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FRD ~~SCAR~~, CSIR, PO Box 395, Pretoria 0001
SNO ~~SCAR~~, WNNR, Posbus 395, Pretoria 0001

MARINE MAMMAL RESEARCH AT THE MAMMAL RESEARCH INSTITUTE (MRI), UNIVERSITY OF PRETORIA

Financed formerly by the Department of Transport and latterly by the Department of Environment Affairs, on the advice of the Scientific Committee on Antarctic Research (SASCAR), the MRI launched its involvement in marine mammal research within the South African National Antarctic Programme during 1973.

Marion Island (46°54'S, 37°45'E) with its southern elephant seal *Mirounga leonina* and sub-Antarctic fur seal *Arctocephalus tropicalis* populations became the focal point for this research. It soon became apparent that these populations were in a state of flux, *M. leonina* showing a marked decline whereas *A. tropicalis* was increasing exponentially, based on a comparison with research carried out during the early 1950s, soon after the annexation and establishment of a weather station by South Africa. Baseline values established for these populations became very important for subsequent research, not only on the Prince Edward Islands, but also for the Kerguelen Province islands clustered around the ecologically important Antarctic Convergence within the Indian Ocean Sector of the sub-Antarctic. These trends were first recorded at Marion Island during the post-exploitation period which ended with the last sealing operations during the early twentieth century. It was also discovered that the Antarctic fur seals *A. gazella*, formerly only known from islands south of the Convergence, were establishing themselves on the island, and possibly interbreeding with the more numerous *A. tropicalis*.

Fuelled by these important discoveries, focussed on *M. leonina*, research on the fur seal *A. tropicalis* was extended to include the Gough Island (40°20'S, 9°54'W) population in the South Atlantic in 1974. Confirmation for the high intrinsic rate of natural increase in the fur seal was found here, and was subsequently found to be true over the whole distributional range of the species and strictly according to different phases, with differing rates of population increase. Sadly the small (<300) Gough Island elephant seal population remained at very low levels since the first post-sealing survey of 1955.

International recognition came with the launching of collaborative studies dealing specifically with the growth rate and social structure of elephant seal populations, in particular those on the French Archipelago of Kerguelen (49°21'S, 70°12'E) during the summers of 1977/78,1979/80 and in January/February 1984 in collaboration with Terres Australes et Antarctiques Francaises (TAAF). Highlighted during an International Colloquium held in Pretoria (6 September 1983) to mark ten years of research on Antarctic and sub-Antarctic seals by the MRI, an invitation to help launch the elephant seal research programme envisaged by the Australian Antarctic Division at Heard Island (53° 5'S, 73°30'E) was extended and executed during the spring of 1985. This unequivocally indicated that the elephant seal decline applied to the whole of the Kerguelen Province sub-populations, constituting an important signal of at least regional environmental change yet to be identified. Annual censusing of the breeding population at Marion Island

(1973 - 1988) in conjunction with the tagging/recapture programme over the entire period, provided a fine resoltuion in population trends. Evaluation of these and other population parameters, are now possible to identify at which stage(s) of the life cycle environmental limitations are operating. Associated research also investigated the influence of elephant seals on the terrestrial ecology of Marion Island, fidelity to birth/breeding sites, dispersal and dispersion, seasonal haulout cycles, and factors influencing the reproductive success of southern elephants.

According to lesser role in the overall research thrust on Marion Island, the finger nevertheless remained on the pulse of fur seal populations at Marion and Gough islands. This also included a stint at Amsterdam Island (37°49'S, 77°33'E) in collaboration with TAAF during 1981/82, and whenever the opportunity arose at Iles Kerguelen and Heard Island. Possible resource competition with the crayfish industry around the Tristan da Cunha Islands (Gough in particular), subsequently shown to be unfounded, also allowed investigation into population parameters of *A. tropicalis* based on a culled sample. The occurrence of both *A. tropicalis* and *A. gazella* at Marion Island, resulted in a study of the relationships between these sympatric breeding populations, and confirmed their inter-breeding.

Investigation of the distribution and abundance of true Antarctic seal species in the pack-ice off Western Dronning Maud Land, Antarctica, commenced on an annual basis over the period 1974 - 1977 centered on January/February of each year to provide baseline values for monitoring future possible changes. A major find was that the rare Ross seal *Ommatophoca rossii*, the least known of the pinnipeds, occurred at a consistently high density despite different pack ice conditions over the four consecutive years. This led to a preliminary study at finding out more about the age structure, reproductive state and diet of this species, with a view to devising and executing a more detailed study dealing with, amongst others, the distributional ecology of this species.

