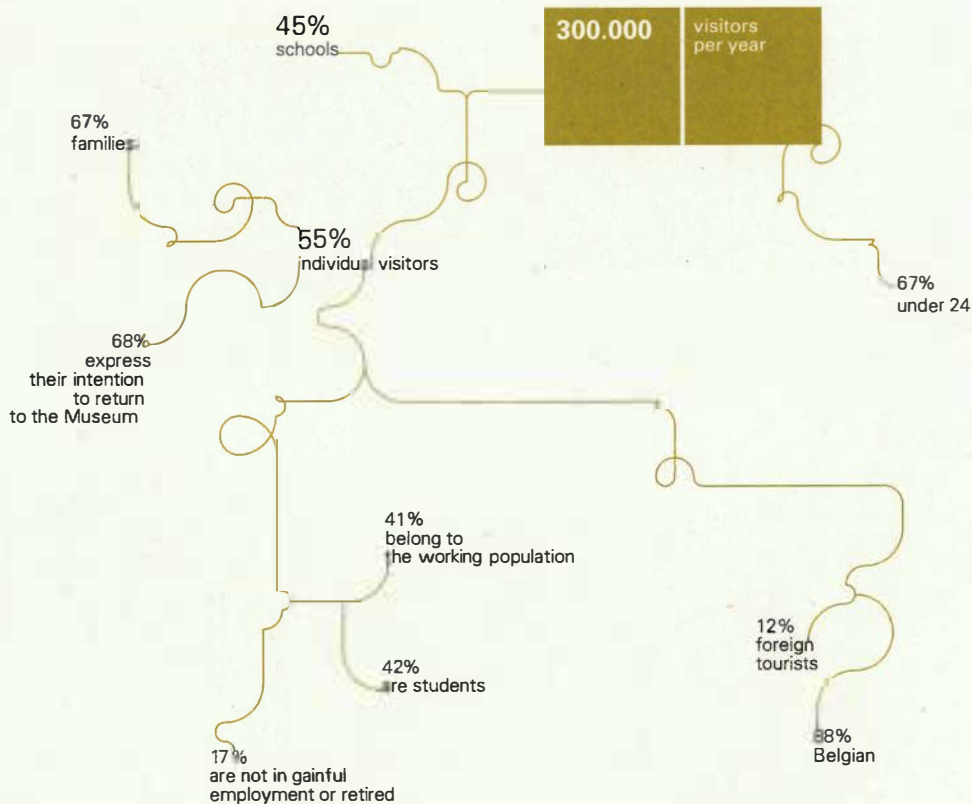


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Our audience

The museum reaches all sections of the population and the various communities of our country.
That remains our objective, our concern and our pride.



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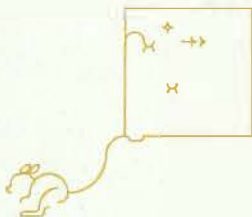
An encyclopaedia of nature

In the exhibition halls with permanent collections, visitors can get to know the collections of the RBINS. But they will only see the tip of the iceberg. For how can one display 37 million items?

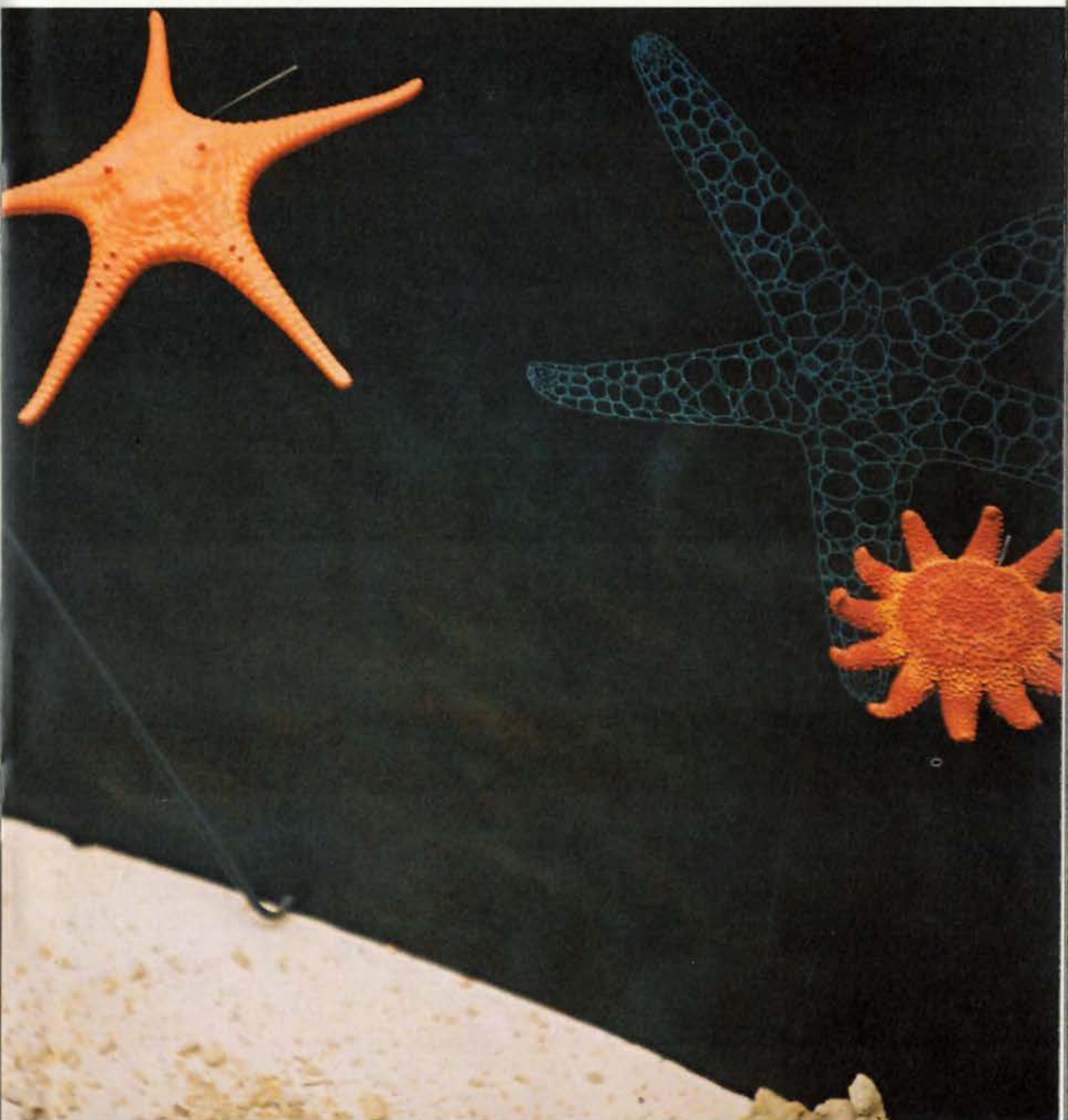
From minerals and moon rock to dinosaur skeletons and shellfish, insects, creatures from the polar regions, and mammals from near and far. Not forgetting the evolution of Man and his distant ancestors.

