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Editorial for the Ross H. Crozier Memorial Volume

Dr. Helge Schlüns (guest editor; contact author), School of Marine and Tropical Biology, James Cook University, Townsville, Queensland 4811, Australia; and: Department of Apiculture, RoBeeTech, University of Agricultural Sciences and Veterinary Medicine, Calea Mănăştur 3-5, 400372 Cluj-Napoca, Romania.
E-mail: helge.schluens@zoologie.uni-halle.de

Dr. Corrie S. Moreau (guest editor), Department of Zoology, Field Museum of Natural History, Chicago, Illinois 60605, USA.

Dr. Herbert Zettel (permanent editor), International Research Institute of Entomology, Natural History Museum Vienna, A-1010 Vienna, Austria.

Prof. Dr. Birgit C. Schlick-Steiner & Dr. Florian M. Steiner (permanent editors), Institute of Ecology, University of Innsbruck, A-6020 Innsbruck, Austria.

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In memoriam – Ross H. Crozier (1943 - 2009)

The late Professor Ross H. Crozier studied ants for more than 40 years. Although his biological interests and research addressed many other organisms, he was especially fond of ants and always expressed his great appreciation and interest in their general biology, genetics, and evolution. Most of the editors of this memorial volume knew and worked with him closely in recent years. He was intellectually inspiring and extraordinarily knowledgeable especially in his main research areas of evolutionary genetics and myrmecology. At the same time, he was a very kind, very well liked gentleman, and a great role model for everybody who was fortunate to spend time in his lab.

We, editors, invited myrmecologists – colleagues, and former students of Ross H. Crozier – to contribute to this special volume. Since Ross knew ant researchers all over the world it was a very difficult decision whom to ask to submit potential manuscripts. We sincerely hope no one will feel left out and that this volume and its papers, which comprise four reviews and twelve original articles, will be received as intended, to honour one of the greatest myrmecologists of the last 40 years: Ross H. Crozier. A foreword to this special volume was provided by Edward O. WILSON (2011). Pekka PAMILO (2011), a former very close colleague and friend of Ross, contributed an obituary reviewing and summarizing Ross' life and work. Hirotami T. IMAI (2011), another former close colleague and friend of Ross, wrote a biographical essay on their collaborative studies in ant cytogenetics.

As can be seen from Ross H. Crozier's publication list (see appendix of PAMILO 2011), his research spanned a broad range of topics, from the assessment of biodiversity to X-linked loci. In a similar manner, the contributions to this special volume also address a large variety of questions in ant research. The contributions can be grouped into broad topics including: biodiversity and community ecology; molecular phylogenetics and taxonomy; molecular evolution and genetics; and behavioural and molecular ecology.

Biodiversity and community ecology

Nicholas J. GOTELLI & al. (2011) review different sampling methods for carrying out field work in order to study community ecology of ants. They also review statistical methods and discuss the special challenges in estimating biodiversity of ants that arise from multiple ecological levels: species, populations, colonies, and individuals. Joan M. HERBERS (2011) gives an overview of her long-term study of litter ant communities in North American deciduous forests and presents results on variation in nest density in different seasons and at different sites.

Molecular phylogenetics and taxonomy

Ant phylogenetics was one of the topics Ross was very passionate about indeed. Hence, we are glad to have a review by Philip S. WARD (2011) who assesses the power of molecular and "traditional" methods in order to achieve reliable phylogenies for taxa within the Formicidae. Perttu SEPPÄ & al. (2011) investigate morphological, genetic and chemical means and approaches to distinguish ant species using two *Formica* species as an example. Two authors use alpha taxonomy to honour Ross. Robert W. TAYLOR (2011) describes two new species of heteroponerine ants naming one of these after Ross H. Crozier: *Heteroponera crozieri*. Steven O. SHATTUCK (2011) describes a new dolichoderine ant species and honours both Ross and his wife Ching by naming it after them: *Turneria rosschinga*.

Molecular evolution and genetics

Ross H. Crozier held a Chair of Evolutionary Genetics at James Cook University. Appropriately, there are two papers in this special issue addressing questions of molecular evolution and genetics in ants. Eisuke HASEGAWA & al. (2011) study and analyse the complete mitochondrial genome of the thelytokous ant *Pristomyrmex punctatus*. It is one of the first ant mitochondrial genomes that have been fully sequenced and investigated. Another paper on mitochondrial genomes by Alice P. JOHNSON & al. (2011) presents us with an outlook on maternal inheritance in a eusocial hymenopteran species.

