

# Full Proposals for International Polar Year 2007-2008 Activities

## Proposed IPY Activity Details

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### 1.0 PROPOSER INFORMATION

(Activity ID No: 83)

#### 1.1 Title of Activity

SCAR-MarBIN: the information dimension of Antarctic Marine Biodiversity

#### 1.2 Short Form Title of Proposed Activity

SCAR-MarBIN

#### 1.3 Activity Leader Details

Claude De Broyer  
Royal Belgian Institute of Natural Sciences  
Belgium

#### 1.4 Lead International Organisation(s) (if applicable)

SCAR  
OBIS  
ULB, RBINS  
ULB, RBINS

#### 1.5 Other Countries involved in the activity

Australia  
United Kingdom  
Germany  
Poland  
Brazil  
Italy  
Russia  
New Zealand  
France  
Belgique  
Belgique  
Belgique  
Belgique  
Belgique  
Belgique  
Belgique

#### 1.6 Expression of Intent ID #'s brought together in this proposed activity

817,83,111,189,192,365,379, 839

#### 1.7 Location of Field Activities

Antarctic

**1.8 Which IPY themes are addressed**

1. Current state of the environment
2. Change in the polar regions
4. Exploring new frontiers
5. The polar regions as vantage points

**1.9 What is the main IPY target addressed by this activity**

2. Data Management

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**2.0 SUMMARY OF THE ACTIVITY**

The Antarctic environment is presently undergoing radical changes. Due to its relatively pristine state, its high rate of endemism, its highly adapted character and its presumed sensitivity to these changes, the Antarctic marine biodiversity has an exclusive value. In this context, there is an obvious need to establish reliable and comprehensive baseline information about Antarctic marine biodiversity to provide a reference state against which subsequent changes - due to possible effects of global warming, ozone depletion, exploitation, global pollution or natural causes - may be monitored and compared in the medium and long term. Antarctic marine biodiversity knowledge is patchy: benthic fauna of a few parts of the continental shelf and near-shore regions have been relatively well studied, as well as the biology of some pelagic species, such as Antarctic krill. For the most part, almost nothing is known about the mesopelagic, bathy/abyssal-pelagic and deep-sea benthic fauna of the slopes and abyssal plains, nor about the tiny organisms (bacteria, archaea, eukarya, viruses, nanoplankton) in the sea wherever they occur and in whatever habitats. Knowledge of life under the sea ice is, at best, fragmentary. Moreover, most of the existing biodiversity information is widely scattered, not easily accessible and sometimes vanishing, although the use of this information for scientific, monitoring, management, and conservation purposes could reach its utmost potential once the required data become highly available in digitised format through integrated information networks. The SCAR-MarBIN (Marine Biodiversity Information Network) project aims at establishing and supporting a distributed system of interoperable databases, which will form a coordinated network, placed under the aegis of SCAR (Scientific Committee on Antarctic Research). SCAR-MarBIN will compile the existing information and manage new information by co-ordinating, supporting, completing and optimizing such databases networking. SCAR-MarBIN will integrate these efforts in order to give a single and easy access to the marine biodiversity information and to maximize the exploitation of these resources. This network will leave a highly valuable legacy for future generations, in the form of a powerful information tool, which will provide a baseline reference for comparison with the future and past. In the framework of the IPY, SCAR-MarBIN will constitute the information component of the SCAR-Census of Antarctic Marine Life (CAML) (EoI 83), and the Antarctic node of the Ocean Biogeographic Information System (OBIS), the information component of the world-wide programme Census of Marine Life (CoML). CAML is a 5-year project that will focus the attention of the public on the Antarctic ice-bound oceans during the International Polar Year (IPY) in 2007/08. Its main objectives are to conduct a collaborative, large-scale survey of species diversity, abundance and distribution in the Southern Ocean, to study the evolution of life in Antarctic waters to determine how this has influenced the diversity of the present biota, and to use these observations to predict how it might respond to future change. Before starting new field censuses, it is however imperative to make widely available the existing information on Antarctic marine biodiversity, a task SCAR-MarBIN is intended to accomplish. By presenting and linking CAML and other related IPY projects data resources, SCAR-MarBIN will allow the exploitation of data emerging from a matchless multi-scale investigation effort, which will lead to a comprehensive assessment and a better understanding of the actual diversity and status of Antarctic marine life.

