

International Society for Behavioral Ecology

Newsletter

Editor: Ken Otter
Ecosystem Science & Management Program
University of Northern BC
Prince George, BC, Canada V2N 4Z9
Phone - (250) 960 5019
Fax - (250) 960 5539
email - otterk@unbc.ca

web.unbc.ca/isbe/

Volume 18, Issue 1
Spring/Summer 2006

Editorial

This issue of the Newsletter marks a transition point; after six years as the sole Editor of the Newsletter, I am happy to announce that the Newsletter will be taking on an Associate Editor beginning this summer. This will also mark the succession of editorship, as the new Associate Editor prepares to assume my position in Fall 2007.

I have thoroughly enjoyed the position of Newsletter Editor and the freedom the society has allowed me in framing the Newsletter's content. I have, strangely enough, even enjoyed the occasional controversy that this 'freedom' has caused. However, as time tends to make one complacent, it is appropriate to allow a new Editor with new ideas to take the helm.

The new Associate Editor will be announced this summer, with the vision that the Associate Editor will work with me for a one year period to learn the ropes and hoops that go along with producing this publication. The Associate Editor then will take over as Editor, and a new Associate Editor will be appointed. This new initiate will ensure at least two people helping to organise the Newsletter at any time. The hope is with the expanded 'staffing' the Newsletter can increase the number of reviews and commentaries within each issue without becoming an overwhelming task for one individual.

During this transitional period, I hope that all members of the society will help the new Associate Editor by continuing to contributing the commentaries, workshop & book reviews and cartoons that have become the mainstay of the Newsletter.

Contents of this Issue

Editorial	1
Contributions to the ISBE Newsletter	2
Current Executive	3
Society News	4
Election Results – Marlene Zuk	4
Invitation to ISBE 2006 – Marc Théry and Jérôme Casas	5
Book Reviews	
A Natural History of Families (Forbes) Review by Robert Butler	6
The Evolution of Animal Communication (Searcy & Nowicki) Review by Harry van Oort	7-8
Hormones and Animal Social Behavior. (Adkins-Regan) Review by Nikolaus von Engelhardt	8-10
Animal Communication Networks (McGregor, ed) Review by Daniel Mennill	11-12

With that in mind, this issue contains four excellent book reviews. In addition, the results of the recent ISBE Executive Elections are found on page 4; I would like to congratulate all the elected executive on their success.

Stay tuned for new initiatives and a new generation of the Newsletter.

Ken Otter
Newsletter Editor

CONTRIBUTIONS TO THE ISBE NEWSLETTER

The ISBE Newsletter publishes Book Reviews, Conference and Workshop Reviews and Commentary Articles of interest to the *International Society for Behavioral Ecology*. *The ISBE Newsletter will only consider work that is not already published or intended to be submitted for publication elsewhere.*

Book Reviews: Reviews are generally solicited by the Editor as new books arrive at the office, and are deemed to be of interest to the society. Persons involved in the publishing of books who would like these to be considered for review in the Newsletter may contact the Editor and arrange for their publisher to forward a review copy to this office. Authors may submit a list of possible reviewers. Alternately, members who wish to review a particular text should contact the Editor. The Editor will provide reviewers with instructions and a style sheet. Reviews are typically 1500-2000 Words.

Workshop/Conference Reviews: Workshop and/or Conference reviews should be prepared in one of the following two formats. **Brief synopses** (max 1500 words) may be submitted by either participants or conference organizers at the regular newsletter deadlines. These can include synopses of workshops that will be published in more detailed accounts (book or special journals), and should include information as to where the information will be published. **Longer reports** (max 3000 words) will be considered from large workshops/conferences for which other publications are not stemming. The purpose of the latter format is to provide a venue to disseminate information and discussions that would otherwise not be available to non-conference participants. Anyone attending such a workshop and wishing to publish in the Newsletter should contact the Editor at least **one month** prior to submission deadlines. Reports should aim at a critical assessment of the conference, as well as a synthesis of the convergent ideas presented. A synopsis of future directions of research that were reached at the end of the conference should also be included. Anyone attending the workshops may submit reports, but preference will be given to submissions not authored by conference organizers. A single application for a workshop will be considered, so it may be appropriate to agree upon a reporter at the conference. Graduate students and postdocs are strongly encouraged to consider contributing to writing these reports.

