Sub-Saharan Africa Regional Implementation Committee

Chairperson and PI:
Prof Charles Griffiths
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Vice Chair-person: None appointed

Project Manager: none

Education and Outreach Network Liaison: none

Address of the site(s) most closely related to this effort
http://www.afrobis.csir.co.za:8000..

Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions
   a. Please fill-in the total number of cruises and expeditions in 2010 only

<table>
<thead>
<tr>
<th>Number of Cruises in 2010</th>
<th>None specifically CoML</th>
</tr>
</thead>
</table>

   b. Please list the total number cruises and expeditions from Project Inception to 2010 (please note: a. and b. together will help us most accurately update our numbers from previous years)

<table>
<thead>
<tr>
<th>Total Number of Cruises</th>
<th>&lt;list here&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>No dedicated CoML funded or organized cruises undertaken, but team members (Lange) participated in 3 cruises</td>
<td>RV Fridtjof Nansen 2007 Benguela survey</td>
</tr>
<tr>
<td></td>
<td>FRS Africana 2008 and 2009 demersal cruises</td>
</tr>
</tbody>
</table>

2) Sampling Stations
   a. Please list the total number of stations or sites sampled from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Sites Sampled</th>
<th>Nansen 101</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Africana 200</td>
</tr>
</tbody>
</table>

   b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.
No records, but these were the first quantitative invertebrate trawl surveys undertaken in this region

3) Specimens Collected
   a. Please list the total number of specimens collected from Project Inception to 2010

   | Total Number of Specimens Collected | 12,479 from Nansen cruise |
   |                                  | 321,845 from Africana cruises |

   b. Please list the total number voucher specimens (new species) *(Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report)*

   | Total Number of Voucher Specimens | Circa 25 |

Only two of the species collected on the cruises listed above (both holothurians and named by Thandar 2009 after the researchers involved - *Pseudostichopus langeae* after Louise Lange and *Psolus griffithsi* after Charles Griffiths), have been described as new, although others probably do represent unknown species. During the decade 2000-2010 the group has, however, described or discovered some 25 species. These are 22 South African ascidians described by Monniot et al 2001 (with Griffiths as a co-author), one lobster, one shrimp, and one myzostomid polychaete. Several anemones, two amphipods and one barnacle are also in the process of being described by graduate students. Many new records to the region have also been reported, including at least 5 each of anemones, barnacles and amphipods.

c. Please list the total number or percentage of specimens not yet identified/analyzed

   | Total Number or % of Specimens not yet analyzed | Approx 20 % of species collected |

4) Publications

   *Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)*

   a. Please list the total number of publications

   | Total Number of publications | 18 scientific |

   b. Please list the total number of books published


Edkins, M.T., Teske, P.R. Papadopoulos I. and Griffiths C.L. 2007 Genetic and morphological analyses suggest that the Southern African crowned crab *Hymenosoma orbiculare*, represents five species, not one. *Crustaceana*, 80: 667-683


d. Please list the total number of special issues published

| Total Number of special issues | none |

5) Academic Theses

a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

b. **Awad, A.** Biogeography of SA marine fauna MSc 2000
   **Kruger, N.** Long term changes in the benthos of Saldanha Bay MSc 2003
   **Shine, K.** Biogeography of demersal fish in SA MSc 2007
   **Watermeyer K.** Ecopath models of the historical Benguela MSc 2007
   **Medd H.** Marine biodiversity analyses MSc 2007
   **Scott, Robyn** Range restriction, rarity inverts MSc 2010
   **Lange, Louise** Benthic biogeography and biodiversity PhD under examination

| Total Number of theses | 7 |

c. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | 6 |

d. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | 1 |

6) Barcodes

a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | None directly through this project although many form Africa |

b. How many different species were barcoded?

| Number of different species barcoded | <list here> |

7) Images

a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

We have collected mostly portraits of species for our photographic guide book and have a total collection of perhaps 5000 images in 35 mm film prior to 2005 and 4000 digital (only those listed here). Few images depict people!
b. How many different species were captured in the images?

| Number of different species captured in the images | >500 |

I am very happy to have any of my images used by CoML or any other non-profit purposes but have only supplied when asked for specific images.

8) Products for the Public

a. Please list the total number and types of products created specifically for a public audience (Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)

| Total Number of Outreach Products | 12 |

List the types of products here (Please add rows if necessary.):
1 x Guide book (listed above under books)
11 Popular children’s articles in a magazine as below


Griffiths C. L. 2007. Our marine heritage. Envirokids 28 (3); 4-5
Griffiths C.L. 2008 Oceans and climate change Envirokids 29 (2) 18
Griffiths R & Griffiths C. 2009 Ocean Harvests Envirokids 30(3) 8-9

Griffiths R & Griffiths C. 2010. Ocean of Life Envirokids 31(3) 4-5.


9) Participants (Please note: this will help us assess the completeness of the Community database.)
a. Please list the total number of participants in your project
Core team, actually working on project, comprise only part of the time of Griffiths and his postgraduate students (about 12 in all over the decade, 7 graduated and 5 current, so not listed in ‘theses completed’ above), plus Dr Grundlingh and Ms Van St Anje as AfrOBIS staff (also with other duties).
There is also an Implementation Committee of 13 which has never had a full meeting face to face (all communication by email or partial meetings associated with regional conferences). I have thus listed the committee, AfrOBIS staff, plus students as total participants.

| Total Number of Participants | 27 |

b. From how many different countries?

| Total Number of Different Countries | 8 |

10) Meetings and workshops

a. Please list the total number of meetings and workshops organized and held from project inception to 2010

| Total Number of Meetings and Workshops | 2 |

- Marine Biodiversity in Sub Saharan Africa – the known and the unknown, Cape Town Sept 2003
- SSC meeting Cape Town June 2010

11) Conferences, Briefings and Speeches

a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project

| Total Number of Special Sessions | 1 |

- Special session of WIOMSA conference Durban 2007

b. Please list the total number of invited briefings or speeches given by your project
c. Listed here are invited keynote addresses at conferences on this topic

| Total Number of Invited Briefings | 3 |

12) Funding (Please note: this will help us finalize our program accounting.)

a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

Approx $ 40 000 per annum over the period form South African National research Foundation = $400 000 in total (in reality exchange rate has been very variable confusing this conversion to $, plus some non CoMI related work supported by this grant)
Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes

*Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).*

- Completion of a review of state of knowledge of marine biodiversity in South Africa as part of the PLoS ONE synthesis collection. This provides a first comprehensive review of the state of knowledge in the region and particularly of sample coverage and future needs (e.g. the 75% of the EEZ below 1000m remains virtually un-sampled).
- Participation by Prof Griffiths as part of the synthesis team that put together and edited the PLoS ONE NRIC collection
- Publication of a greatly enlarged and enhanced new edition of the standard regional field guide to marine life: ‘Two Oceans – a Guide to the Marine Life of Southern Africa’ in 2010. This contains over 500 additional species entries and over 800 additional photographs than the original 1994 edition.
- Publication of a major review on history of human impacts on the Benguela for HMAP (Griffiths et al 2004)
- Establishment of a regional AfrOBIS node as part of the existing SADCO (South African Data Centre for Oceanography) and populating of this with over 3 million data records from the region, making of one of the largest regional nodes. Also secured ongoing funding to support AfrOBIS node into the future.
- Raised local funding from South African NRF (National Research Foundation) to support series of MSc and PhD student undertaking taxonomic work. This has resulted in taxonomic revisions of several major groups including anemones, barnacles and brittlestars of the region, with new records and species discovered in each of these groups.
- Discovery and description of a number of other notable new species, including a 4 kg rock-lobster off Madagascar which appears to be the largest new species found during the Census!
- Partnership with local amateur dive groups has led to discovery of several new species of shrimp, myzostomid polychaetes, etc and greatly strengthened partnerships between professionals and local dive groups (who have now established a photographic ID web site and published several local faunal guides, such as to fish and nudibranchs, aimed specifically at divers)

2) Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?

The main failure of this NRIC was to secure sustained involvement from other African counties. A successful initial regional meeting was held in Cape Town in 2003 and was attended by delegates from 13 coastal countries, each of whom gave a report on the state of knowledge of marine biodiversity in their regions. Although a proceedings
volume was produced and many delegates from other African countries promised to follow up with data for ArfOBIS very little in fact materialized from these regions and there were no follow up projects (except a few conference presentations, where the project paid for African delegates to attend meetings).

We attribute this to a) a very poor state of knowledge of marine biodiversity in some regions (particularly on the west coast), b) a marked institutional reluctance to share data and c) an attitudinal problem in which many researchers in the region attend meetings only to obtain personal financial rewards and expect payment for any contributions made to communal databases, etc.

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

Our popular book – Two Oceans, a Guide to the Marine life of Southern Africa has sold over 30,000 copies (a top selling number for the non-fiction South African market) and remains the standard guide for the wider region. The PI has also written several articles on marine biodiversity for the children’s environmental magazine ‘Envirokids’.

Apart from this and a few press interviews we have not placed much emphasis on the outreach component, as we do not have outreach staff within the group.

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

Primary research into marine taxonomy and biodiversity within the South African region will continue as before, supported by a research grant to Charles Griffiths from the National Research Foundation Biosystematics Initiative. In the short term research is focusing on crustaceans, echinoderms, bryozoans and sponges, which are the only groups where there is professional expertise in the region to mentor students. Prof Griffiths retires in 2013 and the future thereafter is uncertain, as he is the only university academic in the region who is training students in marine systematics. Support in the rest of Africa will not be possible from this source.

The future of AfrOBIS is secure, as this forms part of SADCO, which has ongoing support from various government and regional organizations.

b. Is there established funding for the project after 2010? If so, how much and from what source?

Prof Griffiths has had a grant from the South African NRF for over a decade to pursue marine systematic research. This ended in Dec 2010, but a renewal has been applied for. An announcement of the successful grants is expected any day and if the grant is awarded we expect some $50,000 per annum for the next three years, following which Prof Griffiths retires.
Specifically the continuation of the AfrOBIS work is funded by SAEON (South African Earth Observation Network) to the tune of approximately $10,000 per annum.

c. Who will be the main point(s) of contact post-2010?

For marine systematics research in general Prof Griffiths remains the contact person.

For AfrOBIS Dr Marten Grundlingh remains the contact person in 2011 but he then retires. The contact person thereafter would be Ursula Von St Ange <UvstAnge@csir.co.za>

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

The main constraints limiting the knowledge of marine biodiversity in the African region are:

Lack of taxonomic expertise – the are no local taxonomists for most invertebrate groups and where that are present they are overwhelmed as they is usually a single person covering an entire class or phylum for a wide region. We desperately need the both train new taxonomists (under the supervision of outside experts) and/or interest outside experts in working in the region. Some sort of academic exchange programme seems the solution here, supported by electronic aids such as EOL.

Poor sampling of deeper waters – regional nations lack the capacity to collect biological samples deeper than about 1000m, so even where there is taxonomic expertise this habitat remains undocumented. International cruises to the region would be greatly welcomed and would hugely improve global coverage as this region really is ‘terra (or rather ‘mare’) incognito’! 9
Part 1: By the Numbers: Project Totals
Not relevant to Australian NRIC

Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

This report includes only information not captured by individual Census projects. We have included items of interest in our geographical region.

1) Outcomes

Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).

- Application of new biodiversity knowledge to support national marine bioregional planning:
  - Validated provincial scale patterns used in defining bioregions and based almost entirely on fish were also representative of 5 assessed invertebrate phyla – at least for the west coast of Australia
  - New statistical techniques for biodiversity prediction validated through Marine Biodiversity Hub and CoML synthesis project and used to provide national maps of predicted biodiversity at 1 sq km scale.
- Summary of marine biodiversity knowns and unknowns through PloS One article
- Increased support and awareness for biodiversity discovery eg. CReefs, GBR Seabed Habitat Mapping, Voyages of Discovery
- Improved taxonomy and identification of cryptic species using new genetic techniques
- Use of BCOL in identifying dried shark fins to improve management of illegal fishing.
- Analysis of historical trends in fishing catch and cpue will inform national State of Environment reporting and is now being extended
• Awareness of historical loss of apex reef predators led to project to investigate re-introducing locally extinct top temperate reef predator to Tasmania as part of climate adaptation.

2) Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?

• Exposure of CoML through a national photographic exhibit, due to lack of contributing funding. Exhibit went ahead successfully sponsored by the Marine Biodiversity Hub [www.marinehub.org](http://www.marinehub.org)
• International press releases did not always get the local exposure that they could have because of a lack of any local content. As the NRIC has no independent funding we rely on research partners to provide media services, and they will generally only do this if their agency involvement in the research is mentioned.

3) What do you feel were your project’s most successful education and outreach endeavours? Which were your least successful?