**2.1 What is the evidence of inter-disciplinarity in this activity?**

Developing an integrated network of Antarctic marine biodiversity databases mainly associates

the project with biologists, but also with environmental and physical oceanographers, viz. for relating faunal distribution and abundance with various environmental features. Obviously, various IT technologies will also be strongly included in SCAR-MarBIN.

## 2.2 What will be the significant advances/developments from this activity? What will be the major deliverables? What are the outputs for your peers?

Theme 1: [current state of the environment] SCAR-MarBIN will manage valuable existing and new marine biodiversity data. In coordination with CAML and other relevant IPY initiatives, poorly known Southern Ocean organisms and habitats will receive special attention.

Theme 2: [change in polar regions] SCAR-MarBIN will provide the necessary tools to integrate and disseminate data that will be exploitable in the future, and which will represent a reference point.

Theme 3: [polar-global linkages] SCAR-MarBIN can provide the tools (datamass, analysis capabilities) to support emerging theories such as the role of the Antarctic as an evolutionary incubator and a center of origin for the global deep sea biodiversity.

Theme 4: [exploring new frontiers] SCAR-MarBIN will manage data which will most probably reveal new patterns and structure in overall marine Antarctic ecosystems, more specifically in the unknown deeper parts of the oceans.

## 2.3 Outline the geographical location(s) for the proposed field work (approximate coordinates will be helpful if possible)

| Locations                | Coordindates |
|--------------------------|--------------|
| Antarctic Peninsula      |              |
| Weddell Sea              |              |
| Haakon VII Sea           |              |
| Eastern Antarctic region |              |
| Ross Sea                 |              |
| Bellingshausen Sea       |              |
| Amundsen Sea             |              |

## 2.4 Define the approximate timeframe(s) for proposed field activities?

| Arctic Fieldwork time frame(s) | Antarctic Fieldwork time frame(s) |
|--------------------------------|-----------------------------------|
|                                | 10/07 - 03/08                     |

## 2.5 What major logistic support/facilities will be required for this project?

**Further details** – No significant logistic support/facilities will be specifically needed for SCAR-MarBIN, it will mainly rely on those used in the framework of CAML and other IPY marine biodiversity projects it will support.

## 2.6 How will the required logistics be supplied? Have operators been approached?

| Source of logistic support             | Likely potential sources | Support agreed |
|--|--------------------------|----------------|
| Consortium of national polar operators | Y                        |                |
| Own national polar operator            | Y                        |                |
| Another national polar operator        |                          |                |
| National agency                        | Y                        |                |
| Military support                       |                          |                |
| Commercial operator                    |                          |                |
| Own support                            |                          |                |
| Other                                  | Y                        | Y              |

**2.7 If working in the Arctic regions, has there been contact with local indigenous groups or relevant authorities regarding access?**

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**3.0 STRUCTURE OF THE ACTIVITY****3.1 Origin of the activity**

This is a pulse of activity during 2007-2009 within an existing programme

**If part of an existing programme please name the programme – SCAR-EBA**

**3.2 How will the activity be organised and managed? Describe the proposed management structure and means for coordinating across the cluster**

The international organization of SCAR-MarBIN will involve different entities which will interact directly and/or through committees. A Scientific Steering Committee has been nominated at the first implementation workshop held in Brussels on 25-25 May 2005, and will be proposed to SCAR. It includes representatives from operators, data providers and users. It will constitute the advisory organ in strategic and scientific matters, and shall contribute to the integration of the project in international initiatives. It will meet in connection with SCAR meetings.