These collections not only give a picture of the research done by the RBINS, but are also the basis for countless educational activities. Because, although the museum regularly organizes temporary exhibitions, its permanent exhibits remain the reference point. Visitors come time and again, a little like leafing through an encyclopaedia. They are looking for information, for the answer to a precise question, or perhaps for confirmation of what they already feel.

Our library is available not only to our scientists, but also to everyone interested in natural sciences. You will find practically everything here: 650,000 books, over 2,000 magazines, articles about dinosaurs and crustaceans, century-old and beautifully illustrated plates of plants and animals, now very rare, the most specialized electronic journals about zoology and geology; and not forgetting an extensive information library for schools and universities.



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A living, talking museum

We will never be a dusty old museum set in its ways, a storage place full of objects and dead animals. Nor are we here simply to impress our visitors. Our aim is to present a museum which lives and speaks, as much through its permanent exhibition halls as through its temporary exhibitions.

Guided tours, workshops, courses, play activities, all have just one aim: to awaken in our visitors an interest or, better still, a real enthusiasm, for nature. For, even when we blithely resort to multimedia technology, the human face is still the best means of contact.

Our hosts show our collections to visitors, unravel the mysteries of science, encourage questions, even venture the odd joke... Nature lovers, scientists, teachers, they all join forces to guide 40,000 visitors a year in their journey of discovery.

We have to entice our visitors, and fill them with wonderment, so our activities are constantly changing. Guided tours continually choose new themes, the exhibitions follow on one after another, the workshops innovate, the courses open up new avenues.

The museum never stands still: a dinosaur weekend, a scientific film festival, late night looks behind the scenes. We are expanding scientific culture, and as such play an integral part in the diary of cultural events.

This is why we regularly go out into the field. At open air events (e.g. environmental happenings, children's parties, etc.), at trade fairs and exhibitions about education and science, leisure, nature, you can find us at them all. We also organise small travelling exhibitions, visiting cultural centres, local authorities and schools.

We are not a museum which wishes to overawe its visitors; we want everyone to get the most out of their visit, and talk about it afterwards. They must feel at ease, like honoured guests. So, they can take photos, and they can make 'the' video clip with the smallest member of the family in raptures over the humpbacked whale. The museum is life: to be consumed with relish!

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A committed visiting card: the temporary exhibitions

We make no secret of our aims: to use all the means at our disposal to make our knowledge more accessible.

Since the 1980s, the museum has been organising large temporary exhibitions, attracting a more and more numerous and varied audience.

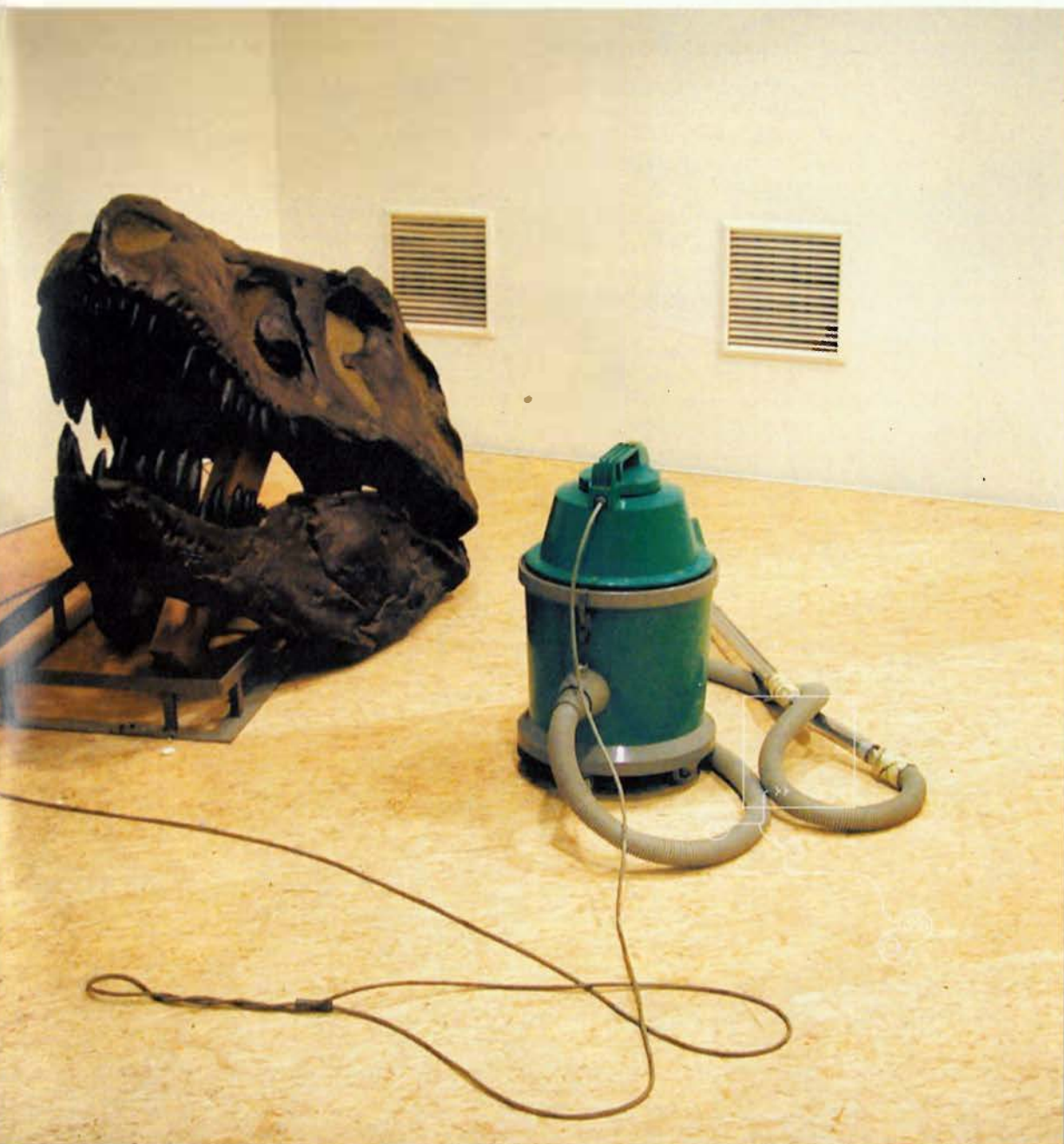
Our calendar has two key events each year: the large winter exhibition and a summer exhibition.

