

Book Review

THE DUSKY DOLPHIN: MASTER ACROBAT OFF DIFFERENT SHORES. Editors: Bernd Würsig and Melany Würsig. Elsevier Ltd., San Diego, California, USA, 2010. ISBN 0-12-373723-6, 457 pp.

With the publication of *The Dusky Dolphin*, Bernd and Melany Würsig for the second time have edited a scientific volume which is entirely dedicated to a single dolphin species—the first book being *The Hawaiian Spinner Dolphin* (published in 1994), which they co-edited with Randy Wells and the legendary Ken Norris. *The Dusky Dolphin* is also quite different in the sense that many more different authors contributed to the book (each with their own unique expertise and background), and because of that, it also gives a broader, more modern, and more diverse view of the species involved, connecting the most recent insights from phylogenetics, morphology, ethology, bioacoustics, oceanography, ecology, and evolutionary biology. In other words, a complete picture of dusky dolphin life emerges from reading this book, drawing upon many different levels: the genetic, morphological, individual, population, and ecological levels. On top of this, the many cross-species comparisons (including comparisons with terrestrial animals—mostly mammals but also species from completely different taxa) put this in an even larger biological context, giving the dusky dolphin (*Lagenorhynchus obscurus*) a clear place within the web of life.

The great power of this book lies in the fact that, in many cases, general biological and evolutionary principles are illustrated by showing examples from the extensive research done on this dolphin species. It deals with the biological challenges facing any organism—how to find food, procreate, avoid being eaten, and socialize with conspecifics—and all this in the context of the extra advantages and challenges that come with living in a completely marine environment—thus contrasting how such principles apply on land. As such, it's not only of interest to researchers studying dusky dolphins or other small dolphin species, or to cetologists in general, but I would argue even to all biologists. That is not to say that this book is only worth reading to people with a scientific background (although they are clearly intended as the main audience); this book also would be understandable to the interested lay person, with

a clear glossary explaining specialist terms at the end of the book—but especially because the majority of chapters were very well written, with frequent use of fun metaphors; illustrative anecdotes; and, in some rare cases, writing with literary, almost poetic aspirations.

For example, each chapter is preceded by a short introduction in italic font, which—unlike the traditional scientific abstract—might be best qualified as describing “a day in the life of,” giving a glimpse of what it would be like to be in the shoes of the authors for a day, and of the joys (and hardships at times) that can be experienced while doing this kind of research. This format works very well for most chapters, leading to such little diamonds as “Maybe, just maybe, answers lie in the wake that dusky dolphins leave behind as they pass so effortlessly through the placid waters” (p. 50, by Silvana Dans). Pure poetry if you ask me! But this can also be encountered in the main text of the chapters themselves. For instance, what about “If one misses evading a predator—well, then life is over” (p. 135, by Srinivasan and Markowitz)? Such playful language (especially prevalent in Chapters 7 through 11) makes the book fun and light to read, which is quite unusual to see in scientific writing, without making any compromises to the quality of the presented content.

Inevitably, there are of course also parts of the book which are denser to read through such as lists of prey items found in dusky dolphin stomachs or exquisite details about the taxonomy, distribution, or anatomical features of dusky dolphins (their average length and weight—coincidentally similar to that of humans—number of teeth, testes to body weight ratio of up to 9%, etc.). However, such parts are also very valuable for a researcher as these could simply be used as a reference for looking up basic background information. So, while the book is a good mixture of detailed information on the one hand and enjoyable reading on the other, to which the storytelling character of chapter introductions definitely contributes, abstracts would still have been a useful addition in order to get a quick overview of the main points of each chapter. For example, these might have been added underneath the chapter introductions, or otherwise standardized, uniform summaries at the end of each chapter would have done the same job (as not all chapters had such clear summaries at the end).

However, if one reads the entire book from cover to cover, the most important points would definitely come across as many chapters repeat information which can be found in greater detail in other chapters. The editors already point this out in the Preface, with the rationale that in order for each chapter to be a stand-alone contribution, some overlap of information is unavoidable—which is fair enough. The most coherent part of the book treating all basic aspects of dusky dolphin biology consists of Chapters 1 through 11, covering, in respective order, dusky dolphin taxonomy, distribution, morphology, diet, acoustics, night time foraging on the Deep Scattering Layer, daytime foraging (so-called prey ball herding), predator avoidance strategies, mating, calf rearing, population genetics, and interactions with humans (which can often be classified as threats in such cases as the illegal dolphin killings in Peru that continue to date, overfishing, pollution, and the rapid growth of mussel farming in New Zealand). Just by reading this excellent first part of the book, you would already learn everything you always wanted to know about dusky dolphins.