Commentaries: Responses to commentary articles published in the newsletter or articles eliciting discussion on topics relevant to the society will be considered for publication. Authors of such articles should contact the Editor at least **one month** prior to regular submission deadlines to outline the content of the article. The Editor may request submission of the article earlier than regular deadline should outside reviewing be deemed necessary.

Cartoons: Cartoonists and other artists are encouraged to submit artwork, either in hardcopy, or as TIFF or high resolution (300 dpi) GIF files. All cartoons published in the newsletter will be credited to the illustrator, and will appear on the Newsletter's website (web.unbc.ca/isbe/newsletter).

Deadlines for submission to the Fall/Winter newsletter will be 1 Sept 2006.

Current Executive

President

Jack Bradbury

Cornell University Lab of Ornithology
159 Sapsucker Woods Road
Ithaca NY 14850 USA
Tel: +1 607 254 2493
Fax: +1 607 254 2439
E-mail: jwb25@cornell.edu

Past-President

Malte Andersson

Animal Ecology
Department of Zoology
Göteborg University
Box 463, SE 405 30 Göteborg, Sweden
Tel: +46 31 773 3695
Fax: +46 31 416729
E-mail: malte.andersson@zool.gu.se

President-elect

Marlene Zuk

Department of Biology
Spieth Hall 3344
University of California
Riverside, CA 92521
Tel: +1 951 827 3952
Fax: +1 951 827 4286
E-mail: marlene.zuk@ucr.edu

Secretary

Paul Ward

Zoologisches Museum der Universität Zürich
Winterthurerstrasse 190
CH 8057 Zürich, Switzerland
Tel: +41 1 635 4970
Fax: +41 1 635 6818
E-mail: pward@zoolmus.unizh.ch

Treasurer

Walt Koenig

Hastings Reservation
38601 E. Carmel Valley Rd.
Carmel Valley, CA 93924 U.S.A.
Tel: +1 831 659 5981
Fax: +1 831 659 0150
Email: wicker@uclink4.berkeley.edu

Councilors

Hanna Kokko

Department of Ecology and Systematics
Biocenter 3 PO Box 65 (Viikinkaari 1)
00014 University of Helsinki
Finland
Tel: +358 9 1915 7702
Fax: +358 9 1915 7694
E-mail : hanna.kokko@helsinki.fi

Nina Wedell

The School of Biology,
University of Leeds, L. C. Miall Building
Clarendon Way, Leeds, LS2 9JT, U.K.
Tel: +44 (0) 1133 433051
Fax: +44 (0) 1133 432835
E-mail: N.Wedell@leeds.ac.uk

Naomi Langmore

School of Botany and Zoology
Australian National University
Canberra ACT 0200, Australia
Tel: +61 2 6125 8436
Fax: +61 2 6125 5573
Email: Naomi.Langmore@anu.edu.au

Mats Olsson

School of Biological Sciences
University of Wollongong
New South Wales 2522
Australia
Tel: +61 2 4221 3957
Fax: +61 2 4221 4135
Email: molson@mirapoint.uow.edu.au

Society News

Most Society News – workshops, conferences and job postings – is now publicized on our website (web.unbc.ca/isbe/newsletter). This allows ads and announcements to be posted shortly after receipt so that deadlines falling between newsletter distributions can be advertised. If you would like to advertise workshops, conferences or job postings of interest to the society, contact Ken Otter (otterk@unbc.ca) for posting.

MEMBERSHIP AND SUBSCRIPTION OPTIONS

Subscription to *Behavioral Ecology* is no longer required to be a member of the International Society for Behavioral Ecology. Everyone now has the option to join the society without taking a subscription to the journal. Such memberships will receive the Newsletter and announcements for the biennial conference. For those who wish to continue their subscription to *Behavioral Ecology* as well as be a member of the society, this option is also available. Information on this process is found on the society's (web.unbc.ca/isbe/ISBEmembership.htm) and Oxford University Press' *Behavioral Ecology* webpages (beheco.oupjournals.org).