• Summary of Australian biodiversity through PLoS One article.
• Hopefully the upcoming release of the Census results to ministers and government agencies in Canberra.
• Cross promotion of Census of Marine Life events via Marine Biodiversity Hub newsletters:
• Posters of new species discovered co-badged with CoML, research partners and the Marine Biodiversity Hub:

Census of Marine Life on Seamounts; Seamount Ecosystems conserved in Australia's Huon Reserve -

New Australian sharks and Rays -

• CoML press releases that contained local content and generated media interviews locally - eg Marine census discovers 1,200 new sea creatures, NRIC Australia spokesman Nic Bax, ABC Radio, 5 October 2010:

• Exposure through other established marine networks - eg Adaptation Research Network for Marine Biodiversity and Resources - in their upcoming December issue of the Marine Adaption bulletin:
http://arnmbr.org/content/index.php/site/resources/.

• International collaboration - UN Atlas of the Oceans
(by Frances Michaelis, Editor, UN Atlas of the Oceans)

The Census of Marine Life is a foundation partner of the UN Atlas of the Oceans. Since June 2002, the Biology section of the Atlas has been maintained by the Census and this accounts for between 5-10% of total Atlas content, consisting of Topic pages, Knowledge Objects, Virtual Conferences and editorials. Check Biology page at http://www.oceansatlas.org/id/17761

The International Year of Biodiversity topic page was loaded in December 2009, and launched in the January 2010 newsletter. It has featured CoML activities throughout 2010 and will continue to do so into 2011. Check International Year of Biodiversity page at http://www.oceansatlas.org/id/219098

Much of this work has been done by Frances Michaelis, Editor, UN Atlas of the Oceans, based in Australia since 2004, and volunteers and interns from around the world working under her supervision in Townsville, Queensland over the past 6 years. This has enabled promotion of projects like CReefs, CAML and input to OBIS, in which Australians have been particularly active. The CoML Education and Outreach team have collaborated closely.
• Least successful probably the web-site. We did not have the resources to keep all the Australian information current and projects worked independently of NRIC in most instances.

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

• National release of CoML outcomes to senior government officials in Australia
  
  Component 1: Evening cocktails with ministers and senior agency officials, potentially including showing of Oceans
  Component 2: Breakfast with parliament
  Component 3: Personal briefings to ministers, department heads and senior officials.

b. Is there established funding for the project after 2010? If so, how much and from what source?

  $20,000 Alfred P Sloan Foundation

c. Who will be the main point(s) of contact post-2010?

  Nic Bax, CSIRO
  Ian Poiner, Australian Institute of Marine Science

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2011 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

• A review of how the Census went over the 10 years, how it delivered on its objectives, including the allocation of resources to the different priorities.
• An understanding of how priorities changed over the 10 year period, why and how the Census was able to respond (or not respond).
• A review of the objectives of the Census and how they might be updated for a second Census.
• A discussion of how to support the collaborative networks that have developed through the Census.
• An identification of international collaborations in marine surveys – what makes them work and where do we need to go in the future.
• The need for increasing standardisation (or cross-calibration) of biological survey techniques and taxonomy to support international, mapping, prediction and monitoring.
• The need for developing an international consensus on the state of the world’s oceans and supporting this through rigorous peer review of synthesis products.
• Identifying the role of a second Census (if any) and how it would link to other ongoing international initiatives.

22 December 2010
Nic Bax and
Annabel Ozimec
Committee Title: Canadian Census of Marine Life

Co-Chairperson: Dr. Philippe Archambault
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Phone: (418) 723-1986 x-1765    FAX: (418) 724-1842 E-mail: philippe_archambault@uqar.qc.ca

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Mailing Address: Ocean Sciences Centre, Memorial University of Newfoundland,
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Phone: (709) 737-3440     FAX: (709) 737-3220     E-mail: psnelgro@mun.ca

Project Manager: Joan Atkinson
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Education and Outreach Network Liaison: Kate Wilke
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Phone: (709) 737-3018     FAX: (709) 737-6983 E-mail: kmwilke@mun.ca

Website: www.chone.ca

Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions
   a. Please fill-in the total number of cruises and expeditions in 2010 only

<table>
<thead>
<tr>
<th>2010 cruises:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- ArcticNet Cruise in Hudson Bay and NW passage on the CCGS Amundsen, July 1 2010 to August 12 2010;</td>
</tr>
<tr>
<td>- ArcticNet Cruise in Beaufort sea on the CCGS Amundsen, August 12 to August 26 2010;</td>
</tr>
<tr>
<td>- ArcticNet Cruise in NW passage and Baffin Bay on the CCGS Amundsen, October 7 to October 22 2010</td>
</tr>
<tr>
<td>- Hudson cruise in Discovery Corridor; xx-xx, 2010 July 28 to August 11, 2010</td>
</tr>
<tr>
<td>- 3 Strait of Georgia cruises on the Vector, February – xx, 2010</td>
</tr>
</tbody>
</table>

7
b. Please list the total number cruises and expeditions from Project Inception to 2010 (*please note: a. and b. together will help us most accurately update our numbers from previous years*)

**2008 cruises:**
- CFL Cruise in the Beaufort sea on the CCGS Amundsen, 05/06/2008 – 07/08/2008;

**2009 cruises:**
- ArcticNet Cruise in the NW passage and Baffin Bay on the CCGS Amundsen, 08/10/2009 – 06/11/2009;
- ArcticNet-Imperial Oil Ltee (IOL) Cruise in the Beaufort sea on the CCGS Amundsen, 16-30 July 2009;
- Discovery Corridor cruise on the Hudson 29 July – 11 Aug.
- Strait of Georgia cruises on the Vector, May, 2009

<table>
<thead>
<tr>
<th>2008 cruises:</th>
<th>2009 cruises:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- ArcticNet-Imperial Oil Ltee (IOL) Cruise in the Beaufort sea on the CCGS Amundsen, 16-30 July 2009;</td>
</tr>
<tr>
<td></td>
<td>- Discovery Corridor cruise on the Hudson 29 July – 11 Aug.</td>
</tr>
<tr>
<td></td>
<td>- Strait of Georgia cruises on the Vector, May, 2009</td>
</tr>
</tbody>
</table>

14

2) Sampling Stations

a. Please list the total number of stations or sites sampled from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Sites Sampled</th>
<th>Many hundred</th>
</tr>
</thead>
</table>

b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

First Enteropneust in Arctic.

3) Specimens Collected

a. Please list the total number of specimens collected from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Specimens Collected</th>
<th>tens of thousands</th>
</tr>
</thead>
</table>

b. Please list the total number voucher specimens (new species) (*Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report*)

| Total Number of Voucher | still sorting |
c. Please list the total number or percentage of specimens not yet identified/analyzed

| Total Number or % of Specimens not yet analyzed | most |

4) Publications

Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)

a. Please list the total number of publications - 26

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<table>
<thead>
<tr>
<th>Submitted/Accepted</th>
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Submitted


Du Preez, C. and V. Tunnicliffe. Shortspine thornyhead and rockfish (Scorpaenidae) abundance patterns in response to substratum, biological structures and trawling. *Marine Ecology Progress Series*, in review, to be submitted in September, 2010

Link, H., Archambault, P., Tamelander, T., Renaud, P., Piepenburg, D. (submitted) Seasonality of benthic processes is determined by ice cover dynamics in the Western Canadian Arctic. *Polar Biology*


Mercer Clarke, C.S.L., Bard, S.M. (submitted) Finding Progress towards ICM: A Review of Efforts to Date. *International Oceans Institute Oceans Yearbook*


Arctic Marine Biodiversity Monitoring Plan

Scientific Criteria for Conservation and Sustainable Usage of Marine Biodiversity in Canada’s Oceans. MTS/IEEE Oceans 08 Quebec.

Marine Expert Monitoring Group (Archambault, P was one of the experts)

Snelgrove, P., P. Archambault, K. Juniper, P. Lawton, A. Metaxas, C. McKindsey, P. Pepin, D.
<table>
<thead>
<tr>
<th>Accepted/Published</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Reference</td>
<td>Journal/Book Details</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------</td>
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<tr>
<td>native and invasive macroalgae in an experimental foodweb.</td>
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<tr>
<td>profiles of sea urchins (Strongylocentrotus droebachiensis) fed natural</td>
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<td>algal diets.</td>
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<td>bacterial communities in the western Arctic Ocean as revealed by</td>
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<td>pyrosequencing of 16S rRNA genes.</td>
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<td>thrive as the Arctic Ocean freshens.</td>
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<td>– using landscape ecology to understand changing patterns of land use and</td>
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<td>its effects on the sustainability of coastal ecosystems.</td>
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<td>and Environmental 18S rRNA Gene Libraries.</td>
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<td>structure of archaeal communities and the distribution of ammonia</td>
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<td>monoxygenase A gene variants in two meromictic High Arctic lakes.</td>
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<td>marine biodiversity: moving fast forward? Diversity</td>
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<td>diversity and succession in a coastal Arctic ecosystem.</td>
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<td>western Atlantic Ocean in response to ocean temperature.</td>
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<tr>
<td>Du Preez, C. and V. Tunnicliffe. Shortspine thornyhead and rockfish</td>
<td>Marine Ecology Progress Series, in review, to be</td>
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<tr>
<td>(Scorpaenidae) abundance patterns in response to substratum, biological</td>
<td>submitted in September, 2010</td>
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<td>structures and trawling.</td>
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<tr>
<td>Link, H., Archambault, P., Tamelander, T., Renaud, P., Piepenburg, D.</td>
<td>Polar Biology</td>
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<tr>
<td>(submitted) Seasonality of benthic processes is determined by ice cover</td>
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<td>dynamics in the Western Canadian Arctic.</td>
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<td>Mercer Clarke, C.S.L., Bard, S.M. and Roff, J.C. (resubmitted with</td>
<td>Coastal Management</td>
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<tr>
<td>revisions for publication) Experience-based Practice in Integrated</td>
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</tr>
<tr>
<td>Coastal Management (ICM): A Pragmatic Analysis of the Shared Constraints</td>
<td></td>
</tr>
<tr>
<td>to Implementation.</td>
<td></td>
</tr>
<tr>
<td>Management in Canada: An analysis of the constraints to progress.</td>
<td></td>
</tr>
</tbody>
</table>
Mercer Clarke, C.S.L., Bard, S.M. (submitted) Finding Progress towards ICM: A Review of Efforts to Date. *International Oceans Institute Oceans Yearbook*


d. Please list the total number of special issues published 3; included in (a)

| Arctic Marine Biodiversity Monitoring Plan | Archambault, P. Marine Expert Monitoring Group |

*From Sea to Sea: Canada’s Three Oceans of Biodiversity.* PlosOne (in press)

5) Academic Theses
a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

| Total Number of theses | 2 (~40 more underway) |

b. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | None complete yet |

c. Please list the total number of PhD theses written from project inception to 2010


6) Barcodes

a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | <200> |

b. How many different species were barcoded?

| Number of different species barcoded | <70> |

7) Images

a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | Thousands |

b. How many different species were captured in the images?

| Number of different species captured in the images | Many hundreds |

c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?

| Total Number of images made available to the Census? | a few dozen but others readily available for the |
a. Please list the total number and types of products created specifically for a public audience *(Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)*

| Total Number of Outreach Products | 5 |

List the types of products here (Please add rows if necessary.):

- **Blog from research cruise (Hudson), July 29-August 11, 2010**
- Maeva Gauthier video ➜? [http://www.youtube.com/watch?v=zi2HYg7VBkI](http://www.youtube.com/watch?v=zi2HYg7VBkI)
- Videos by Cherisse Du Preez
  - [http://www.youtube.com/watch?v=VhEDHVr33JE](http://www.youtube.com/watch?v=VhEDHVr33JE)
  - [http://www.youtube.com/watch?v=LS42Zr4YM3Q](http://www.youtube.com/watch?v=LS42Zr4YM3Q)
- **GOMA Related Videos**

9) Participants *(Please note: this will help us assess the completeness of the Community database.)*

10) a. Please list the total number of participants in your project – 105

**INVESTIGATORS:**
Susan Allen, Phillipe Archambault, Shannon Bard, Leah Bendell-Young, Sam Bentley, Paul Bentzen, Mairi Best, Grace Chiu, Isabelle Cote, Mathieu Cusson, Rodolphe Devillers, Brad DeYoung, Claudio DiBacco, Julian Dodson, Michael Dowd, John Dower, France Dufresne, Evan Edinger, Raymond Gosine, Robert Gregory, Frédéric Guichard, Steven Hallam, Paul Hebert, David Innes, Sara Iverson, Kim Juniper, Irena Kaczmarska, Jean-Sébastien Lauzon-Guay, Peter Lawton, Sally Leys, Bill Li, Connie Lovejoy, Chris McKindsey, Anna Metaxas, William Montevecchi, Christian Nozais, Pierre Pepin, David Pike, Stéphane Plourde, Pedro Quijon, Barry Ruddick, Robert Scheibling, Pascal Sirois, Paul Snelgrove, Dirk Steinke, Bjorn Sundby, Chris Taggart, Verena Tunnicliffe

