

# CIAC Newsletter

Issue 1, January 2010

## Editorial

Louise Allcock

The Cephalopod International Advisory Council (CIAC) is the society of the cephalopod international scientific community and the newsletter was initiated to facilitate communication within the community. Between 1985 and 1993, the newsletter was produced regularly, but a move away from hard copy and then to an informal discussion list has

unintentionally led to decreased communication. As the current 'guardian' of the informal discussion list (fastmoll@jiscmail.ac.uk), it falls to me to kickstart the newsletter. I joined the cephalopod community in '93 - just too late to ever receive one of the original newsletters. Perhaps this is a good thing - since I am unhindered by preconceptions - but it may also mean that this first issue does not completely fulfill the ambitions of our CIAC founders. However,

the newsletter can evolve, and I welcome feedback and suggestions for the next issue (Summer 2010). I would like to thank all of you who have contributed articles and information for your help in producing this first issue. Particular thanks to Vlad Laptikhovskiy who provided an extensive selection of photos from Vigo (see page 11) and a photo credit to Steve Lodefink whose picture of octopus suckers adorns the newsletter margin!

## From the CIAC President

Graham Pierce

Welcome to the first CIAC newsletter in, well, a very long time. I hope you will find the time to read it, and that you find it interesting and/or useful! A regular newsletter was one of the things the founders of CIAC decided that they should do and I think it is pertinent to ask what else CIAC is/should be doing. According to our bye-laws, "the aims of CIAC are to stimulate, accelerate and influence the direction of cephalopod research, to provide help and advice on aspects of cephalopod biology, including those relevant to the management of the increasingly important cephalopod fisheries and to spread information on past and current research".

I think one change that will enable CIAC to do these things and, above all, to represent the views of the "cephalopod community" is to

become a membership-based society. As those of you at the last conference will know, the Council will vote at its next meeting on a proposal for such a change. A membership-based

society could take many forms but I think the key point, which must precede anything else, is that a membership is defined and that it is able to elect members of Council.



**Graham Pierce (right) dissects an *Ommastrephes bartrami* specimen with Angel Guerra**

CIAC is certainly not the only grouping of cephalopod researchers in the world, as is evidenced by the fact that there are two upcoming cephalopod conferences this year, the first (the International Cephalopod Fishery Symposium) in May in Zhoushan, China, and the second (International Symposium on Cephalopods Present and Past) in August-September in Dijon, France. It would be nice to think that CIAC could ultimately grow to represent all branches of cephalopod research.

Please take the time to send in your views on the proposed change and about what you think CIAC could/should do.

Best wishes for 2010.

Graham Pierce

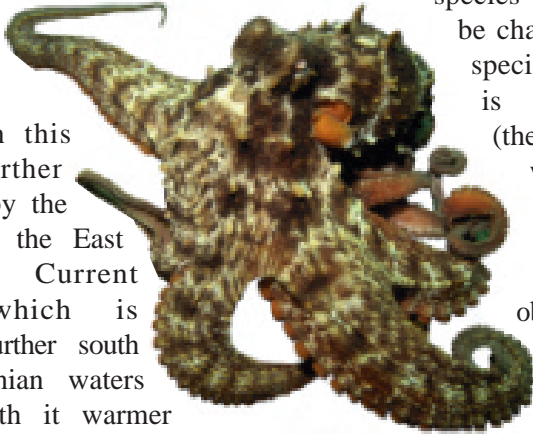
# News & Projects

## Cephalopods on the move in Tassie!

Greta Pecl

The east coast of Tasmania is a climate change 'hotspot' with recent increases in ocean temperatures 3.8 times the global average.

The underlying ocean warming in this area is further intensified by the presence of the East Australian Current (EAC), which is extending further south into Tasmanian waters bringing with it warmer northern sub-tropical waters. This has resulted in several dozen range extensions as species shift poleward to avoid the warming waters of their usual habitats. However, capturing species range shifts can be difficult due to a scarcity of marine monitoring programs and the often short time frames of such studies. In response, Tasmania has launched a website-based project called Redmap (Range Extension Database and Mapping project) that invites the 120,000 recreational fishers in Tassie, along with scuba



divers, commercial fishers and scientists, to log species that are uncommon in waters demonstrating, in time, how species distributions may be changing. One of the species being 'tracked' is *Octopus tetricus* (the gloomy octopus) which is common in mainland Australia, and is now being observed in northern Tasmanian waters for the first time.

If you're interested

in finding out what's on the move in the fastest warming region in the southern hemisphere, sign up at [www.redmap.org.au](http://www.redmap.org.au) for our quarterly newsletter. More cephalopods will be added to the Redmap species list over

the next year.

In Tasmania we also have some preliminary evidence to suggest potential increases in abundance in another Tasmanian octopus species, *Octopus maorum*, that might be related to climate change (see <http://www.climatechange.gov.au/publications/coastline/east-coast-rock-lobster.aspx>). This could also be a function of increased activity as a function of temperature increases but it is a trend we are exploring further as the maori octopus is a major predator of Tasmania's second most important fishery species, the southern rock lobster.



## Ethological Conference

Jennifer Mather

Cephalopods were featured at the 31st International Ethological Conference, held in Rennes, France in August of 2009. There were two symposia on Cephalopod Behaviour, organized by Anne-Sophie Darmaillacq, Ludovic Dickel, Yuzuru Ikeda and Nadav Shashar. Presenters were Roger Hanlon, Benny Hochner, David Edelman, Jennifer Mather, Jean Boal, Nadav Shashar, Sarah Zylinski and Yuzuru Ikeda. In addition there were several

individuals presenting on cephalopod behaviour, including A. Arnett, J. Boal, L. Cartron, S. Chikatosi, M. Guibe, J. Holm, Y. Iwata, C. Jozet-Alves, S. Kobayashi, C. Talbot and S. Zylinski.

## Special Issue

Giambattista Bello

The December 2009 supplement to the *Bollettino Malacologico*, the official journal of the Società Italiana di Malacologia (Italian Malacological Society), is dedicated to the late Vinicio Biagi, an active member of the Society and amateur

teuthologist. Edited by G. Bello, S.v. Boletzky, and R. La Perna, this special issue is entitled Contributions to Mediterranean teuthology - In memory of Vinicio Biagi.