But we do not just organize blockbusters, or jump on the latest bandwagon. Our exhibitions are not afraid to address social or ethical issues.

The exhibition *Five billion people: all parents, all different* which was organised at the museum between 1993 and 1995, stressed that the classification of people into races was not based on scientific factors.

Still today, the travelling version of that exhibition: *Six billion people... Who are you?* helps teachers to broach questions like racism and xenophobia. From 1998 to 2000, we came out with *Living or surviving?*, emphasizing that Man must take responsibility for creating and recreating a favourable environment for himself, for his own survival.

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» **Dig a Dino** (winter 2002/2003)

It is said that children have two passions: Ancient Egypt and dinosaurs. And if you look at the number of films, cartoons and documentaries on these subjects, it may well be true. How can we compete with those images, which are increasingly scientifically and aesthetically sound? Precisely by showing the real thing: authentic dinosaur remains.

188,000 visitors stood nose to nose with fossils of dinosaurs and their contemporaries drawn from all over the world. They were able to put themselves in the shoes of the scientists as they conducted the excavations or examined the discoveries, then leap to the nineteenth century to be with the miners as they unearthed the Iguanodons of Bernissart.

We went off the beaten track, and were in the vanguard of the research. The museum at work! Many big and not so big youngsters were fascinated by our fossils, by videos of the excavations and the research, by our question and answer engines, by the multimedia programmes which enabled the viewer to slip into the skin of the palaeontologist. Have we inspired others to this vocation? We certainly hope so!

» **View of the Sea** (summer 2003)

An exhibition which gives visitors a foretaste or a reminder of their holidays, *View of the Sea* changes our view of the Belgian coast. In an airy summer atmosphere, in the heart of Brussels, you can put your feet in the sand, dive into the water... without getting wet.

The recurring theme is a playful journey along the Belgian coastline. The central feature is the *Belgica*, our Institute's own oceanographic vessel working for Belgian research.

Our researchers are studying and monitoring the ecosystem of the coast and the Belgian North Sea. When visitors to this exhibition get their heads above water again, they will think differently about the sea, and its peoples. It is planned that it should become a travelling exhibition.

» **Fatal Attraction** (winter 2003/2004)

"They got married and had lots of children." That is the fairytale version, but how does it all work out in nature? *Fatal Attraction – Animals' Love Letters* lifts the veil on the most romantic secrets of the animal kingdom: courtship. In *Fatal Attraction* the animals are the stars of the show, but it also uses interactive devices, multimedia games and films. You will be able to decode the seduction techniques of the animals: from mosquitos to deer, from snails to white whales... But not everything is moonlight and roses in this world; spies and cheats, beasts of prey and rivals are lurking... ready to strike when passion reaches its height.



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A museum open on the world

The museum has been expanding for twenty years, and it is flourishing: the fact that there are now ten times as many visitors as in 1980 speaks for itself.

But to look only at the figures is to risk missing the point.

The essential point remains the quality of our productions. The museum is continuously reviewing its objectives, its public, the presentation of its collections. It does this in close cooperation with the other great European natural history museums.

This cooperation, at the initiative of the museum, gave birth in 2000 to the CASTEx network (*Common Approach for Scientific Touring Exhibitions*), with the support of the European Commission. Initiated in concert with the two heavyweights, the museums of London and Paris, and with help from Leiden and Stockholm, this system centralises the know-how and the experience so useful to the organisers of natural history exhibitions.

Those working in European museums share the same commitment, the same challenges, the same objectives. We pool our ideas and experiences in order to work out innovative approaches to the life and the growth... of natural history museums. That is why, for example, we have now come together to work on joint productions.

The exhibition *Fatal Attraction* is the result of a first collaboration between three Natural History museums: Brussels, Paris and Leiden. It is a matter of pride that our French and Dutch partners invited us to take charge of the production of this first cooperative exhibition. This production clearly constitutes a suitable prototype for evaluation by the CASTEx partners.

