CEPHALOPOD

Biodiversity, Ecology and Evolution

International Symposium and Workshops

31 August - 14 September 1997

South African Museum
Cape Town, South Africa

Programmes and Abstracts

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Cape Town 1997
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SYMPOSIUM INFORMATION

Theme

The theme of the CIAC’97 Symposium is *Cephalopod Biodiversity, Ecology and Evolution*. The symposium will be preceded by a workshop on *Cephalopod Ecology and Fisheries Management*, and followed by a second workshop on *Biodiversity of Southern African Cephalopods*.

Symposium and Workshop Objectives

- To provide fora for presentation, discussion and dissemination of information on the latest thinking in three mainstream areas of cephalopod research: ecology, systematics and evolution.
- To provide a workshop forum to help fisheries scientists and managers improve strategies for sustainable utilization of cephalopod resources.
- To produce a multi-authored identification guide to southern African cephalopods.

Symposium Proceedings

The symposium proceedings will be published as a special Symposium edition of the *South African Journal of Marine Science*, planned for publication at the end of 1998/beginning of 1999. This issue will also contain a summary of the workshop proceedings on cephalopod ecology and fisheries management. Papers accepted for oral or poster presentation at the symposium will be considered for publication in the proceedings, and will be subjected to the usual peer review process. All manuscripts should be handed in to the Symposium Secretariat by 4 September 1997.

Format of the Symposium and Workshops

The symposium will be convened in plenary sessions, composed of invited papers and oral presentations, and in poster sessions where posters will be viewed. During poster viewing sessions, poster authors are requested to remain at their posters during their assigned session, and to be prepared to give a short summary of their poster.

The workshop on *Cephalopod Ecology and Fisheries Management* will comprise of round table discussions and oral presentations on the use of cephalopod biology and ecology in resource management, on operational management procedures for loliginid and ommastrephid fisheries, and on the cephalopod-finfish analogy.

The workshop on *Biodiversity of Southern African Cephalopods* will comprise of hands-on sessions with specimens from the South African Museum's collections to resolve taxonomic problems and compile species accounts.

Instructions for Oral Presentations

Presenters should please make themselves known to the Chair of their session prior to
the start of the session. Please do not speak for longer than the time allocated to your presentation, and remember that 3-5 minutes of each presentation slot is reserved for the audience for questions and discussion. Chairs have been instructed to cut short presentations that go overtime.

Presenters may view their slides in the Blue and Red Rooms, where symposium helpers will be available to assist prior to the morning sessions and during lunch and refreshment breaks, and early morning prior to a session. Please number your slides, label them with your name and session, and hand them to the projectionist before the start of your session.

Instructions for Poster Presentations

Posters will be on display for the entire duration of the symposium and workshops. Posters should be mounted as early as possible and be taken down at the end of the symposium. Velcro strips will be available for mounting posters, and helpers will be on hand to assist. Stand numbers were e-mailed earlier to all participants; a list is displayed on the notice board (off T H Barry Lecture Theatre) and is also available from the Secretariat. If required, posters can be stored at the Secretariat.

Poster presenters should stand at their poster during their session and be prepared to give a short summary of their poster and to answer questions. Each Poster Session will be chaired by the Chair of the preceding Plenary Session.

Symposium Committees

**Symposium Chairman:** Dr Andy Payne  
**Vice-chairman:** Dr Mike Cluver

**Scientific Committee:**  
Dr Marek Lipinski (Chair)  
Dr Johann Augustyn  
Dr Yolanda Melo  
Mr Mike Roberts  
Ms Martina Roeleveld

**Organising Committee:**  
Mr Mike Roberts (Chair)  
Dr Johann Augustyn  
Ms Lesley Johnstone  
Dr Marek Lipinski

**Secretariat, Coordination and Communication**  
Ms Michelle van der Merwe  
Dr Marek Lipinski
LOGISTICS

Dates and Venues

The Workshop on *Cephalopod Ecology and Fisheries Management* will take place from Sunday 31 August to Tuesday 2 September 1997, the Symposium on *Biodiversity, Ecology and Evolution* from Wednesday 3 September to Sunday 7 September 1997, and the Workshop on *Biodiversity of Southern African Cephalopods* from Tuesday 9 September to Sunday 14 September 1997, in the South African Museum, Queen Victoria Road, Cape Town. Examination of specimens of *Architeuthis, Taningia* and *Thysanoteuthis* can be done on Monday 15 - Friday 19 September 1997 in the Wet Laboratory of the South African Museum.

Plenary sessions will take place in the T.H. Barry Lecture Theatre. Poster viewing sessions will be held in the Green and Yellow Room. Teas, refreshments and lunches will be served in the same room.

The CIAC Council Meetings will be held on Wednesday 3 and Monday 8 September 1997 in the Blue Room. The CIAC General Meeting will take place on Friday 5 September 1997 in the T.H. Barry Lecture Theatre.

Registration

Registration for the two workshops and the symposium will take place on Sunday 31 August from 08h00 to 09h00 and on Wednesday 3 September from 17h00 to 18h00 at the registration desk at Level 2, outside the Green and Yellow Room (South African Museum). This will be followed by a welcoming cocktail party. Late registration will be possible on Thursday 4 September 1997 between 08h00 and 09h00 at the registration desk.

