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Mammalogy Techniques: Lab Manual

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To cite this version:

Carsten Schradin. Mammalogy Techniques: Lab Manual. Quarterly Review of Biology, 2020, pp.141-142. hal-03007063

HAL Id: hal-03007063

https://hal.science/hal-03007063v1

Submitted on 16 Nov 2020

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Mammalogy Techniques: Lab Manual
By James M. Ryan. Baltimore: Johns Hopkins University Press.

Published as
Schradin, C. 2020. Mammalogy Techniques Lab Manual by James M. Ryan. The Quarterly Review of Biology, 95, 141-142.

This book can be recommended to anybody (wishing to be) working with mammals in the field and is a must have for students of mammalogy (including researchers) and any biology department covering mammalogy. In 19 chapters, James M. Ryan covers different techniques used by mammalogists in the field. Students are not only shown how to collect data, but also how process them, based on the statistical software R. While it does not and cannot replace a statistical course, the field techniques are thus embedded in the modern research environment students have to work in. As such, the book represents mammalogy as a modern science, not as an ancient art.

All chapters have the same structure: time required to teach the method, learning objectives, equipment needed, background information and detailed description of exercises. Each chapter contains a large number of very useful and easy to understand figures. The chapters make it easy to teach with little time needed for preparation. It also allows anyone to teach the technique himself. This is thus useful for professors, for students, but also for researchers that want to add a new technique to their field studies.

The 19 chapters include traditional techniques but also modern one. The more traditional ones are (in my order, not the one of the book): keeping a field notebook, trapping, 2 chapters on mark-recapture studies, transects, collecting parasites, specimen preparation, studying the skull and teeth. More modern approaches are phylogenetic reconstruction, camera trapping, radio tracking, GPS tracking, and preparing karyotypes. There are also three chapters on different aspects of behavior (general, sounds, and optimal foraging). Being myself a behavioral ecologist, I read the chapter on quantifying mammalian behavior especially critically. Its introduction is very sound and raises important points I also make for my own students, like making it dependent on the research question which behaviors to define, to avoid an observer bias, and to term a behavior pattern descriptively, avoiding terms that already imply function. However, it is not mentioned that behaviors should be divided between events (frequency is recorded) and states (recording of duration). The methods described for sampling behavior are correct but focused on “who to observe” without considering the important question of “how to observed”. As such, the different recording rules (continuous recording, point recording, one/zero recording and frequency recording) are not covered. As such, the chapter on animal behavior gives a good and adequate introduction on which students then can then build on in more specialized classes. From my reading, this is true for all chapters and when in the future I will have a student using a technique so far not used in my project, I will ask her to first read and apply the corresponding chapter in this book and then to move forward from there.

Are there any chapters missing? Not really. One important topic which I would urge everyone to address when teaching any of the topics is ethics and the necessity to apply for the necessary permits. Further, there are no chapters on how to collect blood or tissue samples. This is understandable as when teaching students how to collect blood samples, then these samples should also be used, for example for hormone analyses, which is beyond the scope the book. Accordingly, how to collect samples is detailed in the chapter on karyotypes where the necessary laboratory techniques are then also described. Thus, students interested in field techniques in mammalogy might in addition want to visit courses in laboratory animal care, where one learns for example how to collect blood samples, and physiology courses to learn how to measure hormones and metabolic rate.

While anybody teaching or learning field based mammalogy will benefit from this book, people like myself conducting field work since 20 years will also enjoy reading it. This is because even field biologists are specialized but will encounter questions and opportunities that need techniques which they are so far not using. This book is now an important addition to the research library in my research station in South Africa and I am sure the students working there years will benefit from it.

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