The experience gained and baseline values obtained from continued endeavour over 15 years of involvement with pinnipeds, both in the Antarctic and on sub-Antarctic islands has set the stage for the next decade of pinniped research. These would involve primarily the defining of forces responsible for change in population parameters of these top-predators. This would entail a study of the trophodynamics of seals, i.e. food consumption in quality and quantity, the feeding behaviour, energetic and biochemical considerations, the role of seals in the Southern Ocean ecosystem, the implications of this for growth and survival and the use of growth rates and reproductive parameters as indicators of change in the ecosystem. The availability of sophisticated equipment (TDRs) to unravel time budgets during pelagic phases, use of double labelled water methods to study energetics of free-living seals, and the use of VHF radio-tracking, satellite telemetry, and their successful application in studies of this nature on seals and/or penguins, emphasizes the opportunity that we have for similar work on the two fur seal species at Marion Island as well as the declining population of *M. leonina*. Furthermore, the recent suggested possible dramatic reduction in the crabeater seal population between the early 1970s and 1983 in the western Weddel Sea and the Pacific Antarctic Sector, emphasizes the research priorities identified by the SCAR Seal Specialist Group also for our area of

interest, offshore from Dronning Maud Land and, in particular, the little known Ross seal. Furthermore the South African Data Base on *M. leonina* is the most comprehensive and reliable anywhere, allowing us to follow in detail the continued decline and associated population parameters of the Marion Island population.

Initially executed on an opportunistic basis, involving killer whales *Orcinus orca* off the coast of Marion Island, and other cetaceans in Antarctica during seal surveys, whale research was placed on a firm footing during 1984. It was shown that Right whales *(Eubalaena australis)* along the South African coast continue to increase at a surprisingly brisk rate (for whales) of 7% a year. Studies of this increasing population are now focussing on determination of population size, calving interval, age at first reproduction and adult survival rate, using the re-photography of naturally marked individual cows, of which some 250 are on file. Starting in 1988 aerial photography will also be used to measure cow calf pairs over four months of the year to establish calving season, size at birth, growth rate of calves and size composition of adult females.

Work on the feeding ecology of common dolphins *(Delphinus delphis)*, a large schooling species that feeds on pelagic fish such as anchovy and pilchard, is focussed on a comparative analysis of the stomach contents from a number of coastal delphinids to establish their importance as predators of pelagic fish. *In vitro* experiments on the digestion rate of various dietary components have been started in order to interpret the stomach content data more fully.

The migration pattern of humpback whales *(Megaptera novaeangliae)* on the east coast of southern Africa has also commenced. These animals make use of coastal waters in their seasonal migration from Antarctic feeding grounds to their tropical breeding grounds. The main aims of this project are to determine:

(a) the characteristics (e.g. timing, direction, intensity, speed of migration, pod size and composition) of the migration from a shore-based observation tower in Natal;

(b) the Antarctic breeding grounds and tropical breeding grounds with which these whales are associated; and

(c) whether the migrations are consistently east or west coast migration or whether some mixing between coasts occurs.

A preliminary study carried out during July 1988 indicated that most of the migration characteristics could feasibly be measured from a shore based conservation platform.

Postgraduate students wishing to pursue further study on marine mammals should write to the Director and provide full personal particulars.

