

Book reviews

Raphignathoidea (Acari: Prostigmata). *Fauna of New Zealand 52*. By Qing-Hai Fan and Zhi-Qiang Zhang. Published in 2005 by Manaaki Whenua Press, Lincoln, Canterbury, New Zealand. 400 p., soft cover. ISBN: 0–478–0937–3. Price: NZ\$89.00 (+ NZ\$5 delivery charge within New Zealand per order); US\$89.00 (+ US\$5 delivery charge outside New Zealand per order) (email: mwpress@LandcareResearch.co.nz).

Studies of the New Zealand fauna of the Raphignathoidea started in the mid 1960s when there was a burst of activity in the study of mites in natural and modified ecosystems. This welcome addition to the *Fauna of New Zealand* brings together and updates information on this group of mites, and access to this contribution is essential for anyone studying biological control of invertebrates in modified or natural ecosystems.

This volume is focused on the New Zealand fauna, but also provides a comprehensive revision of the super family Raphignathoidea, providing keys to world families (11) and world genera of families present in New Zealand (5). The New Zealand fauna consists of 76 species, 21 newly described, belonging to 20 genera. The main part of the volume comprises excellent detailed descriptions and illustrations of these species. For most people, however, the supplementary information will be the most useful part of the volume.

This Fauna provides a useful review of the biology of the superfamily. It includes what little is known about feeding behaviour and predation, and interaction with other predators. Most species for which there is information, are free living predators, a few are parasites on flies, and a few are phytophagous on mosses. Their prey include scale insects and other mites, both herbivores and predators. Some of these species also feed on pollen, as do predatory mites in other families.

Those who wish to identify mites in this superfamily will find that the keys and detailed descriptions are accompanied by clear and detailed

illustrations that are amply provided with abbreviated names for the structures. The abbreviations are listed on pp. 19–20, although it appears that some abbreviations for leg setae have been omitted. Where material is available, all life stages are described and illustrated. For each family, keys are provided to the life stages and to the genera of adults. For each New Zealand genus, a key is given to species found in New Zealand.

The families are arranged alphabetically, as are the genera within a family and species within a genus. This makes it very easy to locate species descriptions and information about each species. At the end of each species description, the material examined is followed by “Habitat” which as well as the obvious “under stone” also lists all the plants on which the species has been found and, if known, it is followed by “feeding habits”. Appendix 1 summarises the species found on each plant species. Within the “Habitat”, links are made between common and scientific names for plant species, e.g., pohutukawa and *Metrosideros excelsa*, but this is not done in Appendix 1 and may create problems for non-New Zealand readers. Also in Appendix 1 there are some non-plant names such as “Eves Bush”, a reserve near Nelson. The list of species on host plants shows the importance of these predators on apples compared with other fruit trees.

This Fauna also includes distribution maps for each species found in New Zealand. These maps emphasise how little is known about New Zealand’s mite fauna, with many species represented by only one dot on the map. Even species associated with crops do not appear to be widespread. Linked to the distribution maps is Appendix 2 that lists the New Zealand species that occur in other countries and in which countries they occur. For example, species associated with fruit trees are found in several other countries. Two *Agistemus* species, *A. collyerae* and *A. longisetus*, are found on apple trees and have both been found overseas. The latter is predominately associated with non-native plants whereas the former is mostly associated with native plants. Is *A. collyerae* a native species that has colonised exotic

plants or is it a foreign species that has invaded native ecosystems? A close examination of “materials examined” suggests the latter, whereas other species recorded from apple trees are strongly associated with native ecosystems, e.g., *Eryngiopus arboreus*.

The two species found on kiwifruit (*Actinidia deliciosa*) illustrate the value of depositing voucher specimens. Previously *Mecognatha hirsuta* was the only species found on kiwifruit. However, it is now distinguished from the newly described, *M. parlis*. Both species are widespread and found on apple trees, kiwifruit vines, and other habitats. The presence of specimens in the New Zealand Arthropod Collection (NZAC) from previous observations and experiments means that those observations can be validated, whereas in the absence of voucher specimens the previous data for “*M. hirsuta*” have lost some of their value. In the

light of the emphasis of research over the last 20 years into integrated pest management and reduced use of pesticides, it is surprising that there are relatively few recent collections of Raphignathoidae in the NZAC.

This addition to the *Fauna of New Zealand* may encourage the study of these predatory mites in both natural and modified ecosystems and be accompanied by the preparation of good quality microscope slides that are deposited in suitable repositories. These will form the basis of a future revision of this fauna some years hence.

N. A. MARTIN

New Zealand Institute for Crop and Food
Research Limited
Private Bag 92 169
Auckland, New Zealand

Biological pollution: an emerging global menace. Edited by Kerry O. Britton. Published in 2004 by APS Press, 3340 Pilot Knob Road, St Paul, MN 55121–2097, United States (<http://www.shopapspress.org>). 124 p., softcover. ISBN: 0–89054–313–5. Price: US\$69 (email: aps@scisoc.org).