Behavioural and molecular ecology

Mating, reproduction, and kin structure are important topics in ant behavioural ecology in which Ross had a great interest. Kazuki TSUJI & Shigeto DOBATA (2011) review the reproductive biology and colony structure of the thelytokous ant *Pristomyrmex punctatus*. Alfred BUSCHINGER (2011) reports on observations of a queen polymorphism in the Australian myrmicine ant *Monomorium* cf. *rubriceps*. Ellen A. SCHLÜNS & al. (2011) discover a genetic component in polyethism in the Austral-Asian weaver ant *Oecophylla smaragdina*. Division of labour and potential intra-

colonial conflict are affected by mating system and number of queens per colony. Hence, nestmate relatedness is studied by Matthias SANETRA (2011) in the bulldog ant *Myrmecia pyriformis*. Furthermore, Wee Tek TAY & al. (2011) investigate colony structure in the Australian ant *Rhytidoponera* sp. 12. Tom M. VAN DER HAVE & al. (2011) present research on mating systems in two European species of *Lasius* discussing potential hybridisation and introgression between the species. Bert HÖLLDOBLER & al. (2011) study number of queens and aggressive conflict among colonies in two American honeypot ants of the genus *Myrmecocystus*.

We hope that this special volume will inspire current ant researchers as well as future myrmecologists as much as each of us has been personally inspired by Ross H. Crozier and his work.

References

BUSCHINGER, A. 2011: Queen polymorphism in an Australian ant, *Monomorium* cf. *rubriceps* MAYR, 1876 (Hymenoptera: Formicidae). – Myrmecological News 15: 63-65.

GOTELLI, N.J., ELLISON, A.M., DUNN, R.R. & SANDERS, N.J. 2011: Counting ants (Hymenoptera: Formicidae): biodiversity sampling and statistical analysis for myrmecologists. – Myrmecological News 15: 13-19.

HASEGAWA, E., KOBAYASHI, K., YAGI, N. & TSUJI, K. 2011: Complete mitochondrial genomes of normal and cheater morphs in the parthenogenetic ant *Pristomyrmex punctatus* (Hymenoptera: Formicidae). – Myrmecological News 15: 85-90.

HERBERS, J.M. 2011: Nineteen years of field data on ant communities (Hymenoptera: Formicidae): What can we learn? – Myrmecological News 15: 43-52.

HÖLLDOBLER, B., GRILLENBERGER, B. & GADAU, J. 2011: Queen number and raiding behavior in the ant genus *Myrmecocystus* (Hymenoptera: Formicidae). – Myrmecological News 15: 53-61.

IMAI, H. 2011: A productive friendship – my work in ant cytogenetics with Ross H. Crozier. – Myrmecological News 15: 1-5.

JOHNSON, A.P., SCHMID-HEMPEL, R. & SCHMID-HEMPEL, P. 2011: Female lines in social insects – a homage to the Croziers' mitochondria. – Myrmecological News 15: 101-108.

PAMILO, P. 2011: Contributions by Ross Crozier on genetics and phylogeny of ants and other organisms. – Myrmecological News 15: V-XXII.

SANETRA, M. 2011: Nestmate relatedness in the Australian ant, *Myrmecia pyriformis* SMITH, 1858 (Hymenoptera: Formicidae). – Myrmecological News 15: 77-84.

SCHLÜNS, E.A., WEGENER, B.J. & ROBSON, S.K.A. 2011: Genetic polyethism and nest building in the weaver ant *Oecophylla smaragdina* (FABRICIUS, 1775) (Hymenoptera: Formicidae). – Myrmecological News 15: 7-11.

SEPPÄ, P., HELANTERÄ, H., TRONTTI, K., PUNTTILA, P., CHERNENKO, A., MARTIN, S.J. & SUNDSTRÖM, L. 2011: The many ways to delimit species: hairs, genes and surface chemistry. – Myrmecological News 15: 31-41.

SHATTUCK, S.O. 2011: *Turneria rosschinga* sp.n. (Hymenoptera: Formicidae), a new dolichoderine ant from Australia. – Myrmecological News 15: 125-128.

TAY, W.T., SEPPÄ, P. & PAMILO, P. 2011: Colony kin structure, reproductive dominance and colony founding strategies in the ant *Rhytidoponera* sp. 12 (Hymenoptera: Formicidae). – Myrmecological News 15: 67-76.

TAYLOR, R.W. 2011: Australasian ants of the subfamily Heteroponerinae (Hymenoptera: Formicidae): (1) General introduction and review of the *Heteroponera leae* (WHEELER, 1923) species group, with descriptions of two new species. – Myrmecological News 15: 117-123.

TSUJI, K. & DOBATA, S. 2011: Social cancer and the biology of the clonal ant *Pristomyrmex punctatus* (Hymenoptera: Formicidae). – Myrmecological News 15: 91-99.

VAN DER HAVE, T.M., PEDERSEN, J.S. & BOOMSMA, J.J. 2011: Mating, hybridisation and introgression in *Lasius ants* (Hymenoptera: Formicidae). – Myrmecological News 15: 109-115.

WARD, P.S. 2011: Integrating molecular phylogenetic results into ant taxonomy (Hymenoptera: Formicidae). – Myrmecological News 15: 21-29.

WILSON, E.O. 2011: Foreword to the Ross H. Crozier Memorial Volume. – Myrmecological News 15: I.