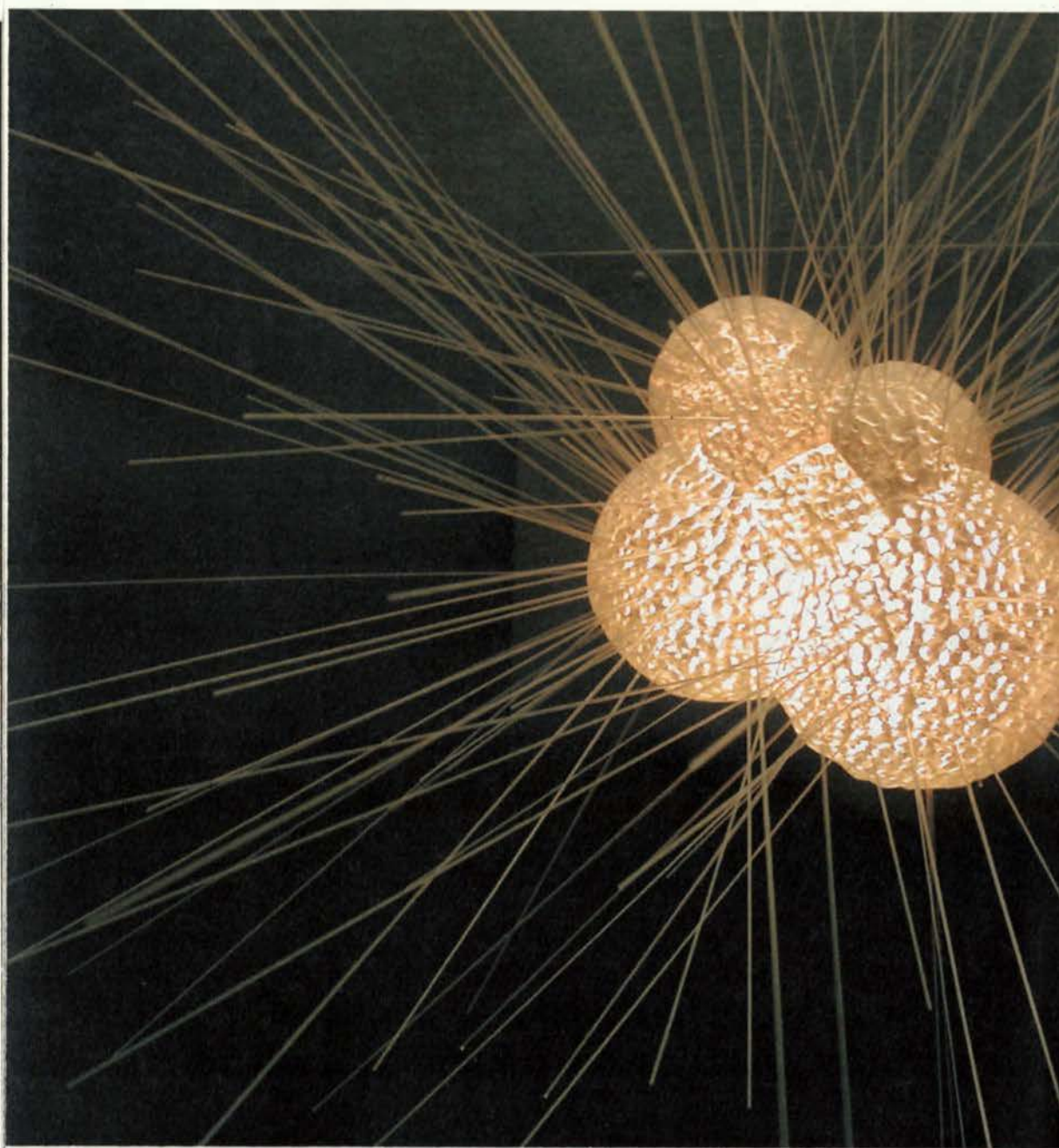
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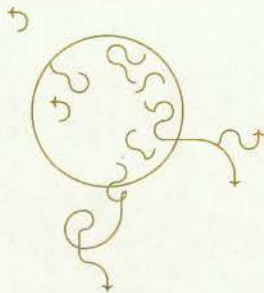
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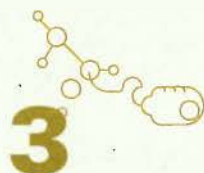


Aside from purely museological activities, there is a multitude of other fields in which exchanges and collaboration between museums take place. In the protection of the environment in particular, natural history museums today have a major role to play. This is how the network OCEANICS (*Oceans as a link between research and citizen's concern*) came into being. Financed by the European Commission, this project seeks to find ways to make the public more aware of the issues surrounding the protection of the oceans. Our Institute represents the natural science museums at the heart of this network.

Projects such as this raise the visibility of our museum and enhance its European image in keeping with its Brussels roots.

But this international dimension is limited neither to Europe nor to the dissemination of knowledge. International collaboration is even more important for research, which henceforth cannot hope to operate except on a global scale. A network of interdisciplinary networks to which the Institute and its museum is of course fully signed up.