Drs M Bester & K Findlay
MRI, University of Pretoria

WEERGAWE VAN DIE 88/89 WETENSKAPLIKE OORNAME VAN SANAE

Die S.A. AGULHAS het die oggend van 2 Desember 1988 om 09h00 die hawe uitgevaar op pad na Sanae. Groot was die opgewondenheid toe ons die pakys binnedring en die reeds 2 000 km vanaf Sanae. Intussen is die nuwe manne behoorlik ingesweer deur koning Neptuns van die see. DOW & G se span wen toe weer die toutrek kompetisie en die wetenskaplikes se span kom toe weer laaste. Vir tydverdryf is 'n hele paar flieks per dag vertoon en 'n gesamentlike praatjie is deur die wetenskaplikes gereël om aan die res van die geselskap te probeer verduidelik wat hulle nou eintlik op Sanae doen. Die baie pakys het egter veroorsaak dat ons eers op 14 Desember 1988 by die bukta aangekom het. Die geluk was aan ons kant aangesien 'n stuk pakys nog nie van die bukta weggebreek het nie. Die geoloë is afgelaai om die sterkte en dikte van die pakys te toets, terwyl Sanae 29 se manne nog besig was om met behulp van catterpillars 'n pad deur die 25 meter hoë yswand te stoot wat afkom tot op die pakys. Die Adelie en Keiser pikkewyne het ook nader gestaam om te kom groet en die hele affêre te betrag. Die weer was baie gunstig en die aflaai van die skip het die aand van 15 Desember 1988 begin. Behalwe die kosblik wat Okkie van Eck platgery het met sy reuse D6 catterpillar het die aflaai baie goed verloop. Die eerste mense is reeds op 18 Desember na die Sanae basis uitgevlieg terwyl die res saam met die nuwe span die volgende middag gearriveer het. 'n Heerlike ete is deur die twee kokke voorberei ter viering van Kaptein en mevrou Leith se 25ste herdenking van hulle trŏudag.

Die verskillende groepe het besluit om die buitewerk eerste aan te pak aangesien die weer by die dag verbeter het. Terwyl Willem van Loo se span met die oprigting van Potch se hutte besig was, het geskeduleerde cat-treine die koskassies en ander toerusting vanaf die bukta na die basis aangery. André Benadie en Bennie Pelzer van Potchefstroom het saam met die twee Potchkassies begin om die drie Riometer antennes weer op te rig. Graham Tilbury van Natal en sy Natalkassies het net so hard gespook om hulle beskadigde antenne af te takel, 'n nuwe een op te rig en nuwe kabels na die antenne te lê. Andy en Martinus van Hermanus het hulle buitehut intussen verhoog en met kalibrasiewerk op hulle toerusting begin. John en Des, die twee Rhodeskassies, het gevoel hul hut kort 'n goeie verf en moet weer behoorlik verseël word. Intussen is die eerste cat-trein na Grunehogna gestuur met brandstof en ander voorrade vir die geoloë.

Twee weke later het die weer vinnig begin versleg, en werk moes buite so te sê gestaak word. Die meeste wetenskaplike programme was voor op skedule en herstel- en installasiewerk kon binne die beskerming van die wetenskapblok hervat word. Kragbronne, bandaandrywers, drukkers, rekenaars, b.l.f. apparaat, telex masjiene, Pakratt toerusting, versterkers, ionosonde apparaat en nog seker 'n paar dosyn soorte apparate is herstel, ge-yk of ingebou. 'n Baie aangename werksgees het tussen al die wetenskaplikes geheers. So tussen die werk deur was daar darem tyd vir 'n bietjie slaap, lekker kosmaak en eet en so af en toe 'n mooi fliek, maar dit was net moontlik na 11h30 saans. Vyf Adelie pikkewyne het die begin van Januarie een hele middag besoek kom aflê by die basis tot groot vreugde van die fotograwe. Teen middel Januarie het die swak weersomstandighede weer begin opklaar en buitewerk is weer in alle erns hervat. Terwyl DOW & G besig was om die skuinsskag van die basis van 'n

vertikale skag te voorsien het die wetenskaplikes die laaste afrondingswerk begin voltooi en die werkende programme aan die nuwe spanlede oorgedra. Die mooi weer het ook toegelaat dat die wetenskaplikes van die Duitse basis ons met 'n kuiertjie kom verras het in hulle twee mooi Dornier vliegtuie. Die ete, Suid-Afrikaanse wyne en die stempel van koeverte was die betrokke middag en aand vir beide groepe 'n hoogtepunt van die 88/89 oorname.

André Benadie en Graham Tilbury saam met Willem van Loo, Bernard Gaum, Johan Krynauw en sy geoloë het ondersoek gaan instel na moontlike posisies vir onbemande stasies, 'n nuwe basis wat op rots gebou kan word, en die gebruik van die bestaande Grunehogna basis as 'n oorwinterbasis. Die opdrag is uitgevoer per helikopter en skidoo met 'n slee.