### Index to the issue

- Bello & La Perna - Foreword.
- Bello & Boletzky - In honour of Vinicio Biagi (1936-2004).
- Capua - In memoriam. Vinicio Biagi (1936-2004).
- Villari & Ammendolia - On a beached specimen of *Octopoteuthis sicula* (Cephalopoda: Octopoteuthidae) in the Strait of Messina.
- Orsi Relini - Notes about colour displays observed in female specimens of *Tremoctopus* (Cephalopoda: Octopoda)

# Cephalopod Project - Brazil

Tatiana Leite

and their taxonomic value.  
Sartor & Belcari - *Opisthoteuthis calypso* (Cephalopoda: Octopoda) collected on bathyal bottoms of the northern Tyrrhenian Sea (western Mediterranean).  
Capua *et al.* - On a large specimen of *Histioteuthis bonnellii* (Cephalopoda: Histioteuthidae) caught in the northern Tyrrhenian Sea, western Mediterranean.  
Orsi Relini *et al.* - First record of an egg mass of *Loligo forbesi* (Cephalopoda: Loliginidae) in the Ligurian Sea, with notes about egg laying patterns in southern populations.  
Biagi & Bello - Occurrence of an egg mass of *Thysanoteuthis rhombus* (Cephalopoda: Teuthida) in the Strait of Messina (Italy), locus typicus of the species.  
Boletzky - Records of cephalopod eggs and embryos: what do we need?  
Sanchez - One century of teuthological records from the Catalan Sea.  
Salman - Cephalopod research in the eastern Mediterranean (East of 23°E): a review.  
Ciavaglia & Manfredi - Distribution and some biological aspects of cephalopods in the North and Central Adriatic.  
Balducci & Piccinetti - Distribution of juvenile cephalopods collected during a survey on tuna larvae in the Mediterranean Sea (1994).  
Voliani *et al.* - An updated review of the occurrence of *Bathypolypus sponsalis* (Cephalopoda: Octopodidae) in the Italian seas and notes on its distribution in the Mediterranean.  
Deickert - Reproductive mode in the genus *Sepietta* (Cephalopoda: Sepiolidae).  
Laptikhovsky *et al.* - A habitat-dependence in reproductive strategies of cephalopods and pelagophile fish in the Mediterranean Sea.  
Cuccu *et al.* - On the abundance and spatial distribution of *Illex coindetii* (Cephalopoda: Ommastrephidae) and *Eledone moschata* (Cephalopoda: Octopodidae) in the Sardinian Seas...

Jereb & Agnesi - Current state of knowledge on exploited cephalopods in Italian waters.

Copies may be ordered for €30 inc. postage from Dr. Paolo Crovato, Technical Editor, email: paolo.crovato@fastwebnet.it.



Our project focuses on the systematics, taxonomy, ecology and behaviour of cephalopods in the Northeast of Brazil, including the oceanic islands of the South Atlantic and North.

Because it is developing studies in conservation areas and areas of economic and scientific interest, the project has the support of the Brazilian Institute of Environment Natural Resources (IBAMA), ICMBio, the Interministerial Commission for Sea Resources (CIRM - Navy Brazil), Administration of Fernando de Noronha, Federal University of Rio Grande do Norte (UFRN) and Federal University of Rio Grande (FURG), which facilitates access and progress of research in ocean areas.

Cephalopods researchers from other Brazilian universities and from abroad, such as Dr. Jennifer Mather, University of Lethbridge, Canada, and Dr. Roland Anderson, USA are also contributing to the project.

The main objectives are to:

1. Identify the species of cephalopods that occur in coastal and oceanic islands in Northeast Brazil;
2. Make a database on species identification;
3. Get information about the ecology, biology and behaviour of species of cephalopods in the region;
4. Assess the impact of fishing on populations, outline the state of conservation and develop sustainable management plans;
5. Trace the local populations, aspects of the biology and ecology, thus underscoring the importance of conservation.

Results so far include

the description of a new octopus species – *Octopus insularis* Leite & Haimovici, 2008

*Octopus insularis* was described from material collected in shallow equatorial waters around the oceanic islands of Fernando de Noronha Archipelago, Rocas Atoll, St Peter and St Paul Archipelago, and the mainland of northeastern Brazil (Leite *et al.*, 2008). This



species is commercially important and accounts for a large percentage of octopus fisheries from Para (01° 28'N, 48° 29'W) to Bahia States (12° 56'N, 38° 31'W) in Brazil.

*Octopus insularis* differs both morphologically and genetically from *Octopus vulgaris* in the Mediterranean, Venezuela and Southern Brazil. It has relatively short and stout arms, rugose reddish brown skin in preserved specimens, 8 to 11 gill lamellae on the outer demibranchs, small ligula, characteristic symmetrical radula, spermatophore and beak, small eggs and high fecundity (213000 oocytes under 1.5 mm diameter) (see more in Leite *et al.*, 2008, Journal of Molluscan Studies; and Leite & Mather, 2008, American Malacological Bulletin).

For more information contact Dra. Tatiana Leite, Post-doc - Oceanography Dept. – UFRN Telephone: +55 (84) 3342-4963, email: leite\_ts@yahoo.com.br or see the project website at www.projeto-cephalopoda.webnode.com.

# Cephalopod Cookbook & other projects

Mandy Reid

I am a cephalopod taxonomist based in Wollongong, Australia. I am currently primarily working on:

- a revision of the Australian Sepiolidae, Idiosepiidae and Sepiadariidae

There are many specimens belonging to these three families in Australian museum collections that are yet to be described. This work is being funded by ABRIS (the Australian Biological Resources Study).

- a book 'The Cephalopods of Australia: including subantarctic

waters'

This book is to be published by CSIRO Publishing, Melbourne and is due for completion in January 2013. It aims to bring together everything known, if possible, about species occurring in Australian waters. I am currently sourcing images for the book, so if anyone has images they are able to contribute, I would be grateful if they could contact me on [mandy.reid@skymesh.com.au](mailto:mandy.reid@skymesh.com.au).

