

## The Nineteenth Symposium of the European Association for Aquatic Mammals—Riccione, Italy—15th to 18th March, 1991

The 19th symposium was held in Riccione, Italy, the second time that it had met there since its inception in 1972. Unfortunately the timing of the conference clashed with the Gulf War and many members were either prevented from attending by their organisations, or were unwilling to take the risk of leaving their homes—this latter particularly applied to our North American members. Despite these restrictions, some 89 members did attend, accompanied by 8 spouses, and there was also a number of students who visited the meeting for variable times. Some 35 papers were read and three sets of posters displayed. A printed copy of the abstracts of these papers was given to everyone attending and further copies may still be obtained from the President of the Association, Dr Cees Kamminga, at the Technical University of Delft in the Netherlands.

The President, Dr Cees Kamminga, opened the proceedings by welcoming everyone to the meeting, pointing out that the Association was the oldest organisation dealing specifically with the welfare of marine mammals in Europe. He was very sorry to have to report the death of one of the regular speakers at these meetings—Professor R. L. Turner—whose papers were not only very erudite but also very entertaining to listen to. He asked members to honour a minute's silence in his memory. Leandro Stanzani, on behalf of the hosts of the Conference, then formally welcomed everyone to Riccione and identified the members of his staff who would be around during these four days and be able and willing to help in any way possible. He then handed the Chair over to Victor Manton for the first of the scientific sessions, entitled 'Husbandry and Release'.

**Dr Alessandro Salvelli** reported on the difficulties following the delayed parturition of a South American Sea Lion—the first birth at his establishment. Although initially everything seemed to progress normally, the continual calling of the separated male induced the female to ignore her baby. An attempt was commenced to hand rear but the baby died after ten days—despite an attempt to tube feed. No lesions related to the death were found at autopsy.

Alessandro Salvelli,  
*Medico Veterinario Coadiutore, Parco Natura Viva,*  
*37012 Bussolengo-Pastrengo, Verona, Italy.*

**Dr Arlete Sogorb** reported on the developments in the Algarve to build a new facility, 'Zoomarine', from scratch. She described with slides, what had already been achieved and, in some detail, went on to develop the theme which the Park intended to illustrate. Completion is intended in approximately 3 years from now. She was pleased that they were working in cooperation with the University of the Algarve and aiming towards a release programme in the future.

It was encouraging to realise how much planting of trees was planned for the whole area. Among the animals there, she was pleased to record, were two dolphin calves, one of 15 months and one of 5 weeks.

Arlete Sogorb,  
*Mundo Aquatico, Jardim Zoologico de Lisboa,*  
*Estrada de Benfica 158, Lisboa, Portugal.*

**Patricia S. John** reported, in detail, on a recent trip she had taken to the dolphinarium in Russia, at Pitsunda and Batumi in Georgia. Only the second Western visitors to the area, she highlighted the difficulties under which the staff were operating and felt that the Association could offer much in the way of advice and help. The concept of holding Black Sea bottlenose dolphins in an open area of that Sea seemed to have much to commend it.

Patricia S. John,  
*Mid\*Point Foundation, P.O. Box 246, Bridgewater,*  
*Connecticut 06752, USA.*

**Dr Geraldine Lacave** described in detail the new facility, at Brugge, which was built to replace the one lost by fire in May 1988. Illustrated by slides, she showed the details of the fire damage and how far developments have progressed. It was encouraging to realize how far the keeping of aquatic mammals had progressed since the first EAAM meeting way back in 1972. Her presentation certainly whetted the appetites of the audience for the 1992 Symposium, which is being held there.

Geraldine Lacave,  
*Boudewijnpark, A. de Baeckestraat 12, 8200 Brugge,*  
*Belgium.*

After a short coffee break, **Dr Ron Kastelein** brought the audience up to date with the latest in one of

his continuing projects—the provision of food dispensers for occupational therapy of walruses. In the wild up to 6000 shells have been found in one animal's stomach contents and, in his inimitable way, he took the audience on a stage by stage journey over the difficulties he had encountered and the methods he employed to overcome them.

Ron A. Kastelein,  
*Dierenpark Harderwijk, Strandboulevard-Oost 1,  
3841 AB Harderwijk, The Netherlands.*

**Dr E. J. Vedder** summarized the work of the Seal Rescue Centre at Pieterburen which, over a period of now more than 20 years, had returned so many animals to the Waddensea, that, in the Dutch area, about 25% of the population are animals returned from care at the Centre. She summarized the present work on viral infections and pollutants and their interaction via the immune systems. She was pleased to say that their work was now recognized world wide. Recently they had been asked to advise on problems in Lake Baikal with the seals there.

