



ISBE Newsletter

- THE INTERNATIONAL SOCIETY FOR BEHAVIORAL ECOLOGY -
PRESIDENT: LINDA PARTRIDGE, EDINBURGH



EDITORIAL

Almost half a year has now passed since we had the last newsletter. Some delay was inevitable as we, the new editors, had to find a good way to coordinate our activities across the Atlantic. Also, some reorganisation in the mailing scheme is still under investigation. You may also have noticed that the second issue of the journal has been delayed; we hope that these problems can be remedied soon. At the same time, on behalf of the readers we would like to warmly thank our former editor of the Newsletter, Martin Daly, for the phantastic job he had done. Only now, we can appreciate how much work it must have been, and we hope to be able to keep up to his standards.

But not only that half a year has passed, in the meantime also a lot of tragic things happened in the world. The violent events in the Gulf should be reason for deep concern, regardless of who is right or wrong. The damage inflicted to natural habitats and wildlife as a consequence of military actions can hardly be underestimated and is rather depressing on the background of the worldwide decline in biodiversity in general. But as political and military crises come and go, let us not forget about the ongoing slow, constant, and "peaceful" destruction of wildlife almost everywhere on this planet. Striving for excellency in our scientific work and the tightening of the network of behavioral ecologists all over the world will be needed more than ever to establish a scientific community that has a weight in the discussions about the future of this planet's natural resources. Let us hope that this society will be able to contribute its due share.

In a similar sense, it is this latter point that was also made by our former president, John Krebs, during the last conference in Uppsala. In fact, behavioral ecologist could contribute quite a lot to the discussions in areas like conservation biology, because many of those problems are intimately related to the question of how animals (or plants !) react to changing environmental conditions over ecological and evolutionary time scales. This is essentially what behavioral ecologists do when they analyse strategies of organisms in functional terms. One can therefore hope that some of our approach will become included in future developments. Still another aspect that was brought up is the question of methodology. In fact, there is a discussion about what behavioural ecology is (see opinions in this issue), but is there also a special methodology ? And if so, how is it developed and are there new techniques coming up that will also make new insights possible? Readers certainly have their own ideas about all of these topics. We would look forward hearing from them (addresses, see p.12).

C o n t r i b u t i o n

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Female behavioural ecologists respond to novel male traits

Jacqui A. Shykoff

Zoologisches Institut der Universität,
Rheinsprung 9, CH-4051 Basel, Switzerland
Tel. 41-61-293486, Fax 41-61-293457

Abstract. I supply evidence that female behavioural ecologists were attracted to a diversity of novel male ornaments but largely failed to respond to subtle labels. This supports the sensory exploitation hypothesis of Ryan et al. (1990), that female choice can arise through a previous bias on the part of females for the traits that evolve in males. I argue that the origin of the trait by prior bias does not preclude its further evolution by either runaway selection or linkage to good genes.

Introduction

The evolution of secondary sexual characteristics through female choice or intermale competition has received both theoretical and empirical attention since its first formulation (Darwin 1859). Recent considerations have focused on whether females choose preferred traits to garner "good genes" for their offspring (Hamilton and Zuk 1982) or whether male trait and female preference result from "runaway" selection (Fisher 1958, Arnold 1983). Ryan et al. (1990) formulated a third possibility, that of sensory exploitation, which suggests that males exploit preexisting biases in the females sensory system.

While Ryan et al. (1990) provide a mechanism for immediate female response to new male advertisements, their hypothesis does not exclude subsequent evolution and maintenance of male trait and female preference through either Fisher's "runaway" or "good genes"

processes. Indeed "runaway" and "good genes" arguments explain escalation and maintenance of secondary sexual characteristics, saying nothing about their origin. However, if sensory exploitation can be involved in the initial establishment of new male ornaments, females must be biased to choose novel traits in males as soon as these arise (Ryan et al. 1990).

Using a natural population of behavioural ecologists in a private student bar in Uppsala, Sweden on August 25, 1990, I tested the effect of novel male traits on male display behaviour and female interest. Additionally I tested the efficacy of two types of traits - elaborate ornaments compared to inexpensive labels - in attracting female attention.