DONATED SUBSCRIPTION PROGRAMME

Please help colleagues in need. Every donation will help increase scientific contacts across the world. In a time when nationalism is again raising its ugly head, this is more important than ever. For details, see the advertisement on the inside back cover of *Behavioral Ecology* volume 12(4).

WORKSHOPS AND OTHER MEETINGS

(more detailed information is available on the website)

The 24th International Ornithological Congress will be held in Hamburg, Germany, 13-19 August 2006.

<http://www.i-o-c.org/>

ISBE Executive Election Results

As President-Elect of ISBE I am pleased to announce the results of our recent election of officers:

ISBE Council

Rebecca Kilner

Michael Jennions

Secretary

Rob Magrath

President-Elect

Pat Monaghan

Our online ballot system worked quite well, despite a few snags, and I would like to thank Cathy Kennedy and the rest of the staff at Oxford University Press who enabled us to have this electronic election. The turnout was approximately 34%, considerably higher than in previous elections. I hope that in future we will have an even higher participation rate from our members.

I appreciate the willingness of all of the candidates to serve our Society and look forward to seeing them at the Tours meeting.

Marlene Zuk

President-Elect

ISBE 2006 Conference, Tours, France

Reprinted from ISBE Newsletter 17(2)

The organizing committee would like to invite you to participate in the 11th Congress of the ISBE held in Tours, France, between 23rd and 29th of July 2006. Tours is located in the heart of the Loire valley, acknowledged for its outstanding cultural landscape of great beauty in the Unesco World Heritage List. The region is also known as the French castle capital.

The President of ISBE, Jack Bradbury, and the organizers decided to highlight the important contribution of Game Theoretical Models to Behavioural Ecology by inviting Geoffrey Parker to present the Hamilton Lecture, and Peter Hammerstein and Karl Sigmund to present plenary lectures. Other plenary conferences will be given by Tim Caro, John Endler, Luc-Alain Giraldeau and Alex Kacelnik. The last morning will be dedicated to symposia on 6 emerging themes, each hosting at most 60 people. Topics can be proposed to they@mnhn.fr and jerome.casas@univ-tours.fr

Tours has about 265 000 residents, among them 26 000 students. It is easily accessible from Paris, Roissy international airport, London, Brussels and Geneva by high-speed train, as well as by motorways from Northern Europe, North-Eastern Europe, Spain, Italy and Switzerland. The Tours airport has daily direct flights from London, and is connected with most European capitals through Lyon.

Accommodation will be available at the university residence and in about 100 hotels in the vicinity of the Vinci convention centre. Thanks to the central location of Vinci, congress participants will enjoy the rich history and the various activities available in the town centre and its immediate surroundings. Excursions can also be arranged to visit the wonderful castles and gardens of Touraine. A gala dinner will be organized in a 13th century medieval setting, followed by music and dancing.

On behalf of the organizing committee,

Marc Théry and Jérôme Casas.



Website: <http://www.isbe2006.com>

E-mail: info@isbe2006.com

Book Reviews

A Natural History of Families

Scott Forbes, Princeton University Press, 2005. 231Pp.
ISBN 0-691-09482-9 (Hardcover)

The theme of Scott Forbes highly readable *A Natural History of Families* is that “families are founded on conflict and parents and offspring are genetically girded for battle.” Behavioral ecologists will feel quite at ease with this theme - after all Forbes and his colleagues have been writing about it for decades. Robin Dunbar’s comment on the back cover of the book that he could not put the book down until it was finished, is testament to my claim. However, the writing style is easy and free flowing with plenty of witticisms to appeal to a general audience who is likely not well-versed in behavioral ecology. Nevertheless, Forbes wins the day by delving into a wealth of familiar and unfamiliar examples to bolster his argument. For example, he dispels the idea that fratricide and infanticide are antisocial behaviors and posits instead that they are the expected outcome of conflict between mothers and offspring. How his interpretation might enlighten public policy for human family relationships is wisely avoided.