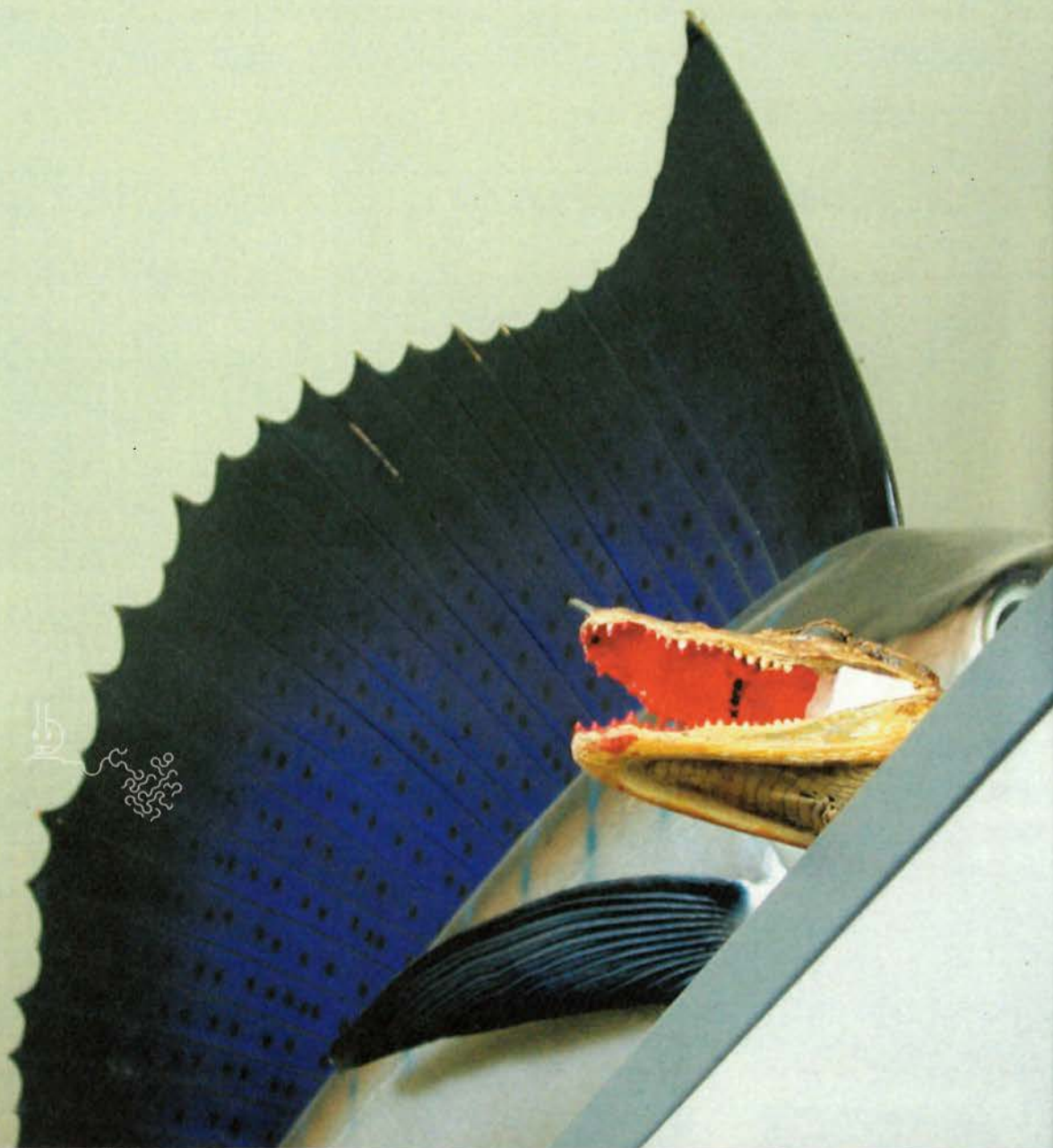
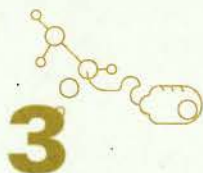


Collections
and research :
rich potential for our
provision of scientific
services

COLLECTIONS
AND RESEARCH

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**Some 37 million specimens; 200 years' research;
an incalculable expertise**

**An inexhaustible supply of research data, all at the service
of scientific expertise, our collections are considered
to be among the ten most important in the world.**

**More than a heritage:
a treasure!**

These millions of specimens –and the data which accompanies them– constitute as much of a heritage of historic value as a basis of scientific work.

For our research continuously relies on these *archives of biodiversity*. Used for the classification of species on the basis of their morphological characteristics, they not only enable extinct ecosystems to be reconstructed, but new species to be identified and assessments to be made about the future. Moreover, they have equally become the base material for new forms of research, such as the analysis of DNA, which is at the heart of the Institute, as elsewhere.

And this heritage continues to grow richer. Put together by two centuries of research and fieldwork, our collections continue to expand, thanks to finds, gifts (custom seizures, animal deaths in zoos or recoveries by the Brussels Institute for the Management of the Environment) and by exchanges with other scientific institutions. To this must be added, finally, research studies from all over the world.

Research concerns us all

Our team of scientists consists of biologists, geologists, sedimentologists, mineralogists, palaeontologists, anthropologists, engineers and IT experts.

They sound like a colourful bunch – and they are! And that's our strength.

Our researchers are all participating in the study of the evolution of the environment, biological diversity, sustainable development and climate change. These are fields of research with a vast scope: the planetary environment represents an extraordinarily complex network of interactions between organisms and their environment, and what is more, the overwhelming majority of the species of organism living on Earth are not even known yet!

We give priority to research projects that are innovative, up-to-date and socially relevant, and which may also have socio-economic spin-offs. In short, research projects that enable us to provide expert services to a highly diverse public.

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Our researchers are working for you and your children

Visitors can call on us for a large number of tasks. Our services are provided to the general public, government, the media, the academic world and the private sector.

Sustainable development is impossible without research. We monitor the Belgian zone of the North Sea, continuously checking the pollution and the potential polluters. For this we have a floating laboratory, the research vessel *Belgica*. We are just as vigilant on land: we chart the Belgian substrata and provide accurate information about groundwater and contaminated sites.

Our expertise in identifying species of animals is constantly being sought, for lawsuits, in combating epidemics, for controls on imports of protected species and the implementation of legislation on nature conservation. Thanks to the broad scope of our specialist areas, we monitor many obligations of the federal government and carry out expert scientific evaluations.