Materials and Methods

I arbitrarily assigned males to the following experimental treatments, independent of their own wishes (males did not represent a self-selected group nor could they refuse membership in treatment or control groups): ADORNED (n=8) with artificial ornaments constructed from multicoloured paper serviettes in the form of spurs, epaulets, tails, or comb and wattles, LABELLED (n=10) by writing "high quality male", "parasite free male", or "handicapped male" on their name tags, or CONTROL (n=115) with no experimental manipulation. I observed all experimental males and randomly chosen control males (n=10) for 5 periods of 3 minutes each, during which I recorded the frequency of the following female behaviours. I noted the number of females approaching and inspecting each male, displaying, or making long visits of more than 1 minute duration to each male. Display behaviour by females mainly involved dancing, but removal of sweaters while talking to a male was also considered display. To correct for nonnormality and heteroscedasticity, I reciprocal transformed female inspection and display behaviour data. I used SAS (SAS Institute 1985) nested ANOVA and SNK multiple comparisons test to investigate the main effect of treatment, with the nested effect of males in each treatment as the error term

(Zar 1984).

To test whether experimental manipulation affected male display activity I made five spot checks of the dance floor. I counted the number of males of the three treatment groups on the dance floor and tested the observations against the number expected by chance, using G log-likelihood test (Zar 1984).

Results

Tables 1 and 2 summarise the results of female attraction to males in the three treatments groups. ADORNED males received more approaches and inspections and female displays than LABELLED or CONTROL males. The distribution of female long visits to ADORNED males overlapped with long visits to both LABELLED and CONTROL males, but LABELLED males received the most long visits (Table 1).

Experimental manipulation affected display activity by males as well as female interest. The total numbers of males in the different treatment groups found on the dance floor differed significantly from the counts expected by chance (all spot checks combined: $G=14.55$, $df=2$, $p<0.001$). Counts of ADORNED males on the dance floor were far higher than expected, while those for both LABELLED and CONTROL males were somewhat lower than expected.

Discussion

Novel male ornaments attracted the interest of female behavioural ecologists. Females increased both inspection and display behaviour to males bearing novel showy traits (Table 1). In addition, giving a male a showy ornament increased his display activity. On the other hand, females paid as many long visits to LABELLED males as to ADORNED ones.

These data illustrate two principles. First, not only were females able to perceive novel male traits (Ryan et al. 1990), they also showed interest in them. While this demonstrates that

females may prefer some arbitrary male ornaments as soon as they arise in a population, it precludes neither that further evolution will escalate the male trait along a Fisherian "runaway" path (Kirkpatrick 1982), or that the trait is linked to "good genes" (Hamilton and Zuk 1982). Second, females were attracted to showy ornaments rather than to subtle labels, which could also be an indication of male quality. Sensory limitation of females, which readily spotted a colourful tail, or comb and wattles, could have prevented them from differentiating between modified and control name tags at a distance. Thus there may be restrictions on which male characteristics could be effective advertisements to females. This phenomenon may partly explain why, though according to Fisherian runaway selection, traits should evolve in both directions (Cockburn 1990) more elaborations than reductions in secondary sexual characters are observed. On the other hand the preference for showy over subtle traits may reflect selection for an intersexual communication system protected against cheating (Zahavi 1977). This idea is consistent with the result that females paid more long visits to LABELLED males, perhaps requiring more time to assess their quality. Altogether this experiment showed that females possessed prior bias for some novel male ornaments. This is however not inconsistent with the traits becoming established in the population via Fisherian "runaway" or natural selection through linkage to good genes.

Acknowledgements. Special thanks to Gotland's Nation for providing the study site and to the organising committee of the Third International Conference on Behavioural Ecology (not to mention the participants) for making this study possible through both the stimulating intellectual climate and the ideal experimental situation. Lastly I would like to express my gratitude to all experimental and control males who participated in this study. I cannot list you all, but Peter Hammerstein was the most active of the control males and Mark Elgar was remarkable in his comb and wattles. The manuscript was improved by critical comments from Elke Hillesheim, Don Kramer, John Krebs, Urs Leugger, Christine

Müller, and Linda Partridge.

Literature

Arnold, S. J. 1983. Sexual selection: the interface of theory and empiricism. - In; Bateson, P. (ed.), Mate choice. Cambridge University Press, Cambridge, pp. 67-107.

