

WHAT BUG IS THAT?

The Guide To Australian Insect Families

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Introduction

Insects are challenging to identify because of their high diversity. In Australia, there are approximately 200,000 species of insects placed in 640 Families and 26 Orders¹. Dichotomous keys to all families of Australian insects were published in "The Insects of Australia" in 1991²; since then, a number of major electronic products have updated some keys to insect families (e.g. Coleoptera, Diptera, Hymenoptera & Odonata) to an electronic and interactive form on CD.

What Bug Is That?

The Taxonomy Research and Information Network (TRIN) project "What Bug Is That?" will update and combine variously formatted keys (e.g. dichotomous, web-based, Delta, Lucid, etc.) into a uniform web-based environment that aims to facilitate the identification of Australian insects by utilising modern, interactive identification tools (Figure 1).

"What Bug Is That?" provides a one-stop shop for on-demand insect identification that is easily updateable, expandable, and can link to a galaxy of other web-based information related to those families. Individually, user-friendly interactive identification keys have been proven to have major benefits to tertiary courses, and beginner and advanced workshops. Collectively, they will provide an unrivalled resource to support education, training, and a variety of "citizen science" environmental activities.

Development of Keys to Insect Families

The on-going development of keys for the project relies on contributions by collaborators from Australia and around the world. The insect family keys incorporate:

- identification keys for all families (Figure 2)
- illustrations and notes on identification and biology for each family
- keys developed in other formats, which are translated into Lucid keys for deployment on the web
- the Lucid On-Line Player so that key software and data is supplied free through the user's browser
- family fact sheets in BioLink so they can be used elsewhere on the web, such as in the ALA, and
- web-based information using currently acceptable biodiversity informatics best practices with consistent user interfaces and standardised information across all taxa.