- a review of *Rossia pacifica*

With collaborators Eric Hochberg and Luke Pedersen we are trying to make sense of the *R. pacifica* species complex.

On hold, but certainly not forgotten, is the publication of a cephalopod cookbook. Many

CIAC members have contributed some fabulous recipes since CIAC Hobart 2006. I have not yet been able to secure a publisher and am contemplating a web publication. All I need is time.

I am a bit frustrated in that I am working full time in a totally unrelated area at Wollongong University, so I am working on the above projects in my 'spare' time, which makes my progress very slow.

I would like to wish everyone a happy New Year and all the best for 2010.

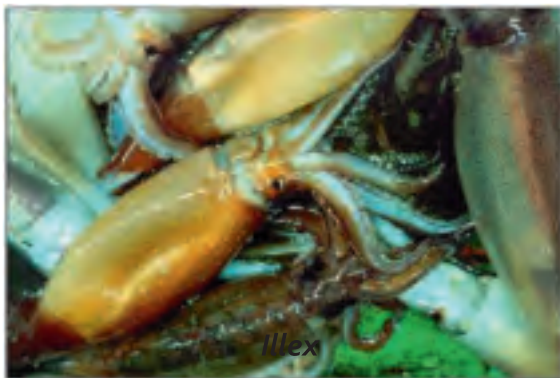
Cheers, Mandy

Amanda (Mandy) Reid (Dr), 6 Sturt Place, Bulli NSW 2156, Australia. Ph: +61 2 4285 2613. Email: [mandy.reid@skymesh.com.au](mailto:mandy.reid@skymesh.com.au)

## Evolution of Ommastrephidae and Onychoteuthidae

Vlad Laptikhovskiy and Jan Strugnell

The modern oceanic nekton is a young ecological group with its cephalopod fraction formed only during the Neogene. Its evolution proceeded from original coastal



habitats to the offshore pelagic realm of the open ocean beyond continental slopes (Nesis, 1978). The most abundant nektonic oceanic squid families in this new environment are Gonatidae, Ommastrephidae and Onychoteuthidae.

Gonatidae likely appeared in the north Pacific and later penetrated into North Atlantic and subpolar waters of the Southern hemisphere where they are very abundant though not diverse (Lindgren *et al.*, 2005). However, the family never invaded pelagic waters between the tropics of Cancer and Capricorn.

In contrast to this, two other families manage to occupy the epipelagic trophic waters of all oceans. General patterns of evolution of Ommastrephidae are more or less clear (Nigmatullin, 1979, 2007). The most primitive genus *Illex* (no seminal receptacles, no photophores, aberrant spermatozoa) occurs in neritic waters of the Atlantic Ocean, whereas more advanced Todarodinae and Todaropsinae (seminal receptacles, no photophores, normal spermatozoa) occupy neritic-oceanic waters of all oceans. Next in the progressive ommastrephid nektonisation are the neritic-oceanic to oceanic Ornithoteuthinae and Ommastrephinae (with seminal receptacles and photophores). Then the most advanced genera morphologically are *Hyaloteuthis* and *Eucloteuthis* (complex system of photophores), which inhabit the

epipelagic realm of the low productive centres of all oceans. Though the family itself likely has a Mesozoic origin, its oceanisation probably began in the Oligocene – Miocene (40–20 mya), and species ranges of extant species were probably shaped as late as the Pliocene–Pleistocene (Nigmatullin, 2007).

Evolution of Onychoteuthidae is still a riddle. It is supposed that the family has tropical origins (Nesis, 2000) with the genus *Onykia* having the most ancestral characters. Thus the family evolved in two directions: via “*Moroteuthis*” to *Kondakovia* ('ammoniacal', neutrally buoyant branch), and through *Ancystroteuthis* and *Notonykia* to *Onychoteuthis* ('muscular' negatively buoyant branch). The last revision of the



family system by Kat Bolstad (2008) assumes a different scenario.

Our working hypothesis is as follows. The most primitive genus of the family is Antarctic *Kondakovia*, and the entire family evolution happened in the direction of nektonisation and mastering life in warm-water environments. The Onychoteuthidae appeared in the Southern Hemisphere more or less simultaneously with notothenioid fishes, and the species diversification into tropical regions and the northern hemisphere occurred about the same time as adaptive radiation of notothenioid fish (Eastman, 2000) as well as both nektonisation and respective speciation of ommastrephids, - between 15 and 5 mya. Notothenioid fish never managed to evolve into a "proper" holopelagic form inhabiting the epipelagic realm except for the Antarctic species *Pleurogramma antarcticum*. Possibly this is because an intensive fat accumulation is required to maintain neutral buoyancy in the absence of a swim bladder – a too expensive strategy outside of cold waters.

In contrast, Onychoteuthidae evolved into active nektonic predators, as did ommastrephid squids i.e. becoming faster swimmers with more muscular mantle, penetrating into the oceanic tropical epipelagic realm beyond continental shelves and slopes, and developing more complicated behaviour (evolving photophores). In their run to the surface of tropical seas, Onychoteuthidae intensively interacted with Ommastrephidae competing for the same habitats. During this competitive race both families occupied tropical, subtropical, and temperate offshore waters of all oceans, including Subantarctica and Antarctica, but never managed to settle in the Arctic ocean and its surroundings.

The competition between

Onychoteuthidae and Gonatidae probably was much weaker, because representatives of the latter family in shared habitats were generally much smaller, and the adult part of the life cycle of most species happens in deep seas.

The idea of the proposed project is to follow a simultaneous speciation and diversification of Ommastrephidae (probable starting point – inshore tropical Atlantic) and Onychoteuthidae (probable starting point – Antarctic waters) using a multigene approach to reconstruct a molecular phylogeny and to estimate interspecific

divergence times.