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Fisher, R. A. 1958. The genetical theory of natural selection. - Dover, New York.

Hamilton, W. D. and Zuk, M. 1982. Heritable true fitness and bright birds: A role for parasites? - Science 218: 384-387.

Kirkpatrick, M. 1982. Sexual selection and the evolution of female choice. - Evolution 36: 1-12.

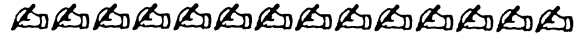
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SAS Institute. 1985 Statistics, version 5. SAS Institute, Cary, NC.

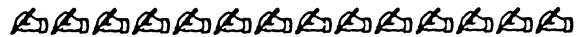
Zahavi, A. 1977. The cost of honesty (further remarks on the handicap principle). - J. theor. Biol. 67: 603-605.


Zar J. H. 1984. Biostatistical analysis.- Prentice-Hall, Engelwood Cliffs, NJ.

Correspondence: J.A.Shykoff



 Correspondence, contributions, opinions etc. of general interest to the membership are welcome by the editors. Please send hardcopy, if possible together with an ASCII-file of your text on 3.5" disks (Macintosh preferred). Texts may be shortened.



 Do you want information about jobs, opportunities, meetings, etc ? Looking for opinions, society matters ?

Yes ? Then send us your information any time. We try our best to include your contribution in the next newsletter to keep our society an open place.

The Editors

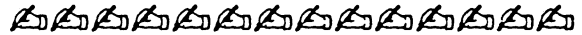


Table 1. Female interest in males of the three treatments ADORNED, LABELLED and CONTROL. The value represents the mean (95% Confidence Interval) over 5 replicates per male of the number of female approaches and inspections, displays or long visits to males per 3 minute observation period. Means within a behaviour followed by the same superscript were not different at $p < 0.05$ (tested with SNK multiple comparison test with male(treatment) as the error term. Means (and 95% C.I.) for inspection and display behaviour are back-transformed from reciprocal transformed values.

| | ADORNED n=8 Mean(95%C.I.) | LABELLED n=10 | CONTROL n=10 |
|------------|---------------------------------|-------------------|------------------|
| Inspection | 1.18a (0.42-3.75) | 0.26b (0.02-0.62) | 0.09b (0.0-0.29) |
| Display | 0.52a (0.12-1.37) | 0.06b (0.0-0.22) | 0.05b (0.0-0.19) |
| Long visit | 0.45ab (0.03-0.87) | 0.63a (0.29-0.97) | 0.22b (0.0-0.52) |

Table 2. Nested ANOVA tables for the three female behaviours "inspection", "display" and "long visit" to males of the three treatments ADORNED, LABELLED and CONTROL. Main effect of treatment was tested over male(treatment) as the error term.

| Inspection behaviour | | | | |
|----------------------|-----|-------------|-------|--------|
| Source | df | mean square | F | p |
| Treatment | 2 | 2.4460 | 16.92 | 0.0001 |
| Male(treatment) | 25 | 0.1445 | 3.38 | 0.0001 |
| Error | 112 | 0.0428 | | |
| Display behaviour | | | | |
| Source | df | mean square | F | p |
| Treatment | 2 | 1.1823 | 16.21 | 0.0001 |
| Male(treatment) | 25 | 0.0736 | 2.26 | 0.002 |
| Error | 112 | 0.0326 | | |
| Long visit behaviour | | | | |
| Source | df | mean square | F | p |
| Treatment | 2 | 2.4214 | 6.24 | 0.0063 |
| Male(treatment) | 25 | 0.3880 | 2.17 | 0.0032 |
| Error | 112 | 0.1786 | | |

SOCIETY NEWS

☉ This is a reminder that ISBE Membership dues will henceforth be collected by Oxford University Press. From what you pay in 1991, \$2.50 is society dues, the rest covers the journal.

☉ Oxford University Press is pleased with the journal and subscription sales are going well. Still, check your own library!

☉ By late September last year (1990) membership had gone up from 496 announced at Uppsala to 629. It seems that our society is prospering.