Alles het nie altyd glad verloop nie. Een van die helikopters is tydens die opstyg naby Grunehogna beskadig. Ons is bly niemand is beseer in die voorval nie en hoop die helikopter sal gou weer operasioneel wees. Redelike ernstige barste het ook die afgelope tyd in die Armco plate begin voorkom. Die plate kan ook nie meer die geweldige druk van buite weerstaan nie. Die basis sal waarskynlik binne die volgende drie jaar vervang moet word.

Teen 26 Januarie 1989 was die S.A. AGULHAS weer terug by Sanae en kon die geoloë aan boord gaan. Die laaste 100 000 liter grootmaat diesel is met behulp van 'n pypleiding tot bo-op die ys in 'n groot rubbertenk gepomp. Die laaste mense is Sondagoggend 29 Januarie vanaf die noodbasis ingevlieg en nadat die diesel klaar gepomp was, het ons vertrek na Kaapstad. Na 'n veilige terugreis het die S.A. AGULHAS weer die oggend van 7 Februarie in die hawe aangekom.

Dit was 'n aangename oorname waartydens hard gewerk is en heelwat verrig is. Die dank gaan ook aan die koördineerders van DOS, die vakmanne DOW & G, die kaptein van die S.A. AGULHAS en die kommandant en sy bemanning van die helikopters vir die veilige reise wat onderneem is.

Namens die wetenskaplikes van die 88/89 oorname.

André Benadie
Potchefstroomse Universiteit vir CHO

INTERNATIONAL TASK FORCE REPORTS ON HEALTH EFFECTS OF CHLOROFLUOROCARBONS

Immediate and effective international cooperation is essential to counter stratospheric ozone depletion caused by the accumulation of chlorofluorocarbons (CFC).

This is the recommendation made by an international task force on chemical safety composed of experts from the World Health Organization (WHO), the International Labor Organization (ILO), and the United Nations Environment Programme (UNEP). The task force which met in Munich, West Germany, from

21 to 25 November 1988, reviewed the direct and indirect health effects of halogenated chlorofluorocarbons. The report of this meeting will be published as part of the WHO Environmental Health Criteria series.

Chlorofluorocarbons are chemical gases used for industrial applications and in various household equipment, from sprays to refrigerators. Although chlorofluorocarbons are useful, durable and "safe" chemicals for industrial applications, their continued use is an indirect threat to the environment and to human health.

The reaction of chlorofluorocarbons that causes ozone depletion in the upper stratosphere and the increase of Ultraviolet B (UVB) radiation striking the surface of the earth are causing increased concern among environmental specialists.

The projected increased level of UVB irradiance due to ozone depletion is anticipated to exert substantial hazardous effects on human health and the environment. Depletion of the ozone layer by 1% would increase the incidence of skin cancers (non melanoma) by 3%, and 5% depletion would increase skin cancer incidence by 16%. This would mean an advent of about 200 000 new skin cancer patients a year.

An increase of UVB irradiation would probably also increase the incidence of melanoma, the most dangerous and lethal skin cancer that effects the human race. Apart from the effects on the skin, possible immunotoxic and occular effects led to the task force to call for urgent measures to counteract stratospheric ozone depletion.

Unlike the indirect effects already mentioned, the direct effects of halogenated chlorofluorocarbons are negligible. The available toxicological data show a low acute and chronic toxicity and indicate no mutagenic or carcinogenic potential. Health risks to human beings are mainly confined to occasional high exposures that may occur when handling these substances.

The report prepared by the task force contains an evaluated background information on the physical and chemical properties of chlorofluorocarbons, employing the frequently used analytical methods for determining levels of exposure. It gives an overview of the main sources of human and environmental exposures, and tabulates the levels determined in a number of countries. There is also a section in the report which is devoted to the absorption, distribution, metabolic transformation, retention, and reaction of chlorofluorocarbons to body components.