**STUDENTS:**

### b. From how many different countries?

| All PIs from Canadian institutions but students from US, China, France, South Africa, Germany, Poland |

#### 11) Meetings and workshops

| CHONe annual meetings: 2008 (St. John’s, NL), 2010 (Montreal) |

#### 12) Conferences, Briefings and Speeches

| None yet |

| CHONe annual meetings: 2008 (St. John’s, NL), 2010 (Montreal) |

| None yet |

### b. Please list the total number of invited briefings or speeches given by your project – 28 (see below)
### Invited talks

<table>
<thead>
<tr>
<th>Name</th>
<th>Details</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim Juniper</td>
<td>Federal government National Advisory Meeting; provided science guidance on the development of a network of MPAs; Ottawa, ON</td>
<td>June, 2009</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Woods Hole Oceanographic Institute; invited talk on CHONe; Woods Hole, Mass, US</td>
<td>May, 2008</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Oceans '08 IEEE Meeting; invited talk on CHONe; Quebec City</td>
<td>Sept, 2008</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Symposium on Deep Sea Biology, Rutgers University; invited talk on CHONe; New Jersey;</td>
<td>Nov, 2008</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>World Biodiversity Congress; Valencia, Spain</td>
<td>Nov, 2008</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>US interagency group meeting on biodiversity, 14 agencies represented; invited speaker; Siver Spring, MD USA</td>
<td>Oct, 2009</td>
</tr>
<tr>
<td>Phil Archambault</td>
<td>La biodiversité a-t-elle une valeur autre que pour 'humain? Colloque La biologie dans tous ses états :Conservation et biodiversité,</td>
<td>Mar 2008</td>
</tr>
<tr>
<td>Phil Archambault</td>
<td>La biodiversité et son importance. Musée Régional de Rimouski, Rimouski, Quebec</td>
<td>Apr 2009</td>
</tr>
<tr>
<td>Phil Archambault</td>
<td>La biodiversité marine et son importance- Musée de Sherbrooke, Quebec</td>
<td>Nov, 2010</td>
</tr>
<tr>
<td>Phil Archambault</td>
<td>Biodiversity and its importance. Open public conference, GEOTOP annual meeting, UQAM, Montréal,</td>
<td>Jan 2010</td>
</tr>
<tr>
<td>Phil Archambault</td>
<td></td>
<td>Apr 2010</td>
</tr>
</tbody>
</table>

### Media interviews

<table>
<thead>
<tr>
<th>Name</th>
<th>Details</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anna Metaxas</td>
<td>Outfront Magazine (Fall 2010) – Dalhousie; interview about CHONe</td>
<td>Fall 2010</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>The Telegram newspaper, St. John's, NL; <em>Ocean research network launched at MUN</em>&lt;br&gt;<a href="http://www.marinebiodiversity.ca/CHONe/news/other-news/StJOhnsLaunch12-01-09.pdf">http://www.marinebiodiversity.ca/CHONe/news/other-news/StJOhnsLaunch12-01-09.pdf</a></td>
<td>Jan, 2009</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Progress; <em>Beefing up the Bonafides.</em>&lt;br&gt;<a href="http://www.progressmedia.ca/article/2009/12/beefing-bonafides">http://www.progressmedia.ca/article/2009/12/beefing-bonafides</a>; article on CHONe</td>
<td>Dec, 2009</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>MUN Gazette; <em>Federal Funding fuels more comprehensive research.</em>&lt;br&gt;<a href="http://today.mun.ca/news.php?news_id=5348">http://today.mun.ca/news.php?news_id=5348</a>; article on CHONe</td>
<td>March, 2010</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Marine Biodiversity Research publication; <em>Uniting Marine Scientists in Canada and Australia;</em>&lt;br&gt;<a href="http://www.marinehub.org/index.php/site/newsletter_extended/chone/">http://www.marinehub.org/index.php/site/newsletter_extended/chone/</a>; article on CHONe</td>
<td>March, 2010</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>MUN Gazette; <em>Young minds, deep oceans;</em>&lt;br&gt;<a href="http://today.mun.ca/news.php?news_id=5727">http://today.mun.ca/news.php?news_id=5727</a>; interview on CHONe cruise</td>
<td>August, 2010</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Globe and Mail; <em>Marine census points to vast diversity;</em>&lt;br&gt;<a href="http://www.theglobeandmail.com/news/national/marine-census-points-to-vast-diversity/article1659757/?cmpid=rss1">http://www.theglobeandmail.com/news/national/marine-census-points-to-vast-diversity/article1659757/?cmpid=rss1</a>; interview on CHONe</td>
<td>August, 2010</td>
</tr>
<tr>
<td>Paul Snelgrove</td>
<td>Globe and Mail; <em>Hosts of unknown microbes identified;</em></td>
<td>August</td>
</tr>
</tbody>
</table>
## Final Project Report to the Census of Marine Life

2010

| Paul Snelgrove | Globe and Mail; *New wave of discovery shows octopus origins*;  
**http://www.theglobeandmail.com/eceRedirect?articleId=721571; interview on CHONe cruise** | Nov, 2008 |

### Workshops

| Phil Archambault | Census of Marine Life workshop; coordinator of the Canadian biodiversity synthesis; Los Angeles, US | Feb, 2009 |
| Paul Snelgrove | Gulf of Maine Groundfish Fine-Scale Ecology workshop; invited participant; York Harbour, Me | April, 2009 |
| Paul Snelgrove | Gulf of Maine Research Institute; participation in workshop on Habitat Mapping; Portland, Me | April, 2009 |
| Paul Snelgrove | UN 'Law of the Sea Group of Experts'; invitee to workshop on marine scientific research; New York City, NY | April, 2009 |
| Paul Snelgrove et al | DFO/other federal agencies’ workshop on research priorities and activities; invited participant; Ottawa, ON | May, 2009 |

### Other activities

| Eric Pedersen | Ocean Management Research Network annual meeting, University of Ottawa; represented CHONe students in panel discussion; Ottawa, ON | Oct, 2009 |
| John Roff; Pierre Pepin, Chris McKindsey | Fisheries and Oceans Canada scientific peer-review meeting to discuss the marine component of the Ecosystem Status and Trends Report (ESTR); represented CHONe expertise in the discussions; Ottawa, ON | Dec, 2009 |
| Patrice Simon | Ocean Management Research Network annual meeting, University of Ottawa; represented CHONe on panel discussion on Canada's three oceans; Ottawa, ON | Oct, 2009 |
| Paul Snelgrove | Bigelow Laboratory for Ocean Sciences; presented seminar on CHONe; West Boothbay Harbour, ME; | April, 2009 |
| Paul Snelgrove | Federal government Science Integration Board; invited speaker; Ottawa, ON | July, 2009 |
| Paul Snelgrove | National Oceanic and Atmospheric Administration (NOAA); seminar on CHONe; Siver Spring, MD USA | Oct, 2009 |
| Paul Snelgrove | National Oceanic and Atmospheric Administration (NOAA); seminar on CHONe at Sandy Hook; New Jersey | June, 2009 |
| Paul Snelgrove | Oceans Day, informal gathering of persons interested in ethical dimensions of the Global Commons; presentation on CHONe; Ottawa, ON | June, 2009 |

13) Funding (*Please note: this will help us finalize our program accounting.*)  
   a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.  
   Total funding is just under $10 million, including ship time and research funds.
Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes
*Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).*
- Creation of Canadian Network (CHONe)
- Co-leadership of GoMA
- Major Infrastructure (Ocean Tracking Network)
- Academic-University Partnership
- New research tools (ongoing)
- Excellent outreach response
- International partnerships with other biodiversity related programmes

2) Please list any milestones or goals that you did not accomplish and explain why. *For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?*
Do not yet have a plan for beyond 2013.

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?
Discovery Corridor Video and other You Tube postings, Census Book,

4) Plans for post-2010

   a. Are there any plans to carry forth your project post-2010? If so, what are they?
Funding goes through 2013 and community is interested in extending that further if we can find funding when the time comes

   b. Is there established funding for the project after 2010? If so, how much and from what source?
Yes, from Canadian government at approximately 1 million per year through 2013.

   c. Who will be the main point(s) of contact post-2010?
Paul Snelgrove
Philippe Archambault

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?
We are discussing proposing a session and sending a strong group of students…topics might include population connectivity, ecosystem function, and biodiversity prediction….these are also the topics we feel are the “next big question”.
Part 1: By the Numbers: Project Totals

The Caribbean NRIC was involved in NaGISA, OBIS, HMAP, Chess, COMARGE and ICOMM. Updates about the performance of the Caribbean community within these projects has been included directly in each of the projects reports.

1) Cruises & Expeditions
   a. Please fill-in the total number of cruises and expeditions in 2010 only

| Number of Cruises in 2010 | N/A |
b. Please list the total number cruises and expeditions from Project Inception to 2010 (*please note: a. and b. together will help us most accurately update our numbers from previous years*)

| Total Number of Cruises | N/A |

2) Sampling Stations
   a. Please list the total number of stations or sites sampled from Project Inception to 2010

| Total Number of Sites Sampled | N/A |

b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

Juan Manuel Díaz found a bivalve species (*Pholadomya candida*) at Santa Marta, Colombia, in shallow waters, thought to be extinct (highlighted in Decade of Discovery 2010 report). (Díaz at al. 2009)

3) Specimens Collected
   a. Please list the total number of specimens collected from Project Inception to 2010

| Total Number of Specimens Collected | N/A |

b. Please list the total number voucher specimens (new species) (*Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report*)

| Total Number of Voucher Specimens | N/A |

c. Please list the total number or percentage of specimens not yet identified/analyzed

| Total Number or % of Specimens not yet analyzed | N/A |

4) Publications
   *Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.*)

a. Please list the total number of publications

| Total Number of publications: | 2 books 10 articles (Participation in one special issue – PloS ONE) |
b. Please list the total number of books published

<table>
<thead>
<tr>
<th>Total Number of books:</th>
<th>2</th>
</tr>
</thead>
</table>

c. Please list the total number of journal articles published: Total = 10


Other publications related to HMAP (e.g. the book “Early Human Impact on Megamolluscs”, edited by Andrzej Antczak and Roberto Cipriani, Archaeopress, Publishers on British Archaeological Reports, 2008), NaGISA, ICOMM, Chess, and COMARGE are reported in the final reports of those projects.

d. Please list the total number of special issues published

|---|---|

5) Academic Theses

a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

| Total Number of theses | N/A |

b. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | N/A |
c. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | N/A |

6) Barcodes
   a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | N/A |

b. How many different species were barcoded?

| Number of different species barcoded | N/A |

7) Images
   a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | ~200 |

b. How many different species were captured in the images?

| Number of different species captured in the images | ~50 |

c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?

| Total Number of images made available to the Census? | 70 |

8) Products for the Public
   a. Please list the total number and types of products created specifically for a public audience (Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)

| Total Number of Outreach Products | 3 |

List the types of products here (Please add rows if necessary.):

| Identification field guides for divers (together with South American NRIC): cnidarians, mollusks, crustaceans, echinoderms |
| Educational posters with local marine fauna divers (together with South American NRIC): cnidarians, mollusks, crustaceans, echinoderms |
9) Participants *(Please note: this will help us assess the completeness of the Community database.)*
   
a. Please list the total number of participants in your project

   | Total Number of Participants: | 43+ |

Ernesto Weil, University of Puerto Rico
Pablo Penchaszadeh, Museo Argentino de Ciencias Naturales
Elva G. Escobar-Briones, Universidad Nacional Autonoma de Mexico
María Luisa Machain, Universidad Nacional Autónoma de México
Lorna Inniss, University of the West Indies
Juan Manuel Díaz, Fundación Mar Viva
Diana Gómez, INVEMAR
Cristina Díaz, Museo del Mar
Felipe Artigas, Universite du Littoral
Jorge Cortés, Universidad de Costa Rica
Juan José Alvarado, Universidad de Costa Rica
(Currently at Universidad Autónoma de Baja California Sur)
Manuel Ortiz, Universidad de La Habana
George Warner, University of West Indies
Eduardo Klein, Universidad Simón Bolivar
Juan José Cruz, Universidad Simón Bolivar
Andrzej and María Magdalena Antczak, Universidad Simón Bolivar
Carolina Bastidas, Universidad Simón Bolívar
Alberto Martín, Universidad Simón Bolívar
Juan José Cárdenas, The Nature Conservancy
Lila Gil, The Nature Conservancy
Baumar Marín, Universidad de Oriente
Sheila Márques Pauls, Universidad Central de Venezuela
Aniuska Kazandjian, Universidad Simón Bolívar
Yuruaní Lavado, Chevron - Venezuela
Diaisa Sánchez, Petróleos de Venezuela
Irene Petkoff, ConocoPhillips
Ross Robertson, Smithsonian Tropical Research Institute
Fernando Zapata, Universidad del Valle
Judith Gobin, University of West Indies
Norman Quinn, Association of Marine Laboratories of the Caribbean
Marjorie Reaka-Kudla, The University of Maryland
Enrique Pugibet, Universidad Autonoma de Santo Domingo
James Wood, Bermuda Biological Station for Research
Luz Stella Mejía, INVEMAR
Juan Antonio Gómez, Universidad de Panamá
Janzel Villalaz, Universidad de Panamá
b. From how many different countries?