☛ **4th International Behavioral Ecology Congress at**

✱ Princeton University, August 17-22, 1992

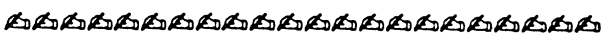
A second announcement will be sent in September 1991.

Details are available from:
ISBE Committee, Dept.of Ecology and Evolutionary Biology, Princeton University, Princeton, New Jersey 08544-1003, USA.

☛ **5th International Behavioural Ecology Congress will take place at**

✱ Nottingham University in 1994 !

Chris Barnard will be the host. He has taken the challenge to organize the next meeting after Princeton on behalf of the society. We have every reason to be delighted about this choice and look forward to another great place to meet !



Miscellaneous

☉ As a reminder: there is an electronic-mail network for behavioral ecologists managed by Dave Stephens. This is not directly an ISBE service. Of course, there are many contacts and we try to exchange information between the e-net and this newsletter if people are willing and the topics are of general interest. To subscribe to the e-net, use:

b-e-requests@forager.UNL.edu

and set your name and e-address in the message body. There is daily activity there and lots of useful information can be tapped.

☉ Users of the behavioral ecology e-mail group who would like to put some material into this newsletter, should send Nancy or Paul an electronic message (addresses are given below). The circulation of the Newsletter is larger and addresses a different audience, it reaches in particular also our colleagues at places without access to electronic means.

☉ The Spanish Ethological Society is publishing a new journal: "Etologia". The first issue has now come out. The editorial board consists of nine scientists from different universities in Spain. Subscription rates range from 4'000 - 5'000 Ptas for individuals, and 10'000 - 11'000 Ptas for institutions. Society members (fees: 4'500 Ptas, 1'500 Ptas for students) receive the journal for free. Contacts; for the Society: Sede de la S.E.E., Dpto.de Psicologia Biologica y de la Salud. Facultad de Psicologia. Universidad Autonoma de Madrid. 28049 Madrid, Espana. For journal subscriptions: Etologia, Dpto.de Psicologia, Universidad de Orviedo, 33005 Orviedo, Espana. The Editor: Etologia, Apartado 98033, 08080 Barcelona, Espana.



Meetings of Interest

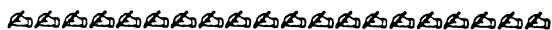
in 1991:

- **Care and Use of Amphibians, Reptiles and Fish in Research.** New Orleans (USA), April 8-9. Contact: Scientist's Center for Animal Welfare, 4805 St.Elmo Av, Bethesda MD, USA (Ph.:301-654-6390; fax:301-907-3993).
- **Foraging and diet in monkeys, apes and humans.** London (UK), May 30-31. Contact: The Secretary, Royal Society, 6 Carlton House Terrace, London SW1Y 5AG, U.K.
- **Animal Behavior Society Meeting.** University of North Carolina, Wilmington, (USA), June 1-6. Contact: John Williams, Dept.of Zoology, The University of North Carolina at Wilmington, Wilmington, NC 28403-3297, USA.
- **Chemical Signals in Vertebrates VI.** University of Pennsylvania, Philadelphia (USA) June 16-22. Lectures, posters etc. Contact: Conference Management Associates, Inc., 127 Brook Hollow, Hanover, New Hampshire 03755 USA (Ph.+1/603-643-2325; fax +1/603-643-1444).
- **International Society for Chemical Ecology.** Dijon (France) July 2-7. Semochemicals in Vertebrates. Plant-insect interactions. Sub-presocial and social insects: an evolutionary approach. Contact: Dr.R.Brossut, Faculté des Sciences, Laboratoire de zoologie, 6 Bd Gabriel, F-21000 Dijon, France. (Ph:+33/80-396294).
- **Resource Management and Behavioral Ecology.** University of British Columbia, Vancouver, (Canada), July 24-26. Contact:Nancy Oikawa,Secretary, Institute of Applied Mathematics, University of British Columbia, 222-1984 Mathematics Road, Vancouver BC, Canada V6T 1Y4 (Ph.:604-228-4584;fax in Dept.:604-228-6074).
- **First European Congress on Social Insects.** Leuven (Belgium), August 19-22. Lectures, Posters. Contact: Prof.J.Billen, Zoological Institute K.U.Leuven, Naamsestraat 59, B-3000 Leuven, Belgium.(Ph:+32/16-283975; fax:+32/16-284575).
- **Human Behavior and Evolution Society.** Hamilton, Ontario (Canada), August 22-25. Contact for papers etc: N&R Thornhill, Dept.of Biology, University of New Mexico, Albuquerque NM 87131 (e-mail: Nthorn@unmvm). Contact for meeting info: Margo Wilson or Martin Daly, dept.of Psychology, McMaster University, Hamilton, Ontario, Canada L8S 4K1 (Ph:416-529-140, ext.3033; fax:416-529-6225;e-mail: Daly@mcmaster. ca).
- **22nd International Ethological Conference.** Kyoto (Japan), August 22-29. Varied Topics and Roundtables. Contact: 22nd IEC Conference Secretary, c/o Simul International, Inc., International Conference Departement, Kowa Bldg.No.9, 1-8-10 Akasaka, Minato-ku, Tokyo, 107 Japan.(Ph:+81/6-373-5471; fax:+81/6-311-2767).
- **3rd Congress of the European Society for Evolutionary Biology.** Debrecen (Hungary), September 2-6. Plenary lectures, symposia, workshops. Contact: Dr.L.Pasztor, Dept.of Genetics, Eötvös University, 1088 Budapest, Muzeum krt.4/a., Hungary. (Ph: +36/1-118-1296; fax:+36/1-118-2694).
- **Symposium on "Plant Reproductive Ecology: Progress and Perspectives".** Uppsala (Sweden), September 9-11. Contact: Dr.L.A.Nilsson, Dept.of Systematic Botany, Uppsala University, Box 541, S-751 21 Uppsala, Sweden (fax: +46/18-300590; e-mail: Zoomp@seudac 21).