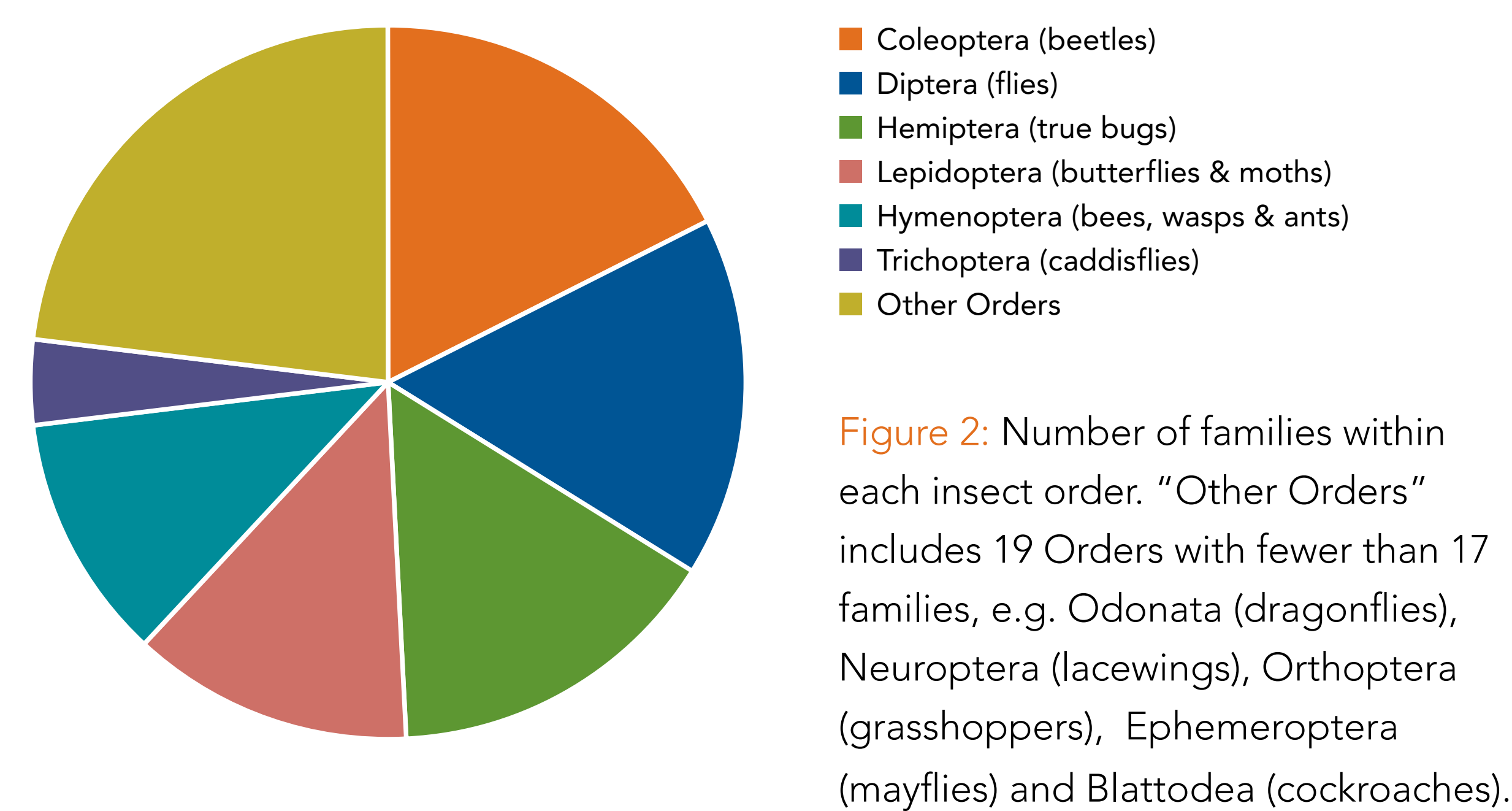


Figure 2: Number of families within each insect order. "Other Orders" includes 19 Orders with fewer than 17 families, e.g. Odonata (dragonflies), Neuroptera (lacewings), Orthoptera (grasshoppers), Ephemeroptera (mayflies) and Blattodea (cockroaches).

References

1. Yeates, D.K., Harvey, M. and Austin, A. 2003. New estimates for terrestrial Arthropod species-richness in Australia. Proceedings of the Royal Society of South Australia. 7: 231-241.
2. "The Insects of Australia" (1991), 2nd Ed., CSIRO Entomology, Melbourne University Press, Victoria.