<table>
<thead>
<tr>
<th>Total Number of Different Countries: 14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venezuela, Colombia, Mexico, Bermuda, Costa Rica, Puerto Rico, US Virgin Islands, Trinidad &amp; Tobago, Jamaica, France, Panama, Barbados, Dominican Republic, Cuba</td>
</tr>
</tbody>
</table>

10) Meetings and workshops

a. Please list the total number of meetings and workshops organized and held from project inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Meetings and Workshops: 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) KUU Workshop, June, 2004 (Isla de Margarita, Venezuela)</td>
</tr>
<tr>
<td>2) Caribbean NRIC and CoML-SSC</td>
</tr>
</tbody>
</table>
11) Conferences, Briefings and Speeches

a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project

<table>
<thead>
<tr>
<th>Total Number of Special Sessions: 1</th>
</tr>
</thead>
</table>

b. Please list the total number of invited briefings or speeches given by your project

| Total Number of Invited Briefings: 13+ |


12) Funding  *(Please note: this will help us finalize our program accounting.)*  
   a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

**The Caribbean NRIC received the following grants since its inception in 2004:**

- Caribbean KUU workshop (Sloan Foundation): 45K in 2004
- Caribbean NRIC activities - support (Sloan Foundation): $45 for 2006-2007
- Caribbean NRIC synthesis (CoML Secretariat): 25K in 2008
- Caribbean NRIC assistant funds I (CoML Secretariat): 10K in 2008
- Caribbean NRIC assistant funds II (CoML Secretariat): 21K in 2009-2010
- Support to Megamollusk Caribbean NRIC/HMAP project (CoML Secretariat): 5K in 2009-2010
- After London Caribbean workshop: OBIS tools for policy makers (CoML Secretariat): 20K pre-approved by Ex. Com for 2011

Other financial support to the Caribbean NRIC has been for specific activities within the projects (e.g. NaGISA) and are provided in the project’s reports.

**Part 2: Reflecting on your project & the Census of Marine Life: Narrative section**

1)  **Outcomes**
   
   *Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).*
   
   - The support obtained to build a Center for Marine Biodiversity at Universidad Simon Bolivar by Chevron and ConocoPhillips (2008)
   - The network of researchers
   - The worldwide visibility given to the region

2)  **Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?**

   Improve the digital databases in the region and incorporate them into OBIS. The Caribbean NRIC made significant efforts in loading the marine biodiversity digital databases from the SIBM (INVEMAR, Colombia), as well as some local databases from Venezuela (USB and UCV) and a full compilation of species of five taxonomic groups for the Caribbean PLoS ONE paper. However, there is still much information that is not in digital format and the distribution map produced clearly shows a bias in which the areas with the highest biodiversity are also the areas in which more research efforts have been carried out. The major obstacle to accomplish this improvement is funding. With appropriate funding, the institutions that have the data could work on
georeferencing this data and incorporating it into OBIS. The Caribbean NRIC paper in PLoS shows that at least 50% of the known species of the Caribbean are not in OBIS.

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

The education and outreach efforts of the Caribbean NRIC were mostly focused in NaGISA activities. These were quite successful in Venezuela thanks to the generous grant from Chevron to Universidad Simon Bolivar to carry out Nagisa monitoring and education activities, from which a highschool handbook was created and implemented in one highschool in the Venezuelan coast, and some invited talks were given in other schools. The limitation was that E&O efforts were not widespread to the rest of the region.

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

There is interest among the Census-Caribbean researchers to keep the network going and to keep research activities, particularly carry out the specific reviews on the diversity of several important taxonomic groups such as mollusks, sponges, amphipods, etc, following the example of the echinoderm paper in the journal Marine Biodiversity. In 2011, there will be at least four important activities in which the Caribbean NRIC will be involved:

(1) The workshop “CoML Tools for Environmental Managers” to be held in Caracas, February-March, 2011
(2) The 35th Scientific Conference of the AMLC, Association of Marine Laboratories of the Caribbean. May 22-27, 2011, San José, Costa Rica. Besides having an invited talk, the workshop “CoML Tools for Environmental Managers” will be held again to a broader audience
(3) The VIII CLAMA, Congreso Latinoamericano de Malacología. June 12-17, 2011, Puerto Madryn, Argentina
(4) Participation in the World Conference of Marine Biodiversity in Aberdeen, Scotland

There is also a planned workshop in which P. Miloslavich will be invited following the “Darwin and the Adventure workshop” which will be tentatively held by the Beagle Trust in March 2011 in Santiago, Chile. This workshop is intended to keep working on the draft programme of the future Beagle expedition.

Particularly in Venezuela, Census initiatives will continue to consolidate in the Center for Marine Biodiversity (CBM). The CBM was created in 2008 thanks to funds provided by Chevron and ConocoPhillips under the umbrella of the Law of Science, Technology and Innovation (LOCTI) of Venezuela. It is an academic unit of the Simon Bolivar University. The mission of this center is to study the marine biodiversity in the Venezuelan Caribbean and Atlantic front, providing knowledge on species systematics, environmental dynamics and ecosystem function through scientific contributions, education and outreach. Research
carried by the CBM will also provide key answers to problems derived from coastal and offshore human activities and their impact on biodiversity.

b. Is there established funding for the project after 2010? If so, how much and from what source?

There is no funding for the committee for activities beyond 2010. The CBM has funds for infrastructure and equipment, and the Census Secretariat has pre-approved funding for $20K to carry out the workshop “CoML Tools for Environmental Managers”.

c. Who will be the main point(s) of contact post-2010?

Patricia Miloslavich and Eduardo Klein, Universidad Simon Bolivar, Caracas, Venezuela
pmilos@usb.ve
eklein@usb.ve

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

The biggest questions and challenges began to be addressed by the Census community during the London workshop on October 7, 2010. From this workshop, the group agreed in that a new programme should have an overarching vision that is (1) exciting to scientists, (2) relevant for society, (3) global and inclusive in scope, and (4) that captures the fact that the loss of biodiversity has economic implications. From the discussions it was very clear and agreed upon that the Census had been a visionary program in at least two aspects, the technological side, and the information side. For both, capacity building is needed. Monitoring also brings the additional benefit of being helpful in prediction...

Following these discussions, the biggest scientific questions would deal with:
1) Discovery and understanding of processes: role of biodiversity in resilience, what is our capacity for predictions using proxies for ecosystem structure and function
2) Monitoring: scaled down to regions (in hotspots or areas of greatest change)
3) Prediction capacity: provides the policy connection (e.g. spatial planning)

The Census Secretariat has thought on a strategy to move forward a second Census initiative beyond 2010. For this, two groups of researchers have been invited and conformed. The first group entitled the “Beyond 2010 Census of Marine Life Science Planning Committee” will shape a follow-on effort to the Census which will facilitate ongoing international collaboration, build on the baseline of the first Census, and incorporate the ever-changing questions, priorities, and approaches in marine biodiversity
science, particularly to help address societal needs. The second group entitled “Beyond 2010 Census of Marine Life Scientific Advisory Committee” or SAC composed of researchers with the high-level connections necessary for securing support for a large-scale scientific program, and also able to speak to their national and regional issues, will provide input and guidance to the science plan presented by the Planning Group, in a way that is endorsed by the Census 2010 community, incorporates new science challenges, and addresses the science priorities of nations around the world.

P. Miloslavich will be chairing the Planning Group along with Paul Snelgrove and in this way, will provide the experience from coastal biodiversity research and the approach from the Caribbean and South American regions. The major challenge, from our point of view will not be to build such a science programme but to find the funds necessary to carry it out.
Census of Marine Life activities in the Caribbean region

Summary

The Census of Marine Life (CoML) is an international science program to assess and explain the diversity, distribution and abundance of marine life, past, present and future. The major components of the program involve history, exploration and modeling, all of which are integrated into an open source database, the Ocean Biogeographic Information System (OBIS) for visualization and analysis.

Goals:
In the Caribbean, the program began in 2004 with the goal of reviewing the state of knowledge of marine biodiversity, establishing links with research and conservation regional programs, and implementing Census projects in the region.

Research projects and activities:
- Early Human Impact on Megamollusks: integration and synthesis of the data on early human impact on marine molluscs in a global perspective.
- Community structure (taxonomic composition, abundance and biomass) in the deep sea of the south western sector of the Gulf of Mexico, including the continental slope and the abyssal plain: SIGSBEE Cruises, 1997-2005.
- Natural Geography in Shore Areas: patterns of biodiversity at global and local scales on rocky shores and seagrass beds.
- Latin American and Caribbean International Census of Marine Microbes: establishment of a network of marine scientists in diverse areas of microbiology in coastal and oceanic systems.
- Database integration: integration of data from the Museo de Historia Natural Marina de Colombia (INVEMAR), the Museo de Ciencias Naturales (Universidad Simon Bolivar), and the Museo de Biologia (Universidad Central de Venezuela) into OBIS.
- Education and outreach activities involving high school students.

Main publications:

Partnerships
Since its establishment in 2004, the Caribbean Committee of the Census of Marine Life has established partnerships with other projects and organizations in the region. Some examples are: the global Ocean Tracking Network (OTN), the Caribbean Large Marine Ecosystem (CLME) Project, the Intergovernmental Oceanographic Commission (IOC of...
UNESCO), the Barbados Coastal Zone Management Unit (CZMU), the CARICOMP program (Caribbean Coastal marine Productivity), the SERPENT project (Scientific and Environmental ROV Partnership using Existing iNdustrial Technology), the Association of Marine Laboratories of the Caribbean (AMLC), the Nature Conservancy, Conservation International, Chevron, ConocoPhillips, and the Harte Research Institute for Gulf of Mexico Studies.

**Legacies:**
Consolidating Census initiatives and thanks to funds provided by Chevron and ConocoPhillips under the umbrella of the Law of Science, Technology and Innovation (LOCTI) of Venezuela, the Center for Marine Biodiversity (CBM) was created in 2008 as an academic unit of the Simon Bolivar University. The mission of this center is to study the marine biodiversity in the Venezuelan Caribbean and Atlantic front, providing knowledge on species systematics, environmental dynamics and ecosystem function through scientific contributions, education and outreach. Research carried by the CBM will also provide key answers to problems derived from coastal and offshore human activities and their impact on biodiversity.

**Participating institutions and countries:**
Universidad Simón Bolívar (Coordination), Universidad Central de Venezuela, Universidad de Oriente, Museo Marino de Margarita, Fundación Científica Los Roques (Venezuela), Instituto Alexander Von Humboldt, Instituto de Investigaciones Marinas y Costeras - INVEMAR, Fundación Mar Viva (Colombia), Universidad de La Habana (Cuba), Universidad Nacional Autónoma de Mexico (Mexico), East End Marine Park (US Virgin Islands), Universidad de Costa Rica (Costa Rica), University of Puerto Rico (Puerto Rico), Coastal Zone Management Unit (Barbados), Universite du Littoral (France), University of West Indies (Trinidad and Tobago), Universidad de Panama, Smithsonian Tropical Research Institute (Panama), Universidad Autónoma de Santo Domingo (Dominican Republic), Bermuda Biological Station for Research (Bermuda), University of the West Indies (Jamaica).