To complete this molecular phylogenetic study we are trying to collect as many ommastrephid and onychoteuthid species as possible and would be extremely grateful for any tissue samples from the cephalopod community. We require only a tiny tissue sample (a few cms squared) preserved in ethanol (70-95%), ideally with known co-ordinates. If you can have any tissue samples that you could spare for this project please e-mail us - jan.strugnell@gmail.com, vlaptikhovskiy@fisheries.gov.fk

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## Forthcoming Book

James B. Wood

**Octopus: The Ocean's Intelligent Invertebrate by Jennifer A. Mather, Roland C. Anderson, and James B. Wood. Publication date: May 2010. 24-page color insert, 272 pp, 6 1/2 x 9, Hardcover, \$25.95. ISBN: 978-1-60469-067-5**

The octopus has terrified, mystified, and fascinated the world from ancient times. In this revealing, closeup account of the stranger-than-fiction life cycle, ingenious anatomy, remarkable personalities, and uncanny intelligence of the eight-armed mollusk-without-a-shell, three avid field researchers tell a tale that will forever change the way you look at a wondrous creature of the deep.

From the molluscan ancestry of today's octopus to its ingenious anatomy, amazing mating and predatory behaviors, and other-worldly relatives, the authors take readers through the astounding life cycle, uncovering the details of distinctive octopus personalities. With personal narratives, underwater research, stunning closeup photography, and thoughtful guidance for keeping octopuses in captivity, *Octopus* is the first comprehensive natural

history of this smart denizen of the sea.

### About the authors:

Jennifer A. Mather is a leading researcher on octopuses, concentrating on their behaviour and personalities. A professor of psychology at the University of Lethbridge in Alberta, Canada, she teaches a variety of courses including studies of aging and perception.

Roland C. Anderson, a longtime biologist at the Seattle Aquarium, has observed octopuses in captivity and the wild for more than 30 years. He is particularly interested in the natural history, behaviour, and aquarium husbandry of marine invertebrates.

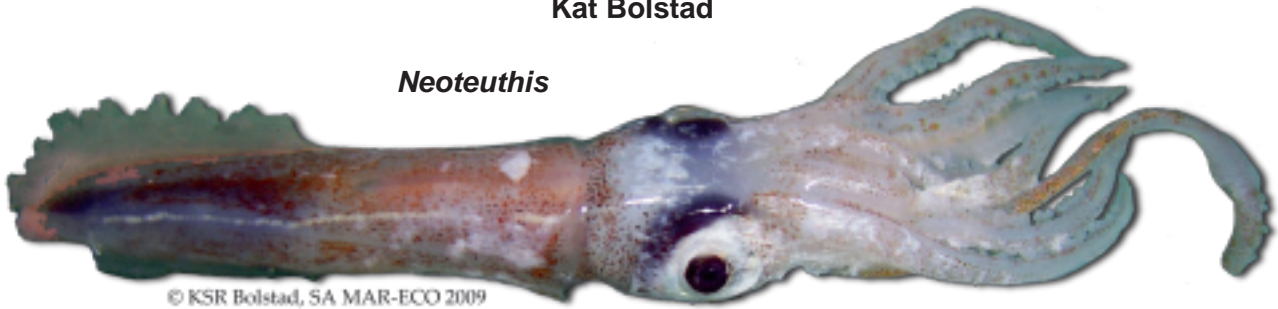
James B. Wood is the director of education at the Aquarium of the Pacific in Long Beach, California. An accomplished underwater photographer, he is especially interested in cephalopod behaviour, husbandry, and physiology.

For additional information about the book, photo requests, or author interviews, please contact Melanie Platosh at [mplatosh@timberpress.com](mailto:mplatosh@timberpress.com). For sales inquiries, please contact [sales@timberpress.com](mailto:sales@timberpress.com). [www.timberpress.com](http://www.timberpress.com)

# Preliminary Ceph Findings of the first SA MAR-ECO Cruise

Kat Bolstad

*Neoteuthis*



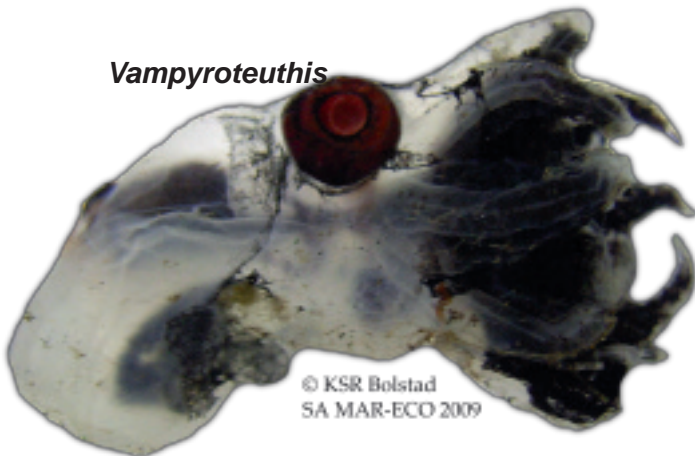
© KSR Bolstad, SA MAR-ECO 2009

During November, 2009, the MAR-ECO project, which has been researching biodiversity in the North Atlantic for the past ten years, expanded into the South Atlantic. The Russian research vessel Akademik Ioffe travelled along the Mid-Atlantic Ridge from 27°30'N to 35°30'S, carrying Russian and South American benthos, fish and plankton specialists, plus teuthologists Angel Perez (UNIVALI, Brazil) and Kat

histioteuthids and onychoteuthids following. Pyroteuthids and ommastrephids were encountered at most stations, and pelagic gelatinous octopuses were also relatively common. Several rarely encountered taxa were also collected, including *Neoteuthis* sp., *Ctenopteryx sicula* and a small but impressive *Lepidoteuthis grimaldii* (ML ~25mm).