Press Release WHO/LUN 61
9 December 1988

NB For further information, please contact Dr W Kreisel, Director, Division of Environmental Health, World Health Organization, 1211 Geneva 27, Switzerland.
Fax : 41 22 91 0746
Telex : 27821 OMS CH
Telegram : Unisante Geneve
The WHO Environmental Health Criteria series is available from WHO Publications Centre USA, 49 Sheridan Avenue, Albany, NY 12210

S.A. AGULHAS SCHEDULE 1989 AND 1990

Voyage No.	Destination	Dates	Duration
1988 V53	Marion Island I	24/03 - 28/04	36 days
V54	Marion Island II	25/08 - 14/09	20 days
V55	Gough Island	29/09 - 04/11	36 days
V56	Sanae 1988/89	02/12/88 - 09/02/89	71 days
1989 V57	Marion Island I	29/03 - 09/05	42 days
V58	Marion Island II	10/08 - 30/08	20 days
V59	Gough Island	26/09 - 03/11	38 days
V60	Sanae 1989/90	28/11/89 - 10/02/90	74 days
1990 V61	Marion Island	28/03 - 03/05	36 days
V62	Marion Island II	13/08 - 07/09	25 days
V63	Gough Island	25/09 - 31/10	35 days
V64	Sanae 1990/91	28/11/90 - 10/02/91	74 days
1991 V65	Marion Island I	March - April	36 days

SASCAR Office

BRITISH SHIPYARD TO BUILD ANTARCTIC SURVEY SHIP

British Education Secretary Kenneth Baker announced that Swan Hunter Shipbuilders of Newcastle-upon-Tyne have secured a contract in excess of £30 million for the construction of the new research and logistics vessel, JAMES CLARK ROSS, for the British Antarctic Survey.

Mr Baker said:

"The Natural Environmental Research Council yesterday signed a contract with Swan Hunter Shipbuilders for the construction of a new ship for the British Antarctic Survey (BAS), to replace its 33 year old dual purpose research and logistics vessel, the Royal Research Ship JOHN BISCOE. The new ship will enable BAS to enhance its marine biology, geology and geophysics research programme and to strengthen the logistical support which it gives to its

bases in Antarctica. THE JAMES CLAK ROSS will provide British scientists with state-of-the-art facilities to study marine geology and geophysics and marine biology in both the Antarctic and the Arctic. It will enable the UK to maintain its position at the forefront of Antarctic scientific research."

Dept of Education and Science News
87/89, 22 March 1989

SAJAR AND OTHER PUBLICATIONS

During 1988 two numbers in volume 18 were published in the South African Journal of Antarctic Research. Number 1 is a multidisciplinary issue with the following articles:

- Grantham, Groenewald & Hunter; 'Geology of the northern H.U. Sverdrupfjella, western Dronning Maud Land and implications for Gondwana reconstructions'.

- Ryan & Watkins; 'Accumulation of stranded plastic objects and other artefacts at Inaccessible Island, central South Atlantic Ocean'.

- Wilkinson & Bester; 'Is onshore human activity a factor in the decline of the southern elephant seal?'.

- Klages & Gerdes; 'A little known colony of Emperor penguins on the coast of the eastern Weddell Sea'.

- Cooper; 'Bird ringing at Gough island, 1982-1987; with an analysis of movements of wandering albatrosses'.

- Gartshore, Cooper & Hunter; 'Bird ringing at Marion and Prince Edward Islands, 1982-1987; with an analysis of movements since 1951'.

Number 2 contains two articles both about fish fauna, titled as follows:

- Gon & Klages; 'The marine fish fauna of the sub-Antarctic Prince Edward Islands'.

- Gon; 'The fishes collected during the South African SIBEX I + II expeditions to the Indian sector of the Southern Ocean (60-66°S, 48-64°E)'.

Also recently published is the 'Data Report of the First Cruise of the Marion Off-shore Ecological Study (MOES-I)' by C M Duncombe Rae, in the South African National Scientific Programmes Report Series as number 159.

All of these publications are available to interested persons on request from Mrs Hannie Ridder, Technical Editor, SAJAR. Several backnumbers of SAJAR are also still available and a complete list of articles published in the Journal may be requested.

Hannie Ridder
SASCAR Office

EXECUTIVE SECRETARY OF SCAR

Below is an extract from a circular letter dated 3 April 1989 from the SCAR secretariat.

"As you know, last year SCAR advertised for an Executive Secretary to succeed me. The response was very good and the President of SCAR, Dr C Lourius, has now appointed Dr Peter Clarkson to the position.

Dr Clarkson is 44 years of age and has worked as a geologist for British Antarctic Survey for over 20 years. Indeed, some of you may already know him because he has visited stations of a number of different countries and has presented papers at SCAR Earth Sciences symposia. In addition to his scientific work, he does have experience in administration and is enthusiastic about the cause of international collaboration in Antarctic science.