Lise Vedder,  
*Seal Rehabilitation and Research Centre, Hoofstraat  
94a, 9968 AG Pieterburen, The Netherlands.*

**Riet van de Velde**, in the last paper of this session, summarized the Educational programme which had been developed at Bruges dolphinarium. She emphasized how important it was to encourage the visitor, especially those of tender years, to take an interest in and work for the conservation and protection of the marine environment.

Riet van de Velde,  
*Dolphinarium Brugge, Alfons de Baeckerstraat 12,  
8200 Brugge, Belgium.*

The meeting then adjourned for a visit to the ancient city of Ravenna, taking a typical local luncheon on the way.

The first session on Sunday was entitled 'The Wild' and Professor Jan van Haften took the Chair. He introduced the host for this conference, **Leandro Stanzani**, who described in great detail the Rescue Network for living stranded Cetaceans, and other marine mammals, which he had been so instrumental in establishing in 1985. He summarized the operations which, initially had dealt with only dead specimens but which now was coping with live specimens. Since 1989, 25 living or nearly dead animals had been dealt with. The advent of drift nets in 1988 caused new problems and the setting up of an SOS rescue team to cover all Italy.

Leandro Stanzani,  
*Adriatic Seaworld, Via Lungomare della Repubblica,  
47036 Riccione, Italy.*

**Professor Mukhametov** from the USSR, a welcome and first time visitor, addressed the subject of investigations into sleep in Aquatic Mammals. He felt it important to first define sleep—physiologically, NOT behaviourally. He had studied 11 species over a period of 17 years. Pinnipeds and Manatees did undergo paradoxical, or deep, sleep but this was not present in dolphins. In these animals, unihemispheric slow sleep is a characteristic of those animals carrying out movements 24 hours a day. He emphasized that they were as likely to be awake as asleep when 'hovering' and pointed out that immobility is NOT an essential part of sleep.

Professor L. M. Mukhametov,  
*Severtsov Institute of Evolutionary Morphology and  
Ecology of Animals, USSR Academy of Sciences,  
Leninsky prospekt 33, Moscow, 117071, USSR.*

After an early coffee break, **Peter Bloom** continued the story, in great detail, which he had begun last year on the daily recording of the movements of a wild dolphin off the North East Coast of England. The animal, nicknamed 'Freddy', had now been resident in the area for 4 years. The river Coquet, flowing into the area and into the small harbour of Amble, was a salmon river, and sea trout were plentiful in the area. Probably due to ignorant human interference, aggressive moves by the animal towards humans are now becoming more common. The records collected by Peter Bloom and his team covered 362 days in 1990, and swimmers were recorded in the sea with the animal on 220 of these. During the 24 hour watches, only 9 minutes over the period were lost in the summer but this extended to 7 hours in the winter watches—when darkness lasted so much longer. It was interesting to note that the range of this old animal only amounted to an area about 500 metres in diameter.

Peter Bloom,  
*Flamingoland, Kirby Misperton, Malton, North  
Yorkshire YO17 0UX, UK*

**David Goodson** demonstrated the relationship between the movements of 'Freddy' and the noises he had recorded underwater. For the animal to swim in a figure of 8 pattern, would fit in very well with the variations in recorded sounds. By continued observation and concurrent video recording, he was able to show the activities of the animal linked to particular sound emanations.

A. D. Goodson,  
*Sonar and Signal Processing Research Group,  
Electronic and Electrical Engineering Department,  
University of Technology, Loughborough LE11 3TU,  
UK.*

**Michelle van Hove** presented evidence of a rate modulating effect in sonar click trains. This occurred in a modulation pattern in click trains.

Michelle van Hove,  
Delft University of Technology, P.O. Box 50311, 2600  
GA Delft, The Netherlands.

After a break for luncheon, A. di Natale took the Chair for a session of 'Free Communications'. The first was by **Dr Anton Gauckler**, reporting on a case of nasal fluke infestation in a Tursiops. He reminded the audience that in Copenhagen in the 1978 Conference, he had reported on the occurrence of nasal flukes in Guianese dolphins. This time he was reporting on the symptoms and successful treatment in 4 Tursiops and truncatus that had been in captivity for more than 1 and 3 years respectively. The antischistosomiasis drug 'Dronsit' (Praziquantel by Bayer) was used again with equal effectiveness.