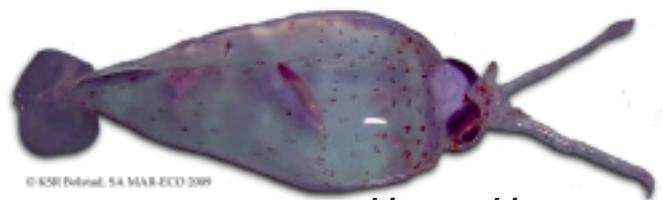
Tissue samples were collected from a number of

*Vampyroteuthis*



© KSR Bolstad  
SA MAR-ECO 2009

Bolstad (AUT, New Zealand). Among the 74 samples collected, at least 360 taxa were represented, including 44 cephalopod species from 22 families in four orders. Cranchiids were the most diverse family, comprising 25% of the total species observed, with enoploteuthids,



*Liocranchia*

© KSR Bolstad, SA MAR-ECO 2009

species and are being analysed; sequences will be submitted to GenBank in due course. In-depth reports on faunal composition and descriptions of the material are also underway. The specimens will be divided between institutions in South America and the South African Museum.

For further details, and stories of adventure on the high seas, the events of the cruise were journalled online and are still available through the MAR-ECO website ([http://www.mar-eco.no/Shiptoshore/akademik\\_ioffe\\_2009](http://www.mar-eco.no/Shiptoshore/akademik_ioffe_2009)) in English, and in Portuguese through the UNIVALI website (<http://www.univali.br/mar-eco>).

## EOL

<http://www.eol.org>

At CIAC 2009, Roger Hanlon made a presentation on cephalopod participation in the Encyclopedia of Life project. As most of you will know, EOL is the brainchild of E.O. Wilson, who envisaged a website that, for every species on earth, would contain "a summary of everything known about the species' genome, proteome, geographic distribution, phylogenetic position, habitat,

ecological relationships, and, not least, its perceived practical importance for humanity."

Pages will be created in EOL through 'LifeDesk', a specially created software package. The flow of information into EOL depends upon Administrators, individual scientists and expert curators. However, EOL will also be 'scraping' information from Tree of Life so there should be no need to duplicate information therein.

At the moment, Mike Vecchione has agreed to act as Expert Curator for cephalopods. He reports that

the curatorial job is essentially to check what has been entered / submitted by others. There are inevitably some teething problems, but you are certain to hear more on this from Mike and Roger in the future.

For those of you who missed Roger's presentation at Vigo, you can download the pdf from the CIAC webpages, or you can contact Roger on [rhanlon@mbl.edu](mailto:rhanlon@mbl.edu). In his presentation, Roger stressed that he was particularly keen to involve young researchers.

# New Faces

## Daniel Oesterwind

PhD student at Zoological Department University of Kiel and the IFM-GEOMAR Kiel, Germany

Email: doesterwind@ifm-geomar.de

**Thesis title: Distribution and feeding ecology of cephalopods in the North Sea and their impact on fish stocks. Supervisors: Heinz Brendelberger and Uwe Piatkowski.**



**M**y PhD project is funded by the Deutsche Bundesstiftung Umwelt (DBU), one of Europe's largest foundations which supports innovative and exemplary environmental projects.

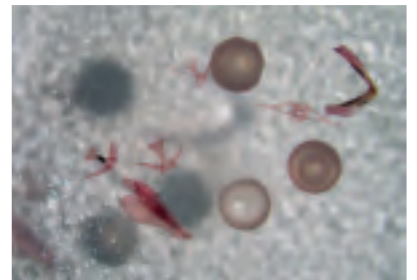
With worldwide cephalopod landings increasing during the last fifty-six years from 600.000 tons in 1953 to about 4,200,000 tons in 2008 there are also indications that cephalopod abundance is rising in the North East Atlantic. For the North Sea it has been shown that commercially important fish stocks have been depleted, but plankton diversity and stock sizes of fish and invertebrate species that prefer warmer water masses increased. The potential consequences of increasing cephalopod stocks on the recruitment of traditional fish species has become an important issue.

The major focus of my studies is to elucidate whether cephalopod abundance and stock size of the most important species, such as *Loligo forbesii*, are increasing or if the higher amounts of cephalopod landings are just a consequence of an increasing catch effort? There are strong indications that cephalopod numbers in the central North Sea, especially in the German Bight, have increased and that this is connected with global warming. Besides climate change also higher nutrient impact, pollution and commercial fisheries influence the North Sea ecosystem and make the whole system very complex. In order to see whether the cephalopod stocks increase I am analyzing various data sets of cephalopod by-catch data of a number of ICES coordinated International Bottom Trawl Surveys.

Furthermore, I am analyzing thousands of cephalopod stomach contents to document to what extent cephalopods actually prey on fish. Stable isotope measurements will help me estimate the trophic position of cephalopod species in the North Sea food web.



Alloteuthis



stomach contents



omastrephids

## Andrea Frommel

PhD student at the IFM-GEOMAR Kiel, Germany

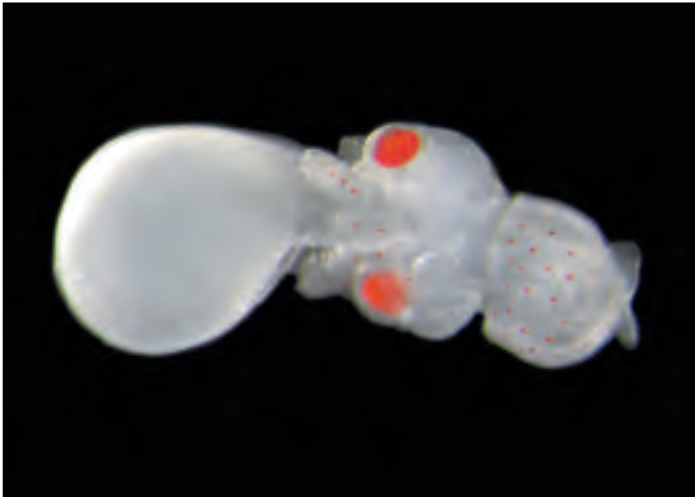
Email: afrommel@ifm-geomar.de

**Thesis title: Influence of CO<sub>2</sub> on the development of early stages in fish and cephalopods.**

**Supervisors: Uwe Piatkowski and Catriona Clemmesen.**

**I**n my thesis I am testing the effect of ocean acidification on the survival, growth, development and fitness of cephalopod embryos and paralarvae. CO<sub>2</sub> levels in the oceans are expected to rise dramatically over the next century due to anthropogenic emissions into the atmosphere by burning fossil fuels and a shift in land-use (deforestation, etc.). Carbonate chemistry will change as a result of increasing CO<sub>2</sub> and decreasing pH in





seawater leading to an under-saturation of calcium carbonate. This in turn will affect marine organisms that build calcified structures. Along with reduced calcification rates found for molluscs, cnidarians and echinoderms, elevated CO<sub>2</sub> concentrations can disturb the acid-base regulation, blood circulation and respiration, as well as the nervous system of marine organisms, leading to long term effects such as reduced growth rates and reproduction.

