

### ***Measuring Behaviour: An Introductory Guide, Fourth Edition***

M Bateson and P Martin (2012). Published by Cambridge University Press, Shaftesbury Road, Cambridge BB2 8BS, UK. 238 pages Hardback (ISBN: 978-1108745727). Price £27.99.

A lot of animal behaviour researchers have grown up with previous editions of *Measuring Behaviour* as their go-to book for advice on techniques and ideas for appropriate methods for quantifying what their subject species is doing. The latest (and fourth) edition of this excellent handbook will no doubt become a staple on the bookshelves of many more students (and established researchers); this time with Professor Melissa Bateson taking on the mantle from her father, Sir Patrick Bateson. This edition has been updated, and new areas added, resulting in an increase in pages since the third edition in 2007, from 176 to 238 pages.

Because this is a well-known publication, I have tried in this short review to concentrate on the subjects added to the book, which relates to developments in techniques, and the inclusion of humans as the subject for study, as well as ethical aspect of behavioural research.

This latest edition has a much nicer flow to it, with the introduction easy to read, and a more logical re-organisation of the different chapters, many of which have been given new headings and sub-headings. For example, a discussion on potential floor and ceiling effects when collecting behavioural data has been moved from the chapter on 'Interpreting findings' in the previous edition to the chapter on 'Measurement quality' in this edition. Previously, we were presented with Tinbergen's four questions in the Introduction, whereas the current edition places them in the chapter on 'Choosing a research question', where they fit far more aptly.

A new and daring chapter entitled 'Science and truth' offers a fresh view on the nitty gritty of our métier and the theory of science. It includes a whole section on the 'Replication crisis', which is highly relevant — and not only to behavioural research. And the chapter on 'Designing a behavioural study' (Chapter 4) should be compulsory reading for all students of applied animal behaviour, as well as their supervisors.

If, like me, you have been using one of the previous editions of *Measuring Behaviour* in your studies, teaching, and supervision, I can highly recommend upgrading to the fourth edition. This may be best illustrated by the chapter on 'Recording technology', containing an up-to-date (as far as that is possible) description of various techniques available for automatic tracking of behaviour, as well as how to code your collected data into usable form — but it also explains the use of old-fashioned check-sheets, which may still be relevant in some situations. In comparison, the previous edition was largely limited to video-recordings, check-sheets, and event-recorders. The fourth edition contains many new illustrations, and the few that are reused from previous editions have been updated and redrawn. Useful information can be found throughout, and the revised

chapters on data analysis, and interpretation of findings contain guides on common statistical mistakes, and how to write a scientific paper.

Overall, this is a highly useful book for anyone working in or around applied behavioural research. The use of numbered references makes the chapters easier to read, but it also would have been useful to have an alphabetically ordered reference list. However, if that is the only issue I can find for improvement, it bodes well. So, in summary, make sure this latest (and much renewed) edition of *Measuring Behaviour* becomes part of the library in your behavioural lab.

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### ***Pigs: Welfare in Practice***

I Camerlink (2020). Published by 5m Publishing, 8 Smithy Wood Drive, Sheffield S35, IQN, UK. 166 pages Paperback (ISBN: 978-1789181050). Price £14.95.

This compact volume is part of the 5m Publishing 'Welfare in Practice' series of short, practical books on the welfare of farmed animals. As described by the publishers, "The series covers what is currently known about the welfare requirements of specific animal species and how to put this into practice." The book is aimed primarily at farmers, stockworkers and animal handlers, with scientists and students (and smallholders) only a secondary audience, and this makes it rather different to many reference volumes used by animal welfare scientists.

The book is edited by Irene Camerlink, with Xavier Manteca as the series editor. Each chapter, and many of the individual sections within chapters, has its own author leading to an extensive list of almost fifty contributors from across the world. Many of these will be familiar to researchers and readers of textbooks about farm animal and pig welfare, and about farming economics. The vast majority of the authors are based in Western countries and more developed regions, primarily Europe and North America. While the book aims for international applicability, most of the cost and price examples are given in GBP and euros, which may suggest a somewhat Eurocentric bias.

The contents are divided into four sections: the first, 'Understanding pig welfare', introduces the concept of animal welfare and gives an overview of the main issues related to pig welfare across the world. The second, 'Making the business case for animal welfare', discusses the economic benefits of improving animal welfare and includes examples of cost-benefit analysis applied to tail damage, gilt rearing and farrowing systems. The third section, 'Assessing animal welfare', covers welfare indicators including 'iceberg' indicators (those showing the 'tip of the iceberg', revealing greater problems underneath), the Welfare Quality® assessment protocol, qualitative behaviour assessment, the use of apps and Precision Livestock Farming. The final section, 'What you can do to