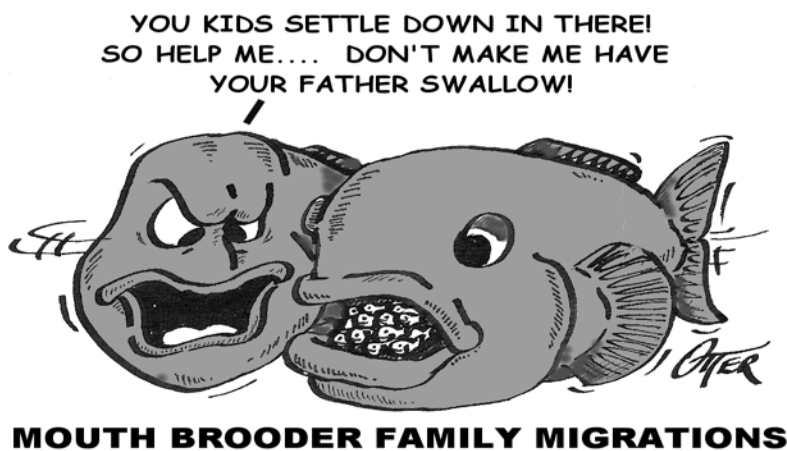
This is not to say that behavioral ecologists will not find much new in this book. To the contrary it opened my eyes to the host of examples in human reproduction and child rearing that can be explained in terms of behavioral ecology theory. He brings new

interpretations to such topics as morning sickness, miscarriage, spontaneous abortions and why offspring squabble with each other and their parents. Whether sociologists and child psychologists accept his interpretations might result in a squabble he did not envision.

Good books leave one to ponder and *A Natural History of Families* did just that. Forbes’ interpretations make a lot of sense. But human families are complex partnerships that behave in ways that are not easy (yet) to explain. For example, I wondered why some parents disown their genetically-related offspring because of some social slight even to the point of cutting them out of a will? Perhaps this will be the topic of his next book.

Rob Butler

*Pacific Wildlife Research Centre
Canadian Wildlife Service
Delta, BC, Canada*



The Evolution of Animal Communication: Reliability and Deception in Signaling Systems

William A. Searcy & Stephen Nowicki, Princeton University Press, 2005, 270 Pp.

ISBN: 0-691-07094-6 (cloth), ISBN: 0-691-07095-4 (paperback)

'The Evolution of Animal Communication: Reliability and Deception in Signaling Systems' by William A. Searcy and Stephen Nowicki is the latest book in the Monographs in Behavior and Ecology series (Eds. John R. Krebs and Tim Clutton-Brock). In this book the authors summarize and explain relevant honest signaling theory and they survey an appropriate selection of the empirical investigations towards these ideas. The book will have value to both students and professional scientists with an interest in this field. It is stacked with interesting content, however it is the skill in which it is organized and written that will make this book especially appreciated.

There are 6 chapters all told, with chapters 2, 3 and 4 forming the conceptual core of the book. These chapters are organized similarly, beginning with a discussion of theoretical concepts and an explanation of mathematical models, followed by a survey of empirical data for a selection of 3-4 well-studied signal types. Each signal type (e.g., begging signals, carotenoid signals, status badges, etc.) is put through the empirical ringer, asking the questions: are these signals reliable, are they costly, and how do receivers respond? The potential for deceptive signaling is obviously related to a signal's cost and reliability, and is discussed more sporadically.

After the short introductory chapter, chapter 2 investigates the evolution of signals used for communication between related individuals. This section begins with an explanation of the Sir Philip Sidney game, and builds from here with other more complex models. There are 3 sub-sections on different well-studied types of signals: begging signals, alarm signals and food calls.

Chapter 3 is concerned with mate attraction signals. Following a well-written review of the relevant theory (e.g., works by Graffen, Kokko and many more), the reader is treated to subsections on carotenoid signals, bird song, and elongated tails. The variety of costs associated with these signals is astounding, making an interesting read.

Chapter 4 deals with the evolution of signals used in aggressive contexts. There is a fairly extensive and valuable discussion of the various old and new models of aggressive signaling, some of which demonstrate

why deceitful signalers may persist in a population. Four types of signals are discussed: postural displays, status badges, weapon displays, and dominant frequency of calls in frogs and toads.