So far I have performed experiments on *Loligo vulgaris*, incubating newly laid wild eggs at different CO<sub>2</sub> concentrations in the laboratory until hatch, recording the survival and behaviour. Morphometric measurements of mantle length, yolk sac size, etc. are taken through-out the experiment. After hatch, I measure bio-chemical components such as protein and lipid content, as well as RNA / DNA ratios as a measure of fitness and growth potential. I am also looking at the shape and surface structure of the statoliths, examining

them for any deformations caused by the CO<sub>2</sub>. In further studies, I hope to do some experiments with *Sepia officinalis* and rear them up to the juvenile stage under different CO<sub>2</sub> scenarios.

The images show the early life stages of my target species, *Loligo vulgaris*.

My work is connected to the German project BIOACID (“Biological Impacts of Ocean ACIDification”) which is co-ordinated at IFM-GEOMAR in Kiel and funded by the German Ministry of Education and Research (BMBF) (<http://bioacid.ifm-geomar.de>) and to the EU FP7 Integrated Project EPOCA (“European Project on Ocean ACIDification”) (<http://www.epoca-project.eu>). The overall goal of these projects is to advance our understanding of the biological, ecological, biogeochemical, and societal implications of ocean acidification.



## Rommel H Maneja

PhD student at the IFM-GEOMAR Kiel, Germany

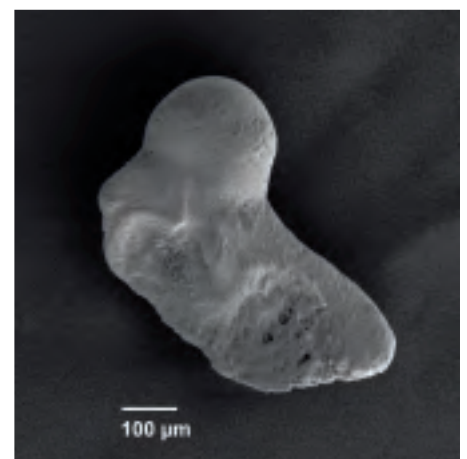
Email: [rmaneja@ifm-geomar.de](mailto:rmaneja@ifm-geomar.de)

**Thesis title: Ocean acidification effects on the calcification in earstones of cephalopods and fish. Supervisors: Uwe Piatkowski and Catriona Clemmesen.**



I am an Early Stage Researcher of the EU FP7 Marie Curie Initial Training Network project CALMARO (Calcification By Marine Organisms; see <http://www.calmaro.eu>) tasked with investigating the environmental and physiological controls of calcification of the otolith, statolith and cuttlebone in fish and cephalopods, respectively. I am particularly interested in the effects of ocean acidification and temperature on the calcification mechanism and how this affects the behavioural and life strategies of the organisms. The three structures are composed of aragonitic calcium

carbonate, which is susceptible to dissolution under acidic



***Sepia bandensis* observed while capturing mysid prey**

conditions. However, other internal physiological factors also control the calcification process such as the concentration of organic and inorganic components of the endolymph. Thus, the cause-effect



***Sepia officinalis* embryo. Incubation of cuttlefish for CO2 perturbation experiments were done from the earliest embryonic stage possible.**

relationship between calcification and external environmental conditions may not be straightforward. Since these aragonitic structures mainly function in detecting movement and regulating balance and buoyancy, changes in their morphology and structural integrity might affect feeding behaviour such as capture of prey, consequently affecting survival. The rate of calcification and crystal formation may also enhance or lessen the “vital effects” of uptake of trace and major elements into the aragonitic matrix. Understanding elemental uptake is important since elemental records in the otolith and statolith are useful for ecological studies and might also indirectly or directly influence the calcification process itself.

Currently, I am working on the cuttlefish species, *Sepia officinalis* and *Sepia bandensis*. The scope of

my research activities includes the following analyses: seawater carbonate chemistry, seawater major and trace elements, statolith microstructure and microchemistry, pH microsensor measurement of the statocyst endolymph, and feeding behaviour observations.

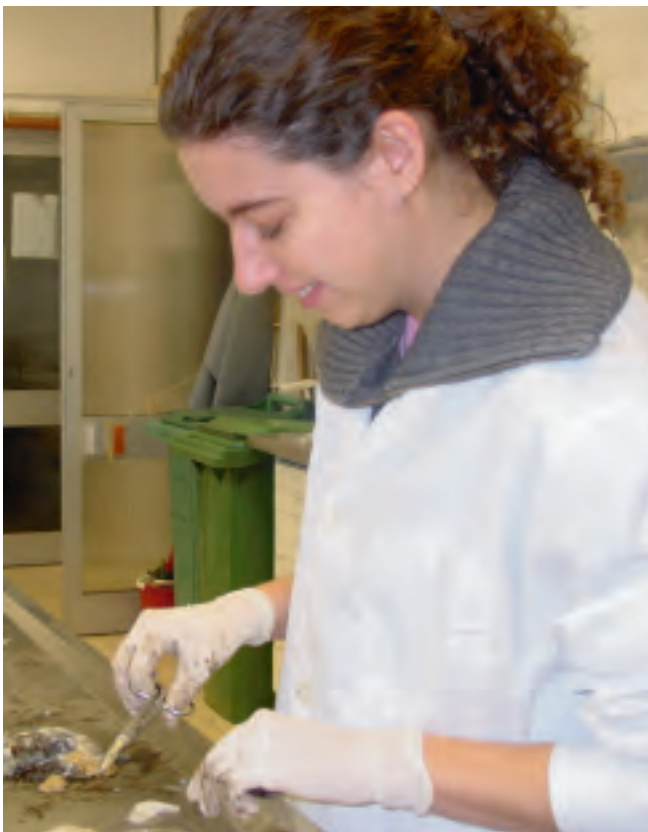


***Sepia bandensis* observed while capturing mysid prey**

## **Silvia Lourenço**

**PhD student of the Oceanography Centre of the Faculty of Sciences of Lisbon University  
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**PhD thesis title: The common octopus survival strategies: physiological and morphological study of its life cycle, reproduction and growth.**