Secretariat

The Secretariat will be located outside the T.H. Barry Lecture Theatre at the South African Museum. All queries should be directed to the Secretariat, who in turn will redirect queries to the appropriate people. Payphones are available at the South African Museum. Limited photocopying facilities will be available through the Secretariat. Souvenirs will be on sale at the Secretariat from Sunday 31 August 1997.

Post Office, Bookshops, Banks, Travel Agent

The Main Post Office, several banks and bookshops are within easy walking distance of the South African Museum.

On Thursday 4 and Friday 5 September, Clarke’s Bookshop, Cape Town, will be in attendance offering for sale a wide variety of books on natural history, southern Africa and Cape Town.

A limited selection of books, as well as African and South African Museum memorabilia
can also be purchased in The Museum Connection store, located in the South African Museum (trading hours: 10h00-17h00 daily).

Delegates who have made (or still wish to make) bookings for any post-symposium excursions with LED Tours, can obtain further details by phoning the travel agent on 531-3493. Contacts with LED Tours can also be made through the Secretariat.

**Refreshments**

Finger lunches, teas and refreshments will be provided for all participants in the Green and Yellow Rooms. Light refreshments are also available at The Museum Café (trading hours: 09h30-16h00 daily)

**Transport**

The hotels where the symposium participants are staying, are within easy walking distance of the South African Museum. Participants using their own transport may park only in the Rosedale Lower Section of UCT’s Hiddingh Hall Campus, Orange Street. They should display a CIAC’97 logo disc (issued upon Registration) to avoid being fined.

**Souvenirs**

Sweatshirts bearing the CIAC‘97 Symposium logo will be on sale at the Secretariat from Sunday 31 August at a cost of R80.

**Acknowledgements**

We are grateful to the following people for their assistance: Ms Sheryl Ozinsky, Mr Gaston Fernandes, Dr Rob Tilney, Dr Stan Pillar and Ms Claire Ward and all those who contributed time and energy to assist in various ways with the Symposium and Workshops. We also acknowledge the contribution of Mr Mike Botha of SASMIA, who passed away in July 1997.

The following provided sponsorship, logistic support and/or funding; we are grateful for their contributions, without which this CIAC’97 meeting would not have been possible.
- Cephalopod International Advisory Council (CIAC)
- De Beers Marine (Pty) Ltd
- Foundation for Research Development (FRD)
- Lusitania Fishing Co.
- Sea Fisheries Research Institute (SFRI)
- South African Museum (SAM)
- South African Squid Management Industrial Association (SASMIA)
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Please Note:

- Organised transport to and from the out-of-town functions is only for participants staying in symposium hotels.
- On all free evenings, participants are to make their own dinner arrangements.
- Excursions organised by the Symposium Secretariat on Saturday 6 September should be paid for upon registration at the Registration Desk. A final list of excursions will be displayed on the notice board.
- If space permits, accompanying persons may attend social functions, including the Symposium dinner on Tuesday 2 September, the latter at a cost of approximately R80 per person. Please enquire at the Registration Desk or at the Symposium Secretariat.
CIAC '97 PROGRAMMES

SOUTH AFRICAN MUSEUM, CAPE TOWN
WORKSHOP ON CEPHALOPOD ECOLOGY AND FISHERIES MANAGEMENT

SUNDAY 31 AUGUST - TUESDAY 2 SEPTEMBER 1997

VENUE: T H Barry Lecture Theatre
Teas and Lunches: Green and Yellow Room

OBJECTIVE: To provide a workshop forum to help fisheries managers improve strategies for sustainable utilization of cephalopods

DAY 1: SUNDAY 31 AUGUST

08h00 - 09h00 Registration (Level 2 outside the Green and Yellow Room, South African Museum), and slide pre-view for the speakers (Blue and Red Rooms, South African Museum)

09h00 - 09h10 Opening and Welcome: Dr Andy Payne, Director: Sea Fisheries Research Institute

Fisheries Review Presentations

09h10 - 12h00 Examples (Chair: Doug Butterworth)

09h10 - 09h40 The Japanese experience in managing cephalopod resources - Yasunori Sakurai
09h40 - 10h20 Falkland squid resources and their management - Sophie des Clerfs and Lynne Purchase

10h20 - 10h40 TEA BREAK (Venue: Green and Yellow Room)

10h40 - 11h10 Management of the South African chokka squid - Beatriz Roel
11h10 - 11h35 Options and considerations in the development of management strategies for chokka squid in South Africa - Johann Augustyn
11h35 - 12h00 Management of squid resources in NW Atlantic waters of U.S.A. - Jon Brodziaik and Lisa Hendrickson

12h00 - 13h00 LUNCH (Venue: Green and Yellow Room)

13h00 - 15h15 Constraints and Difficulties (Chair: Beatriz Roel)