I enjoyed these chapters. In particular, it is apparent that different signal types have their own peculiar set of circumstances depending on what sort of information is signaled, who the information is signaled to, and the nature of the signal's cost. Likewise, it becomes apparent that the potential for deception differs among signals. These chapters obviously benefit from the presence of a very large body of theoretical and empirical work; yet it is apparent that more work is needed in several areas.

Chapter 5 steps back from the dyadic signaler-receiver paradigm in which most theories are born and expands discussion on the evolution of signals into the more realistic paradigm of communication networks. This short chapter deals less with theoretical concepts than the previous chapters. The chapter starts off with some introduction to communication network biology, summarizing evidence of 'eavesdropping' in both aggressive and mate choice contexts, and evidence of 'audience effects'. At this point, I was thinking that this chapter was a bit of an add-on chapter. However, following the review of communication network studies, the authors bring it back home and propose that by considering the network situation, additional (third party) receiver-dependent costs may be imposed on the signaler (e.g., costs not considered by the traditional dyadic paradigm), and offer some very interesting and convincing examples.

The concluding chapter is very much an assimilation of the material covered earlier in the book and gives a good evaluation of how well the evidence matches theory. Like the rest of the book, this chapter is succinct and clearly written.

This is not a flashy-looking book. It has a subdued cover adorned with four simple, but elegant, drawings. The jacket honestly signals the book's content in that the text contained inside is also not flashy; rather the text is plain and easily understood. There is very little use of unnecessary jargon, and the high readability of this book will be appreciated by all readers who have

struggled through some of the original, more mathematical articles reviewed in this book. It reads very easily and is not over-burdened with excessive empirical studies. The examples that are used are carefully picked, and there is very little repetition. A more deceptive element of the cover art is that there are no birds illustrated, despite the fact that birds are repeatedly used as examples throughout the book. Inside, there are 45 figures, mostly reprinted from original articles.

I really enjoyed this book, and I highly recommend reading it to anyone who is interested in the evolution of reliable signaling systems in animals.

Harry van Oort

Kingbird Biological Consultants
Revelstoke, B.C., Canada.

Hormones and Animal Social Behavior.

Elizabeth Adkins-Regan Princeton University Press, 2005, 429 Pp.

ISBN 0-691-09247-8.

Though the title could suggest a purely mechanistic look at hormone-behavior relationships, Elizabeth Adkins-Regan's book *Hormones and Animal Social Behavior* tightly integrates mechanistic, ontogenetic, functional and phylogenetic approaches to understanding the role of hormones in shaping adaptive phenotypic variation.

The book provides a very good starting point for students and researchers from behavioral ecology, behavioral endocrinology and evolutionary biology wanting to understand the mechanistic basis of phenotypic variation. It is also interesting for researchers already experienced with behavioral endocrinology, since Adkins-Regan gives a broad overview of hormone-behavior relationships, provides a huge range of examples of different mechanisms in vertebrate and invertebrate species, clearly points out crucial open questions and brings up stimulating, original ideas. Not least, it is highly enjoyable to read due to the lively, unconventional and imaginative style of writing.

Adkins-Regan carefully explains the important questions from a behavioral-ecology point of view, discussing the evidence, pointing out controversies and inconsistencies and suggesting possible (experimental) approaches to answer them. She then tackles the same issues from the perspective of the behavioral endocrinologist and finally tries to integrate the different approaches, which typically raises further questions and shows how much there is still to study. As an expert in experimental behavioral endocrinology who has worked on a number of central questions such

as sexual differentiation, mating behavior and maternal hormones, the author is well placed to review this research field and outline ways to approach such questions experimentally. She clearly speaks the language of both evolutionary biologists and endocrinologists and I believe her approach of taking both perspectives will help researchers from these fields to understand each other better. Despite the large field she covers, Adkins-Regan goes into sufficient detail and presents many useful examples to highlight unresolved issues and controversies. One should not expect that for each theme all the important ideas and references are included, but rather use the book as a basis from which to explore further these exciting research areas.