I’m a Portuguese Marine Biologist and over the next four years I’m going to study cephalopod life history strategies, mainly of the common octopus. I will conduct my work at three marine laboratories, the Oceanography Centre of Lisbon University (CO-FCUL), the Portuguese Fisheries Research Institute (IPIMAR) and the Marine investigations Institute of Vigo (IIM). My PhD project is funded by the national Foundation of Science and Technology (FCT).

The growing commercial interest in the common octopus, *Octopus vulgaris*, in Portugal and Spain, reflects the need to assess the fisheries potential of the species to guarantee its sustainable exploitation. Along with its importance as a fisheries resource, the aquaculture potential of the common octopus increases interest in determining the environmental and biological factors which control its life cycle with an aim to optimize its growth. The main objective of this project is to assess which environmental, nutritional and biologic conditions have a major influence on the common octopus life cycle. I intend to study which environmental factors control the reproduction stage, the quality of eggs and paralarvae, and to assess how environmental conditions influence the length of the paralarval phase and the survival of the next generation. Hopefully, this study will help fill some important gaps in the knowledge of survival strategies during the entire life cycle of the common octopus.

# CIAC'09 - Vigo



congress was closed by the Mayor of Vigo.

The publishing process is now in full swing. The manuscripts that in the opinion of the referees meet the required standard, will be published in two mainstream and high standard journals: ICES Journal of Marine Science (Guest editors: Ángel F. Gonzalez, Greta Pecl and Graham J. Pierce) and Fisheries Research (Guest editors: Ángel Guerra, Louise Allcock and Joao Pereira). Other communications will be published in Iberus, scientific journal of the Spanish Malacological Society and Journal of Natural History.

The Local Organizing Committee wishes to thank all of you that joined us in Vigo during the four workshops and the symposium meetings for your active participation and nice collaboration all the time. Thank you very much for the large number of messages received in this sense.

We would like to congratulate the new President of CIAC, Graham J. Pierce and the new members of the CIAC Executive Committee, and we wish them all the best for the incoming years, which are expected to be exciting.

The CIAC Executive Committee decided that the next symposium will be held in Brazil. Erica Vidal will be the main organizer of this event and we would like to thank her for the work she made to prepare all issues related to the Brazil proposal. We are sure it will be another great event and we would like to give Erica all the support she needs. It would not be fair to forget the magnificent effort made our Japanese colleagues, headed by Yasunori Sakurai; we are sure that they will carry on to hold a future CIAC meeting in Japan.

Our warmest wishes to all of you and see you in Brazil in 2012!

**Ángel Guerra and Ángel F. González. CIAC'09 co-organizers**

The Cephalopod International Advisory Council Symposium (CIAC'09) finished on October 10th with a splendid banquet in the Parador Conde de Gondomar in Bayona. CIAC event was held in the Social Centre of Caixanova in Vigo (Spain). In total, 156 cephalopod experts, including 26 Spaniards, attended CIAC'09. A first for CIAC, was the high number of researchers representing Latin America countries including Mexico, Brazil, Peru, Chile and Argentina. Approximately, 33% of the participants were new graduate or postdoctoral students; 6% of the attendants received some help from the organizing committee towards travel, subsistence or reduced fees.

Besides the excellent inaugural and closing talks given by Sigurd von Boletzky and Paul Rodhouse, respectively, there were 99 oral communications and 91 posters. The fantastic weather supported the extra-curricular activities such as the visits to the National Park of the Atlantic Islands, Santiago de Compostela and the scuba-diving in the Ría de Vigo.

We are very grateful to the sponsoring organisations of this event: Spanish National Research Council (CSIC), the Ministry of Science and Innovation, The Regional Government of Galicia of

Galicia (Xunta de Galicia), The International Council for the Exploration of the Sea (ICES), the Zoological Society of London, the North Pacific Atlantic Organization (PICES), the University of Vigo, the City Council of Vigo and Caixanova.

The symposium attracted a lot of media attention which was directed by the press office of the Delegation of the CSIC in Galicia. Ana Bellón, person in charge of this bureau, has the dossier of press coverage. News on this event was presented in all local, regional and even national newspapers, radio and TV. Our Fishing Industries newspaper extracted a long article with some nice photos. Also it will be disseminated in the Newscast of the Malacological Spanish Society. This news was not limited to the inauguration and closing days, but was communicated throughout the whole week of the symposium.

The photo above shows the dignitaries seated at the opening ceremony: the Conselleira do Mar de la Xunta of Galicia, the dean of the Faculty of Sciences of the Mar of the University of Vigo, the delegate of ICES in Spain, the then president of the CIAC (Sasha Arkhipkin, fourth from left) and both organizers, Angel Guerra (left) and Angel Gonzalez (right). The

# CIAC'09 - Vigo



# CIAC'12 - Brazil

**B**razil will become the first South American nation to host a CIAC symposium, as the country won a majority of the votes of the CIAC Executive Council in Vigo. Brazil is also much in evidence in the world as the first South American country to host the Olympic Games of 2016. In between, the country will also host the 2014 World Cup. It seems that the time has come for Brazil, the largest and the only Portuguese speaking country in South America.

The main rationale for a CIAC symposium in South America was that the cephalopod researcher community has grown considerably in this continent in last few years. This can be partially explained by the development of cephalopod research in nearly all South American countries, but also by the demand for knowledge of important commercially exploited cephalopods (e.g., *Dosidicus gigas* in Mexico and Peru; *Illex argentinus* in Brazil and Argentina, and octopus species in Chile). Therefore, there is a clear demand for a CIAC Symposium in South America, what would also help to potentially increase the participation of researchers and students from South American countries.