13h00 - 13h30 Cephalopod life cycles: where are the major gaps in our understanding? - Marek Lipinski
13h30 - 14h00 How can we predict major squid population trends and catches from environmental change? - Mike Roberts
14h00 - 14h15 The influence of the environment on chokka squid catches - Peter-Jan Schön, Mike Roberts and Warwick Sauer
14h15 - 14h30 Population structure of the southern calamary, Sepioteuthis australis, in southern Australia and its implications for management - Lianos Triantafillos and Mark Adams
14h30 - 14h45 The population structure of the Patagonian squid, Loligo gahi (Loliginidae) in Falkland Islands waters - Conor Nolan, A. Murray and J. Glass
14h45 - 15h00 A GIS for management of fisheries in West Africa: application to the Octopus stock in Senegal - Éric Foucher, Modou Thiam and Mariama Barry-Gerard
15h00 - 15h15 The use of GIS in understanding the life cycle and in biomass estimations of chokka (Loligo vulgaris reynaudii) - Tony Booth, Mike Roberts and Warwick Sauer
15h30 - 17h15  **Practical Management v. Theoretical Understanding: How do you Manage a Fishery with Limited Knowledge?**  (Chair: Johann Augustyn)

15h30 - 16h00  How to use general ecological concepts and existing fisheries science models and/or pragmatic approaches to manage a cephalopod fishery? - Daniel Pauly

16h00 - 16h15  Trawling for *L. gahi* on the shelf edge in Falkland Islands waters: hoovers on a sliding carpet? - Sophie des Cleris

16h15 - 16h30  Assessment of the stocks of *Loligo gahi* around the Falkland Islands - David Agnew, Sophie des Cleris and Conor Nolan

16h30 - 17h00  How can we adapt our concepts, approaches, models of management in everyday practice to a unique cephalopod physiology? - Ron O’Dor

17h00 - 17h15  Chokka squid (*Loligo vulgaris reynaudii*) spawning grounds: environmental influences on the development and hatching success - Ane Oosthuizen, Mike Roberts, Dan Baird and Warwick Sauer

17h15 - 17h30  **BREAK** (Venue: Green and Yellow Room)

17h30 - 18h00  **Discussion I**  (Chair: Warwick Sauer)

**EVENING:** **FREE**

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**DAY 2: MONDAY 1 SEPTEMBER**

**Brainstorming and/or Hands-on Sessions**

09h00 - 12h15  **Taking Stock of Finfish Fisheries Wisdom**  (Chair: Daniel Pauly)

Problems to be discussed

Details:

1. Measurements of abundance and/or its changes (Jon Brodziak);
2. Measurements and use of effort data (Bearz Roel);
3. Measurements of natural variability, assessment of the noise in the data and estimation of standard errors (Sophie des Cleris);

Principles:

1. Lifecycle-related assumptions;
2. Optimal harvesting strategies;
3. Alternative risk scenarios;
4. Optimal Management Plans (Johann Augustyn)

Critical evaluation of the success worldwide in the sustainable utilization of cephalopods (Daniel Pauly, Ron O’Dor).

10h30 - 10h45  **TEA BREAK**  (Venue: Green and Yellow Room)

12h15 - 13h00  **LUNCH**  (Venue: Green and Yellow Room)
13h00 - 16h30  **Taking Stock: Different Perspective** (Chair: Ron O’Dor)  

Problems to be discussed  

Details:  

1. Growth in cephalopods (George Jackson *et al.*: Why don’t we just model squid growth with existing finfish models?)  
2. Genetic equilibria in cephalopod populations (Ron O’Dor)  
3. Cephalopod response to changes in environmental systems related to growth, maturity, behaviour, abundance and availability to fisheries (Warwick Sauer)  

Principles:  

1. "Overdrive": physiological plasticity of cephalopods, in particular the collapse - recovery patterns (Ron O’Dor)  
2. Chaos v. structure in ecology: lessons for fisheries management? (Marek Lipinski)  
3. Lifecycle of cephalopods: possible impact of its understanding on the effort control regulations (Anne Oosthuizen)  
4. Environmentally-linked OMPs: prediction-management-evaluation (Mike Roberts)  

Critical evaluation of the perspectives of the development of "new" management concerning cephalopods (Ron O’Dor, Daniel Pauly)  

14h30 - 15h00  **TEA BREAK** (Venue: Green and Yellow Room)  

16h30 - 16h45  **BREAK** (Venue: Green and Yellow Room)  

16h45 - 18h00  **Discussion II** (Chair: Marek Lipinski)  

18h00 -  
Preparation of panel report (Summary by small group)  
(Venue: Blue Room)  

Panel: AUGUSTYN (CHAIR), LIPINSKI (RAPPORTEUR), BROTIZIUK, BUTTERWORTH, DES CLERS, O’DOR, PAULY, PURCHASE, ROBERTS, ROEL, SAKURAI and SAUER.  

**EVENING: FREE**  

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**DAY 3: TUESDAY 2 SEPTEMBER**  

**SUMMARY: Guidelines for the Future**  

09h00 - 11h00  Panel meeting (Venue: Blue Room)  

11h00 - 11h30  **TEA BREAK** (Venue: Green and Yellow Room)  

11h30 - 12h00  Presentation of summary document (Johann Augustyn)  
(Venue: TH Barry Lecture Theatre)
12h00 - 13h00 LUNCH (Venue: Green and Yellow Room)

13h00 - 14h45 General Discussion (Chair: Jon Brodziak)  
(Venue: T & Barry Lecture Theatre)

14h45 - 15h00 TEA (Venue: Green and Yellow Room)

15h00 - 15h45 A Special Talk: Caged squid - an acoustic and video perspective - Mike Soule and Mark Prowse (Chair: Marek Lipinski) (Venue: T & Barry Lecture Theatre)