**Contact information:**
Patricia Miloslavich
pmilos@usb.ve
http://cbm.usb.ve/CoMLCaribbean/index.html
**Part 1: By the Numbers: Project Totals**

1) Cruises & Expeditions  
   a. Please fill-in the total number of cruises and expeditions in 2010 only  
      
      | Number of Cruises in 2010 | <4> |

   b. Please list the total number cruises and expeditions from Project Inception to 2010 (*please note: a. and b. together will help us most accurately update our numbers from previous years*)  
      
      | Total Number of Cruises | <20> |

2) Sampling Stations  
   a. Please list the total number of stations or sites sampled from Project Inception to 2010  
      
      | Total Number of Sites Sampled | <1000> |

   b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

3) Specimens Collected  
   a. Please list the total number of specimens collected from Project Inception to 2010  
      
      | Total Number of Specimens Collected | <4000> |

   b. Please list the total number voucher specimens (new species) (*Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report*)  
      
      | Total Number of Voucher Specimens | <list here> |
c. Please list the total number or percentage of specimens not yet identified/analyzed

| Total Number or % of Specimens not yet analyzed | <20%> |

4) Publications

*Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)*

a. Please list the total number of publications

| Total Number of publications | <42> |

b. Please list the total number of books published

| Total Number of books | <2> |

c. Please list the total number of journal articles published

| Total Number of journal articles | <40> |

d. Please list the total number of special issues published

| Total Number of special issues | <list here> |

5) Academic Theses

a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

| Total Number of theses | <30> |

b. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | <20> |

c. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | <10> |

6) Barcodes

a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | <489> |

b. How many different species were barcoded?

| Number of different species barcoded | <153> |

7) Images
a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | <200> |

b. How many different species were captured in the images?

| Number of different species captured in the images | <50> |

c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?

| Total Number of images made available to the Census? | <list here> |

8) Products for the Public

a. Please list the total number and types of products created specifically for a public audience (Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)

| Total Number of Outreach Products | <2> |

List the types of products here (Please add rows if necessary.):

<table>
<thead>
<tr>
<th>Websites</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

9) Participants (Please note: this will help us assess the completeness of the Community database.)

a. Please list the total number of participants in your project

| Total Number of Participants | <20> |

b. From how many different countries?

| Total Number of Different Countries | <1> |

10) Meetings and workshops

a. Please list the total number of meetings and workshops organized and held from project inception to 2010

| Total Number of Meetings and Workshops | <4> |

11) Conferences, Briefings and Speeches
a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project

| Total Number of Special Sessions | <list here> |

b. Please list the total number of invited briefings or speeches given by your project

| Total Number of Invited Briefings | <3> |

12) Funding *(Please note: this will help us finalize our program accounting.)*

a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

$7000000

Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes

*Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).*

1. Publication of *《Checklist of Marine Biota in China》*
2. Set up of Chinese OBIS Node
3. Outreach of CoML in China
4. More than 20 cruises have been conducted, including China coastal waters and the Southern Ocean
5. More than 4000 specimen were collected.
6. 1013 Marine zooplankton specimens have been collected. 489 Barcodes for 153 species have been submitted to GenBank.

2) Please list any milestones or goals that you did not accomplish and explain why. *For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?*

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

Yes, We plan to carry forth our project by combining the project and cruises applied from different sources of China government.
b. **Is there established funding for the project after 2010? If so, how much and from what source?**

Yes. There is some funding for the project after 2010. They are from Ministry of Science and Technology of China, Chinese academy of Sciences.

c. **Who will be the main point(s) of contact post-2010?**

Sun Song, Institute of Oceanology, Chinese Academy of Sciences, 7 Nanhai Road, Qingdao, 266071, China. Email: sunsong@qdio.ac.cn

d. **The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?**
Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions – N/A

2) Sampling Stations – N/A

3) Specimens Collected – N/A

4) Publications

   Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)

   a. Please list the total number of publications

      | Total Number of publications | >150 including newsletters, reports, etc |
      |-------------------------------|------------------------------------------|

   b. Please list the total number of books published

      | Total Number of books | ~10 |

   c. Please list the total number of journal articles published

      | Total Number of journal articles | ~110 |
d. Please list the total number of special issues published

| Total Number of special issues | ~3 |

5) Academic Theses N/A

6) Barcodes N/A

7) Images N/A

   However, all photographs on the EuroCoML website are available for anyone to use.

8) Products for the Public
   a. Please list the total number and types of products created specifically for a public audience (Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)

| Total Number of Outreach Products | >30 |

   List the types of products here (Please add rows if necessary.):

<table>
<thead>
<tr>
<th>Website</th>
<th>Books</th>
<th>Newsletters</th>
<th>Video animation</th>
<th>Non-technical reports</th>
<th>Exhibitions</th>
<th>Teaching plans</th>
</tr>
</thead>
</table>

9) Participants (Please note: this will help us assess the completeness of the Community database.)
   a. Please list the total number of participants in your project

   | Total Number of Participants | 114 |

   b. From how many different countries?

   | Total Number of Different Countries | 20 |

10) Meetings and workshops
   a. Please list the total number of meetings and workshops organized and held from project inception to 2010
11) Conferences, Briefings and Speeches
   a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project
      Total Number of Special Sessions  ~5
   
   b. Please list the total number of invited briefings or speeches given by your project
      Total Number of Invited Briefings  ~5

12) Funding (*Please note: this will help us finalize our program accounting.*)
   a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

Funding received from:
Stavros S Niarchos Foundation
Argyll and Islands Enterprise
Foundation Total

Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes
   Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).

   The establishment of a European and world wide invasive alien species up do date the most complete and verified database that will shortly be made freely available for anyone to access.
   Raising the profile of marine biodiversity in Europe, both at pan-European as well regional-seas scales.
   The education and outreach activities that have been undertaken solely by EuroCoML and jointly with other Census and non-Census projects.
   The support provided for the formation of the INDEEP group as well as the inclusion of a number of European Scientists
2) Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?

3) Provision of one of the initially planned deliverables (on regional-scale comparison of marine biodiversity patterns across Europe) was substantially delayed. The manuscript is now under preparation and will be submitted to Frontiers in Ecology and the Environment in 2011. The reason for delay is unexpected re-allocation of institutional/national tasks of the initially appointed lead author and therefore changed research priorities.

4) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

Most successful endeavours:
The book “Deeper than Light”
The exhibition “Deep-Sea Life”
The work plans for school children posted on the website
The animation “Exploring the Ocean Depths”

5) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

At present EuroCoML will maintain links with the INDEEP network. However, EuroCoML leadership has been neither been unable to develop nor make any concrete strategies regarding actions for the coming few years. This is because of uncertainties and/or lack of information. However, it is hoped that as the Census plans themselves become clearer over the next year, so will plans as to how EuroCoML will continue.

b. Is there established funding for the project after 2010? If so, how much and from what source?

There is no funding directly available for EuroCoML post 2010. However, through the INDEEP proposal that was submitted to Foundation TOTAL (~€300,000), there is support to keep the deep-sea side of things running both within Europe and internationally. In addition, there are several big ongoing/starting projects in Europe relevant to potential future EuroCoML aims. Some of these are ambitious with regards to involving a large number of partners. However, these actions are as yet uncoordinated and not all the relevant information has much detail associated with it.
c. Who will be the main point(s) of contact post-2010?

Dr Bhavani Narayanaswamy as primary contact.
Dr. Henn Ojaveer
Dr. Marta Coll

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

Ecosystem structure and functioning
The role of biodiversity in providing goods and services from marine ecosystems
Alien species invasions, diversity and changed aquatic ecosystems
Historical marine biodiversity and biomass baselines and conservation/recovery of degraded ecosystems
The impacts from society, as well as the benefits for society of deep-sea environments.
Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions
   a. Please fill-in the total number of cruises and expeditions in 2010 only

   | Number of Cruises in 2010 | 3 |

   b. Please list the total number cruises and expeditions from Project Inception to 2010 (please note: a. and b. together will help us most accurately update our numbers from previous years)

   | Total Number of Cruises | 9 |

2) Sampling Stations
a. Please list the total number of stations or sites sampled from Project Inception to 2010

| Total Number of Sites Sampled | >60 |

b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

None

3) Specimens Collected

a. Please list the total number of specimens collected from Project Inception to 2010

| Total Number of Specimens Collected | >5000 |

b. Please list the total number voucher specimens (new species) (*Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report*)

| Total Number of Voucher Specimens | 5 |

c. Please list the total number or percentage of specimens not yet identified/analyzed

| Total Number or % of Specimens not yet analyzed | 60% |

4) Publications

*Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)*

a. Please list the total number of publications

| Total Number of publications | 46 (Listed in Annexure I) |

b. Please list the total number of books published

| Total Number of books | - |

c. Please list the total number of journal articles published

| Total Number of journal articles | 46 (Listed in Annexure I) |

d. Please list the total number of special issues published

| Total Number of special issues | 1 |

5) Academic Theses
a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

| Total Number of theses | ~48 |

b. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | ~41 |

c. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | 7 |

6) Barcodes

a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | ~500 |

b. How many different species were barcoded?

| Number of different species barcoded | ~80 |

7) Images

a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | > 2000 |

b. How many different species were captured in the images?

| Number of different species captured in the images | >50 |

c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.? 

| Total Number of images made available to the Census? | 5 |

8) Products for the Public

a. Please list the total number and types of products created specifically for a public audience (*Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.*)

| Total Number of Outreach Products | - |

List the types of products here (Please add rows if necessary.):
9) Participants (*Please note: this will help us assess the completeness of the Community database.*)
   a. Please list the total number of participants in your project
      | Total Number of Participants | 14 |
   
   b. From how many different countries?
      | Total Number of Different Countries | 10 |

10) Meetings and workshops
   a. Please list the total number of meetings and workshops organized and held from project inception to 2010
      | Total Number of Meetings and Workshops | 15 |

11) Conferences, Briefings and Speeches
   a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project
      | Total Number of Special Sessions | 1 |
   
   b. Please list the total number of invited briefings or speeches given by your project
      | Total Number of Invited Briefings | 2 |

12) Funding (*Please note: this will help us finalize our program accounting.*)
   a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.
Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes

Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).

1. Organization of the workshop on coastal and marine biodiversity of Indian Ocean

In 2003, we got together more than 40 scientists from various Indian Ocean (IO) countries and evaluated the status of coastal and marine biodiversity (CMB) in IO. The outcome of this was the production of a special volume of Indian Journal of Marine Sciences on CMB of IO that served as the basis then for all subsequent activities of Io-CoML.

2. Discovery of species

During the course of the existence of IO-CoML, scientists from NIO discovered several new species of sandy beach mites, planktonic mysids, chaetognaths and deep sea sponges, while scientists working elsewhere in the region discovered several species of crabs, mollusks, fish, lobster and even 2 species of whales. The total number of species discovered from IO region in the last 5 years stands at 43.

This is only a conservative estimate since a large number of samples remain yet to be analyzed. For example, deep-sea samples have been collected by the Indian FORV Sagar Sampada in the last decade have only been sorted so far but several have the potential of being new to science. Besides, several species are also being “rediscovered” after their first records a century ago. For example, only yesterday (6 January 2011) Indian scientists reported on the rediscovery of the Deep Sea smoky batfish (recorded only in 1894), razor fish (recorded only in 1878) and the frog crab (described in 1933 based on a specimen collected in 1898). This is in addition to new records of the range of extension, especially with deep sea forms.

3. Barcode of marine life

IO-CoML organized the first international hands-on training on barcode of marine life at Lucknow, India in 2007 wherein about 20 scientists from India and the African countries (South Africa, Kenya and Tanzania) underwent training. This was followed by establishment of marine barcoders network, another training course in 2009, a consultative meeting at Goa in 2008, and another at Porto Novo in 2009. Two students also underwent training abroad and made presentations on their work in international meets.

So far DNA barcoding of 31 spp of deep sea shrimps, 27 spp of zooplankton and 8 spp of fresh water prawns were accomplished at regional centre of NIO at Cochin. Samples were collected from Arabian Sea, Bay of Bengal and Cochin estuary and barcoded using molecular markers targeting COI, 16S, 18S and 28S genes.
By far, this was one of the most successful programs to be implemented by IO-CoML and this continues now as an official in-house program of Centre for Marine Living Resources (CMLRE). Also see point 9.

4. Contributions to projects beyond shelf regions.

Three projects, on Continental Margins, Deep Sea and Seamounts have been of particular interest to IO-CoML, mainly because of the previous research interests of scientists from NIO (where IO-CoML was housed) and the availability of ocean-going facilities. As part of these projects, several cruises were undertaken. The interest generated is such that CMLRE plans to organize specific cruises to seamounts of IO which are even now least explored.

5. Establishment of NaGISA stations

Stations at rocky shore, sandy shore and sea grass bed were established in India and are being sampled regularly. Plans have been drawn to continue sampling these stations in the census 2020 period.

6. Student support

IO-CoML has been supportive of facilitating growth of young researchers in biodiversity. It facilitated training and participation of research students in international meetings and symposium. There has also been production of trained manpower as doctoral students. Examples:

1) Taxonomic training of Mr. Sabyasachi Sautya, Senior Research Fellow at NIO, Goa at Swedish Museum of Natural History, Stockholm, Sweden (CenSeam Mini-grant to Dr. Ingole)
2) Taxonomic training of Mr. Ravail Singh, a doctoral student from NIO, at German Center of Marine Biodiversity Research (DZMB), Wilhelmshaven (CoMARGE grant to Dr. Ingole)
3) Participation of Mr. Francis in the Asia Pacific Marien Biotechnology Conference at Seoul, S. Korea (grant from IO-CoML to Dr. Shanta Achuthankutty)

7. Contribution to microbial census

IO-CoML was aware of the importance of microbial life’s contribution to overall marine biodiversity and in order to improve the inventory, joined the pyrosequencing efforts of ICOMM by providing DNA samples from the region to this venture. IO-CoML also is involved in collection of samples for microbial life from deep sea and supporting the microbial identification system already established and in use at NIO. As part of this programme at NIO, a total of 1100 strains of marine bacteria have been isolated from various marine environments viz Arabian sea, Bay of Bengal, Pak Bay and Cochin estuary.
and identified following polyphasic technique. We also initiated barcoding of marine cyanobacteria. Future works in this area envisages the polyphasic identification of planktonic and associated microorganisms from different marine environments viz deep sea, estuaries and other extreme environments.