- **The Association for the Study of Animal Behaviour** will hold its summer meeting in Stockholm (Sweden), July 10-12 on "Evolutionary Aspects of Behaviour". Contact: T.Radestaer or S.Jakobsson, Dept.of Zoology, Stockholm University, S-106 91 Stockholm, Sweden. The winter meeting will be held at London Zoo on "Learning and Behaviour". Contact: A.Kacelnik, EGI, Dept.of Zoology, South Parks Road, Oxford OX1 3PS, England.

in 1992:

- **ABS 29th Annual Meeting.** Queen's University, Kingston, (Canada), June 13-18. Contact: L.Ratcliffe or P.Colgan, Dept.of Biology, Queen's University, Ontario K7L 3N6, Canada.
- **XIX International Congress of Entomology.** Beijing (China), June 28-July 4. Contact: Prof.Z.L-Zhang, Secretary-General, XIX ICE, 19 Zhongguancun Lu, Beijing 100080, China.
- **Individuals, Populations and Patterns.** University of East Anglia, Norwich (UK), September 7-10. Contact: Dr.S.R.Leather, Forestry Commission, Northern Research Station, Roslin, Midlothian EH24 9SY, U.K.
- **6th European Ecological Congress.** Marseille (France), September 7-11. Contact: Dr.D.Bellan-Santini, Centre d'Océanologie Station Marine d'Endoume, Rue Batterie des Lions, F-13007 Marseille, France.



Opportunities

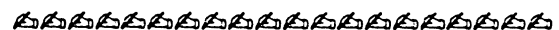
- **European Science Foundation Network on Population Ecology and Genetics.** A 2-3 day workshop with 20-25 people. Younger scientists (< 35 yrs) wishing to

participate should contact the organisers. Workshop 1: "Evolution and Ecology of Genetic Systems". Autumn 1991. Contact: J.van Damme, Institute for Ecological Research. Dept.of Botanical Ecology, Boterhoehsestraat 22, NL-6666 GA Heteren, The Netherlands (until 1 June 1991).

Workshop 2: "Genetics and ecology of Metapopulations". Winter 1991/92. Contact: P.Jacquard, Centre Louis Emberger, CNRS, BP 5051, F-34033 Montpellier Cedex, France. (until 1 Sept 1991).

Workshop 3: "Genetics and Demography of Interacting populations" Spring 1992. A.Lomnicki, Institute for Environmental Biology, Jagellonian University, ul.Karasia 6, 30-060 Krakow, Poland. (until 1 Dec 1991).

