



EXPRESSION OF INTENT FOR ACTIVITIES IN IPY 2007-2008.

Deadline for Submission - January 14, 2005

Email to jcel@bas.ac.uk or Fax to +44-1223-221270

Field Code Changed

1.0 PROPOSAL INFORMATION

1.1 Title of proposed activity

International Collaborative Expedition to collect and study Fish Indigenous to Sub-Antarctic Habitats, 2007

1.2 Acronym or short form title of proposed activity

ICEFISH-2007

1.2 Concise outline of proposed activity 400 words max

In a world experiencing climate global changes, loss of biodiversity and depletion of fisheries, the biotas of the Antarctic and the Sub-Antarctic offer compelling natural laboratories for understanding the evolutionary impact of these processes. Since the IGY (1957-58), fish biologists from the Antarctic-Treaty nations have made impressive progress in understanding the Antarctic ichthyofauna. However, research integration into the broader marine context has been limited, largely due to lack of access to Sub-Antarctic fishes. These fishes, in particular those of the dominant suborder Notothenioidei, are critical for a complete understanding of the evolution, population dynamics, eco-physiology and eco-biochemistry of their Antarctic relatives.

The ICEFISH programme is designed to fill these critical gaps in our knowledge. Three major cruises, encompassing the South Atlantic, South Pacific and South Indian Ocean sectors, constitute the ICEFISH programme, the first comprehensive international survey of the Sub-Antarctic marine habitat. The first, ICEFISH-2004 (17 May –17 July 2004) was a resounding success. Extensive fishing was performed in the South Atlantic sector, including the Burwood Banks, the Falkland Islands/Islands Malvinas, Shag Rock, South Georgia, the South Sandwich Islands, Bouvetoya, and Tristan de Cunha, at depths ranging from tidepools to the abyss (5,400 m) (for information on the cruise, participants, and detailed science projects, see www.icefish.neu.edu).

ICEFISH-2007 will build on the success of the first cruise by sampling the Sub-Antarctic Pacific sector, including Campbell and Scott Islands, the Antipodes, Auckland, Macquarie, and Balleny Islands. Fishing will be multi-modal, using Otter, mid-water, Blake and MOCNESS trawls, plankton nets, beach seining, tide pooling, and traps. We will charter a suitable ice-strengthened ship/icebreaker, equipped with aquaria with running seawater to maintain live specimens, and with high-quality

research laboratories. Thirty to 35 scientists will participate, largely including those of the 2004 cruise, ensuring continuity of the scientific focus of the ICEFISH programme by the enthusiastic subscription of previous participants.

Specific aims:

1. Systematics and evolutionary studies to relate Sub-Antarctic notothenioids to their Antarctic relatives through morphological, molecular and cytological analyses
2. Life history strategies and population dynamics to characterise the composition, distribution, habitat preferences and diets of the Sub-Antarctic species, and larval recruitment
3. Physiological, biochemical and molecular-biological studies of organ and tissue systems to analyse the evolutionary basis of the adaptations of High-Antarctic notothenioids relative to their ancestral stock
4. Genomic resources for Sub-Antarctic notothenioids (nucleic-acid libraries for comparative studies of the genomes of high- and low-latitude species).

1.4 Which IPY 2007-2008 theme(s) will be addressed by the project (see Note 1)

Theme 1 – The current state of the polar environment	Y
Theme 2 - Change in the polar regions	Y
Theme 3 - Polar-global linkages and interaction	Y
Theme 4 - Investigating new frontiers	Y
Theme 5 -The polar regions as vantage points	Y
Theme 6 - Human societies in polar regions	N

1.5 What is the major target of the proposed activity (specify one – see Note 1)

Natural or social science research	Y
Education/Outreach and Communication	N
Data Management	N
Legacy	N
Other Targets	N

1.6 What significant advance(s) in relation to the IPY themes and targets can be anticipated from this project? (100 words max)

Because the notothenioid fishes occupy high trophic niches, they constitute an important sentinel taxon for monitoring the impact of climate change on loss of biodiversity, depletion of marine fisheries and community dynamics in the Southern Ocean. The proposed work will contribute to better understanding the effect of this impact by adding the essential contribution provided by the knowledge of the Sub-Antarctic within the Southern Ocean scenario. It will also contribute to development of a baseline understanding of these sensitive ecosystems, one against which future changes in species distribution and survival may be evaluated judiciously.

1.7 What international collaboration is involved in this project? (see Note 2)
(50 words max)

National institutions which supported the ICEFISH-2004 participants (Italy, USA, UK, NZ, Australia, France, Germany, South Africa; in addition: Japan, Brazil, Spain, others). This Project addresses a specific part (marine ichthyofauna) of EBA and CAML (SCAR). Specific interest was expressed by CCAMLR (October-November 2004). An International Steering Committee will ensure coordination.

2.0 FIELD ACTIVITY DETAILS

2.1 Outline the geographical location(s) for the proposed field work (see Note 3)
(50 words max)

We will fish near the major islands and island groups of the Pacific Sub-Antarctic Campbell and Scott Islands, the Antipodes, and Auckland, Macquarie, and Balleny Islands. Fishing will be conducted at depths from the intertidal to approximately 1,000 m. Some abyssal trawling is also planned.