Specialists or amateurs, scientists or educationalists, we provide them all with advice or documentation, making our research findings or collections available to them, meeting them in experts' meetings or in workshops and courses.

A network of networks: our researchers in the vanguard of international cooperation

The nature and scope of our research areas make work at (inter)national level a scientific and financial necessity. Much of our research occurs in collaborative projects with external financing at the national level (Federal science policy, FWO/FNRS, AMINAL, IWT/FRIA, etc.) and internationally (EU, UN, NATO, etc.).

This ensures that our scientific work is competitive and of an international standard, guaranteeing the quality of our service. In other words, this modern approach leads to a policy in which collection-related research, service provision, diversity, specialization, synergy and quality are key features. Just as a symphony orchestra is much more than a group of soloists, so our broad-based scientific staff are much more than a group of individual specialists.

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Omnipresent!

In order to fulfil our role as a service-providing research centre, we have a whole range of resources and laboratories at our disposal.

A snapshot of an ordinary working day at the RBINS.

> We start at night, somewhere in the North Sea, where one of our teams on the oceanographic research vessel *Belgica* is busy taking plankton samples which will then be analysed in our labs for PCBs, pesticides, and so on.

> At the same time, a group of palaeontologists from the RBINS is working in a remote desert area of Mongolia, looking for fossils that might perhaps show that dinosaurs may not have become extinct without descendants. At daybreak, a spotter plane is flying over a stretch of Belgian territorial waters, looking for pollution.

> Some time later, a little after the museum has opened for the day, a visitor to our library is starting to look at some ancient books from the 16th century, while nearby a student is consulting articles from among our thousands of journals (we have the largest natural history library in Belgium).

> At the same time, our electron microscope is being used to take detailed photographs of various organisms for a university laboratory. We naturally use the conventional microscopes that are set up in our various laboratories for the many species identifications that we carry out for third parties!

> In another part of the building, in special climate-controlled rooms, polar conditions are simulated in order to photograph living Antarctic crustaceans.

> In yet another lab, beetles are subjected to genetic tests in order to study the fragmentation of their habitat. These creatures are stored in our deep-freezers at -80°C.

> At the same time, in more congenial temperatures, a researcher is examining Lake Victoria, to determine relationships between different African fresh water fish.

> In the molecular lab meanwhile, scientists are carrying out DNA analysis in order to trace back evolutionary relationships, to identify animal remains or to evaluate genetic diversity (with a view to environmental protection). Some gene fragments must first be cloned in bacteria. As evening falls, our DNA testing devices are loaded for one last time. They will be running all night long, and the required sequences will be ready on the computer tomorrow morning to be sent via the Internet to the various users.

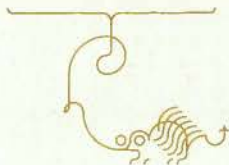
> At the same time, a researcher in the Gulf of Mexico surfaces after a dive looking for certain shellfish. He is carrying out a mission in the context of a programme for the reintroduction of species.

> And back in the North Sea, in the depths of the night, the *Belgica* is still a hive of activity..

3

A glance at some of our research activities:

Let us provide you with a flavour of a few of our ongoing research programmes. We will first touch on projects to provide services and those relating to applications, before moving on to the basic scientific research that supports all our other activities.



The RBINS as a European centre of attraction

01

We make our collections and research facilities viable and available to others in many ways. This accent on service is highlighted by the fact that, in 2001, the EU recognized us as a "large research infrastructure" in the context of CETAF (*Consortium of European Taxonomic Facilities*), a title only bestowed on a few European natural science institutions. CETAF finances our own ABC programme (*Access to Belgian Collections*), which we started in order to give researchers from all over the EU –and associated countries– the opportunity to come and study our collections and use our facilities.

The numerous applications that we have already received show the interest which exists abroad in our research. Candidates are assessed and chosen by an international jury of specialists, who are responsible for ensuring the best use of the funds.