EVENING: Wine tasting at Groot Constantia at 17h00 and dinner at the Brass Bell, Kalk Bay, 19h30 for 20h00.
SYMPOSIUM ON CEPHALOPOD BIODIVERSITY, ECOWELOGY AND EVOLUTION

THURSDAY 4 SEPTEMBER TO SUNDAY 7 SEPTEMBER 1997

VENUE: T.H. Barry Lecture Theatre
Teas and Lunches: Green and Yellow Room
Slide pre-views: Blue and Red Rooms

DAY 0: WEDNESDAY 3 SEPTEMBER

13h00 - 17h00 CIAC Council Meeting (Venue: Blue Room)
17h00 - 18h00 Registration (Level 2 outside the Green and Yellow Room, South African Museum)
18h00 - 20h00 Welcoming Cocktail Party (Venue: Level 1 above the Whale Well, South African Museum)
Welcome: Dr. Mike Cluver, Director, South African Museum and Symposium Vice-Chairman
20h00 Public lecture on Architeuthis: From myths to reality: the quest for the giant squid
CLYDE F.E. ROPER. Smithsonian Institution, U.S.A.
(Venue: Whale Well, South African Museum)

DAY 1: THURSDAY 4 SEPTEMBER

OPENING SESSION (Venue: T.H. Barry Lecture Theatre)

08h00 - 09h00 Registration (Level 2 outside the Green and Yellow Room) and slide pre-view for the speakers (Blue and Red Rooms)
09h00 - 09h05 Welcome: Dr Andy Payne, Director, Sea Fisheries Research Institute and Symposium Chairman
09h05 - 09h15 Official Opening: The Hon. Dr Pallo Jordan, Minister of Environmental Affairs and Tourism

09h15 - 10h00 SYMPOSIUM KEYNOTE ADDRESS: DICK YOUNG
The evolution of cephalopods and their present biodiversity and ecology - R.E. Young, M. Vecchione and D. Donovan

10h00 - 10h45 Theme: Evolution (Chair: E. Hochberg) (Venue: T.H. Barry Lecture Theatre)
10h00 - 10h30 Keynote paper: Evolutionary trends, palaeobiology and extinction of some Upper Cretaceous heteromorph ammonites - H.C. Klinger
10h30 - 10h45 The origin, history and phylogeny of Nautilus - P.D. Ward and W.B. Saunders

10h45 Announcements for the day

10h50 - 11h15 TEA AND POSTERS: Evolution (Venue: Green and Yellow Room)

A1 * Genetic evidence for Sepia hierredda as a different biological species from Sepia officinalis (Cephalopoda: Sepiidae) - M. Perez-Losada, A. Guerra and A. Sanjuan.
A2 * Multiple paternity within broods of the squid Loligo forbesi demonstrated with microsatellite DNA markers - P. Shaw and P.R. Boyle
A3 * A preliminary study on the biochemical genetic structure of the purpleback flying squid Stenoteuthis oualaniensis from the North Indian and South Pacific Ocean - K. Yokawa & B. Jerez
11h15 - 12h25 Theme: **Evolution** (Chair: M. Roeleveld) (Venue: T H Barry Lecture Theatre)

11h15 - 11h30 Molecular phylogeny of Sepiidae - L. Bonnau and R. Boucher-Rodoni

11h30 - 11h50 Evolution and phylogeny of Coleoidea on the basis of shell construction - D.N. Khromov

11h50 - 12h10 Molecular phylogenies of the Coleoidea using mitochondrial and nuclear genes - D. Carlino

12h10 - 12h25 Molecular phylogenetic evidence supporting the taxonomic separation of *Octopus vulgaris* and *Octopus mimus* (Cephalopoda: Octopoda) - R. Söller, K. Warnke, U. Saint-Paul and D. Blohm

12h25 - 13h30 LUNCH AND POSTER SESSION: **Evolution and Biodiversity** (Venue: Green and Yellow Room)

**B1** Distribution and abundance of *Todarodes pacificus* paralarvae from two surveys south of Japan - J.R. Bower, Y. Nakamura, J. Yamamoto, K. Mori and Y. Sakurai.

**B2** *Architeuthis* sp. (Mollusca, Cephalopoda) stranded on Patagonian (Argentina) shore - M.E. Re, P.J. Baron, J.C. Beron, A.E. Gosztonyi, L. Kuba and M.A. Monsalve.


**B4** *Architeuthis* beaks: implications for systematics - M.A.C. Roeleveld

**B5** External recess of the anterior vena cava in some cephalopods: the 'auto-pilot'? - M.R. Lipinski

13h30 - 15h20 Theme: **Evolution** (Chair: P. Ward) (Venue: T H Barry Lecture Theatre)

13h30 - 13h50 Molecular genetic markers in the study of population structuring in the squid *Loligo forbesi* - P. Shaw, P.R. Boyle and G.J. Pierce

13h50 - 14h05

14h05 - 14h20 Description of an unrecognized organ in cephalopods - analysis of structure and function - M. Parry

14h20 - 14h35 The role of the loliginid digestive gland: lipid storage or lipid excretion - J. Semmens

14h35 - 14h50 Immunobiology of *Eledone cirrhosa* - S. Malham

14h50 - 15h05 Autophagy in *Octopus* - B. Budelmann

15h05 - 15h20 A newly discovered family of Oegopsid squids - M. Vecchione and R.E. Young

15h20 - 15h45 TEA AND POSTERS: **Biodiversity and Ecology** (Venue: Green and Yellow Room)

**C1** Spent females of deepwater squid *Galeorhynchus glacialis* (Chun) under the ice at the surface of Weddell Sea (Antarctic) - K.N. Nesis, C.M. Ningmaullin and I.V. Nikitina.