8. Indian Ocean OBIS

The IndOBIS, after a 2-yr successful operation, was short of funds in 2008 and was in need of securing funds from different sources to continue. At this stage, IO-CoML negotiated with the Ministry of Earth Sciences of the Government of India and has got the IndOBIS re-located at CMLRE with guaranteed open-ended financial and infrastructure (personnel, hardware) support.

9. Continuation of CoML in India

Faced with the prospect of an end to support from Sloan Foundation in 2010, IO-CoML held extensive dialogues with the Ministry of Earth Sciences of the Government of India and convinced them to take up CoML in one of their constituent laboratories, the CMLRE. The outcome of this is that the CMLRE will sustain CoML (surveys and inventories, barcode of marine life, IndOBIS and other projects as and when suggested) in India under the aegis of the Ministry of Earth Sciences. This shall be done under the banner of CoML-India, a committee that brainstorms on the challenges and opportunities in the Indian context and also builds on existing regional co-operation programs.

10. Future of OBIS

With the support from Sloan Foundation scheduled to end in 2010, the OBIS project was in dire need of financial and technical security to survive. IO-CoML took initiatives to convince the Ministry of Earth Sciences to sustain OBIS at INCOIS, another constituent laboratory of the Ministry. This was accepted and consultation between the Ministry, IOC and OBIS directorate are underway to formalize India’s support to OBIS.

2) Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?

1. In spite of the initial enthusiasm to have the activities spread and extended to as much of the IO countries as possible, the efforts finally remained confined mostly to India alone. The major cause was lack of time since the IO-CoML personnel were also serving scientists with commitments to Institutional work and could not devote full time to IO-CoML. Another reason was the difficulty in maintaining communication links.

2. Another main goal, to have the Ministry of Environment and Forests (responsible for all biodiversity-related matters in India) committed to CoML, did not materialize.
The SSC and the Secretariat were helpful at many stages, with Mr. Jesse Ausubel offering to come to India and talk to administrators. IO-CoML accepted this offer at a later stage and had members of the SSC meet the Secretary of the Ministry of Earth Sciences of the Government of India, once the latter Ministry showed inclination to continue with CoML.

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

The most successful was sensitization of scientists across the whole country and a substantial fraction of the science administrators. That is how IO-CoML was successful in getting a continuity for CoML in India.

The least successful was reaching out to general public.

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

Yes. CoML will continue under the brand name CoML-India at CMLRE with full, open-ended financial support from the Government of India. This has been already operationalized. NIO shall be closely associated with the second phase of the Census by provision of technical support, and participation in cruises and projects supported by CMLRE.

b. Is there established funding for the project after 2010? If so, how much and from what source?

Yes. With CoML having been integrated as in-house program of CMLRE, the funding, for all practical purposes, in indefinite. The latest news from CMLRE is that the Ministry has asked CMLRE to draw up a plan of work at a cost of INR 20 million (400,000 US $) for the next 2 years.

c. Who will be the main point(s) of contact post-2010?

Dr. V.N. Sanjeevan
Dr. Lokabharathi and Dr. Ingole shall continue to be contact points from NIO.

We also have plans to formally constitute the CoML-India management team which has been agreed to by the Scientific Advisory Committee of the CMLRE. We expect that NIO shall be an important member of this management team.

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2011 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

One of the reasons why IO-CoML was not able to get all IO countries involved in census was the large unequal developments in manpower capacity, institutional capacity, infrastructure capacity and funding opportunities between the nations. Not to mention political instabilities.

This was also evident in the case of another NRIC – the sub-Sahara African NRIC which finally ended up as South Africa-centered instead of getting all African nations together. The causes were the same as in IO region and I suspect this could be also the case with South American NRIC.

The problems facing marine biodiversity, however, are independent of these inequalities and hence addressing a problem in a developed country would not solve it in toto because the marine environment is a continuum. If at all every effort in solving biodiversity issues, be it a survey or a protection measure, have to succeed, then a certain degree of equality in competency and capability between interested parties has to be brought about. Only then a commitment from ALL can be secured. If not, all these efforts will remain only isolated measures.

For me, bridging this gap still remains the most serious challenge. I am aware that several initiatives are already underway, like regional co-operation programs, TEMA project of IOC-Unesco, periodic training programs, support for infrastructure development etc. These need to be augmented.
### Research Contribution to various CoML projects (2000-2010)

<table>
<thead>
<tr>
<th>Sr. no</th>
<th>Details of research paper/contribution</th>
<th>Affiliated CoML Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>No.</td>
<td>Author(s)</td>
<td>Title and Details</td>
</tr>
<tr>
<td>-----</td>
<td>-----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>10</td>
<td>Nanajkar M &amp; Ingole, B. (2010).</td>
<td>Comparison of tropical nematode community from three harbours, west coast of India. <em>Cahiers de Biologie Marine</em>, 51:9-18 (IF=0.873)</td>
</tr>
<tr>
<td>Page</td>
<td>Reference</td>
<td>Title</td>
</tr>
<tr>
<td>------</td>
<td>-----------</td>
<td>-------</td>
</tr>
<tr>
<td>33</td>
<td>Dovgal I., T. Chatterjee &amp; B. Ingole (2009) New Records of <em>Thecacinta cothurnoides</em> and <em>Trematosoma rotunda</em> (Ciliophora, Suctorea) as epibionts on nematodes from Indian Ocean. <em>Protistology – an international Journal</em>, 6 (1):19-23 (IF=0.00)</td>
<td>NaGISA</td>
</tr>
<tr>
<td>34</td>
<td>Dovgal I., T. Chatterjee B. Ingole &amp; M. Nanajkar (2008) First report of <em>Limnoricus ponticus</em> Dovgal and Lozowskij (Ciliophora, Suctorea) as epibionts on <em>Pycnophyes</em> (Kinorhyncha) from Indian Ocean with key to species of the genus <em>Limnoricus</em> CBM-Cahiers de Biologie Marine, 49 (4): 381-385 (IF=0.597)</td>
<td>NaGISA</td>
</tr>
<tr>
<td>Page</td>
<td>Reference</td>
<td></td>
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<tr>
<td>------</td>
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<td></td>
</tr>
</tbody>
</table>
**Project Title:**

**NRiC Indonesia**

National Coordinator:
Dr. Tonny Wagey

Phone: [+62] (21) 6471 4126  FAX: [+62] (21) 6471 4126  
E-mail: t.wagey@fisheries.ubc.ca

Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions  
   a. Please fill-in the total number of cruises and expeditions in 2010 only

<table>
<thead>
<tr>
<th>Number of Cruises in 2010</th>
<th>N/A</th>
</tr>
</thead>
</table>

   b. Please list the total number cruises and expeditions from Project Inception to 2010 (*please note: a. and b. together will help us most accurately update our numbers from previous years*)

<table>
<thead>
<tr>
<th>Total Number of Cruises</th>
<th>N/A</th>
</tr>
</thead>
</table>

2) Sampling Stations  
   a. Please list the total number of stations or sites sampled from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Sites Sampled</th>
<th>N/A</th>
</tr>
</thead>
</table>

   b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

3) Specimens Collected  
   a. Please list the total number of specimens collected from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Specimens Collected</th>
<th>N/A</th>
</tr>
</thead>
</table>
Final Project Report to the Census of Marine Life

b. Please list the total number voucher specimens (new species) *(Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report)*

| Total Number of Voucher Specimens | N/A |

Please note:

4) Publications

*Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)*

a. Please list the total number of publications

| Total Number of publications | - |

b. Please list the total number of books published

| Total Number of books | 1 |

c. Please list the total number of journal articles published

| Total Number of journal articles | - |

d. Please list the total number of special issues published

| Total Number of special issues | - |

5) Academic Theses

a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

| Total Number of theses | - |

b. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | - |

c. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | - |

6) Barcodes

a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | - |
b. How many different species were barcoded?

| Number of different species barcoded | - |

7) Images

a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | N/A |

b. How many different species were captured in the images?

| Number of different species captured in the images | N/A |

c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?

| Total Number of images made available to the Census? | N/A |

8) Products for the Public

a. Please list the total number and types of products created specifically for a public audience (*Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.*)

| Total Number of Outreach Products | 2 |

List the types of products here (Please add rows if necessary.):

| 1. Brochure for movie “Oceans” when it was first screened in Indonesia (in Bahasa Indonesia) |
| 2. CoML brochures for public info (in Bahasa Indonesia) |

9) Participants (*Please note: this will help us assess the completeness of the Community database.*)

a. Please list the total number of participants in your project

| Total Number of Participants | 1 |

b. From how many different countries?

| Total Number of Different Countries | 1 |

10) Meetings and workshops

a. Please list the total number of meetings and workshops organized and held from project inception to 2010

| Total Number of Meetings and Workshops | |
11) Conferences, Briefings and Speeches
   a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project
      | Total Number of Special Sessions | 2 |

   b. Please list the total number of invited briefings or speeches given by your project
      | Total Number of Invited Briefings | - |

12) Funding (*Please note: this will help us finalize our program accounting.*)
   a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

   Note: We have never received funding from other sources other from the Sloan Funds

Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes
   *Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).*
   1. Publication of the “Marine Biodiversity Review of the Arafura and Timor Sea”
   2. Participation at the screen launching of the movie “Oceans” in Jakarta

2) Please list any milestones or goals that you did not accomplish and explain why. *For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?*

   Note: we have not been able to set any milestones or a clear goal yet, as this is a fairly new project. The support from SSC members and management has been superb and greatly appreciated

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?
   1. The publication of “Marine Biodiversity Review of the Arafura and Timor Sea”

4) Plans for post-2010
   a. Are there any plans to carry forth your project post-2010? If so, what are they? 
This will be greatly dependent on funding available for 2011 and beyond towards the existence of CoML in Indonesia. However, pending on the successful on-going discussion with the “Arafura and Timor Seas Ecosystem Action” (ATSEA) a GEF-funded project, and the Australian Institute of Marine Sciences (AIMS), CoML Indonesia is planning to participate on a oceanographic cruise covering the Timor Sea. This cruise is planned for June or October 2011.

b. Is there established funding for the project after 2010? If so, how much and from what source?

Not at the moment

c. Who will be the main point(s) of contact post-2010?

Dr. Tonny Wagey (t.wagey@fisheries.ubc.ca)

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

I understand that the meeting in Nagoya took place already, however several topics and ideas that CoML Indonesia can implement including:
1. Collaboration with other regional collaborations such as: the Coral Triangle Initiative (CTI), PEMSEA, The Sulu-Sulawesi Marine Ecoregion (SSME), etc
2. One of the main threats to marine biodiversity comes from the impact of climate change and climate variability to marine ecosystem. This topic must be studied in more detailed if we want to conserve marine biodiversity in this region.
Final Project Report to the Census of Marine Life

**Project Title**

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Phone: +81(980)-50-0114  
E-mail: katsuhikot@jamstec.go.jp
Project Manager(s) Name:
Name: Naomi Mochizuki
Institute of Biogeosciences, Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
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Phone: +81(46) 867-9560 FAX: 81(46) 867-9525 E-mail: mochizukin@jamstec.go.jp

Education and Outreach Network Liaison
Name: Katsunori Fujikura
Full Mailing Address:
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Phone: +81(46) 867-9560 FAX: 81(46) 867-9525 E-mail: fujikura@jamstec.go.jp

Address of the site(s) most closely related to this effort
http://www.jamstec.go.jp/jcoml/

Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions
   a. Please fill-in the total number of cruises and expeditions in 2010 only

   - Number of Cruises in 2010: 12
   - List:
     Using the ROV Hyper-Dolphin (JAMSTEC)
     1. PI. Hiromi Watanabe (JAMSTEC), Ecology of the deep-sea chemosynthetic community in Sagami Bay and the Okinawa Trough.
     2. PI. Kenji Okoshi (Toho Univ.), Ecology of the deep-sea whale fall community in Sagami Bay.
     3. PI. Hiroshi Miyake (Kitazato Univ.), Biodiversity of the deep-sea chemosynthetic community.
     4. PI. Yoshihisa Shirayama (Kyoto Univ.), Ecology of the deep-sea sunken wood community.
     5. PI. Florence Pradillon (JAMSTEC), Deep-sea benthic animals.
     6. PI. Tomoko Yamamoto (Kagoshima Univ.), Ecology of the deep-sea whale fall community.
     7. PI. Shinji Tsuchida (JAMSTEC), Ecology of the deep-sea hydrothermal vent community.
     8. PI. Robert Jenkins (JAMSTEC), Ecology of the deep-sea methane seep community
     Using the HOV Shinkai 6500 (JAMSTEC)
9. PI. Shigeaki Kojima (Univ. of Tokyo), Ecology of the deep-sea hydrothermal vent community.