Dr Clarkson will take up his duties with SCAR on 1 May 1989. He will work full-time for SCAR, which the Executive Committee considers necessary in view of the increasing activities and growth of SCAR.

It gives me great satisfaction to know that the future administration of the SCAR secretariat will be in such competent hands. I shall remain involved for some time yet to ensure a smooth hand-over and thereafter, at the request of the Executive Committee, I shall be available to SCAR in a consultant capacity .

I certainly commend Dr Clarkson to you and have every confidence that he will serve SCAR admirably."

G E Hemmen
Executive Secretary : SCAR

MEETINGS, CONFERENCES AND SYMPOSIA

BIOMASS Evaluation Meeting

The BIOMASS Evaluation Meeting will be held in September 1990 (exact dates not yet determined) at the Alfred Wegener Institute for Polar Research in Bremerhaven, F.R.G. The objective of the week-long meeting is to review the accomplishments of the BIOMASS Program during the decade of 1980-1990 and to discuss the gaps in our knowledge of the Antarctic marine ecosystem.

At its meeting in Hobart, in September 1988, the BIOMASS Executive made it clear that the meeting would not be planned as a Symposium but as a carefully balanced mix of presentations and discussions. The Executive realize that there would be a need for further data analysis workshops in advance of the meeting.

In the presentations, strong emphasis is to be placed on BIOMASS research as it relates to the topics under discussion.

• The first day of the week-long meeting will be a plenary session devoted to a presentation on the history and objectives of the BIOMASS Program, summaries of National contributions to BIOMASS (consisting of oral reports and compilations of cruises and field work); and a presentation on the role and operation of the BIOMASS Data Centre.

• The next day would consist of seven detailed presentations, each by one or more contributors, synthesizing aspects of the BIOMASS Program; this would continue the following morning with a further four such presentations. The syntheses presentations include: phytoplankton, biomass and production; krill swarms (size, distribution, relationships to oceanographic features and phytoplankton); krill biomass (acoustics and net estimates); krill life history and energetics; consumption of krill by predators; krill, zooplankton and ichthyoplankton relationships; and krill interannual variability in relation to hydrological and meteorological conditions.

• It was intended that written papers would be provided in advance of the meeting as pre-prints so that attendees could study them; the presenters, from one to several per session would give oral presentations drawing attention to the main points, but in less detail than the written accounts. Time for discussion would be included. Strong emphasis to be placed on BIOMASS research related to the topics discussed. The significance of the results should be to emphasize the future research activities discussed.

• The afternoon of the third day would be a Working Party on Krill (up to 10 members), synthesizing further the information presented in the detailed presentations. The fourth day would include two more such Working Parties on fish and squid (distribution, relation to hydrographic conditions, population trends) and on birds and mammals (distribution in relation to biotic and abiotic factors). There will also be a Working Party on Modelling. The Chairmen of these Working Parties would prepare a structured plan for the discussions and each would be allocated about 3 hours. There would be written reports from these Working Parties for the published proceedings.

The significance of the results will be emphasized, as well as the open discussion of plans for future research activities.

• On the final day there would be plenary sessions. In the morning the achievements of the BIOMASS Program would be presented by the three chairmen of the Working Parties referred to above with time for discussion. The afternoon session would be devoted to gaps in knowledge of the Southern Ocean ecosystem and the future need for cooperation. There would also be a final closing session. ■

Extract from BIOMASS Newsletter
Vol. 2, December 1988

THE SOCIETY FOR MARINE MAMMOLOGY

30 January 1989

Dear Colleague:

The Eighth Biennial Conference on the Biology of Marine Mammals will take place from 7 through 11 December 1989 in Pacific Grove, California. It will be co-sponsored by the Society for Marine Mammalogy, the Monterey Bay Aquarium, the United States Fish and Wildlife Service, and the University of California at Santa Cruz.

The meetings will take place at the Asilomar Conference Center, located about 15 minutes from downtown Monterey, in the midst of Monterey pine forests and stunning ocean views. As you may recall from the discussions in Miami, the single conference price will include housing, registration and meals. Plans are underway for stimulating symposia, sessions of posters and contributed spoken presentations, a plenary session, and several social events.