**C2** Fishery for and ecology of South African octopods - C. Smith

**C3** Reclassification of the Cirrata (Cephalopoda: Octopoda) - S. O'Shea

**C4** The position of common octopus (*Octopus vulgaris*) within the benthic community of the NW-African coast (Cap Blanc, Mauritania): species associations, compared variations of abundances and ranges of habitat - D. Jouffre.

15h45 - 17h40 Theme: **Evolution** (Chair: M. Norman) (Venue: T.H. Barry Lecture Theatre)

15h45 - 16h00
16h00 - 16h20  
Beak Morphology as a taxonomic character in Southern Oceans (Cephalopodidae) - R. Ogden, L. Allocco, P. Watts and J. Thorpe

16h20 - 16h35  
Biology of the erratic octopus Grimpoteuthis glacialis (Cephalopoda, Opisthoteuthidae) in the South Shetland Islands, Antarctica - M. Vecchiione, U. Piatkowski and L. Allocco

16h35 - 16h50  
Chiroteuthis veranyi from the South Atlantic (Cephalopoda: Chiroteuthidae) - P.G. Rodhouse and C.C. Lu

16h50 - 17h10  
The status and importance of cephalopod systematics in Southern Africa - M.A.C. Roeleveld

17h10 - 17h25  
Temporal variations in the life stages of sepiolid squid - W.C. Summers and G.A. Eberle

17h25 - 17h40  
Morphometrics and chromatophore arrangements in hatching of Loligo species from Patagonian coastal waters - P.J. Baron

17h40 - 18h15  
SUNDOWNERS AND POSTER SESSION: Biodiversity and Ecology (Venue: Green and Yellow Room)

* Experimental jiggling operations in the Thracian Sea (NE Mediterranean) and behaviour of Loligo vulgaris - P. Sanchez, E. Lefkadiou, M. Demestre and A. Adamidou

* The metamorphic cycle of the squid Loligo vulgaris male and the opportunity for sperm cryopreservation - R.Kühn, M.R. Mann

* Cephalopods discarded by trawl fisheries in the Western Mediterranean - P. Sartori, P. Belcari, A. Carbonelli, M. Gonzalez, A. Quegglas and P. Sanchez.


20h00 -  
Meeting of the Architeuthis discussion group  
(Venue: T.H. Barry Lecture Theatre)

DAY 2: FRIDAY 5 SEPTEMBER

08h00 - 09h00  
Slide preview for the speakers (Blue and Red Rooms)

09h00 - 10h00  
The theme: Biodiversity (Venue: T.H. Barry Lecture Theatre) (Chair: M.R. Lipinski)

09h00 - 09h30  
Keynote paper: Biodiversity and systematics in cephalopods: unresolved problems, an integrated approach - K.N. Nesis

09h30 - 09h45  
Cephalopods represented by beaks in the shoals at which stranded at Patkikariki, North Island, Clarke, M.R. and C.F.E. Roper

09h45 -  
Announcements for the day

09h50 - 10h30  
TEA AND POSTERS: Biodiversity, Ecology and Fisheries Biology (Venue: Green and Yellow Room)

* Modelling growth and maturation of annual squid species - E.P.M. Grist and S. des Clerfs

* Trophic relations of the large squid Loligo vulgaris (Cephalopoda, Opisthoteuthidae) - A. Giacchi and S. Pasqual

* Paracalophyllia as natural biological tests for cephalopods in Southern Spain: a pilot study on tunicate relationships - E. Anido, C. Alías, F. Gonzalez and S. Pasqual

* Patterns and processes in parabolic communities: the application for cephalopod ecology - S. Pasqual, E. Anido, C. Gil

* C. Alías
10h30 - 12h35: Theme: Biodiversity, Ecology and Fisheries Biology (Chair: M. Stiune) (Venue: TH Barry Lecture Theatre)

10h30 - 10h50 Biogeography of bentthic octopuses - M. Norman and E. Hochberg
10h50 - 11h05 Squid trap fishery in Thailand and an impact on their spawning behaviour - C. Chotiyaputta

11h05 - 11h20 Diversity and fisheries of cephalopods from continental shelf and slope waters around Taiwan - C.C. Lu, P.W. Hsueh and S.C. Feng
11h20 - 11h35 Squid distribution in the North Sea in relation to oceangraphic conditions - G. Pierce and C. Waluda

11h35 - 11h50 Cephalopods of the Takabonerate Islands, Indonesia - Abdul Ghofer
11h50 - 12h05 Species composition of the cephalopod discards from the commercial fisheries on the south coast of Portugal - T.C. Borges and M.E. Costa

12h05 - 12h20 Cephalopod larvae off Galician waters (NW Spain) in relation to upwelling conditions - F. Rocha, A. Guerra, R. Prego and U. Pliakowski
12h20 - 12h35 Composition and spatial distribution of cephalopods in two North-Western Mediterranean areas - P. Sanchez, P. Belcar and P. Sarco