A general theme of the book is that hormones coordinate plastic responses in multiple traits in relation to the different situations an organism encounters during its lifetime. A number of concepts such as trade-offs, costs and benefits, constraints, phenotypic plasticity and developmental change reappear in different sections and from different perspectives. These demonstrate the tight links between mechanisms and functions and the dependencies that hormones create between different levels of organization in an organism. The book is structured partly according to these different levels of organization, and partly according to Tinbergen's (1963) four approaches to studying behavior (causation, development, function and evolution), which the author aims to integrate throughout.

Chapter 1, "*Hormonal Mechanisms*", presents general

principles of the hormonal regulation of behavior and their adaptive significance and describes the action mechanisms of hormones involved in social behaviors. Adkins-Regan points out the complexity of hormone-behavior relationships, which preclude one-to-one correspondences between hormones and behavior: it is wrong to say that hormones cause behavior; rather, they permit or enhance the expression of certain behaviors. She discusses in detail the idea that hormones mediate trade-offs between fitness costs and benefits.

Chapter 2, *“Mating, Fighting, Parenting, and Signaling”*, looks in detail at how hormones are involved in behaviors important for reproduction and survival. Again, trade-offs between fitness costs and benefits come up in the context of sexual selection and honest signaling. One important message is that one has to study the specific quantitative relationship between hormone levels and behavior, since qualitative effects will not provide any information on individual variation in signaling behavior or the precise nature of trade-offs. This is a very important message, since we often focus on whether a hormone affects a certain behavior without due consideration of the precise quantitative relationships.

Chapter 3, *“Social Relationships and Social Organization”*, presents how variability between species in sociality, competition, mating and parental behavior relates to hormones. This chapter takes a comparative perspective and addresses the paradox of how relatively conserved hormonal mechanisms can create such astonishing diversity. In a stimulating section on yolk hormones and their effects on offspring development in birds, Adkins-Regan provides a fresh perspective on what are commonly viewed as adaptive maternal effects by suggesting that the target of selection for yolk hormones may be the offspring rather than the mother.

Chapter 4, *“Development of Sexes and Types”*, focuses on the distinction between organizational and activational effects of hormones. The author considers how these create differences between and within the sexes and might thereby provide a mechanism for the production of alternative phenotypes. This is a topic that is currently attracting a lot of attention from evolutionary biologists.

Chapter 5, *“Evolutionary Change and Species Differences”*, discusses the involvement of hormones in both short-term and long-term evolutionary changes. The author points out the general problem that there are

usually no strict correlations between hormone levels and behavior. Changes in receptors and the metabolism of hormones may be more important than average hormone concentrations, but these are still difficult to study experimentally.

Chapter 6, *“Life Stages and Life Histories”*, shows how hormones regulate transitions between life-history stages and mediate trade-offs between maintenance and reproduction, mating and parenting. Hormones control the allocation of resources to these different functions and coordinate suites of traits. This is an important area where hormones can flexibly adapt the organism to varying environments and may allow individual development to respond to changing conditions.

Chapter 7, *“Phylogeny”*, demonstrates the variability in hormone receptors and metabolizing enzymes, and revisits the paradox that genes, hormones and the brain are relatively conserved, yet also responsible for a huge diversity in behavior. This points to the importance of learning and phenotypic plasticity and shows how little we understand about the links between genes, brain, hormonal mechanisms and behavior.

Of course, the book does not give final answers to the questions raised, but rather provides evidence for why there are no simple rules governing the interaction of hormones and behavior and their functional significance and evolution. As was her intention, the author encourages critical thinking and stimulates a deeper investigation into many of the questions raised. Her book will surely result in many more experiments addressing these important issues.

Adkins-Regan suggests that we are only starting to realize how hormone-mediated phenotypic plasticity and coordination of trait expression may be important in evolution. Though not a central topic of the book, it suggested to me that one of the most important future questions may be the genetic basis of hormone-behavior relationships, since genetic change is required for evolution. The author addresses some aspects of this genetic basis - such as sexual differentiation and genetic variation in receptors and metabolizing enzymes -but it seems this can only be the tip of the iceberg of the genetic basis for hormonal regulation of flexible phenotypes.