Brazil encompasses all the desirable conditions to fulfill this demand. The country has an expressive and growing number of cephalopod researchers, whom have been delivering scientific contributions to the mainstream science on a regular basis. Operational conditions are attractive to international events, not only because of the excellent infrastructure for congresses and meetings, but also because of the lower costs for accommodations and catering in relation to Northern Hemisphere countries. In addition, Brazil is a tropical country with a multi-ethnic people and breathtaking scenery. Some of the world's most exciting destinations lie inside of Brazil's borders. From white-sand beaches and tropical islands stretched over more than 8000 Km along the Atlantic coast to inland unique biomas, like the Pantanal and the Amazon and Atlantic forests congregating some of the greatest biodiversity of the planet, there will be plenty

of room for entertainment and adventure. Given the country innumerable charms, a CIAC symposium in Brazil will certainly contribute with high standard scientific outputs, while offering the attendees a pleasant and friendly environment with memorable moments of leisure, not to mention the experience of



the music, dance, food and nature.

One of two cities, Florianópolis or Curitiba will host the symposium. These cities are located 300 Km apart and are the State Capitals of Paraná and Santa Catarina respectively. Flight times from São Paulo-Guarulhos airport, the main international airport in Brazil, to Florianópolis or Curitiba are less than 1h. Florianópolis, is one of the three Brazilian's state capital islands and comprises a Main Island, a small continental part and small surrounding islands. The city has a population of about 480.000, and around 100 beautiful beaches, many of which are perfect places for a number of water sports, like surfing, kayaking, and scuba diving. The diverse scenery offers a tranquil and peaceful stay, while cultural activities and fine seafood and local gastronomy will certainly satisfy a broad range of tastes. The city's privileged infrastructure for scientific meetings is renowned, and a number of important international events had already been held in Florianópolis major resorts. Curitiba is a modern and cosmopolitan capital city with almost 1.8 million inhabitants. It is considered to be the "ecological capital" of Brazil, having a leading position in urban and ecological solutions. The emphasis in Curitiba is protecting the environment with dozens of urban parks and gardens. As a result, the city provides one of the highest standards for life quality within the country and is known as a very pleasant place to live. Curitiba is located 934 m above sea level and separated from the coast by the 'Serra do Mar' a mountain range belonging to one of the most preserved areas of the Atlantic Forest.

The organizing committee is already discussing the logistics for this conference and will offer more details about the meeting in the next CIAC newsletter. We are looking forward to seeing you in BRAZIL!

# What's happening?

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## WCM2010 Phuket, Thailand

The World Congress of Malacology 2010 and the 17th International Congress of UNITAS MALACOLOGY will be held in Phuket, Thailand, 18th - 24th July 2010. Early bird registration ends April 2010. <http://www.wcm2010.com/>

As all who attended CIAC'03 know, Phuket is a great city for a conference!! There are 13 organised symposia withing the conference, none of which has a cephalopod oriented theme but if your paper does not fit one of the symposia, it can be placed either in the open session or the contributed papers section. When was the last cephalopod themed session at a World Congress of Malacology symposium? Hawaii '95? Answers on a postcard (or by email) to the Newsletter editor... [your prize will be to organise the next one...]

## 2010 Internationall Cephalopod Fishery Symposium

**Date:** 20-23 May, 2010; **Registration:** 20 May, 2010. **Symposium venue:** Sheraton Hotel (five star), Zhoushan City, Zhejiang Province, P.R. China. **Deadline for Abstract submission:** 1 March 2010, **no more than 400 words;** **deadline for manuscript submission:** 31 March, 2010. <http://news.zjou.edu.cn/fish-meeting/>

This conference, hosted by China Zhejiang Ocean University, the Yellow Sea Fisheries Res. Inst. Of Chinese Fisheries Academy, Taiwan Ocean University aims to inform development of a cephalopod fishery, especially its restocking and culture fishery, to allow an exchange scientific views and to facilitate joint research with international partners. It will be held in the beautiful island city, Zhoushan of the East China Sea, an emerald place at the west side of the Pacific. All cephalopod biologists are invited!

## Cephalopods Present and Past

The 8th International Symposium, Cephalopods Present and Past will be held at the University of Burgundy, Dijon, France from August 30 to September 3, 2010. **Deadline for registration and Abstract submission:** May 5th 2010. <http://www2.u-bourgogne.fr/cephalopods/>

The organizers cite this as a unique opportunity for sharing research ideas and recent findings on all aspects of cephalopod biology and evolution. They particularly encourage young scientists and those using cutting-edge techniques and original approaches to attend.

## Every Friday....

The Friday Cephalopod posted on PZ Myers science blog 'Pharyngula' - be sure to follow the link on a Friday...: <http://scienceblogs.com/pharyngula/>

PZ Myers is a biologist and associate professor at University of Minnesota. He describes his own blog as 'Evolution, development, and random biological ejaculations from a godless liberal'. Every Friday he posts a cephalopod picture and has been doing so for years...

## New Edition of a classic book

**Nautilus: The Biology and Paleobiology of a Living Fossil: 6 (Topics in Geobiology) by W. Bruce Saunders and N.H. Landman (Hardcover - 16 Dec 2009).** Available from Amazon who describe it thus:

This volume is a reprint of a classic book about *Nautilus*, first published in 1987, with an introductory chapter summarizing all of the work on *Nautilus* and its habitat since the publication of the first edition more than 20 years ago. The surge in articles in the last two decades indicates an expanded interest in the subject, reflecting a renewed appreciation of the complexity and fragility of the marine habitat and its biota. The 37 chapters are written by 48 experts in the field and cover all aspects of this living fossil from its ecology to its embryology. This volume also features new photos, including an impressive image of the first hatched *Nautilus* in captivity. *Nautilus* is an iconic animal in the marine realm and represents part of the diverse fauna of the Indo-Pacific. It is also a member of a lineage of shelled cephalopods dating back more than 400 million years. As a result, this volume will be relevant to the fields of marine science, evolutionary biology, and paleontology.