In response to concerns expressed at previous meetings, the conference committee has expanded the number of presentations to allow for almost 130 spoken papers and 160 posters. Oral presentations will be made in the standard fifteen minute format, in concurrent sessions to be held in the late morning and afternoon of each day. Each session of posters will be displayed all day, with a mixer each evening at the poster area to facilitate discussions with the authors.

In addition, each morning there will be two concurrent symposia. A list of the tentative symposia is included in this mailing. However, there is room for more. If you'd like to suggest and organize a symposium, please write to Conference Chairman, 272 Applied Sciences, University of California, Santa Cruz, CA 95064 by 15 February 1989.

Abstracts for concurrent and poster sessions will be due in mid-July. Detailed information regarding abstract format and submission, and registration will be mailed about 1 April 1989.

We look forward to seeing you in California.

Sincerely,

Glenn R. VanBlaricom
1989 Conference Chair

ANNOUNCEMENT AND TENTATIVE PROGRAM

EIGHTH BIENNIAL CONFERENCE ON THE BIOLOGY OF MARINE MAMMALS

7 - 11 December 1989
Asilomar Conference Center
Pacific Grove, California

TENTATIVE SYMPOSIUM SESSIONS

1. Habitat Degradation and Marine Mammals
   Ecosystem approaches to marine mammal conservation

2. Reproductive Biology of Marine Mammals

3. Foraging Ecology of Marine Mammals
   Foraging behavior and energetics of diving mammals

4. Rehabilitation
   Methods and results of current methods

Further symposia are being planned. If you would like to organize a symposium, suggest a topic, or participate in one of the above symposia please contact Dr. Glenn R. VanBlaricom, Conference Chair, 272 Applied Sciences, University of California, Santa Cruz, CA 95064, (408) 429-4926, by 15 February 1989.

PRELIMINARY
CALL FOR PAPERS

Papers at this year's meeting will be presented in either spoken concurrent, or poster sessions. In the selection of papers for presentation, priority will be given to members of the Society for Marine Mammalogy. Senior authorship will be limited to one presented paper (poster or spoken). Abstract forms will be provided in the next mailing and must be completed and postmarked by 15 July 1989 for consideration. Authors will be requested to designate their choice of topic area, as well as mode of presentation. Every effort will be made to meet the needs of authors.

REGISTRATION AND ABSTRACTS

Registration materials and abstract submission forms will be mailed in early April. If you are not currently a member of the Society for Marine Mammalogy and would like to receive registration materials, please submit your name and address to the conference chair. If you would like to become a member of the society, please contact the Membership Chairperson. Renewals or new memberships must be received by 1 September 1989 for member registration at this year's meeting. Members register at a reduced rate.

Notice of Symposium

on

«The Antarctic Treaty System in World Politics»

Oslo, Norway, May 9–11 1990

The Fridtjof Nansen Institute (FNI) at Polhøgda, Lysaker, Norway is pleased to announce that it will host an international symposium in Oslo on May 9–11, 1990 which will have as its theme «The Antarctic Treaty System in World Politics».

In 1973 an informal meeting with participants from several countries took place at the Fridtjof Nansen Institute where the possibility was discussed of concluding at treaty which would regulate the exploitation of Antarctic mineral resources. At this gathering was thus sown the seed of the process of negotiations which in 1988 culminated in the signing of the *Convention on the Regulation of Antarctic Mineral Resource Activities (CRAMRA).*

In 1991 it is thirty years since the Antarctic Treaty, done at Washington in December 1959, came into force. A review conference may or may not be held in 1991. With a view to the signing of CRAMRA, the time is in any case ripe for providing scholars, government officials, and others interested in Antarctic matters with an opportunity to underlake a wide ranging analysis and assessment of the Antarctic Treaty System's (ATS) past, present, and future. The three days symposium will focus on

1. **Resource Management and Environmental Issues in the Antarctic Treaty System**
   - CRAMRA as a management Tool: An Assessment
   - The Role of Environmental Concerns in CRAMRA
   - Living Resources: Implementation of CCAMLR
   - Resource Management and the Changing Profile of Science in the Antarctic
   - The ATS at Work: Does it Meet the Needs of Resource Management? The Issue of a Permanent Secretariat.

2. **The Antarctic Treaty System and the World**
   - The ATS Questioned: Exclusive Management?
   - The ATS and the United Nations
   - The Adaptability of the ATS to External Critique
   - The ATS as a Model for International Cooperation

3. **The Antarctic Treaty System and the Future**
   - Internal Challenges to the ATS
   - External Challenges Facing the ATS
   - Differentiation and Specialization within the ATS
   - Are there Viable Alternatives to the ATS?