12h35 - 13h30: LUNCH AND POSTER SESSION: Biodiversity, Ecology and Fisheries Biology (Venue: Green and Yellow Room)

*The life cycle of Alloteuthis subulata in the North Sea - S. Steimer
*Application of an objective assessment of maturity to the Patagonian squid Loligo gahi (d'Orbigny) from Falkland Islands waters - E.M.C. Haffield and A.W.A. Murray.
*Observations on the embryonic development of Octopus minus - K. Wamke
*Embryonic stages of a Patagonian species of Loligo - P.J. Baron
*Embryonic development of Illex argentinus from artificial insemination - M. Sekui, N.E. Brunetti, B. Elena and Y. Sakurai

13h30 - 15h20: Theme: Ecology and Fisheries Biology (Chair: D. Young) (Venue: TH Barry Lecture Theatre)

13h30 - 14h00 Keynote paper: Physiology and ecology in fisheries science: limitations or new horizons? - R. O'Dor
14h00 - 14h15 The Fisheries Workshop: results - M.R. Lipinski
14h15 - 14h35 Environmental constraints and the physiology of performance in squids: an overview - H.O. Pörtner
14h35 - 14h50 Forsythe hypothesis revisited - J.W. Forsythe
14h50 - 15h05 Sea temperature, growth and maturation of Loligo gahi in Falklands waters - S. des Clerc, E.P.M. Grist and C. Nolan
15h05 - 15h20 Trade-offs between growth and reproduction: a morphological, structural, and proximate assessment of the loliginid squid, Photololigo species - N. Mitschaniwskyj and J. Semmens

15h20 - 15h40: TEA AND POSTER SESSION: Biodiversity, Ecology and Fisheries Biology (Venue: Green and Yellow Room)

*Biological early life stages of Loligo species - M.C. Martins
*Tagging Octopus vulgaris: tests in concrete tanks (Dakar, Senegal) - F. Domain, A. Caerveri et al.
*Sympatric populations of Illex argentinus on the Patagonian shelf: the perils of snapshot data - C. You and L. Purchase.
15h40 - 17h20: Theme: Ecology and Fisheries Biology (Chair: H.O. Pörtner) (Venue: T.H. Barry Lecture Theatre)

15h40 - 15h55  Seasonal influences on squid growth, how squids respond to ambient changes in their environment - G. Jackson

15h55 - 16h15  Somatic growth processes: how are they modified in captivity? - G. Pecl and N. Moltschanowkyj

16h15 - 16h30  The influence of temperature on squid statolith microstructure - D. Durholz and M. Lipinski

16h30 - 16h45  The hard structures of Sepia officinalis (L. 1758): a tool for ageing - V. Bettencourt and A. Guerra

17h30 - 19h30  CIAC General Meeting (Venue: T.H. Barry Lecture Theatre)

19h30  EVENING SOCIAL EVENT: WATERFRONT RESTAURANT

DAY 3: SATURDAY 6 SEPTEMBER

EXCURSIONS

17h30  Braai (= barbecue) (Venue: South African Museum Courtyard)

DAY 4: SUNDAY 7 SEPTEMBER

08h00 - 09h00  Slide pre-view for the speakers (Blue and Red Rooms)

09h00 - 10h25  Theme: Biodiversity, Ecology and Fisheries Biology (Chair: N. Brunetti) (Venue: T.H. Barry Lecture Theatre)

09h00 - 09h20  Gladius growth increments: their periodicity and formation in relation to growth under captive conditions - S.E. Hughes, P.R. Boyle and Y. Sakurai

09h20 - 09h40  Biology and body darkening related to maturity of the European flying squid Todarodes sagittatus (Cephalopoda: Ommastrephidae) in the eastern central Atlantic - U. Piatkowski and V. Hernandez-Garcia (two abstracts)

09h40 - 09h55  Growth lines within the beak microstructure of the octopus Octopus vulgaris Cuvier 1797 - C. Perales Rayo and C.L. Hernandez-Gonzalez

09h55 - 10h10  Growth and reproduction of Octopus chelensis D'Orbigny, 1835 (Mollusca: Cephalopoda) in southern San Matias Gulf, Patagonia, Argentina - M.E. Re

10h10 - 10h25  The working hypothesis on reproductive strategy in Antarctic squids - U. Piatkowski, P. Rodhouse and Ch. M. Nigmatullin

10h25  Announcements for the day

10h30 - 10h50  TEA AND POSTER SESSION: Biodiversity, Ecology and Fisheries Biology (Venue: Green and Yellow Room)
**H1** Population biology and fishery of the squid *Loligo plei* (Blainville, 1823) (Myopsida: Loliginidae) off Santa Catarina, Southern Brazil - J.A.A. Perez.

**H2** The fisheries biology of *Todarodes sagittatus* in Irish and Scottish waters - C. Lordan, E.D. Brown and M.A. Collies.