**Using the RV Yokosuka (JAMSTEC)**
10. PI. Hiroshi Kitazato (JAMSTEC), Geo-Biology of the deepest ecosystem in the Challenger deep.

**Using the RV Tansei-Maru (JAMSTEC)**
11. PI. Shigeaki Kojima (Univ. of Tokyo), Genetic diversity of the deep-sea benthic organisms.
12. PI. Shuhei Nishida (Univ. of Tokyo), CMarZ cruise.

b. Please list the total number cruises and expeditions from Project Inception to 2010 (*please note: a. and b. together will help us most accurately update our numbers from previous years*).

<table>
<thead>
<tr>
<th>Total Number of Cruises</th>
<th>&lt;list here&gt;</th>
</tr>
</thead>
</table>

2) Sampling

a. Please list the total number of stations or sites sampled from Project Inception to 2010.

<table>
<thead>
<tr>
<th>Total Number of Sites Sampled</th>
<th>&lt;list here&gt;</th>
</tr>
</thead>
</table>

b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

PI. Hiroshi Kitazato (JAMSTEC), Geo-Biology of the deepest ecosystem in the Challenger deep, Mariana Trench.

3) Specimens Collected

a. Please list the total number of specimens collected from Project Inception to 2010.

<table>
<thead>
<tr>
<th>Total Number of Specimens Collected</th>
<th>&lt;list here&gt;</th>
</tr>
</thead>
</table>

b. Please list the total number voucher specimens (new species) (*Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report*).

- Total Number of Voucher Specimens: 8
- List here:
  1. Trachymedusae: Rhopalonematidae: *Voragonema tatsunoko*
  2. Nemertea: Hoplonemertea: *Dinonemertes shinkaii*
  3. Crustacea: Decapoda: *Periclimenes cannaphilus*
  4. Gastropoda: *Anatoma fujikurai*
5. Hexacorallia: Zoantharia: *Terrazoanthus onoi*
6. Hexacorallia: Zoantharia: *Terrazoanthus sinnigeri*
7. Hexacorallia: Zoantharia: *Antipathozoanthus hickmani*
8. Hexacorallia: Zoantharia: *Antipathes galapagensis*

c. Please list the total number or percentage of specimens not yet identified/analyzed

| Total Number or % of Specimens not yet analyzed | <list here> |

4) Publications

*Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)*

a. Please list the total number of publications

- Total Number of publications: 19 + others

- List

18. Japan: Marine Biodiversity Hot Spot. Fuji TV.
+ others
b. Please list the total number of books published

c. Please list the total number of journal articles published

-Total Number of publications: 28

-List


13. Lindsay, D.J., and Minemizu, R. 2010. First record of *Sphaeronectes fragilis* Carré 1968 (Siphonophorae, Calycophorae) from the North Pacific Ocean with observations of related species. Plankton and Benthos Research. in press.


d. Please list the total number of special issues published
- Total Number of special issues: 2
- List:

5) Academic Theses
a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010
b.  

| Total Number of theses | <list here> |
c. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | <list here> |


d. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | <list here> |

6) Barcodes
a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | <list here> |

b. How many different species were barcoded

| Number of different species barcoded | <list here> |

7) Images
a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | <list here> |

b. How many different species were captured in the images?

| Number of different species captured in the images | <list here> |

c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?

| Total Number of images made available to the Census? | <list here> |

8) Products for the Public
a. Please list the total number and types of products created specifically for a public audience. *(Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)*

- Total Number of Outreach Products: 1
- List the types of products here (Please add rows if necessary.):

| Website | http://www.jamstec.go.jp/jcoml/ |
9) Participants (*Please note: this will help us assess the completeness of the Community database.*)
   a. Please list the total number of participants in your project
      -Total Number of Participants: 18
      -List
        1. Aoyama, Horoshi (NaGISA), Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University
        2. Fujikura, Katsunori (NRICs, OBIS), Institute of Biogeosciences (BioGeos), Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
        3. Fujiwara, Yoshihiro (ChEss) BioGeos/JAMSTEC
        4. Furushima, Yasuo (OBIS) BioGeos/JAMSTEC
        5. Harada, Hyakubun (NaGISA), Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University
        6. Horikoshi, Koki (ICoMM) BioGeos/JAMSTEC
        7. Kitazato, Hiroshi (CoMARGE) BioGeos/JAMSTEC
        8. Kogure, Kazuhiro (ICoMM) Atmosphere and Ocean Research Institute, University of Tokyo
        9. Lindsay, Dhugal J. (CMarZ) BioGeos/JAMSTEC
       10. Matsuda, Hiroyuki (FMAP) Faculty of Environment and Information Sciences, Yokohama National University
       11. Miya, Masaki (MAR-ECO) Natural History Museum and Institute, Chiba
       12. Mochizuki, Naomi (Website) BioGeos/JAMSTEC
       14. Nishida, Shuhei (CMarZ) Atmosphere and Ocean Research Institute, University of Tokyo
       15. Shirayama, Yoshihisa (SSC, NaGISA) Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University
       16. Tanaka, Katsuhiko (OBIS) Global Oceanographic Data Center (GODAC), / JAMSTEC
       17. Tsuchida, Shinji (CenSeam/OBIS) BioGeos/JAMSTEC
       18. Yamamoto, Hiroyuki (OBIS) BioGeos/JAMSTEC

   b. From how many different countries?
      -Total Number of Different Countries: 1
      -List: Japan
10) Meetings and workshops
a. Please list the total number of meetings and workshops organized and held from project inception to 2010

| Total Number of Meetings and Workshops | <list here> |

- Total Number of Meetings and Workshops: 3
- List:
  1. OCEANS (Movie) symposium
  2. CoML activities by Japan NRICs in the Side event of the CBD/COP10
  3. Marine Biodiversity Seminar in the Kanagawa Prefectural Museum of Natural History

11) Conferences, Briefings and Speeches
a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project

| Total Number of Special Sessions | <list here> |

b. Please list the total number of invited briefings or speeches given by your project

- Total Number of Invited Briefings: 5
- List:

12) Funding (Please note: this will help us finalize our program accounting.)
a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes
Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).

1. Accumulation of species richness baseline data in Japanese water:
   Stakeholders in Japan understand outstanding species richness in Japanese waters.

2. Contribution to progress for marine biology in Japan due to species richness baseline data

3. The Biological Information System for Marine Life, in short, BISMaL, is a web-based database constructed. This is Japan OBIS Node.

4. We have constructed good domestic and international marine biologists network.

5. New marine ecosystems and diversity project in Japan will be started from 2011 due to CoML activities. It is Global Environment Research Fund by Japanese Government.

6. Contribution for CBD/COP10

2) Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

   1. We are organizing marine biodiversity project, namely “Estimation and monitoring for marine biodiversity and ecosystems change in Japan region”.
   2. Operating of the database, BISMaL: Biological Information System for Marine Life, which is OBIS Japan Node.
   3. Participating in the INDEEP.

b. Is there established funding for the project after 2010? If so, how much and from what source?
Final Project Report to the Census of Marine Life

$720,000

c. Who will be the main point(s) of contact post-2010?

Name: Katsunori Fujikura
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2-15 Natsushima, Yokosuka, Kanagawa 237-0061 JAPAN
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Name: Yoshihisa Shirayama (SSC, NaGISA)
Full Mailing Address: Seto Marine Biological Laboratory, Field Science Education and Research Center, Kyoto University
459 Shirahama, Nishimuro, Wakayama, 649-2211 JAPAN
Phone: +81(739)-42-3515    E-mail: meiobenthos2007@yahoo.co.jp

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

To understand ecosystem function, we have to investigate species interaction including trophic level and food web.
Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions
   Total: 3
   II CPR Antarctic Brazilian Cruise (January 2010)
   II CPR Antarctic Chilean Brazilian Cruise (March 2010)
   CPR Training off Brazilian shelf (May 2010)

2) Sampling Stations
   Non available information in NRIC. Please refer to Project leaders.

3) Specimens Collected
   Non available information in NRIC. Please refer to Project leaders.

4) Publications
   Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)

   a. Please list the total number of publications
      Non available information in NRIC. Please refer to Project leaders.

   b. Please list the total number of books published

c. Please list the total number of journal articles published
   No more available information in NRIC. Please refer to Project leaders.

d. Please list the total number of special issues published
   Special Issue from the ASAI Meeting in Oecologia Australis. A set of 18 manuscripts are in the editing process.

5) Academic Theses
   a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010
      Non available information in NRIC. Please refer to Project leaders.

   b. Please list the total number of Masters theses written from project inception to 2010
      Non available information in NRIC. Please refer to Project leaders.

   c. Please list the total number of PhD theses written from project inception to 2010.
      Non available information in NRIC. Please refer to Project leaders.

6) Barcodes
   a. Please list the total number of barcodes recorded in your project
      The Barcode Initiative was mainly focused on FishBOL, and it is particularly developing for Souther South Western Atlantic Ocean. Currently SWA barcoded species are 142. Estimates of the following numbers will be about 200 species in the Atlantic, and a few representations in the Pacific (ca. 50).

7) Images
   a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)
      This should be referred directly to the information available for each project (NAGISA, CAML, FishBOL, ICoMM)

   b. How many different species were captured in the images?
      Non available information.
c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?
   About 30.

8) Products for the Public
   “Antarctic Benthic Organisms at Admiralty Bay, King George Island”. Video produced by Drs Petti (Universidade de Sao Paulo) y Campos (Universidade federal do Rio de Janeiro).
   “Oceans” official launch in Brazil and Argentina, hosted by Drs Campos and Pechaszadeh respectively.

9) Participants (Please note: this will help us assess the completeness of the Community database.)
   a. Please list the total number of participants in your project.
      Not a definitive number, but circa 200. This number fluctuates in relation to the different project participation. The personnel listed in the COML database are only country/project liasons.
   b. From how many different countries?
      Nine (French Guiana, Brazil, Uruguay, Argentina, Chile, Perú, Ecuador, Colombia and Venezuela)

10) Meetings and workshops
    a. Please list the total number of meetings and workshops organized and held from project inception to 2010

    El Programa Mundial Censo de la Vida Marina y la Contribución de Chile a una Década de Descubrimientos. (Universidad de Concepción, Chile, November 2010).
    Organized by Drs Gallardo and Espinoza.

11) Conferences, Briefings and Speeches
    a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project

    Special Session Advances in Marine Microbial Diversity and Dynamics in Latin America and the Caribbean. Conveners: Luis Felipe Artigas (Université du Littoral Côte d’Opale, France), Ernesto Otero (University of Puerto Rico Mayagüez) and Rodolfo Paranhos (Universidade Federal do Rio de Janeiro, Brazil). ASLO Science Meeting, February 2011.
b. Please list the total number of invited briefings or speeches given by your project:

*World Ocean Network Meeting* (Boulogne sur Mer, France, May 2010). Dr. Felipe Artigas.

*IV Brazilian Congress on Oceanography* (CBO) (Rio Grande, Brazil, May 2010). Drs Campos and Bassoi.

*Brazilian National Week for Science and Technology* (Natal, Brazil, July 2010). Dr. Campos.

*XXXI SCAR Open Science Conference* (Buenos Aires, Argentina, September 2010). Several LA CAML Researchers.

12) Funding (*Please note: this will help us finalize our program accounting.*)

No new funding lines were applied for 2010. The National Research Council of Argentina created a new Barcode Grants line, with currently 40 researchers funded in several groups. Specifically for marine Life, a new center will be funded in Universidad Nacional de Mar del Plata. Antarctic Research funds are continuously being received by the national agencies/Antarctic institutions.

