

## PREFACE

Rodents have been a problem to mankind since many thousands of years. Crop destroyers and carriers of diseases, rats and mice have stimulated man's endeavours to find ways of killing the vermin. Yet, rodents are still out there and thriving as well as ever. They pose continuing pest problems even in the richer parts of the world where elaborate prevention and control programmes have been set up. In developing countries, where economic constraints often prevent adequate pest management, the situation is much worse. Agricultural production is barely sufficient for survival in many of these countries and any pest damage may tip the balance to shortage or even famine. Hygienic standards are generally lower and public health systems less well equipped, so that diseases transmitted by rodents may spread faster and cause an increased morbidity.

Africa has more than its share of rodent problems with a variety of species that attack different crops and carry many diseases. Rodent damage on fields and in stores is an annual phenomenon but several species show irregular population explosions and damage figures of up to 80 % have been reported. Two classic examples of rodent zoonoses are prominently present: plague is endemic in Madagascar, Tanzania and the neighbouring countries; Lassa fever is an important health problem in West Africa. FIEDLER (1988) reviewed rodent problems in Africa in detail<sup>1</sup>. In his discussion, he attributed the failure of rodent control on that continent to poor biological knowledge about the concerned species and the lack of trained and well-equipped rodent scientists.

With this background in mind, we started a collaborative project in 1994 with scientists from Tanzania, Ethiopia, Norway, Denmark and Belgium. The objective of this project was to investigate several aspects of rodent biology in East Africa and integrate such knowledge for pest management; financial support was provided mainly by the Commission of the European Union (DG XII). Knowing that several other groups of researchers were addressing similar issues, we organised the «International Workshop on Rodent Biology and Integrated Pest Management in Africa» in Morogoro, Tanzania, from 21-25 October 1996. Morogoro, about 200 km west of Dar es Salaam, was an obvious place for this Workshop; the Rodent Control Centre of the Ministry of Agriculture and the Rodent Research Unit at the Sokoine University of Agriculture in this town have been active in rodent control and research during the past 15 years (with assistance from Denmark, Belgium, Canada, Sweden, Germany and the European Union) and still continue to do so. There were 62 registered participants at the Workshop, coming from 26 coun-

<sup>1</sup> FIEDLER, L.A. (1988) – Rodent problems in Africa. In: *Rodent pest management*. PRAKASH, I. (Ed.). CRC Press, Inc., Boca Raton: 35-65.

tries of which 16 in Africa. There were 50 oral presentations and 13 posters, divided in sessions on taxonomy, population dynamics, behaviour, physiology, zoonoses epidemiology and integrated pest management. A mini-symposium on plague epidemiology in Tanzania was convened by B.S. Kilonzo and incorporated in the Workshop program.

The aim of the Workshop was not so much to discuss rodent problems and control techniques in Africa, but rather to bring together rodent scientists with different experiences and see how their knowledge could contribute to improved rodent management strategies in Africa. This issue of the *Belgian Journal of Zoology* contains the proceedings for the Workshop. Many of the presented studies at the Workshop were in initial phases, not yet allowing publication; others were ready to be published elsewhere. Although the present proceedings thus do not contain contributions from each participant, they provide a very good overview of the different topics discussed in Morogoro. The papers published here also support the Workshop recommendations for future strategic and applied research which were formulated at the end of the meeting. These recommendations can be summarized as follows:

- The taxonomy of African pest rodents, and their parasites, still needs a lot of multi-disciplinary study. Ecologists and rodent control specialists should be stimulated to collect material for taxonomical purposes. Taxonomists should design a standardized collection protocol and a coordinated distribution and communication system. The same material could also be made available for research on the epidemiology of zoonotic infections. Reference collections are needed both locally and in international museums.

- Ecological studies should attempt to collect much longer time series and analyse these properly. Too many of the short-term studies are still purely descriptive and basically replicates of earlier work; such studies would benefit from an intensified experimental approach. Ecological modelling of African rodent populations, temporally and spatially, will be useful in improving our understanding of the dynamics but also in forecasting rodent problems and simulating management strategies.

- The differences in life-history characteristics between closely related rodent pest species in Africa call for comparative studies of the physiology of these rodents.

- Increased activities in the field of medical ecology are desirable. The epidemiological patterns of rodent-borne zoonoses like plague and many others are still not clear. Community-ecology studies are urgently needed to understand the interaction between rodents, their parasites and pathogens and the environment.

- The study of plague epidemiology is hampered by the poor diagnostic services that are available locally. Improvement of these facilities and the used techniques, and an organised reference system to an African research center are required.

- Rodent control still follows the principles of Integrated Pest Management (IPM) only rarely. A more selective use of rodenticides requires increased research efforts on forecasting, repelling and prevention, and on the sustainability of rodent IPM strategies. Damage assessment techniques must be adapted and refined to evaluate control approaches. Simultaneous control of rodents and their ectoparasites should be developed for areas with enzootic arthropod-transmitted infections. There is a need for high-level education of rodent control scientists.

– Rodent control should be integrated in the existing IPM systems. Newly developed knowledge should be transmitted more effectively to private end-users; their participation in rodent management should be stimulated. There is much to learn from the experience that has been gained in Asia in this respect.

– The knowledge on population dynamics, epidemiology of rodent-transmitted zoonoses and management of rodents is fragmented and scattered. A central database about this knowledge and the relevant expertise should be established, if possible, under auspices of international organizations like FAO/WHO.

The Workshop Organizing Committee is confident that the Morogoro meeting has succeeded in its prime goal of bringing African rodent scientists together and confront their ideas with the needs and facts of rodent control. We hope that the above recommendations may stimulate further investigations in African rodent biology and that these studies may contribute to improved management strategies for rodent problems on the African continent.

### ACKNOWLEDGEMENTS

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(Lyngby, 21 July 1997)