**H3** Aspects of the fishery and biology of the common octopus, *Octopus vulgaris* (Mollusca: Cephalopoda), on the south coast of Portugal - T.C. Borges, I. Goncalves and J.H. Ramos

10h50 - 12h25 Theme: Biodiversity, Ecology and Fisheries Biology (Chair: M. Roberts) (Venue: T. Barry Lecture Theatre)

10h50 - 11h05 A new type of ovary ontogenetic development in cephalopods - Ch. M. Nigmatullin and A. Pietrowski

11h05 - 11h20 The reproductive status of *Opisthoteuthis grimaldii* over an annual cycle - H.I. Daly and P.R. Boyle

11h20 - 11h35 Ovarian atresia during the sexual cycle in *Loligo vulgaris reynaudii* - Y.C. Melo and W.H. Sauer

11h35 - 11h50 Population structure and maturation patterns of *Sepia officinalis* in the Ria Formos Lagoon (south Portugal) - J. Quintela, H. Villa and J.P. Ancrade.

11h50 - 12h05 Multiple spawning in tropical and temperate loliginid squids - G. Peel

12h05 - 12h25 The biology of *Loligo vulgaris reynaudii* - W. Sauer, C.J. Augustyn and M.J. Rober

12h25 - 13h30 LUNCH AND POSTER SESSION: Biodiversity, Ecology and Fisheries Biology

(Venue: Green and Yellow Room)

**A1** Agua dos Sertões de Raimundo em I + E

**A2** Predatory role of Patagonian squid *Loligo gahi* on the Patagonian shelf and Falkland Islands waters - M. Rascio and J.M. Portela

**A3** The influence of *Aggregata* infection on cephalopod condition - C. Gestal, E. Abollo, C. Arias, A. Guerra and S. Pascual.

**A4** The applicability of GLM methods to study the effects of parasites on cephalopod populations: practical aspects - S. Pascual, E. Abollo, C. Gestal, A. Guerra and C. Arias.

13h05 - 15h05 Theme: Biodiversity, Ecology and Fisheries Biology (Chair: W. Sauer) (Venue: T. Barry Lecture Theatre)

13h05 - 13h20 Biological contributions to the stock assessment and management of chokka squid *Loligo vulgaris reynaudii* in the South African fishery - C.J. Augustyn

13h20 - 13h35 The effect of changing environmental regimes on *Todarodes pacificus* populations: a possible scenario - Y. Sakurai, H. Kiyoyuji and S. Saltón


13h50 - 14h05 Contribution to the biology of the mundial squid *Makaira hyperborea* (C. H. Helle, 1905) from the Icelantic - M. E. Iwanusik, M. L. Ivanovic, B. Elena and R. O'Dor

14h05 - 14h20 The impact of temperature, food availability and transport processes on the early inshore migration of the short-finned squid *Illex illecebrosus* - I.A.A. Perez and R. O'Dor

14h20 - 14h35 Investigation of the factors affecting beach-seine catches of *Loligo vulgaris* in the Thracian Sea (Eastern Mediterranean) - E. Leifsdottir, P. Sanchez, A. Adamidou and A. Tsangridis

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14h35 - 14h50 Quantification of squid spawning behaviour: design of an underwear video-environmental- acoustic telemetry system (UVEATS) - M. Roberts


15h05 - 15h20 TEA AND POSTERS: Biodiversity, Ecology and Fisheries Biology (Venue: Green Yellow Room)

15h20 - 17h50 Theme: Biodiversity, Ecology and Fisheries Biology (Chair: I. Augustyn) (Venue: Barry Lecture Theatre)

15h20 - 15h35 Large and meso-scale distribution of the ommastrephid squid Martialiahyadesi in the Southern Ocean: a synthesis of information relevant to fishery forecasting and management - P.G. Rodhouse

15h35 - 15h50 Fisheries biology of the ommastrephid squid Martialia hyadesi in South Georgia during the austral winter - A.F. González and P.G. Rodhouse

15h50 - 16h05 How temperature and ocean level affect growth of nurse octopuses Sepia officinalis - W. Henschke and P. Whiteman

16h05 - 16h20 Preliminary observations on beak development in Todarodes pacificus paralarvae - J.R. Bower

16h20 - 16h35 The zoological importance of Illex coindetii and Todaropsis eblanae in Irish waters - C. Lordan, G.M. Burnett, and T.F. Cross

16h35 - 17h00 Cephalopods in the diets of four shark species from the East Coast of South Africa - M.J. Smale and G. Cliff

16h50 - 17h05 Cephalopods in the diet of the albacore Thunnus alalunga - G. Bello and G. Mar

17h05 - 17h20 Cephalopods in the diet of sperm whales caught commercially off Durban - M. Clarke and M.A.C. Roelved

17h30 - 18h00 CONCLUSIONS - Johann Augustyn (Venue: T.H. Barry Lecture Theatre)

17h30 - 17h45 CLOSE (Dr Mike Cluver, Director: South African Museum and Symposium Vice-Chairman) (Venue: T.H. Barry Lecture Theatre)

19h30: EVENING SOCIAL EVENT: African Dinner in the Whale Well, South African Museum

DAY 5: MONDAY 8 SEPTEMBER

08h00 - 13h00 CIAC COUNCIL MEETING (Blue Room)
WORKSHOP ON BIODIVERSITY OF SOUTHERN AFRICAN CEPHALOPODS

TUESDAY 9 SEPTEMBER - SUNDAY 14 SEPTEMBER 1997

VENUE: T H Barry Lecture Theatre, Red and Blue Rooms
Teas and Lunches: Green and Yellow Room

OBJECTIVE: To produce a multi-authored identification guide to southern African cephalopods.