Pollution “by” as well as “of” biology is a hot topic as scientists and economists try to quantify the actual or potential impact of invasive pests to justify importing a new species, or increase funding to border control. In New Zealand, a country which relies on the productive management of exotic species for export, the issue is of paramount importance; few other countries are as vulnerable biologically and economically. It has been estimated that exotic pests already cost the country up to NZ\$2 billion a year (Barlow & Goldson 2002). Each time a calculation is made, in any country, the dollar impact increases (in New Zealand, the estimate of cost was NZ\$800 million (Bertram 1999)), and the difficulty in making the estimate in the absence of definitive economic data is restated (e.g., Bigsby 2003; Goldson et al. 2005).

This new book on biological pollution, edited by Kerry Britton of the United States Department of Agriculture and Forest Services, does not improve the ability to calculate the cost, but does add to the increasing quantity of literature that will assist members of society to understand the magnitude of

the problems. It presents a broad spectrum of concerns in non-technical language in a style accessible to the non-specialist interested in conservation matters.

From describing the general problem of pests and their spread, the authors (different experts for each chapter) move to discussing weeds, diseases, and parasitic nematodes in more detail. These middle chapters are predictable, but in the introduction there are some concepts that are worth consideration either to scotch them, or promulgate them further.

At the forefront of concern is the statement that importing plant species “should be attempted only when the effects are predictable”. As they never are, this is promoting the “if in doubt don’t do it” approach, rather than some evaluation of risk and reward or cost-benefit analysis. I have no quibble with the suggestion that border inspections are part of the solution in preventing biological pollution, but what follows is a clear lobby for more lobbying “...environmentalists can assist in the political processes in which laws are changed...” The implications are that laws should be stricter, that importation should be stopped.

A second concern is a strange calculation made on the basis that all species have equal access to all portions of the world (Preston 1960). Westbrooks & White (2004) have estimated that a single global land mass would support c. 2000 species, instead of the c. 4200 species currently supported by isolated continents. They conclude that a breakdown of biogeographic barriers could lead to extinction of

more than half of the continental mammals and even more of the island species. This distracts from the main focus of the book which is more about inadvertent introduction of pests through seeds, fungus, tiny eggs, etc, than inter-mammalian competition. However, even while questioning the validity of the assumptions about “equal access”, the message that “biological pollution” will result in decrease of species variety remains clear.

The book has three chapters on what can be done about biological pollution. These cover risk assessment and quarantine, assessing exotic threats, and political and economic barriers. Given the increasing literature on, and importance of, risk assessment, it is surprising to find only two references (1995 and 1996), in that chapter. The second chapter on assessing exotic threats fares only marginally better. Neither refer to seminal works in the area which had been published (for a comprehensive assessment see Burgman 2005).

The final chapter, “Fighting back”, renews the plea for assistance from environmentalists, but also contains a message for scientists: “If we could accept doing less science, but persist in taking each major result all the way to a useful outcome, we would find eager hands waiting to help”. There is no proof; it is a naïve statement.

Au fond, despite the overt statements that this book was written to raise public awareness of the risks in liberalised trade, it is not entirely clear for whom it is intended because it lacks a consistent approach. The inclusion of broad, deep, history, future, non-technical language, multi-scholastic referencing, dated references (e.g., in 1995, United States farmers spent c. US\$5 billion on herbicides), secondary sources, specificity to forestry and yet inclusion of other sectors, all in 113 p. (almost 23 of which are references), is confusing. One is left with the feeling that the meeting of the American Phytopathological Society conceived the idea that having such a book would be of benefit, and so it was written.

On the school library shelf some chapters will be of use for projects. For those with a lay-interest in forest conservation it will probably be of interest. For the scientist, however, it is a strange mixture, and concern about some of the statements remains.

REFERENCES

- Barlow ND, Goldson SL 2002. Alien invertebrates in New Zealand. In: Pimentel D ed. Biological invasions: economic and environmental costs of alien plant, animal, and microbe species. Boca Raton/London/New York/Washington DC, CRC Press. 384 p.
- Bertram G 1999. The impact of introduced pests on the New Zealand Economy. In: Hackwell K, Bertram G ed. Pests and weeds; a blueprint for action. Department of Conservation, P.O. Box 10 420, Wellington, New Zealand.
- Bigsby H, Evans E, Lee D, Alavalapati J 2003. Economics of managing invasive species in tropical and subtropical areas of the USA: a case study development. International Agricultural Trade and Policy Center Working Paper Series WPTC 03–5.
- Burgman B 2005. Risks and decisions for conservation and environmental management. Cambridge University Press. 488 p.
- Goldson SL, Rowarth JS, Caradus JC 2005. The impact of invasive invertebrate pests in pastoral agriculture: a review. New Zealand Journal of Agricultural Research 48: 401–415.
- Preston F 1960. Time and space and the variation of species. Journal of Ecology 41: 611–627.
- Westbrook RG, White P 2004. An ecological explosion in slow motion. In: Britton KO ed. Biological pollution. Minnesota, APS Press. Pp. 8–16.

JACQUELINE ROWARTH

Director, Office for Environmental Programs
The University of Melbourne
VIC 3010, Australia