SCAR-MarBIN will be represented in the CAML Scientific Steering Committee and will keep close contacts with appropriate international organisations (in particular GBIF, OBIS, JCADM) in order to follow advances in terms of technical developments, standards and procedures.

SCAR-MarBIN will require a small permanent team (1 scientific coordinator and 1 IT officer) integrated within the Belgian Biodiversity Platform and benefiting from its expertise (the Platform is acting as the Belgian GBIF node). The SCAR-MarBIN team will collaborate closely with the Flanders Marine Institute (VLIZ, which acts as the European OBIS node) for IT tasks and, for scientific aspects, with the Belgian Antarctic biodiversity experts (who developed several Antarctic biodiversity databases under the BIANZO project; see [www.bianzo.be](http://www.bianzo.be)).

**3.3 Will the activity leave a legacy of infrastructure and if so in what form?**

Although no direct infrastructure will be left by SCAR-MarBIN, the project will live after the IPY, leaving an internet portal providing access to a system of interoperable databases, integrated in the (permanent) OBIS network. In this respect, SCAR-MarBIN will leave a legacy in the form of a valuable data (re)-discovery tool.

**3.4 Will the activity involve nations other than traditional polar nations? How will this be addressed?**

Nations other than traditional polar nations will be approached and invited to participate in the project in the framework of the IPY. This matter will be addressed by making links with institutions or individual scientists from these nations, but also by involving some representatives in the international Steering Committee as SCAR-MarBIN privileged partners. Nations other than traditional polar nations will be approached and invited to participate in the project in the framework of the IPY. This matter will be addressed by making links with institutions or individual scientists from these nations, but also by involving some representatives in the international Steering Committee as SCAR-MarBIN privileged partners.

**3.5 Will this activity be linked with other IPY core activities? If yes please specify**

In accordance with its terms of reference, SCAR-MarBIN will logically link to other core IPY activities. These activities will mainly include EoIs in the Marine Biodiversity cluster, namely CAML-EoI83 and ANDEEP-SYSTCO EoI 111. Other links with IPY activities will be sought through EBESA-EoI189, DrakeBiocreas-EoI192, Subantarctic Islands biodiversity hotspots-EoI365, GOSGEN-EoI379 and FOREBIO-EoI839.

**3.6 How will the activity manage its data? Is there a viable plan and which data management organisations/structures will be involved?**

SCAR-MarBIN in its essence is a data management structure. It will link, compile and

disseminate existing and new data arising from pertinent IPY projects through a single internet portal. SCAR-MarBIN will in turn provide data to the Ocean Biodiversity Information System (OBIS), as required by the Census of Marine Life. All OBIS data will in turn be provided to the Global Biodiversity Information Facility (GBIF). Firm relationships are established with JCADM, which will provide the means to feed metadata to the Antarctic Master Directory (AMD).

### **3.7 Data Policy Agreement**

**Will this activity sign up to the IPY draft Data Policy (see website)**

Yes

### **3.8 How will the activity contribute to developing the next generation of polar scientists, logisticians, etc.?**

SCAR-MarBIN will provide the next generation of polar scientists with valuable outcomes, including a comprehensive and evolutive census of Antarctic marine biodiversity, data/tools for assessing global change effects and human impact on biodiversity, data/tools for modelling species distribution dynamics (habitat suitability, invasive species), data/tools for detection of biodiversity hotspots, facilitation of biogeographic synthesis and identification of gaps in biodiversity surveys.

In addition, SCARMarBIN's role in federating institutions and individual scientists, will weave and consolidate strong collaboration, which are vital for future Antarctic research.