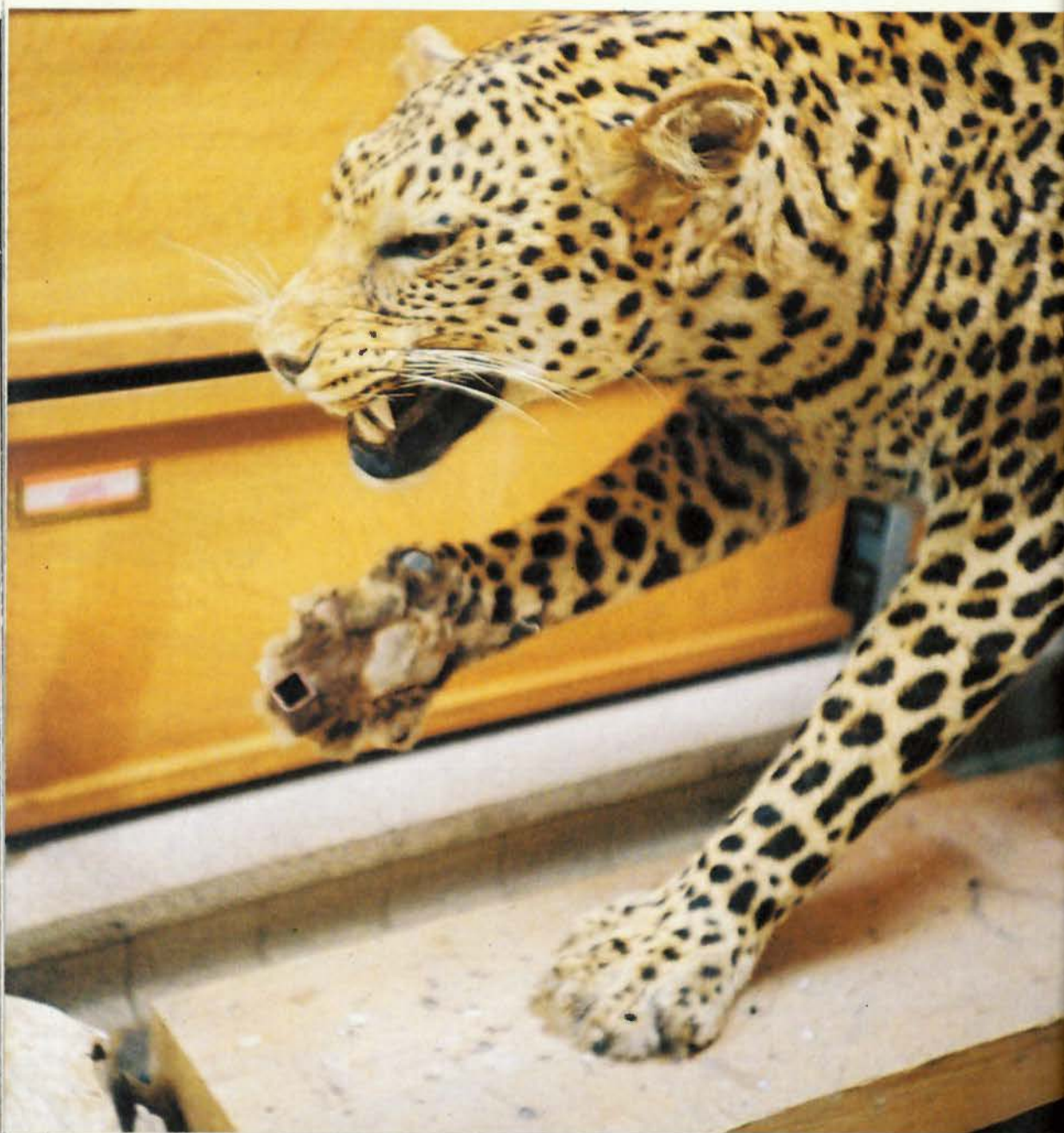
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Biological diversity and conservation of wild animals and plants

02

In 1992, Belgium signed the Rio de Janeiro Convention on the protection and sustainable use of biodiversity. In 1995, the federal government designated the RBINS as the National Centre for monitoring this treaty. We coordinate reporting on the status of biodiversity in Belgium, and set up all kinds of activities aimed at increasing the general public's awareness of biodiversity. In addition, we have a pioneering role in the provision of services to developing countries: they can call on us for the construction of their own Internet sites. In 2003 we provided support to no less than 23 countries!

Keeping or collecting rare animals and plants, the hunt for souvenirs and trophies, all are human activities that pose a threat to biodiversity. They are causing many natural populations either to be severely endangered or to become extinct altogether. In 1973, an international treaty was signed in Washington that imposed restrictions on global trade in endangered wild animals and plants (CITES– *Convention on International Trade in Endangered Species of Wild Fauna and Flora*). The supervisory authorities often call on our expertise, while our scientists also cooperate in the continual monitoring of the application of this treaty. We are keen that our visitors should know as much as possible about these activities and, to this end, have created a special stand dedicated to the operation and importance of CITES.

Monitoring the health of the sea

03

Three-quarters of the Earth's surface is covered by sea. The marine environment must also be protected and managed in the light of sustainable use. The RBINS manages important assignments under international conventions: Paris (1972) on the marine environment, London (1972) on pollution of the seas, Bonn (1983) about oil and other hazardous substances in the North Sea, and New York (1992) on the conservation of small cetaceans.

For our permanent monitoring of water quality, soil and local biodiversity, we make use of the research ship *Belgica*, a spotter plane and satellite photography. These tools are also vital to enable us to respond quickly in the event of shipping accidents with risks of pollution. To tackle such emergencies, we have computer models which help us to predict how an oil slick will spread.

But we do much more than that: we evaluate reports on the environmental impact of large structural works in the sea, we advise the relevant minister on the award of permits, and we study marine sediment transport and identify areas needing added protection. Moreover we can reconstruct the evolution of marine life over a long period, since we already have data going back to the end of the 19th century.

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Migrating birds tell us about the environment

04

Every year many millions of migrating birds all over the world fly a combined total of billions of kilometres, more than all the world's aircrafts combined. These phenomena are closely monitored in the context of the international convention on the protection of migratory wild animal species. In Belgium, we manage and coordinate this operation at national level. Many hundreds of volunteers each year ring over half a million wild birds. The subsequent recapture of these ringed birds, by colleagues in Belgium and abroad and by the general public, enable us to follow their progress. The RBINS centralizes all this information, charts the birds' routes and can estimate the life expectancy of the various species. Because birds are excellent indicators of the condition of our environment, this data provides a wealth of valuable information about where, when and how measures should be taken to counter threats to the quality of the environment and to biodiversity.

Our ringing work is a fine illustration of the way in which researchers, volunteers, associations and the general public can work together on a project of such great social significance.

The RBINS, the hole in the ozone layer and the greenhouse effect

05

Study of the various food chains that keep fauna alive form an essential component of our research into biodiversity. Our scientists are carrying out research on this in the Antarctic, a location which was not chosen at random. It was here that an enormous hole was discovered in the ozone layer in 1985. This hole regularly causes sharply increased exposure to UV rays during springtime. Further, it results in increased physiological stress and mortality among the affected communities, placing at risk fauna and flora alike and, ultimately, human beings.

How can we counter global warming?

One solution may be by storing back in the sub-soil the greenhouse gases that are released during energy use. With Belgian and European partners, we are studying safe storage options for CO₂ in deep freshwater lakes and disused coal mines. We have the necessary know-how for this, since our geologists are permanently working in the field to complete and refine the geological map of Belgium.