**Part 2: Reflecting on your project & the Census of Marine Life: Narrative section**

1) **Outcomes**

*Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).*

a) A strong implementation of regional cooperation networks: CoML has greatly favored the establishment of topical regional network. The basis of these networks were the CoML projects, particularly the case of CAML, ICoMM and NAGISA.

b) The establishment of the first fully operative marine biogeographical information system, as part of the OBIS network: The South American implementation of the OBIS nodes not only increased the world available information from South America, but also focused on the importance of web-based biodiversity information. As a consequence of these, several national initiatives began to work in coordination with OBIS and contributed to the nodes funding. This was very important in the case of data mining.

c) Joint regional fieldwork coordination: CoML worked as a platform of opportunity to begin jointly organized fieldwork. This was particularly evident in the case of Antarctica, coastal areas and microbe research. For the first time South American Antarctic research vessels worked with regional teams sharing sampling stations and gear.

d) A regional integration into global marine research initiatives: Some CoML generated initiatives tackled challenging ecosystems (i.e. deep sea) or methods (i.e. barcoding) that would have been very difficult to address in South America.
without the integration into a worldwide framework. That is the case of deep sea projects, with the integration of some countries like Brazil and Chile. Barcoding is also a challenging subject, and there was also a very active integration of some countries like Argentina.

2) Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?

The two main activities that were much less developed than research were the education and outreach branch and the interaction with policy makers. The main cause was basically the few interest found in many countries, and the lack of commitment of some country representatives. This led to lack a real estimation of the products needed in each region, and also the governmental involvement in this type of initiatives. Some exceptions were Brazil, Chile, Venezuela and Argentina, that have taken the advantage of some previous governmental liaisons to reinforce the main philosophy of the CoML.

3) What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?

The most successful were the material produced by OLA-CAML and the Patagonian Biodiversity information produced in the NAGISA project.

4) Plans for post-2010

a. Are there any plans to carry forth your project post-2010? If so, what are they?

The general idea is to maintain the regional interaction originated via CoML, but with not now a clear idea of how to proceed. It needs to be discussed if a regional committee is needed, or if the topical networks established should continue working independently.

b. Is there established funding for the project after 2010? If so, how much and from what source?

No.

c. Who will be the main point(s) of contact post-2010?

Tentatively the Chair and Vicechair.
d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

Out of date?
Part 1: By the Numbers: Project Totals

1) Cruises & Expeditions
   a. Please fill-in the total number of cruises and expeditions in 2010 only

<table>
<thead>
<tr>
<th>Number of Cruises in 2010</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
b. Please list the total number cruises and expeditions from Project Inception to 2010 (*please note: a. and b. together will help us most accurately update our numbers from previous years*)

<table>
<thead>
<tr>
<th>Total Number of Cruises</th>
<th>N/A</th>
</tr>
</thead>
</table>

2) Sampling Stations
   a. Please list the total number of stations or sites sampled from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Sites Sampled</th>
<th>N/A</th>
</tr>
</thead>
</table>

   b. Please note any exceptional records your project accomplished through its sampling sites, such as deepest, hottest, densest, etc.

   N/A

3) Specimens Collected
   a. Please list the total number of specimens collected from Project Inception to 2010

<table>
<thead>
<tr>
<th>Total Number of Specimens Collected</th>
<th>N/A</th>
</tr>
</thead>
</table>

   b. Please list the total number voucher specimens (new species) (*Please note: if there are updates to the lists of individual new species names provided to the Secretariat in April 2010, please attach to this report*)

<table>
<thead>
<tr>
<th>Total Number of Voucher Specimens</th>
<th>N/A</th>
</tr>
</thead>
</table>

   c. Please list the total number or percentage of specimens not yet identified/analyzed

<table>
<thead>
<tr>
<th>Total Number or % of Specimens not yet analyzed</th>
<th>N/A</th>
</tr>
</thead>
</table>

4) Publications

*Please note how many publications in each category and clarify whether they are accounted for in part (a) total number of publications. (Please note: this will help us determine the completeness of the bibliographic database.)*

   a. Please list the total number of publications
      (Accounts for all Publications, including those counted in the categories below)

<table>
<thead>
<tr>
<th>Total Number of publications</th>
<th>6</th>
</tr>
</thead>
</table>

   b. Please list the total number of books published

<table>
<thead>
<tr>
<th>Total Number of books</th>
<th>0</th>
</tr>
</thead>
</table>
Final Project Report to the Census of Marine Life

c. Please list the total number of journal articles published

| Total Number of journal articles | 2 |

d. Please list the total number of special issues published

| Total Number of special issues | 0 |

5) Academic Theses
   a. Please list the total number of theses published (includes both Masters and PhD) written from project inception to 2010

| Total Number of theses | N/A |

   b. Please list the total number of Masters theses written from project inception to 2010

| Total Number of master theses only | N/A |

   c. Please list the total number of PhD theses written from project inception to 2010

| Total Number of PhD theses only | N/A |

6) Barcodes
   a. Please list the total number of barcodes recorded in your project

| Total Number of Barcodes Recorded | N/A |

   b. How many different species were barcoded?

| Number of different species barcoded | N/A |

7) Images
   a. Please list the total (or estimated) number of images captured by your project. Please note the numbers of different types of imagery (technologies, scientists at work, organisms, etc.)

| Total Number of Images Captured | N/A |

   b. How many different species were captured in the images?

| Number of different species captured in the images | N/A |

   c. How many of these have been made available to Census for use in Press Releases, slideshows, exhibits, etc.?

| Total Number of images made available to the Census? | N/A |

8) Products for the Public
   a. Please list the total number and types of products created specifically for a public audience (Please include YouTube pages, Facebook pages, Twitter, websites, videos, tutorials, etc.)

   Total: 3
List the types of products here (Please add rows if necessary.):

| Total Number of Outreach Products | <list here> |

- CoML.US website ([http://coml.us/](http://coml.us/))

9) Participants *(Please note: this will help us assess the completeness of the Community database.)*

   a. Please list the total number of participants in your project

   | Total Number of Committee members (plus ex-officio) current | 19 |
   | Total Number of Committee members since 2000 | 26 |
   | Total number of participants, including workshops | 164 |

   b. From how many different countries?

   | Total Number of Different Countries | 3 |

10) Meetings and workshops

   a. Please list the total number of meetings and workshops organized and held from project inception to 2010

   | Total Number of Meetings and Workshops | 20 |

11) Conferences, Briefings and Speeches

   a. Please list the total number of special sessions (note: not individual presentations) at conferences given by your project

   | Total Number of Special Sessions |

   b. Please list the total number of invited briefings or speeches given by your project

   | Total Number of Invited Briefings |

12) Funding *(Please note: this will help us finalize our program accounting.)*
Final Project Report to the Census of Marine Life

a. Please list the total number of total amount of funding received (other than the Sloan funds) from inception to date. Please provide a breakdown (funds since last report in August 2009) in the attached spreadsheet.

$3,926,861 total funds since inception, including Sloan funds
$1,990,000 funds since inception from Sloan
$1,936,861 funds since inception from OTHER sources

Part 2: Reflecting on your project & the Census of Marine Life: Narrative section

1) Outcomes
   Please list and briefly describe your project’s most important outcomes (up to 10 outcomes).
   b) The development and funding of OBIS-USA. Officially launched and funded in 2007, OBIS-USA now includes over 6.5 million records and has increased its funding level each year, reaching 365K for 2011.
   c) The USNC sponsored workshop titled “Approaches for Researching the Roles of Marine and Coastal Biodiversity in Maintaining Ecosystem Services.” The workshop resulted in a report and the article “Managing for ocean biodiversity to sustain marine ecosystem services” in the journal Frontiers in Ecology and the Environment. This article was the basis for the development of a U.S. interagency biodiversity group that meets on a quarterly basis and continues as a driving force behind future biodiversity efforts within the U.S.
   d) The NOAA Seminar Series (http://explore.noaa.gov/special-projects/CoML). The 21 part series of presentations at NOAA included briefings about every Census project, OBIS, DNA barcoding, the Gulf of Mexico Affiliated Project, the Canadian and U.S. NRICs, and the Ocean Tracking Network.
   e) The development and dissemination of a Code of Conduct for responsible scientific collection - http://coml.us/responsible-science/code-of-conduct/. The code was subsequently approved by the SSC and distributed to the entire CoML community during the 2007 All-Program meeting in New Zealand.
   f) The Gulf of Mexico Affiliated Project, led by USNC Vice-Chair Wes Tunnell, and the project’s groundbreaking book entitled Gulf of Mexico-Origin, Waters, and Biota: Volume 1, Biodiversity (2009).
   g) Multiple inclusions of the term “biological diversity” in the White House’s Council on Environmental Quality’s Final Recommendations Of The Interagency Ocean Policy Task Force, which came out on July, 19, 2010. The report outlines the future direction of the nation’s ocean policy.
   h) The workshop to establish the U.S. program priorities in 2003 (http://coml.us/about/workshops/), which provided a number of key outcomes, including recommendations for a Gulf of Mexico pilot project, the creation of
the Arctic/Antarctic and coral (deep and shallow) components, and projects exploring plankton, Archaea/Bacteria and Protists.

2) **Please list any milestones or goals that you did not accomplish and explain why. For each, please list what your major obstacles were (if any) and if the Census, SSC, Secretariat, E&O, Synthesis Group have been more helpful?**

The USNC set out to complete an assessment of new and developing technologies employed by Census researchers and the marine biology community in order to develop recommendations on responsible use of technology and ways to mitigate potentially harmful consequences. A working group was established with the goal of holding a workshop and producing a workshop report and submitting an article to a high profile journal. Despite our best efforts, we were unable to motivate the working group to spend the time and effort needed to complete this topic in a thorough manner. Higher priority syntheses efforts of the USNC, such as completion of the PLoS ONE chapter, took more time and resources than originally anticipated, leaving little time for the completion of the ethics project. We don’t believe there was anything the Census community could have done to help this push the effort forward, considering the growing time constraints of the USNC members over the last year and a half.

3) **What do you feel were your project’s most successful education and outreach endeavors? Which were your least successful?**

The most successful USNC education and outreach endeavors were the USNC quarterly newsletter, with a number of pages in each issue set aside for promoting marine science education efforts, and the USNC partnership with the National Ocean Science Bowl (NOSB), which culminated in a biodiversity theme for the 2009 NOSB final competition. Also, numerous Census scientists submitted biodiversity- and Census-themed questions for the 2009 competition.

The least successful endeavor was the USNC education workshop, held in conjunction with the National Ocean and Atmospheric Administration’s (NOAA) Ocean Exploration and Research Program. The goal of the workshop was to facilitate discussion and obtain feedback from a variety of education specialists and experts and provide a forum to explore a means in which to bring the CoML field research into the classroom through useful “real world” content and activities to support *Ocean Literacy: Essential Principles and Fundamental Concepts*. The objectives of the workshop included: 1) gathering community input for a Census-based education component; 2) determining the best means of integrating Census into high level national ocean literacy efforts; and 3) determining the target audience (age group) for any educational materials. Though the workshop was successful in developing a number of ideas and possible educational directions, the USNC was never able to generate the funding to follow through on any of the workshop recommendations.
4) Plans for post-2010

 a. Are there any plans to carry forth your project post-2010? If so, what are they?

The USNC is still completing two distinct essays. The first essay focuses on the role of OBIS within the U.S. and describes the unique challenges OBIS faces working with a vast and complex array of stakeholders, each eager to share data, but also dealing with individual internal priorities and constraints on time and resources. The second essay is a set of reflections from the perspective of the USNC on the entire Census effort. The USNC anticipates completing both of these efforts over the next six months. There are no other immediate plans for the USNC at this time.

 b. Is there established funding for the project after 2010? If so, how much and from what source?

Beyond 2010, there are six months of limited funding from the National Oceanic and Atmospheric Administration. This award runs through June 30, 2011 and as of January 1, 2011 there remains approximately 100K USD.

c. Who will be the main point(s) of contact post-2010?

Michael G. Feldman
Consortium for Ocean Leadership
1201 New York Avenue, NW, 4th Floor
Washington, DC 20005 USA

Phone: (202) 425-2544
E-mail: mfeldman@OceanLeadership.org

d. The Census Secretariat is planning a community workshop during the World Conference on Marine Biodiversity in September 2010 with the goal of developing a list of recommendations for implementing global marine biodiversity research into the future. What topics would you like to discuss in this forum? What do you think are the biggest questions and/or challenges still facing this community that should be addressed in this forum?

One of the greatest accomplishments of Census was the ability to measure what lived in a particular area during a specific period of time. A significant next step is how to regularly monitor biodiversity, not just through a collection of snapshots. At the forum, it would be valuable to hold a discussion on how to regularly monitor biodiversity, including what tools, techniques, and technology might be required, and what major logistical and financial hurdles exist.
Related to the above point, Census worked to establish the world’s first global baseline, but further work on establishing regional baselines is a major challenge going forward. For example, the new U.S. National Ocean Policy calls for in-depth regional analyses of biodiversity. Increased region-specific research and exploration could be an effective approach for biodiversity research in the future. It could serve as a way to build upon Census findings, such as the *Regional Comparisons of Global Issues* collection in PLoS ONE.

A major question that should be addressed during the September 2011 forum is ‘Where will the next generation of community leaders come from’? Who is willing and able to rally the marine science community in a similar spirit of scientific collaboration as the Census was able to achieve?