Anton Gauckler,  
Tiergarten Nurnburg, Am Tiergarten 30, 8500  
Nurnburg, Germany.

**Dr Margaret Klinowska** reported very carefully that, from figures published in the 'Review of Dolphinaria, 1986', she had calculated the annual survivorship rates in captive bottlenose dolphins in the United Kingdom and found that at 0.84 they did not differ markedly from those in the wild—0.931. The figures for *Orcinus orca* were 0.89 and 0.9849 respectively. These figures, she argued, gave the lie to the oft repeated mis-statement that 'Dolphins were dying to entertain us'. Where the captive figures did differ from those in the wild were in the rates for calves—0.61 v. 0.803 for the first year of life, 0.97 v. 0.961 after this period. This was an area, she argued, where dolphinaria ought to be concentrating their efforts to improve husbandry.

Margaret Klinowska,  
Physiological Laboratory, Downing Street,  
Cambridge CB2 3EG, UK.

**Vassilis Kouroutos** reminded the audience that the Hellenic Society for the Study and Protection of the Monk Seal was started in 1988 from Athens University. In June 1990 they had commenced field work to monitor the population and increase public awareness of the animal. By equipping a boat as a mobile exhibition they were able to reach the very people who might adversely affect the welfare of the animal. The work was supported by the Greek Ministry of the Environment.

A rescued calf, that was now being hardened at Pieterburen in The Netherlands, would be released into the centre of the Marine Park of the Northern Sporades in mid April when it had reached 60/

70 Kgs. in weight. He hoped that data on numbers off the Albanian Coast would shortly be available.

Vassilis Kouroutos,  
Hellenic Society for the Study and Protection of the  
Seal, Solomou 35, 106 82, Athens, Greece.

After a short tea break, Dr David Taylor took the Chair for a session entitled 'Pathology'. **Dr Van der Kamp** reviewed his last twenty years findings in the pathology of the seals studied at Pieterburen. He was pleased to announce that an extension to the facilities was planned for this year and 80 000 visitors expected during the same period. He had carried out 500 autopsies during the period 1960–1981 and 474 during 1987–1991. (The results for 1988 were omitted.) 20% had died with pneumonias and 8–10% had drowned. In 1971 one animal picked up had been released into the wild while in 1990 48 had been picked up and 45 set free. 35 animals had been released from the 1988 disaster so a grand total of over 600 animals had now been released from the Centre.

J. S. van der Kamp,  
Weg voor de Jagerskampen 17, 9751 EJ Haren, The  
Netherlands.

**Kees de Groot** summarized the position, in the summer of 1990, when about 500 strandings of the striped dolphin occurred on the beaches of the Western Mediterranean. About 15–20% of these were live strandings and he described the efforts employed to treat and recover these animals so they could be returned to the wild. Despite speedy arrival at the sites of strandings—within 6–8 hours—and all the help that could be given, including the injection of medicaments, none of the animals survived. He reported that no common dolphin was affected but said the cooperation engendered between a number of dolphinaria would be of great use in any further outbreak. Recently a group of live dolphins has been found and they appeared lively and very healthy.

Kees de Groot,  
Marineland Costa Brava, Pallafols, Malgrat de Mar,  
Barcelona, Spain.

**Marian Domingo** then presented the first of two papers based on material obtained from the strandings mentioned above. The rise in dolphin deaths occurred in February, May and June indicating that the disease may have arrived in the Mediterranean from the Atlantic. He found no difference in the numbers of either sex involved nor any tumours. 72% showed broncho-pneumonias and 69% an encephalitis. A morbillivirus antigen was found in formalized tissues from 78% of the carcasses examined (he only dealt with those from the area off Cataluna).

In his second presentation he reported on the finding of *Toxoplasma gondii* infection in three of the striped dolphins. In one carcass he found however one mammary gland which stained very strongly, suggesting that infection could be excreted in the milk. Oocytes were found in both brain and lung—the former without obvious lesions, the latter associated with a necrotizing lymphadenitis. He wondered if the infection arose from food wastes (pork and mutton) discharged into the sea.