- **Erasmus Summerschool: "Chronobiology - Time and Energy in Behaviour".** June 17 - July 12. University of Groningen, The Netherlands. Open for 20 postgraduate students from the EC-countries. Contact: Dr.S.Daan, Groningen University. Ph. (+31)-50 63 20 46, fax: (+31)-50 63 32 05 or: G.Fleissner, Zoologisches Institut, JW-Goethe-Universität, Postfach 111932, D-6000 Frankfurt a/M, Germany. Ph: (+49)-69 798 48 33; fax (+49)-69 798 48 20.



More opportunities

- **Postdoctoral Research Associate** in comparative and developmental psychobiology. Contact: B.A.Campbell, Dept.of Psychology, Princeton University, Princeton NJ 08544-1010, USA (Ph: 609-258-4446).
- **Graduate and Postdoctoral Fellowships in Animal Behavior.** Contact: Research Training Group in Animal Behavior, Ellen D.Ketterson, Biology, or William D.Timberlake, Psychology, Indiana University, Bloomington IN 47405, USA.

- **Faculty Position in Psychobiology**, available from July 1, 1991. Contact: Biopsychology Search Committee, dept. of Psychology, The Johns Hopkins University, Baltimore MD 21218, USA.
- **Research Assistantships and Fellowships** for MS or PhD in behavioral ecology of insects. Contact: Director of Graduate Studies, Dept. of Entomology, S-225 Ag.Sc. Center North, University of Kentucky, Lexington, KY 40546-0091, USA (Ph:606-257-7450).
- **Founder's Summer Fellowship - Field Biology** at Iowa Lakeside Laboratory for pre-docs or recent PhD. Contact: R.W. Cruden, Acting Director, Dept. of Botany, The University of Iowa, Iowa City, IA 52242, USA (Ph: 319-335-1317 or 319-335-2620).
- **Grants from the Sophie Danforth Conservation Biology Fund** (max. \$1000). Projects related to conservation biology are invited. Contact: Anne Savage, Director of Research, Roger Williams Park Zoo, Elmwood Ave., Providence RI 02905, USA.
- **Field Assistant**. About April 1 - August 15. Avian Mating Systems at Mountain Lake Biological Station in southwestern Virginia. Transportation allowance and small stipend provided. Contact: Ellen D.Ketterson, or Val Nolan Jr., Dept. of Biology, Indiana University, Bloomington IN 47405, USA (Ph:812-855-6837).
- **Research Opportunity in Canada**. Behavioral or ecological studies possible on Richardson's ground squirrel in population with known individual histories. Limited research funds available; no salary. For undergraduates, graduates, or postdocs. Contact: Gail R. Michener, Biol. Sciences, University of Lethbridge, Alberta, Canada T1K 3M4 (Ph:403-329-2568, or 403-732-4630).

V o l u n t e e r s w a n t e d

- ▣ **Field Assistant**. May 15-August 15 1991. Behavior and ecology of Kentucky Warblers at Smithsonian's Conservation and Research Center in the Blue Mountain Ridges near Front Royal, Virginia. Housing free. Contact: Mary Victoria McDonald, Dept. of Biology, University of Central Arkansas, Conway AR 72032, USA (Ph: 501-450-3146).
- ▣ **Field Assistant**. Early May-late August 1991. Natural history and reproductive behavior of treefrogs in Jamaica. Transport from Miami, room, and board provided. Contact: Rebecca Thompson, 223 Bartram Hall, Dept. of Zoology, Unive. of Florida, Gainesville FL 32611, USA (Ph:904-392-1107).
- ▣ **Bald Eagle Observer**. March-September 1991, or any period thereof. US Forest Service, Hebgen Lake District, west of Yellowstone National Park. Housing and vehicle provided. Small daily subsistence possible. Contact: J.T. Stangl, Wildlife Technician, P.O. Box 520, West Yellowstone, Montana 59758, USA; or call: Dan Trochta, District Wildlife Biologist (Ph:406-646-7369).
- ▣ **Summer Field Assistant** within long-term research on fin and humpback whales in Massachusetts Bay. Fall and winter positions also available. Contact: Steven Fohock, c/o Atlantic Cetacean Research Center, P.O. Box 1413, Gloucester MA 01930, USA (or call: 508-283-2708).
- ▣ **Marine Research Assistant**. Hawaii, Coconut Island. April 4-May 31. Sex-specific foraging, mating behavior in cleaner wrasse. For Ph.D.; Scuba-diving. Contact: Maria Abate, Northeastern University, Marine Science Center, East Point, Nahant MA 01908, USA (fax:617-581-6076; e-mail: mabate@lynx.northeastern.edu).
- ▣ **Field Assistant**. Mid April-July. Mate choice study on the polymorphic White-throated Sparrow. Cranberry Lake Bio-