Evolutionary biologists are very interested in the developmental processes that produce phenotypic variation from genetic variation, since these are

thought to play an important role both in micro- and macroevolution. Evolution requires genetic change, but it is still not well understood how large phenotypic changes are possible on the basis of successive mutations. Due to their importance for phenotypic plasticity and their coordinated influence on multiple traits while maintaining the integrity of the organism, hormones may be an important player in the solution to this problem. Recent ideas in evolutionary developmental biology suggest that such phenotypic plasticity may initially allow organisms to adjust non-genetically to environmental change. If the environmental change persists, genetic changes can accumulate that optimize the adjustment to the environment. In this perspective genes are followers, not leaders, in evolution (West-Eberhard 2003).

In conclusion, *Hormones and Animal Social Behavior* demonstrates the crucial role hormones play in

translating genotypes into adapted phenotypes in interaction with the environment and across the development of an organism. Every (behavioral) biologist should have this book, since it illustrates how one can integrate function and mechanisms of behavior and thereby get a much deeper understanding of the fascinating variety of animal life.

Nikolaus von Engelhardt

Behavioural Biology

University of Groningen

Haren, The Netherlands

References

Tinbergen, N. 1963. On aims and methods of ethology.

Zeitschrift für Tierpsychologie, 20, 410-433.

West-Eberhard, M.J. 2003. Developmental plasticity and evolution. Oxford University Press, New York.



Animal Communication Networks

Peter McGregor (ed). Cambridge University Press, 2005. 657 Pp.
ISBN 0-521-82361-7 (hardcover)

Seven years ago, in a small tavern in eastern Ontario, a colleague asked me an interesting question about communication networks. At that time, Peter McGregor and his collaborators had formally articulated the idea of communication networks, noting that many animal signals transmit over long distances and that communication is better understood as a process occurring among multiple signalers and receivers (McGregor & Dablesteen 1996). Several important experiments had been published around the time of our conversation, demonstrating that animals extract information from signaling interactions between others (i.e. eavesdropping; McGregor & Peake 2000). However, my colleague was concerned that the communication network literature involved only these eavesdropping experiments. He asked, "Is there anything more to the communication network idea beyond eavesdropping?" With the publication of Peter McGregor's edited volume *Animal Communication Networks* in 2005, we have a definite answer to this question: The communication network model facilitates an improved understanding of a multitude of animal behaviors, including eavesdropping but also a broad spectrum of other receiver and signaler activities.

The book consists of twenty-six chapters, loosely organized into four sections. It begins in familiar territory, with the most thorough reviews to date of eavesdropping behavior (chapters 2, 3) and audience effects (changes in signaling behavior caused by the presence of an audience; chapters 4, 5). These chapters are especially satisfying because each one is firmly supported by numerous compelling behavioral experiments. I expect these chapters will satisfy even the most skeptical behavioral ecologist that communication networks must be invoked to explain some behaviors that do not fit within a dyadic communication model.

The first section of the book also includes a highly provocative chapter by John Bower on victory displays (post-contest displays which are given by the contest winner but not the contest loser). As with many ideas presented in this book, there are no experimental tests of the idea that victory displays are network-based phenomena, but the chapter provides fertile ground for future research questions. This chapter, in particular, should be required reading for any young graduate

students in search of unexplored questions in behavioral ecology. Almost every chapter in the book provides numerous compelling and unanswered research questions which are sure to stimulate future network research. Furthermore, throughout the book there has been a clear effort to depict the primary experimental protocols, often through the use of figures, and this is likely to inspire both lab-based and field-based behavioural ecologists.

The second section of the book deals with communication networks in particular contexts, and the third section of the book deals with communication networks in different taxa. Although birds and fish receive substantial attention throughout the book, intriguing chapters also explore communication networks in insects, fiddler crabs, frogs, rodents, large terrestrial mammals, marine mammals, and even humans. The network model offers insights across many organisms, testifying that the network model is a valuable one for comprehending complex patterns of animal communication. These collected chapters from such a diversity of study systems help the reader to draw general conclusions about the influence of group living on animal signaling behavior.