FORMAT: Hands-on sessions with specimens from the South African Museum's collections to resolve taxonomic problems and compile species accounts. Participants will be divided into teams addressing systematic groups.

PUBLICATION: CD ROM disk, to be produced by the Expert Center for Taxonomic Identification at the University of Amsterdam. Possibly also as hard copy through the FAO.

**DAY 1: TUESDAY 9 SEPTEMBER**

09h00 - 10h00 General discussion on approach and format of contributions (Martina Roeleveld)
(Venue: T H Barry Lecture Theatre)
10h00 - 10h30 TEA (Venue: Green and Yellow Room)
10h30 - 12h30 Material and methods, division of labour (Martina Roeleveld)
(Venue: T H Barry Lecture Theatre)

12h30 - 13h30 LUNCH (Venue: Green and Yellow Room)

13h30 - 15h00 Meeting the specimens (Venue: Marine Biology Section)
15h00 - 15h30 TEA (Venue: Green and Yellow Room)
15h30 - 18h00 Getting to know you, continued (Venue: Marine Biology Section)

DINNER: Own arrangements
EVENING: Free

**DAY 2: WEDNESDAY 10 SEPTEMBER**

09h00 - 10h00 Touching bases - questions, swapping between groups (Martina Roeleveld)
(Venue: T H Barry Lecture Theatre)
10h00 - 10h30 TEA (Venue: Green and Yellow Room)
10h30 - 12h30 Setting down to some work (Venue: Marine Biology Section)

12h30 - 13h30 LUNCH - demonstration of Linnaeus II software from the ETI (Martina Roeleveld)
(Venue: Green and Yellow Room)

13h30 - 15h00 Working with specimens (Venue: Marine Biology Section)
15h00 - 15h30 TEA (Venue: Green and Yellow Room)
15h30 - 18h00 Working with specimens (Venue: Marine Biology Section)

DINNER: Own arrangements
EVENING: Free

**DAY 3: THURSDAY 11 SEPTEMBER**

09h00 - 10h00 **Working with specimens** (Venue: Marine Biology Section)
10h00 - 10h30 TEA (Venue: Green and Yellow Room)
10h30 - 12h30 **Working with specimens** (Venue: Marine Biology Section)

12h30 - 13h30 LUNCH (Venue: Green and Yellow Room)

13h30 - 15h00 **Working with specimens** (Venue: Marine Biology Section)
15h00 - 15h30 TEA (Venue: Green and Yellow Room)
15h30 - 18h00 **Working with specimens** (Venue: Marine Biology Section)

DINNER: Own arrangements

20h00: Informal discussion, over drinks, on speciation theory - e.g. problems of how one defines species in geographically separated populations of cephalopods (Martine Roeleveld (Venue: Green and Yellow Room)

**DAY 4: FRIDAY 12 SEPTEMBER**

09h00 - 10h00 **Working with specimens** (Venue: Marine Biology Section)
10h00 - 10h30 TEA (Venue: Green and Yellow Room)
10h30 - 12h30 **Working with specimens** (Venue: Marine Biology Section)

12h30 - 13h30 LUNCH - theoretical discussion - *What are the morphological and molecular guidelines and/or evidence for determining separate species?* (Martina Roeleveld (Venue: Green and Yellow Room)

13h30 - 15h00 **Working with specimens** (Venue: Marine Biology Section)
15h00 - 15h30 TEA (Venue: Green and Yellow Room)
15h30 - 18h00 **Working with specimens** (Venue: Marine Biology Section)

DINNER: Own arrangements
EVENING: Joll out on the town

**DAY 5: SATURDAY 13 SEPTEMBER**

09h00 - 10h00 **Working with specimens** (Venue: Marine Biology Section)
10h00 - 10h30 TEA (Venue: Green and Yellow Room)
10h30 - 12h30 **Working with specimens** (Venue: Marine Biology Section)

12h30 - 13h30 LUNCH (Venue: Green and Yellow Rooms)
13h30 - 15h00 Working with specimens (Venue: Marine Biology Section)
15h00 - 15h30 TEA (Venue: Green and Yellow Room)
15h30 - 18h00 Working with specimens (Venue: Marine Biology Section)

DINNER:
Own arrangements

20h00-22h00 Informal discussion, over drinks, on evolution theory (Martina Roeleveld) (Venue: Green and Yellow Room)

**DAY 6: SUNDAY 14 SEPTEMBER**

09h00 - 10h00 Working with specimens (Venue: Marine Biology Section)
10h00 - 10h30 TEA (Venue: Green and Yellow Room)
10h30 - 12h30 Working with specimens (Venue: Marine Biology Section)

12h30 - 13h30 LUNCH - theoretical discussion - *What is a species?* (Martina Roeleveld) (Venue: Green and Yellow Room)

13h30 - 15h00 Winding up (Venue: Marine Biology Section)
15h00 - 15h30 TEA (Venue: Green and Yellow Room)
15h30 - 17h00 Winding up, continued (Venue: Marine Biology Section)

18h00: Marek's Farewell Braai (Venue: UCT Tennis Club)

MONDAY 15TH - FRIDAY 19 SEPTEMBER - Examination of *Archaeotheris*, *Tunisia* and *Thysanotea* specimens in wet lab.

[cancelled]