logical Station in the Adirondack Mountains, NY. Expenses at field station paid. Contact: Elaine M. Tuttle, Dept. of Biological Sciences, SUNY Albany, 2400 Washington Av, Albany NY 12222, USA.

- ▣ **Summer and Fall Research.** June - August, and September - November (min. 6 weeks). American Museum of Natural History's Southwestern Research Station at Portal, Arizona. For undergraduates and graduates. Contact: Director of the Southwestern Research Station of the AMNH, Portal, AZ 85632, USA (Ph:602-558-2396).

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## What is "Behavioral Ecology" ?

**Martin Daly**

McMaster University, Dept. of Psychology, Hamilton, Ontario, Canada L8S 4K1.

It seems to me that we need some discussion of the question of the domain of "behavioral ecology" (BE). Our society and our journal bear this label, but what do we intend that it should encompass ? There's a pre-existing journal called "Behavioral Ecology & Sociobiology", so one inference from our choice of title might be that we intend to delimit a narrower, more purely ecological domain. Textbooks tend to define "ecology" by phrases like "the study of organisms in their environment". Clearly this does not mean field biology as distinct from lab work. What it seems to mean is biological study that emphasizes extraspecific physical and/or biotic influences upon the focal organisms.

Such a view of ecology as the biological science concerned with extraspecific influences was invoked by the Uppsala Conference's Selection Committee to explain at least one of their decisions about the discipline's boundaries. One ISBE member submitted an abstract which began: "*Human psychological adaptations are mechanisms designed by selection to process environmental*

*information that influenced inclusive fitness of individuals in evolutionary history*", and which proceeded to propose and test some ideas about evolved psychological responses to certain socio-sexual experiences. A polite reply acknowledged the work's value but denied that it was "*relevant for this conference*", on these grounds: "*The reason is that we fail to see its ecological (relationship to the surrounding world) significance*".

The rejected abstract could hardly have been more explicit in its concern with the "surrounding world" of conspecific actors, so I take the Selection Committee's meaning to be the lack of reference to measured aspects of the extraspecific world. This may well gibe with conventional definitions of "ecology", but I wish to argue that such a definition of BE is unworkable.

The first argument against demanding that contributions to BE must be "ecological" in this sense is that we have already defined BE otherwise. Works in BE (such as the highly successful texts edited and authored by our society's past president, John Krebs) include a good deal of pure sociobiology. By the term "pure sociobiology", I refer to theorizing and empirical work that makes no explicit reference to extraspecific ecological factors, articulating its predictions and tests entirely in terms of intraspecific social dynamics. The second sentence of our new journal's instructions for authors reads:

*"The journal accepts papers in areas such as habitat selection; foraging; anti-predator, mating, parental care strategies; dispersal and migration; sexual selection; cooperation and conflict; communication; spacing and group behavior; and social organization"*. This list was clearly intended to encompass most of what is likely to be called "sociobiology", regardless of whether explicitly "ecological" factors intrude.