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

Arctic Fieldwork time frame(s)	Antarctic Fieldwork time frame(s)
n/a	options: 1) 5-6 weeks, April-May 07; 2) possible link (directly before or after) to CAML voyage, Oct 07-May 08

2.3 What significant logistic support/facilities will be required for this project? Can these resources be usefully shared with other projects? (see Note 4) (50 words max)

Icebreaker or ice-strengthened ship (an application for chartering will be considered by the Italian Programme, PNRA); ROV; existing field stations where possible. For sharing of resources, possibilities will be explored, depending on contributions to other IPY projects, time link with CAML voyage, etc.

2.4 Will the project leave a legacy of infrastructure? (see Note 1)
(50 words max)

Yes. The ICEFISH sampling programme will provide voucher specimens of sub-Antarctic fishes that will be deposited in museum collections around the world. In addition, genomic resources from the fishes will be archived for distribution to polar marine biologists.

2.5 How is it envisaged that the required logistics will be secured? (one or more options can be identified)

Consortium of national polar operators	possibly
Own national polar operator	Y
Another national polar operator	Y
National agency	Y or N
Military support	Y or N
Commercial operator	Y or N
Own support	N
Other sources of support	N
Further details - 50 words max Logistical support will be provided through the polar operators of one or more of the participating national programmes. Furthermore, many investigators will contribute specialised research hardware that they have developed for use in the Antarctic.	

2.6 Has the project been "endorsed" at national or international level (see Note 5)

Y	Further details – 50 words max The Italian National IPY Committees has endorsed ICEFISH-2007; an official statement will be sent in a few days. Endorsements from other National Committees (e.g. France) are in the process of being considered. ICEFISH will make a significant contribution to SCAR-approved EBA, and NSF (US) and NIWA have expressed their support.
---	---

3.0 PROJECT MANAGEMENT AND STRUCTURE

3.1 Is the project a component (established over the IPY 2007-2008 timeframe) of an existing plan, programme or initiative or is it a new autonomous proposal?

New Project ? Y	Component of an existing or planned activity ? Y
Further details – 50 words max ICEFISH was developed in the framework of SCAR international and multidisciplinary programmes: EASIZ, EVOLANTA, EBA, CAML, which have a very wide scope. ICEFISH-2007 is an integral part of these larger programmes because it specifically addresses a very important theme common to all. Although	

autonomous, it builds on the important legacy of ICEFISH-2004.

3.2 How will the project be organised and managed? (see Note 6)

100 words max

It will be coordinated by an International Steering Committee, led by Italy.

3.3 What are the initial plans of the project for addressing the education, outreach and communication issues outlined in the Framework document? (see Note 7)

50 words max

As part of ICEFISH-2004, HW Detrich developed the ICEFISH web site, which addresses all of the requirements, lives on, and will support ICEFISH-2007 and potential future cruises.

Trained PhD students; community extension programme; media coverage; conference proceedings; input to databases (e.g. Genbank); to CAML, EBA, CCAMLR, ANDEEP; interactions with other SCAR programmes.

3.4 What are the initial plans of the project to address data management issues (as outlined in the Framework document)? (see Note 8)

50 words max

The ICEFISH web site also serves as the conduit for data management. These features are about to go on-line. We will work closely with JCADM to ensure timely data release and metadata support. Modelling of interactions between environmental change and organism responses will be performed, to facilitate change predictions in Antarctic and Sub-Antarctic fish.

3.5 How is it proposed to fund the project? (see Note 9)

50 words max

Funding will be sought from national agencies, also for ship chartering (Italy). Participation of other countries: several contributions to ICEFISH-2007 are from projects currently financially supported from national institutions. Cost-sharing initiatives. International funding agencies (European Union, etc).

3.6 Is there additional information you wish to provide?

100 words max

ICEFISH-2007 will form an integral and important component of EBA and CAML, the first of which covers all Antarctic organisms and the second Antarctic marine life. ICEFISH is also important to understanding the biogeography, evolution, and adaptation of fishes along the latitudinal gradient that extends from the Antarctic to the Arctic. As an intermediate geographical system between the polar extremes, study of the Sub-Antarctic and its marine fish fauna will provide vital information pertinent to a global synthesis of the characteristics of marine ecosystems. ICEFISH will meet almost all (and probably all during implementation) of the 9+5 criteria.

4.0 PROPOSER DETAILS

4.1 Lead Contact for the Expression of Intent

Title Dr
First Name Cinzia
Surname Verde
Organisation IBP/CNR
Address 1 Via Marconi 12, Naples
Address 2
Address 3
Postcode/ZIP I-80125
Country Italy
Telephone +39 081 7257 234 / 242
Mobile
Fax +39 081 593 6689
Email c.verde@ibp.cnr.it
Repeat Email c.verde@ibp.cnr.it

4.2 List up to six other project members and their affiliation.

Name 1 Guido di Prisco
Organisation IBP/CNR, Naples, Italy
Name 2 Marino Vacchi
Organisation Univ of Genova, Italy
Name 3 HW Detrich III
Organisation Northeastern Univ, Boston, MA, USA
Name 4 Don Robertson
Organisation NIWA, New Zealand
Name 5 Guillaume Lecointre
Organisation National Museum of Natural History
Name 6 Dick Williams
Organisation Australian Antarctic Division