they possess a particular capacity, then it appears that it should not matter whether or not the animal is a cow or wildebeest. Yet, LFI suggests that there is a relevant difference between our obligations to domestic and wild animals. The question becomes, what is the difference between our obligations to domestic and wild animals?

The author nicely explicates three popular accounts of animal ethics and argues that they are inadequate in explaining why we should not provide aid to wild animals. Palmer's solution is that relational states between humans and animals underlie why we are obligated to help domestic animals, but not those in the wild. Unlike with domestic animals, which are vulnerable and dependent on humans, wild animals do not have the kind of relation with humans that demand corresponding moral obligations.

Palmer deftly anticipates criticisms and unsavory consequences of the relational approach and offers well-argued responses. Also, there is a helpful discussion of relevant concepts that the discussion turns on: domestic and wild, positive and negative moral obligations, and what makes relational states morally relevant. The author offers the most careful treatment available of our moral obligations specifically to animals in the wild.

Jason Zinser, *Philosophy, University of Wisconsin-Marathon County, Wausau, Wisconsin*

GENERAL BIOLOGY

Adaptive Diversification. *Monographs in Population Biology, Volume 48.*

By Michael Doebeli. Princeton (New Jersey): Princeton University Press. $110.00 (hardcover); $49.50 (paper). xiii + 329 p.; ill.; index. ISBN: 978-0-691-12893-1 (hc); 978-0-691-12894-8 (pb). 2011.

A hot topic in population biology remains how much of diversity between and within species can be explained by spatial factors (heterogeneity in environmental conditions and/or restrictions in mixing) and how much can be explained by other factors. This timely book provides a thorough examination of the recently very active field investigating one potentially generally applicable factor: frequency dependent selection arising from ecological interactions. Specifically, where the fitness of an individual is dependent not only on its own phenotype, but also the phenotypes of those individuals with which it interacts, then there can be selection against phenotypes that are common and thus selection for currently rare phenotypes.

Doebeli explores the underlying theory for such potentially diversifying selection across a range of different scenarios, including competition for a resource, predator-prey interactions, cooperative interactions, dispersal, reproduction, and even human languages and religions. The author has been a substantial contributor to this field for over a decade, and this work feels authoritative throughout. However, there is also a great clarity about the writing and a willingness to build slowly from first principles. Thus, this book can be read with benefit by any applied mathematician with some familiarity with dynamical systems, and also by reasonably quantitative evolutionary ecologists. Although starting from first principles, this work will take readers to the forefront of research in this field. A particularly effective aspect of the volume is the use of "challenges" scattered throughout the text set by the author. These are useful for readers to test, stretch, and cement their understanding, but also to offer suggestions for how they might usefully contribute to unresolved issues in this field. This subject has benefitted tremendously from the development of adaptive dynamics as a mathematical tool for predicting evolutionary trajectories, and another effective aspect of this book is its exceptionally clear exposition of this technique. Although mainly theoretical, the volume does draw on empirical testing of theoretical predictions, and points to how this could further be developed.

In summary, this is a timely, useful study that should inspire and equip young theoreticians to indentify and explore the important unanswered questions in adaptive diversification.

Graeme Ruxton, *School of Biology, University of St. Andrews, St. Andrews, Fife, United Kingdom*

Interdisciplinary Environmental Studies: A Primer.

By Gunilla Öberg. Hoboken (New Jersey): Wiley-Blackwell. $120.00 (hardcover); $45.00 (paper). xii + 167 p.; ill.; index. ISBN: 978-1-4443-3686-3 (hc); 978-1-4443-3687-0 (pb). 2011.

Specialization is at the core of scientific practice. But scientific specialization is not limited to excellence within disciplines. Barriers are falling and incentives are rising for scholars to bridge disciplines to address problems of societal importance. As members of a seminar on interdisciplinary scholarship in a large environmental science department, our group has been working to develop a framework for how to effectively practice interdisciplinary science. In this review, we share insights we gained from reading *Interdisciplinary Environmental Studies: A Primer*, a set of reflections by Gunilla Öberg on being an effective interdisciplinary scholar.

The author offers pragmatic advice, particularly to early-career students. The book recognizes the distinctions and commonalities between disciplines and encourages dialogue and collaboration across academic and public sectors. Öberg also deconstructs the conflation of quantitative methods with natural science and qualitative methods with social science. She emphasizes the importance of humility and open-mindedness, and uses examples from her students' work to illustrate how reflection can result in better research, especially when it crosses disciplines.