My second argument against defining BE by the criterion of an emphasis on extraspecific influences is a logical one. Consider the subject of sexual selection (explicitly listed among relevant topics by Behavioral Ecology's editors). Much exciting work these days is concerned with testing Hamilton & Zuk's theory

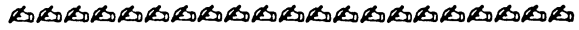
that mate choice criteria and sexually selected display characteristics take the forms that they do because of the selection pressures exerted by parasites. The focus upon the role of parasites make this quintessentially ecological stuff. But what about the leading counter-position, namely that sexual selection is a Fisherian process leading to equilibria that can only be understood in terms of the dynamics of the selective process itself and not as adaptations to extraspecific (ecological) factors at all? Are we to embrace one side of this debate as "ecological" and exclude the other by decree? *Reductio ad absurdum*. BE must welcome "pure sociobiology", neutralist models, and so forth, or else it will be a falsifiable theory (or worse still, an ideology) rather than a discipline. I expect that behavioral ecologists, by and large, won't be particularly fond of "pure sociobiology" when it lacks anchors in extraspecific realities, just as many who study sexual selection in nature rather than in computers are highly skeptical of Fisherian models. But our intentions can be wrong, and it would be doctrinaire and self-defeating to refuse ecology-free hypotheses when they are offered as alternatives to our favored models.

Of course, it's by no means certain that the sort of doctrinaire exclusion of "pure sociobiology" from the domain of BE that I'm arguing against was really at issue in the case referred to above. I suspect it was not. We discussed the domain of BE at the executive meeting in Uppsala, and the notion that "pure sociobiology" might lie outside that domain was unanimously rejected. My guess is that the Selection Committee members simply shared a gut feeling that the rejected abstract wasn't an instance of mainstream BE, and that they attributed their gut feeling to the extraspecific-environment issue post-hoc. My further guess is that their gut feeling really derived primarily from the abstract's allusions to "human psychology".

If my guess that "human psychology" doesn't strike most behavioral ecologists as a subdivision of BE is correct, this cannot solely reflect the choice of study species. Our society embraces the study of *Homo sapiens*: The journal's instructions to authors say explicitly, and the point was proven in the selection of

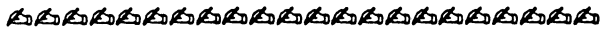
invited plenary speakers at both the Vancouver and Uppsala meetings. So is it "psychology" that oversteps the bounds of BE? As a psychologist, I am painfully aware that many biologists can hardly utter the word without contempt. (And quite understandably so: Just look at the garbage in the psychology section of your average university bookstore!). But there is an irony: BE is ineluctably psychological. BE is centrally concerned with characterizing evolved information-processing and behavioral decision-making mechanisms. Moreover, as those working in foraging can attest, behavioral ecologists have much to learn from comparative psychologists as well as much to teach them. A case can be made that BE is least successful when it loses its psychological focus, and thereby muddles together the distinguishable questions of the proximate causal calculus of animal-decision making and the ultimate causal calculus of the selection processes that shaped the decision-making (psychological) machinery.

I apologize if I've embarrassed or irritated anyone by reference to a particular abstract's rejection. My aim is not to complain about choice criteria (though I would suggest that future Selection Committees might be wise to adopt a blanket rejection that just says we "had many fine submissions and regret that yours was ranked below our cutoff"; don't apologize, don't explain). It's hard not to sympathize with behavioral ecologists who balk at swallowing such a gigantic, distasteful and possibly indigestible bolus as psychology and the social sciences. Sure, the human sciences need to become evolutionarily sophisticated, but that's their problem, not BE's. If we conceive BE too broadly, aren't we in danger of losing our journal overwhelmed by studies of one self-absorbed primate species, and our meetings swamped by social scientists who don't speak our language? I don't think that's a serious risk. The core interests of our membership are too robustly evolutionary, ecological, comparative and behavioral for our identity to melt away. Rather than being overwhelmed by our sister disciplines in the life sciences, we can welcome those of their practitioners who are sufficiently interested in the insights generated by BE to want to be part of it, learn from them as well as teach them, and grow stronger.



The Editors:

**Nancy W.Thornhill**  
The University of New Mexico  
Departement of Biology  
167 Castetter Hall  
Albuquerque, NM 87131, USA  
Ph: (505) 277-2804  
fax:(505) 207-0304  
e-mail:NThorn@unmvm.bitnet



**Paul Schmid-Hempel**  
Zoologisches Institut der Universität  
Rheinsprung 9  
CH-4051 Basel, Switzerland  
Ph: (61) 29 34 82  
fax:(61) 29 34 57  
e-mail:Schmid5@urz.unibas.ch

