Preface

The highly specialized nature of marine mammals when compared with their terrestrial counterparts, the environment in which they live, and the impact humans have had on them today and throughout history, have made of the study of these creatures something unique in itself. Probably with the exception of primates, no other animal group has been perceived as so distinctive. Therefore, it is not surprising that many researchers have also taken a particular approach to their research.

This volume is aimed at providing a glimpse at such diversity of views and approaches while delivering valuable information in marine mammalogy. Given the increasing concern regarding issues of anthropogenic factors affecting these animals it is not surprising that the majority of chapters deal with environmental issues.

In the first chapter of this volume I looked at a question that has baffled some biologists and historians of science alike: how come the suggestion by Aristotle that cetaceans were closely related to their terrestrial counterparts ("viviparous quadrupeds") rather than fish was ignored for about 2,000 years. Interestingly enough it was a non-evolutionist naturalist, Carl Linnaeus, who would create the taxon Mammalia and include cetaceans among them. I advanced the idea that a combination of environmental classification and scholasticism led to their misclassification for centuries.

The late Ed Keith (see his obituary at the end of this book) presents a matrix model of fasting metabolism in the northern elephant seal (*Mirounga angustirostris*). He provides evidence that pups maintain a paradoxical fasting hyperglycemia while fasting for 6-8 weeks after nursing for about 30 days. He discusses this apparent contradiction as possibly related to differences in time scale between the enzymatic reactions occurring among these animals versus the time scale of the actual fasting period.

Marsili et al. introduce the original term of "Test Tube Cetaceans" in the title of their chapter describing cetacean fibroblast cell cultures obtained from the skin biopsies of stranded cetaceans, as the "test tube cetaceans" to evaluate susceptibility to genotoxicity of different environmental contaminants. They suggest how to evaluate the presence of DNA damage by Comet assay in these cetaceans after treatment with different genotoxic compounds.

The chapter by Alava and Gobas on biomagnification and trophic transport of persistent organic pollutants (POPs) in the food chain of the Galapagos sea lion (*Zalophus wollebaeki*) provides us with what is probably the first biomagnification assessment of POPs in a tropical marine ecosystem of the southeastern Pacific. Despite the fact that they studied a population of marine mammals in a protected area (the Galapagos Marine Reserve) and far away from the usual sources of industrial pollutants, the authors found that endangered species at the top of the food web are not immune to the health risks associated with the long range environmental transport of POPs. Therefore, this problem, which has been extensively documented for other areas of the world, now appears commonplace wherever you look for it.

Wise et al. provide another study on the topic of marine mammal toxicology. They use skin biopsy applications in free ranging marine mammals and found it as a very useful tool for studying marine mammal toxicology and conservation. They developed a cell line to measure baseline DNA damage levels while serving as a species-specific model for evaluating the impacts of marine pollutants on DNA. Thus, using a skin biopsy they were able to assess both exposure and impact of exposure.

Mouton and Botha take an ecological approach to a topic that has become more and more the focus of attention among some marine mammalogists: cutaneous lesions in cetaceans due to human impacts on the environment. They review previous reports to evaluate the microbes that seem to be the causative agents, as well as contributing factors such as anthropogenic activities. They found that anthropogenic activities play a role in allowing contact and consequent adhesion of opportunistic microbes from the natural environment, as well as from sewage entering the marine environment. They also point out at toxic pollutants intruding on the physiology of these mammals by compromising their immune systems, rendering them susceptible to a host of health threats. They conclude that skin lesions among cetaceans may be indicative of an ecosystem under severe pressure and a result of human activities.

Arbiza et al. report evidence of influenza virus and *Mycobacterium pinnipedii* infections among individuals of two pinnipeds (*Arctocephalus australis* and *Otaria flavescens*) on the coasts of Uruguay. They confirmed that fur seals could act as reservoirs of human influenza strains that circulated in the past, and also suggest that influenza A and B viruses may be transmitted from humans to seals. This is most likely the result of interactions during capture and research activities, as well as in rehabilitation centers and sometimes with divers that swim near the seal islands. Furthermore, they suggest that keepers and veterinarians at zoos, aquaria and rehabilitation centers are at increased risk of infection because of their extensive contact with the animals.

Ohishi et al. looked at morbillivirus, a causative agent of mass die-offs of marine mammals. Given that a notable biological feature of morbillivirus is its high level of host specificity, they researched SLAM (the principal cellular receptor for morbilliviruses allowing entry and propagation) and found that 32 amino acid residues on the interface of SLAM V domain, which are potentially involved in the

interaction with viruses. These amino acid residues are thought to be important for host–virus specificity. They hypothesize that recent climate change may increase the opportunities for new contacts among wild mammals and for the transmission of viruses and propose a new approach to assess the viral sensitivities of wild mammals by analyzing the host receptors.

In her chapter Brito described early sealing and whaling in the Northeast Atlantic from Portuguese activities. Using relatively unknown Portuguese records of encounters and hunting of monk seals in the Atlantic and medieval and early modern whaling in the Iberian Peninsula, she was able to identify and understand environmental changes integrated in a time of resources exploitation and highly predatory perceptions towards the marine environment.

In my chapter on Yankee whaling in the Caribbean basin I analyze available information at providing a historical context for understanding the economic and political issues that influenced the development of this activity and their cultural and ecological impact. Yet, that influence was not uniform and the heterogeneity in its impact was due to a number of historical and cultural circumstances. At the end I conclude that the development of whaling in the Wider Caribbean area was the result of how multiple factors interplayed.

This book ends with a sad note. It is the obituary of the co-editor of this volume. Edward O. Keith was an excellent scholar and teacher and an even better human being whose life was cut short just when the book was almost ready to be sent for publication. His colleagues and friends will sorely miss him.

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