M. Domingo,  
*Dept. of Vet. Path., Autonomic University of  
Barcelona, 08193 Bellaterra, Barcelona, Spain.*

**Dr Sylvain de Guise** described the pathology of 24 carcasses of beluga whales stranded in the S. Lawrence Estuary. Many lesions, like digestive tract ulcerations, pneumonias and mammary gland abnormalities, were commonly linked with exposure to high levels of organochlorine compounds and high levels (as compared with those in tissues taken from animals in the Arctic) were found in many animals sampled.

Sylvain de Guise,  
*Faculte de Medicine Veterinaire, Sicotte, Saint  
Hyacinthe, Quebec, Canada.*

**Dr John Baker** summarized the diseases and pathology of wild small cetaceans from the Irish sea, taken from samples collected over 15 months. He found an average of 7 disease processes per animal in the more than 50 animals sampled. 20–25% of the deaths were involved with fishing net entanglements. An unusual finding was an ossification of the bronchial cartilages in an animal only 18 months old.

J. R. Baker,  
*University of Liverpool, Department of Veterinary  
Pathology, Leahurst, Neston, The Wirral, Merseyside  
L64 7TE, UK.*

**Dr Paul Nachtigall** took the Chair for the Monday morning session, entitled 'Behaviour', and started the session by reviewing his work over the last 10 years, from the earliest work on echolocation. For an example of an interesting variation, he quoted that the Beluga Whale could echolocate within white noise—as for example under ice. The dolphin was not so good at this. He demonstrated the best abilities existed in a narrow band—both in the horizontal and the vertical directions.

Paul Nachtigall,  
*Naval Ocean Systems Center, P.O. Box 997, Kailua,  
Hawaii 96734, USA.*

**A. J. Ferreira** gave the next paper on the signature-whistle hypothesis in bottlenose dolphins. The

Caldwells had reported that each dolphin has an acoustic signature—best demonstrated in their work on Humpback Whales. Since sound travels 4–5 times as fast in water as in air, more interference arises from over such a wide area. He discussed degradation of the signal and interferences, including those arising from ambient noise—shipping, the slapping of the waves etc. The whistle broadcasts the individual's position, contact with individuals comes with the signature. Higher frequencies are the more readily absorbed and he noted that temperature variations in bands of water caused shadow areas.

A. J. Ferreira,  
*CAPS-IST and ISPS, Lisboa, Portugal.*

**Dr Manuel dos Santos** discussed the social structure of the bottlenose dolphin which he summarized as based on 'promiscuous polygamy' with complicated and variable mating patterns. From studies in captivity many details have been recorded but the environment was not the best. However in the sea, where the animals are shy, fast moving and living for the most part under the surface of muddy murky waters, it is not easy for the human observer to see the animals for very long periods! He felt the best individual recognition was that obtained by photography. Although juveniles could still be found with their dams 7 or 8 years later, there were many groups offshore off the Sado Estuary. Their sizes (400 Kgs and 4 metres long) made catching difficult, compared with Randy Wells who catches the same animals repeatedly off Sarasota, Florida, in the Gulf of Mexico.

M. dos Santos,  
*Instituto Superior de Psicologia Aplicada, R. Jardim  
do Tabaco 44, 1100 Lisboa, Portugal.*

**Professor Massimo Azzali** gave a detailed description of his new video-acoustic device enabling an observer to relate echolocation signals to swimming behaviour. He demonstrated how this had been used on dolphins performing sonar searches.

Prof. M. Azzali,  
*Institute of Marine Fishery, Ancona, Italy.*

In the final session before lunch, Dr Margaret Klinowska took the Chair for the second part of Physiology. She introduced **Dr Ron Kastelein** for his paper on the marginal papillae on the tongue of dolphins. He demonstrated how these appeared, from photographs taken in many establishments, to gradually disappear with age and postulated their use in keeping milk within the buccal cavity during suckling and as an initial aid in retaining fish when solid feeding first commences.

Bottlenose dolphins appear to lose these structures at 16 years of age.

Ron A. Kastelein,  
*Dierenpark Harderwijk, Strandboulevard-Oost 1,  
3841 AB Harderwijk, The Netherlands.*

**Jacques Smolders** gave a fascinating account of how he had introduced a computerized record system for the keepers to use. Initial wariness soon gave way to full and eager acceptance as the staff began to realize how much easier this system made record keeping.