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A window on the past, crystal ball for the future

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Naturally, our research into dinosaurs, fossils, sub-soil, etc. is not conducted simply in an attempt to satisfy our curiosity!

This work gives us an insight into what causes the extinction of species, as well as the real waves of extinction which can occur, giving rise to a large proportion of the Earth's species disappearing and being replaced by new species. We need this information to gain a better understanding of the causes and consequences of the current decline in biodiversity: it appears that this biodiversity crisis we have now has similarities to previous waves of extinction!

Neanderthals can give us some good advice

07

Belgium has a leading role in the field of anthropology and prehistory. This began with the discovery of the Neanderthal skeletons. In 1829 in Engis, then in 1866 in La Naulette, the first anatomical evidence of human evolution is believed to have been found. The finds of 1886 in Spy are very well known; here, for the first time, links were established between human fossils, extinct fauna and bone or stone tools.

These ancient finds are now being studied in an entirely different way. With the help of DNA analysis, we are trying to trace relationships between different branches of the human family. In another case, we have succeeded in proving that the men and women of Spy are the youngest known Neanderthals, at less than 30,000 years old.

We let the Neanderthals have their say, and listen with bated breath to what they have to tell us about the future – our future!

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Monks from Koksijde tell us about land reclamation and its consequences

08

What was the evolution of our coastal and polder landscape? In what age did human beings begin to cultivate the land? From when does the introduction of a particular plant date? How did livestock farming evolve? What are the consequences of this for our environment, centuries later?

Study of the teeth of mediaeval monks from the abbey Duinenabdij is making a contribution to answering these questions. Scientists from the RBINS are examining the chemical composition of bones and teeth from human remains. From these, we learn when people started eating more meat or fish, when maize and other vegetables were introduced, and even what stuck between children's teeth in different centuries. This is a rich area of research, because the techniques applied to the monks' teeth can be used on all human and animal remains.

Calcareous sponges help predict the future

09

Calcareous sponges are "living fossils" which, until recently, were thought to have died out over 500 million years ago!

In the early seventies, these calcareous sponges were rediscovered in tropical underwater caves. Since they grow very slowly (2 cm per century) and can be very old (up to 1000 years), their skeleton shows evidence of the differences in the composition of seawater that are caused by climate change. Against that backdrop, we are now investigating, in Jamaican underwater caves, to what extent calcareous sponges can be used as indicators of previous climatological conditions. With this data, we are attempting to reconstruct previous climatic conditions. In effect, these calcareous sponges give us a sneak preview of the climatic conditions which await us!

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Habitat fragmentation: you can't survive on scraps

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The building of roads, canals, residential areas and industrial zones causes neighbouring areas of countryside to disintegrate into small, isolated habitats for animals. Populations in small fragments of habitat find it difficult to survive as a result of increasing inbreeding, environmental stress, isolation, etc.

So habitat fragmentation is an important factor that must be taken into account in nature conservation, land use and socio-economic development in densely-populated regions. Our scientists have charted the areas of Belgium where animals can still move around freely. In this context, we are closely monitoring the evolution of populations of ground beetle and related species. In this way, we can provide advice about nature and landscape conservation. Visitors to the museum will get an unexpected view of this world in the hall *Wildlife in the City*. Once visitors realize what rich and unexpected fauna (foxes, bats, swallows, falcons, owls, etc.) live in the network of urban gardens and parks, then they will understand the importance for the future of green spaces.

But if we want to see Belgian fauna elsewhere than in the history books or museums in a few years' time, then we must leave them the necessary room for their natural habitat, beside our own homes, offices and factories.

In the footsteps of Darwin

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The collections of our museum and the services provided by our scientists, are underpinned by the insight that we derive from the basic biological research into species, their evolution and their relationships. Every researcher tries to specialize in one or more animal groups, regions, techniques or biological phenomena, so that we can offer very extensive expertise as a team.

That is why our biodiversity research, just like that of Darwin, covers various animal groups, ranging from sponges to humans. Also like Darwin, we are setting out on a discovery of the world, turning our attention to island fauna (Galapagos, Macaronesia, Papua New-Guinea), old lakes (Baikal, Tanganyika, ...) and special hotspots of biodiversity (Antarctica, the Caribbean, South-West Asia ...), not forgetting our own European and Belgian fauna! Finally, we try, again emulating Darwin, to formulate hypotheses on the fundamental questions such as the importance of sexuality in the evolution of life or the origin of the resistance to pesticides in insects – essential questions that make us think about the importance of biodiversity and which also can provide useful spin-offs for pharmacological applications, biotechnology and even space research!

In summary: our quality and the nature of our scientific dynamics, together demonstrate our value in a very wide range of potential applications.

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Missions defined by law

ART 1

The Royal Belgian Institute of Natural Sciences is a federal scientific establishment answerable to the Minister responsible for science policy.

ART 2

Its Missions consist of:

- scientific research in the field of natural sciences, principally directed toward the study of evolution,

- scientific support to those institutions and bodies, both public and private, concerned with the management of the natural heritage, in particular in the application of agreements and laws, whether regional, federal, European or international;

- the management and expansion, in the fields of activity described above, of collections, data banks, libraries and specialist archives, thereby creating a source of information at national and international level;

- the dissemination of scientific culture in the field of natural sciences, by means of the Museum of Natural Sciences' permanent halls, temporary exhibitions and diverse educational activities.



The people who enable us to accomplish these missions

The RBINS has more than 400 personnel at your service:

- 140 research scientists, supported by 100 technicians

- 50 personnel involved in technical and maintenance services

- 40 personnel responsible for reception and security

- 50 personnel responsible for organizing events for the general public

- 15 museologists and 10 members of staff responsible for liaison at national and international level

- The Institute also enjoys the help of 50 volunteers.

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