The fourth and final section of *Animal Communication Networks* attempts to connect the network idea to other biological disciplines, including animal cognition, the evolution of altruism, and primate sociality. These chapters provide interesting food for thought. For example, Irene Pepperberg points out that the cognitive processes associated with eavesdropping are similar to those associated with transitive inference. Redouan Bshary and Arun D'Souza point out that altruistic behavior is easy to understand within a network context where many individuals are assessing each others' behavior.

How is our understanding of animal communication expanded by adopting a network perspective? McGregor's book provides many examples of how network thinking enhances our understanding of behavioral ecology. Here are three exciting examples. (1) Anahita Kazem and Filippo Aurelli apply the communication network model to redirection-of-aggression behavior in primates (chapter 10). They evaluate whether redirection may serve a signaling function within social groups, as opposed to a

traditional view of redirection as a venting of frustration. By considering primate behavior within a communication network, the authors realize that redirection might play an important role in pre-empting attacks by bystanders who witness the redirected aggression. (2) Marty Leonard and Andy Horn evaluate nestling begging in birds as a communication network, and confront the complexity of a network that consists of organisms signaling within extremely close proximity. Colorfully describing the nest as “part communication network, part scrum toward the parent,” Leonard and Horn point out that the competitive interactions between nestlings, siblings, and parents cannot be understood merely as dyadic processes. (3) Ken Otter and Laurene Ratcliffe, as well as Torben Dabelsteen, discuss how choosy females are expected to behave when assessing male mating signals. They establish contrasting patterns for how females should behave if they sample males individually (i.e. approach each male directly, then assess) versus if they sample males through eavesdropping (i.e. approach a position that facilitates comparison between two or more individuals, then assess). Dabelsteen interprets the data from Bensch and Hasselquist’s (1992) study of the movement patterns of female great reed warblers as evidence for the latter type of assessment.

One of the most impressive features of this edited volume is the diversity of topics and organisms which are evaluated from a communication network perspective. There are a few chapters which are only tangentially related to the communication network idea, and there are a few chapters that are highly taxon-specific. Nevertheless, we should commend the editor for including such a broad array of topics and requesting the involvement of so many authors with such diverse backgrounds and diverse study systems.

A recurring theme throughout the book is the importance of the selective pressures of networks in ancestral signaling environments for understanding present signaling behavior. This is most explicitly dealt with among chapters on fish visual signals (chapter 4) and fish olfactory signals (chapter 23), although it also permeates most sections of the book. The cumulative evidence for the influence of networks on signaling and receiving behavior leads the reader to realize that most forms of communication will have been shaped by evolution within a group setting rather than a dyadic setting.

As the first major synthesis on the topic of

communication networks, summarizing roughly ten years of research, the book allows for careful articulation of certain key concepts and terms. Tom Peake’s comprehensive review of eavesdropping introduces a useful distinction between two types of eavesdropping. He proposes the term *interceptive eavesdropping* for the behavior of extracting absolute information from an interaction between others (e.g. a snake locating prey by listening to foot-drumming interactions between kangaroo rats) but distinguishes *social eavesdropping* for the behavior of extracting relative information from a signaling interaction between others (e.g. a female comparing the relative quality of two males based on their relative vocal performance in a song contest).

Given the breadth of topics covered in the book, *Animal Communication Networks* serves as a useful textbook. In the fall of 2005, I used this book as the core text for a graduate course in behavioral ecology. The diversity of topics covered within this volume provided an excellent starting point for discussions of general topics in behavioral ecology, while allowing the students to evaluate the utility of applying the communication network model to each of these topics.

This is an important book for behavioral ecologists, especially those interested in animal communication. The message that underlies this comprehensive volume is that we can achieve an enhanced comprehension of animal communication by including the broader social context in which communication occurs.

Daniel Mennill

*Department of Biological Sciences
University of Windsor
Ontario, Canada*

References

- Bensch S, Hasselquist D. 1992. Evidence for active female choice in a polygynous warbler. *Anim Behav* 44:301-311
- McGregor PK, Dabelsteen T. 1996. Communication networks. In: *Ecology and evolution of acoustic communication in birds* (Kroodsma DE, Miller EH, eds) Ithaca: Cornell University Press; 409-425
- McGregor PK, Peake TM. 2000. Communication networks: social environments for receiving and signalling behaviour. *Acta Ethol* 2:71-81