J. Smolders,  
*Dolphinarium, Antwerp Zoo, Kon Astridplein 26,  
2000 Antwerpen, Belgium.*

**Dr John Baker** returned to extol the virtues of the drug Zoletil 100 as an immobilizing agent for the handling of Grey and Southern Elephant Seals. A dose of 1.01 mg/Kg enabled the animals to be handled safely in 12 minutes. Sedation was assessed at 2.6 on a scale of 1–5 (where 5 is surgical anaesthesia). He reported that there were no signs of disorientation in the sedated animals and the drug had the great advantage, where blood samples were required and clean tags could be inserted, of inhibiting defaecation. Many animals withstood, without side effects, repeated sedations over a period of a few weeks.

J. R. Baker,  
*University of Liverpool, Department of Veterinary Pathology, Leahurst, Neston, The Wirral, Merseyside L64 7TE, UK.*

**Dr Ron Kastelein** then returned to divulge the formula, which he had found accurate, to determine the body weight of the Harbour porpoise from external measurements. An advantage he found was that by measuring the girth either side of the pectoral fin, repeatable and accurate measurements could be made—even by lay staff.

Ron A. Kastelein,  
*Dierenpark Harderwijk, Strandboulevard-Oost 1,  
3841 AB Harderwijk, The Netherlands.*

**Monique van de Water** explained the details behind her efforts to train three bottlenose dolphins for echolocating tasks under controlled conditions.

M. van de Water,  
*Dolphinarium Bruge, Alfons de Baeckestraat 12, 8200  
Brugge, Belgium.*

The final paper of the morning was given by **Professor L. M. Mukhametov** on the behavioural and electrophysiological study of a 24 hour period of

activity in an Amazonian Manatee. This animal weighed 33 Kgs and measured 150 cms and lived in a pool of 0.5 hectares, 2 metres deep. The position of the animal was monitored every 2 minutes for the whole 72 hours. The movement recorded was about 3.5 Kms per day. No paradoxical (or deep) sleep was recorded on the first day—presumably while the animal was becoming acclimatised to the implanted electrodes. After this the length of this deep sleep varied from 20 seconds to 4 minutes. A circadian rhythm of sleep and wakefulness was shown. The animal awoke for each respiratory act—as did Phocid seals.

L. M. Mukhametov,  
*Severtsov Institute of Evolutionary Morphology and Ecology of Animals, USSR Academy of Sciences,  
Leninsky prospekt 33, Moscow, 117071, USSR.*

The Chair for the afternoon session, entitled Education/Training, and the last session of the Symposium, was taken by Leandro Stanzani who introduced **G. Bearzi** on the subject of visitor education. He demonstrated a colour computerized programme using a 'mouse' to give the answers. The programme was developed by Professor Giuseppe Notarbartolo from the Tethys Institute in Milan. It showed great potential and, although its use was now finished until the end of May, would be reworked and started again then.

G. Bearzi,  
*Istituto Tethys, Milan, Italy.*

**Patricia S. John** described her work with autistic children where dolphins were attracted to touch the bare feet with their beaks. This led her to a programme of massage by human hands, which seemed to help quieten the patients.

Patricia S. John,  
*Mid\*Point Foundation, P.O. Box 17, Bridgewater,  
Connecticut 06752, USA.*

**Heinz Hugentobler** showed how important it was for dolphinariums to portray their activities positively, since at the present time it seemed that the 'anti' groups were getting all the publicity, especially after the Bellerive Symposium.

Heinz Hugentobler,  
*Knie' Kinderzoo, 8640 Rapperswil/SG, Switzerland.*

**Jacques Smolders** then presented a brief review of the paper he was to have given last year, at Lipperswil, on Aggressive Behaviour in dolphins. Having carried out a survey of European Zoos, he listed a number of problems which had been reported to him. He had graphed the results showing an assessment by each

Institution of the seriousness of the problem and the reasons which were considered to have caused it. He listed intersexual problems, the degree or absence of injury, the reaction of the opponent, whether it was an isolated or a repeatable occurrence, the time it was reported and suggestions for a reason behind it. Since there appeared, from the answers, to be a lack of understanding of the problem he strongly

recommended that at a future conference there must be a trainer session on aggression, run like a workshop, where views could be obtained from everyone present.

J. Smolders,  
*Dolphinarium Antwerp Zoo, Kon Astridplein 26, 2000  
Antwerpen, Belgium.*