The author insightfully discusses the decisions that interdisciplinary work forces to the surface: choices about framing, research aims, study objects, and data collection. By making these choices explicit, she demonstrates that interdisciplinarity is not holism, but compromise. And, in forging these new compromises, Öberg begins to develop several frameworks for generalizing a path toward interdisciplinary scholarship. These frameworks begin a valuable conversation, but at times they oversimplify and dichotomize the complexities of interdisciplinarity.

Although it does not reveal a prescriptive path for interdisciplinary work, for our group, this volume served as a valuable catalyst for thinking about interdisciplinary research. We look forward to future conversations that build on Öberg's examples of how to navigate problem-oriented, interdisciplinary research.

AVERY SIMON COHN, MELISSA V. EITZEL, KATHRYN J. FIORELLA, CLAIRE GEOGHEGAN, A. CLARE GUPTA, LISA C. KELLEY and KATHERINE L. SETO, *Environmental Science, Policy & Management, University of California, Berkeley, California*

STATISTICS EXPLAINED: AN INTRODUCTORY GUIDE FOR LIFE SCIENTISTS. *Second Edition.*

By Steve McKillup. Cambridge and New York: Cambridge University Press. $85.00 (hardcover); $45.00 (paper). xiv + 403 p.; ill.; index. ISBN: 978-1-107-00551-8 (hc); 978-0-521-18328-4 (pb). 2012.

Despite its largely nonmathematical approach, this volume manages to cover both a remarkable portion of the standard canon of introductory statistics and includes some nontraditional material as well. Among the standard fare are the chapters on probabilities (Chapters 6 and 7), z-statistics and t-tests (Chapter 9), analysis of variance and analysis of covariance (Chapters 11 through 15, 18), and correlation and regression (Chapters 16–17). McKillup does an unusually good job at exploring nonparametric statistics (Chapters 19–21) as well. Most exciting perhaps are the topics covered that are not often discussed in introductory textbooks. Chapter 2 introduces the fundamental principles of the "hypothetico-deductive" view of the scientific method, and Chapter 4 introduces the concepts behind experimental design along with a nice discussion of pseudoreplication. I was most intrigued by Chapter 5, which deals with the important but often neglected issue of scientific ethics. McKillup discusses not only the obvious issue of plagiarism, but also more advanced topics of how to fairly credit others for their contribution, how researchers can feel pressured to find evidence for a particular hypothesis, and how to keep good scientific records. Although the brief evaluation of the peer review process (Chapter 5) is perhaps extraneous for most undergraduates, it is a refreshing introduction to the complexities of research science and a welcome aside.

I think this would be a useful textbook for an undergraduate statistics course aimed at biology majors but, lacking any serious discussion of statistical computing, would be insufficient for more advanced courses. I would have liked more exercises at the end of each chapter, but found the ones that were included appropriate and thought-provoking. In many ways, this volume fills the same niche as *Intuitive Biostatistics* by Harvey Motulsky (2010. Second Edition. New York: Oxford University Press); both books are short (less than 450 pages) paperbacks designed to introduce statistics to biologists in a largely nonmathematical way. McKillup's *Statistics Explained* covers much of the same material as Motulsky's *Intuitive Biostatistics*, but does so more quantitatively and with more focus on the practical details of data analysis. I have no doubt that *Statistics Explained* will find a large and appreciative audience among undergraduate biology majors.

HEATHER LYNCH, *Ecology & Evolution, Stony Brook University, Stony Brook, New York*

FIRST LIFE: DISCOVERING THE CONNECTIONS BETWEEN STARS, CELLS, AND HOW LIFE BEGAN.

By David Deamer. Berkeley (California): University of California Press. $28.95. ix + 272 p.; ill.; index. ISBN: 978-0-520-25832-7. 2011.

The author has written a personal narrative of his career in the field of biogenesis or the origin of life on earth. It is a small field and those in it all know each other personally and avidly read each other's papers. The personal approach is engaging, but by switching to first names after a contributor's full name is mentioned, I found the effect awkward, like trying to retain the first names and full names of a room full of new people. The book consists of 15 chapters that cover the formation of Earth and its seas and atmosphere,