A detailed programme with registration form and information about accommodation and travel arrangements will be distributed by November 1, 1989.

For information, please contact

The Fridtjof Nansen Institute
P.O.Box 326
N-1324 Lysaker, Norway

Tel.: (47-2) 53 89 12
Telex: 79 965 nansen
Telefax: (47-2) 12 50 47

SAVE OUR SEA LIFE

PREVENT PLASTIC POLLUTION CAMPAIGN

GETTING INTO ACTION

THE CITIZEN'S ROLE

The citizen's role in preventing plastic pollution is the most important one of all, because it is really not plastic which is polluting, but **people.** Each individual or group will obviously want to focus on aspects of the problem which directly concerns them or where they feel they can make the most impact. However, the ultimate goal of this campaign is the same: **TO KEEP PLASTIC OUT OF THE OCEAN.**

1. **SET AN EXAMPLE:** Just by reading our campaign pamphlet you have taken the first step towards learning more about the problem. Now practise and promote proper disposal of plastics in your home, at the beach and if you own or operate a boat, in lakes, rivers and at sea. Always remember that litter generates litter. Never dispose of plastics in the sewage system.

2. **AT THE BEACH** dispose of plastics and other litter in the recepticals provided. If these facilities are inadequate, contact the local authority responsible and lodge a complaint. Take your litter back home with you if there are no recepticals on the beach. Pick up any plastic litter you may see on the beach or in rock pools in the vicinity in which you are sitting or walking. Encourage young children to do likewise. Every effort, no matter how small, helps.

3. **ANGLERS** should take special care in correctly disposing of lengths of old or entangled fishing line. Lost line can be lethal to sea birds, marine mammals, turtles and fish.

4. **IN THE STREET** never throw plastic or other litter out of your car or drop it on the pavement or in the gutter. Not only is this practice illegal and you can be fined, but litter washing down stormwater drains is becoming a major source of beach and marine pollution.

5. **ON A BOAT** be sure to stow your plastic trash and old fishing gear for proper disposal on land - STOW IT DON'T THROW IT. If you are the captain, make it ship's policy. In addition, consider using reusable items such as washable dinnerware to minimise the amount of plastic waste you generate. If facilities on land are inadequate, express your concern to the harbour or port authorities. If enough people complain these facilities will most probably be upgraded. If you see other boat crews dumping trash or fishing gear overboard, get the vessel's name, number, location, date and type of trash and report them.

6. **BEACH CLEAN-UPS/SURVEYS:** Beach clean-ups not only provide a public service but create awareness. Surveys bring in valuable data. Contact the DOLPHIN ACTION & PROTECTION GROUP for further information on the latter.

7. **ADOPT-A-BEACH PROGRAMME:** In the USA such programmes have proved extremely successful and the DOLPHIN ACTION & PROTECTION GROUP is at present encouraging them in South Africa. Groups, schools or individuals adopt a particular section of beach for one year and sponsor at least three clean-ups at the site.

8. **INVESTIGATE THE PROBLEM IN YOUR AREA:** Establishing the source of beach, harbour or marine litter in your area is most helpful. Urge your local authority, through your residents' association if necessary, to place litter bins in busy streets, to clean out stormwater drains before the rainy season and to adopt or support recycling schemes. Enormous amounts of plastic and other valuable material go to waste annually in South Africa because householders are not being encouraged to separate household garbage as is being done in many other countries. Every South African citizen must be taught to save resources.

9. **EDUCATION:** Inform others, even in your own household or neighbourhood, of the problem. Encourage schools in the area where you live to include the topic in their curricula. The DOLPHIN ACTION & PROTECTION GROUP has established a national clearing house on marine debris and wildlife entanglement where the public can obtain educational literature for distribution, photographs and other information. Publicise the problems caused by plastic litter in local newspapers or in community newspapers/newsletters. If you are aware of projects underway in your community, publicise these as well.

10. **DISPLAY SOS: PREVENT PLASTIC POLLUTION STICKERS** on your car. These create a great awareness.

THE DOLPHIN ACTION & PROTECTION GROUP P.O. BOX 22227 FISH HOEK 7975 RSA TEL: (021) 82 5845

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