### **3.9 How will this activity address education, outreach and communication issues outlined in the Framework document?**

Regarding communication, SCAR-MarBIN plans to setup and launch a website in mid-2005. The reason of this timing is the occurrence of the SCAR Biology Symposium in Curitiba, Brazil, which will bring together most of the Antarctic marine biodiversity specialists. This website will be designed to convey complete information about SCAR-MarBIN to potential users and contributors. Apart from presenting the project, the website will especially aim at demonstrating SCAR-MarBIN's competence and potential, and at convincing and attracting new contributors. In a first step, the SCAR-MarBIN website will include a provisional register of the 4100 Antarctic macrobenthic species (provided by Prof. Andrew Clarke, BAS), as well as a database prototype based upon the Belgian Biancozo project ([www.bianzo.be](http://www.bianzo.be)) and pertinent bibliographical references.

### **3.10 What are the proposed sources of funding for this activity?**

Funds for the required staff (scientific coordinator, IT specialist) as well as operation costs, equipment and subcontracting should be met for the largest part by the Belgian Government (Federal Science Policy). Complementary funds for the coordination of SCAR-MarBIN (1 year) including specific travel funds and workshops organization have already been met by the CoML (Alfred P. Sloan Foundation, NY, USA) and for workshops by SCAR. Additional funding is still required to fully secure the development of the project for the first five years.

### **3.11 Additional Comments**

The basic philosophy of the SCAR-MarBIN development integrates the following points:

- To build a distributed network of interoperable databases
  - To promote the development of new databases where needed
  - To adopt a strong standardization process for data acquisition and treatment
  - To work through open collaboration
  - To achieve comprehensiveness of the data coverage
  - To prevent the vanishment of valuable data
  - To remain oriented towards user needs
  - To use in priority existing resources and avoid duplication of effort
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## 4.0 CONSORTIUM INFORMATION

### 4.1 Contact Details

#### Lead Contact

Dr Claude De Broyer  
Royal Belgian Institute of Natural Sciences  
29, rue Vautier  
1000  
Belgium

**Tel:** +32(0)26272147  
**Mobile:** N/A  
**Fax:** +32(0)26274277  
**Email:** [claude.debroyer@naturalsciences.be](mailto:claude.debroyer@naturalsciences.be)

#### Second Contact

Dr Bruno Danis  
Royal Belgian Institute of Natural Sciences  
29, rue Vautier  
1000  
Belgique

**Tel:** +32(0)26274272  
**Mobile:** +32 (0) 486 763664  
**Fax:** +32(0)26274277  
**Email:** [bruno.danis@naturalsciences.be](mailto:bruno.danis@naturalsciences.be)

### 4.2 Other significant consortium members and their affiliation

| Name                   | Organisation   | Country         |
|------------------------|--|-----------------|
| Prof. Angelika Brandt  | University of Hamburg                                | Belgium         |
| Prof. Andrew Clarke    | British Antarctic Survey                             | United Kingdom  |
| Prof. Michael Stoddart | Australian Antarctic Division                        | Australia       |
| Dr Helen Campbell      | British Antarctic Survey                             | United Kingdom  |
| Dr Victoria Wadley     | Australian Antarctic Division                        | Australia       |
| Prof. Bruno David      | Université de Bourgogne                              | France          |
| Dr Taco De Bruin       | Joint Committee on Antarctic Data Management         | The Netherlands |
| Dr Tim Deprez          | Universiteit Gent                                    | Belgium         |
| Dr Chantal De Ridder   | Université Libre de Bruxelles                        | Belgium         |
| Dr Huw Griffiths       | British Antarctic Survey                             | United Kingdom  |
| Prof. Philippe Koubbi  | Université du Littoral Côte d'Opale                  | France          |
| Dr Pedro Martinez      | Deutsches Zentrum für Marine Biodiversitätsforschung | Germany         |
| Dr Manfred Reinke      | Alfred Wegener Institute                             | Germany         |
| Prof. Ann Van Reusel   | Universiteit Gent                                    | Belgium         |
| Dr Dave Watts          | Australian Antarctic Division                        | Australia       |
| Dr Jacek Sicinski      | University of Lodz                                   | Poland          |