All the remaining chapters are (in the editors' own words) a bit of a "grab-bag" of other topics, quite a few of which not only apply to dusky dolphins but also to delphinids in general. Chapter 12, for example, gives a very useful overview of all the different management regulations and treaties protecting (dusky) dolphins both at a local level and worldwide (including also a very insightful perspective from the Māori culture), while Chapter 13 talks about a swim-with-dolphins commercial operation in New Zealand. This chapter is the least scientific of the book, but from a business perspective, it's still an interesting story to read how the family enterprise of "Encounter Kaikoura" was developed over time (and a reminder that healthy dusky dolphin populations are also important economically). Chapter 14 then goes on to describe dusky dolphin research in South Africa. In doing so, it resembles Chapter 2 quite a bit. Both chapters give a helicopter overview of most aspects of dusky dolphin biology, focusing on general morphology, distribution, diet, growth, and anthropogenic threats—except that Chapter 2 does so for dusky dolphins worldwide (including South Africa) and Chapter 14 only for South African dusksies (but in greater detail of course than Chapter 2). Both chapters are excellent contributions in themselves, but perhaps the coherence of the book as a whole might have benefited if the authors would have joined efforts and written one combined chapter together. But again, this is not a distraction if these chapters are read as stand-alone contributions.

Finally, Chapter 15 by Heinrich, Elwen, and Bräger looks at patterns of sympatry for seven

species of the genera *Lagenorhynchus* and *Cephalorhynchus* in the Southern Hemisphere. This is a very interesting exercise as, again, from these specific examples of habitat utilization and sharing among the different species where they co-occur (based e.g. on different diets and foraging techniques), some general patterns emerge with the potential to *explain*, rather than just identify, why species are distributed as they are—and such principles might also apply to other marine species. Also, Chapter 16 by Pearson and Shelton, which is on the cognitive aspects and large brains of dolphins, I found to be an outstanding one. It gives an excellent overview of the latest state of knowledge on dolphin intelligence, again with illustrative cross-comparisons to other species such as primates, parrots, and crows, as well as good explanations of basic concepts as the Encephalization Quotient (EQ, brain-to-body weight ratio) and gyrification index (with cetaceans having a higher relative neocortex surface area than humans). One might ask why such a general chapter is part of a book on dusky dolphins, and part of the reasoning is that dusksies were found to have an EQ of 4.7, which ranks as one of the highest among delphinid species (*cf.* an EQ of 4.0 for *Tursiops*) and is therefore expected to affect their social structure to a large extent.

The overall picture of dusky dolphins that one gets from reading this book is mostly a very complete one. There are only a few aspects which I would like to have seen added. The main one is the frequent association between dusky dolphins and common dolphins (*Delphinus delphis*), which at times can aggregate into very large groups of more than a thousand dolphins (with common dolphins usually contributing less than 10% of the total number). This is mentioned briefly a few times throughout the book, but I would have liked to see a more systematic treatment of this phenomenon, or maybe even an entire chapter dedicated to it, because this probably has a large effect on dusky dolphin social life, mating, foraging, and predator avoidance—not to mention the occurrence of dusky-common hybrids.

This aspect also brings me to the second point, which is Chapter 4 on dusky dolphin acoustics by Au, Lammers, and Yin. It contains an excellent and thorough description of dusky dolphin echolocation clicks, but, unfortunately, no such data were presented for dusky dolphin burst pulse signals—except for briefly mentioning that these were encountered quite often. Additionally, I found the provided evidence for dusky dolphin whistles not convincing. For example, in Table 4.1, the average number of recorded whistles per minute of recording effort is given for mixed groups of common and dusky dolphins (4.40), common-only groups

(3.15), and dusky-only groups (0.01). The authors argue that this 300- to 400-fold decrease in whistle rate simply points to a low whistle use by duskies, for which they give several possible hypotheses—but this difference is so large that one cannot rule out the possibility that the rare whistles recorded during dusky-only sessions (21 whistles in total) originated from common dolphins after all, which might have been missed by the researchers on the boat. The only way to find out for sure would be to make broadband array recordings of their whistles (and burst pulses, too, for that matter) so it is known which individual dolphins emitted them. If it would turn out that dusky dolphins do not emit whistles after all, they would to my knowledge be the first nonwhistling dolphin species that emits broadband echolocation clicks, while all other nonwhistling small dolphin species (such as from the family Phocoenidae and genus *Cephalorhynchus*) only emit high-frequency narrowband clicks. Maybe the relatively small size of duskies and their special place on the delphinid family tree (as detailed in Chapter 1, Figure 1.11) is related to this possibility.

However, such controversial points are only food for further discussion, empirical research, and refining of hypotheses, which together is the motor that drives scientific progress. So, despite the extensive knowledge on dusky dolphins which is already available from decades of great research, as always in science, this exciting saga is never ending and there is always more to be done, with newer techniques, newer insights, and newer data. But this beautifully illustrated book, with many color photos (e.g., p. 247) and close to a thousand combined references at the end for easy look-up, is the very best to date describing our current state of knowledge on the dusky dolphin—and in doing so shedding light on the life of any other delphinid, too, for that matter. *The Dusky Dolphin*, simply put, is one of those classics which should not be missing from the shelves of anyone in the marine mammal field.

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