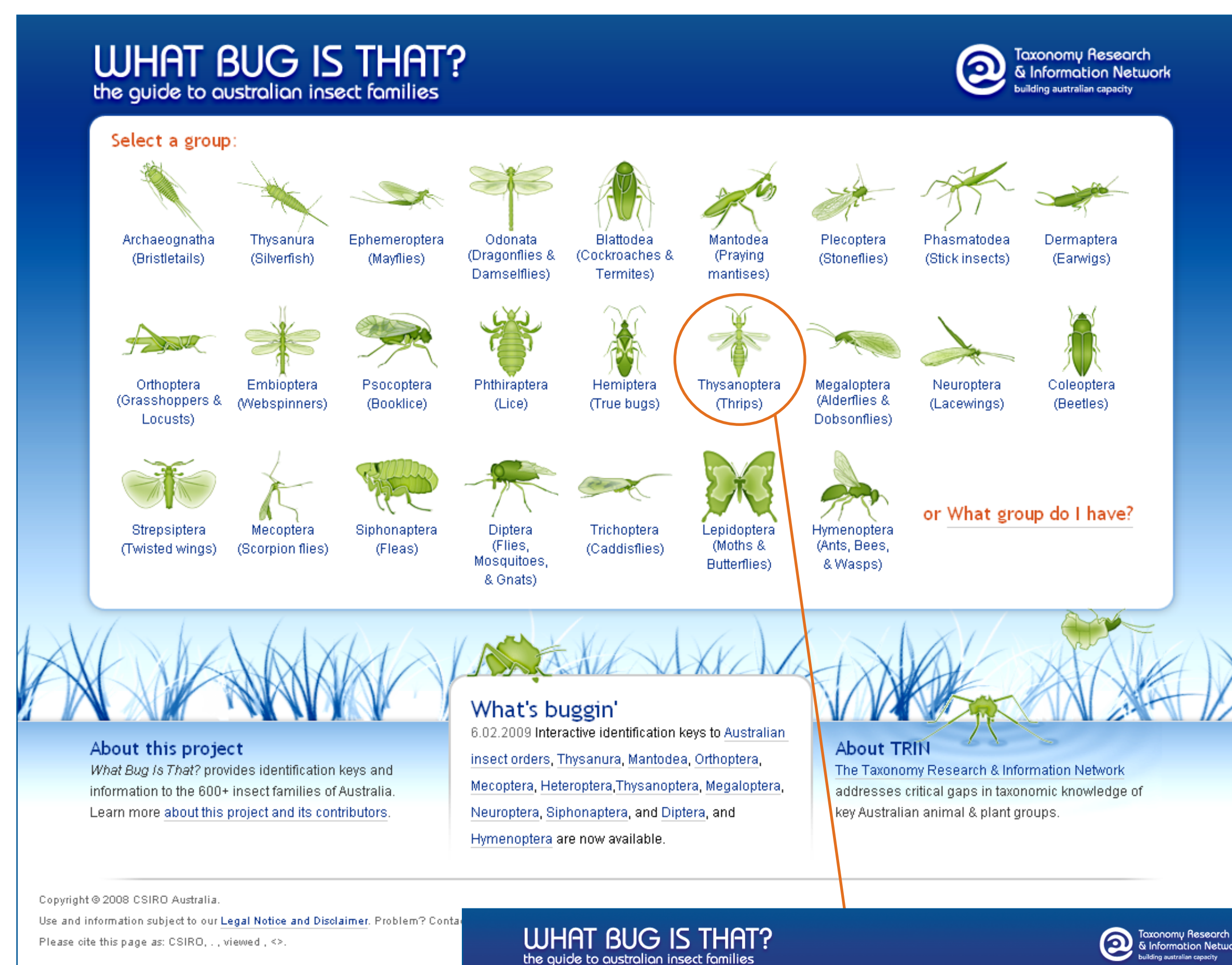


Figure 1: Home page and families description page from the "What Bug Is That?" interactive key to Australian insect Families (<http://anic.ento.csiro.au/insectfamilies/>)

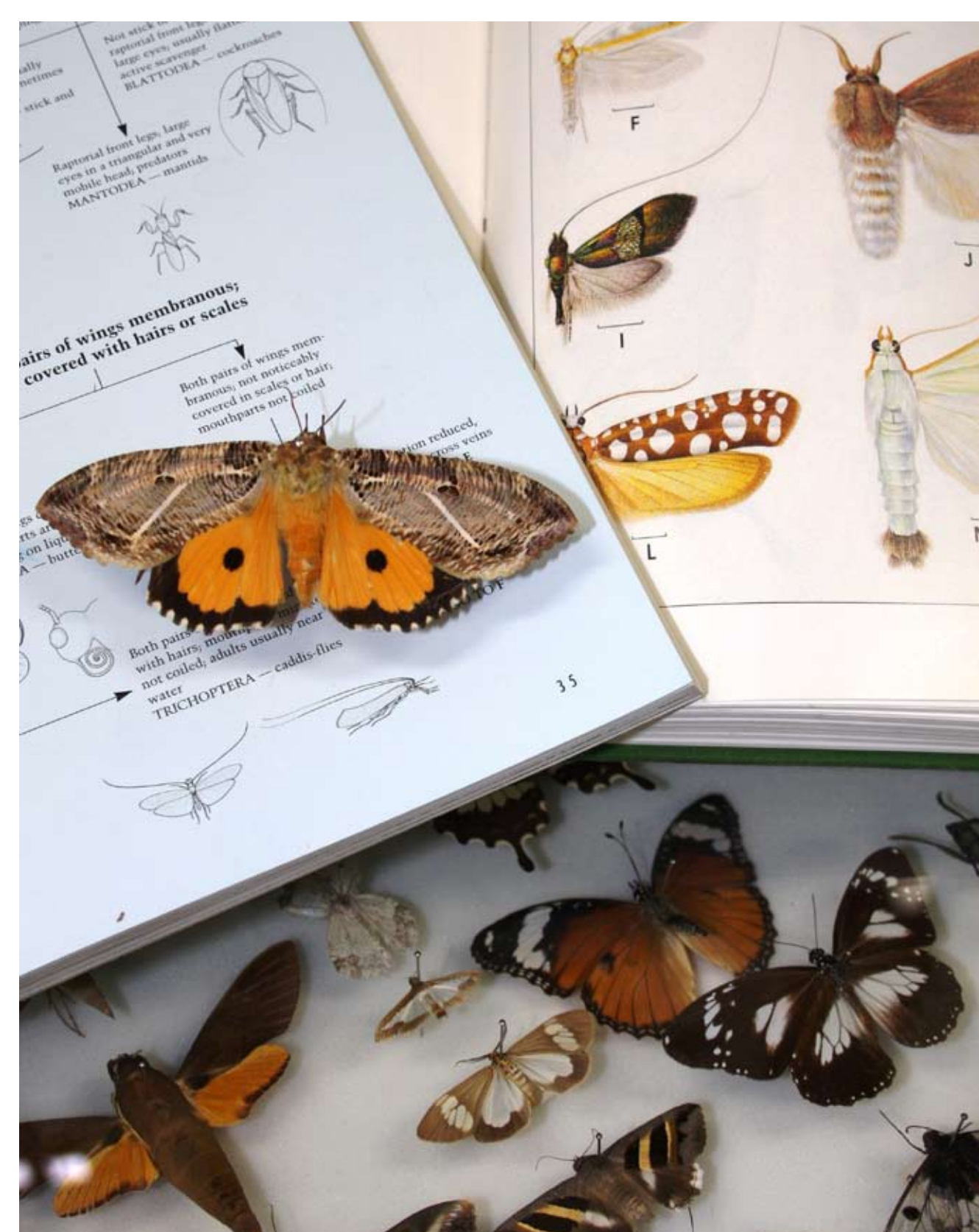
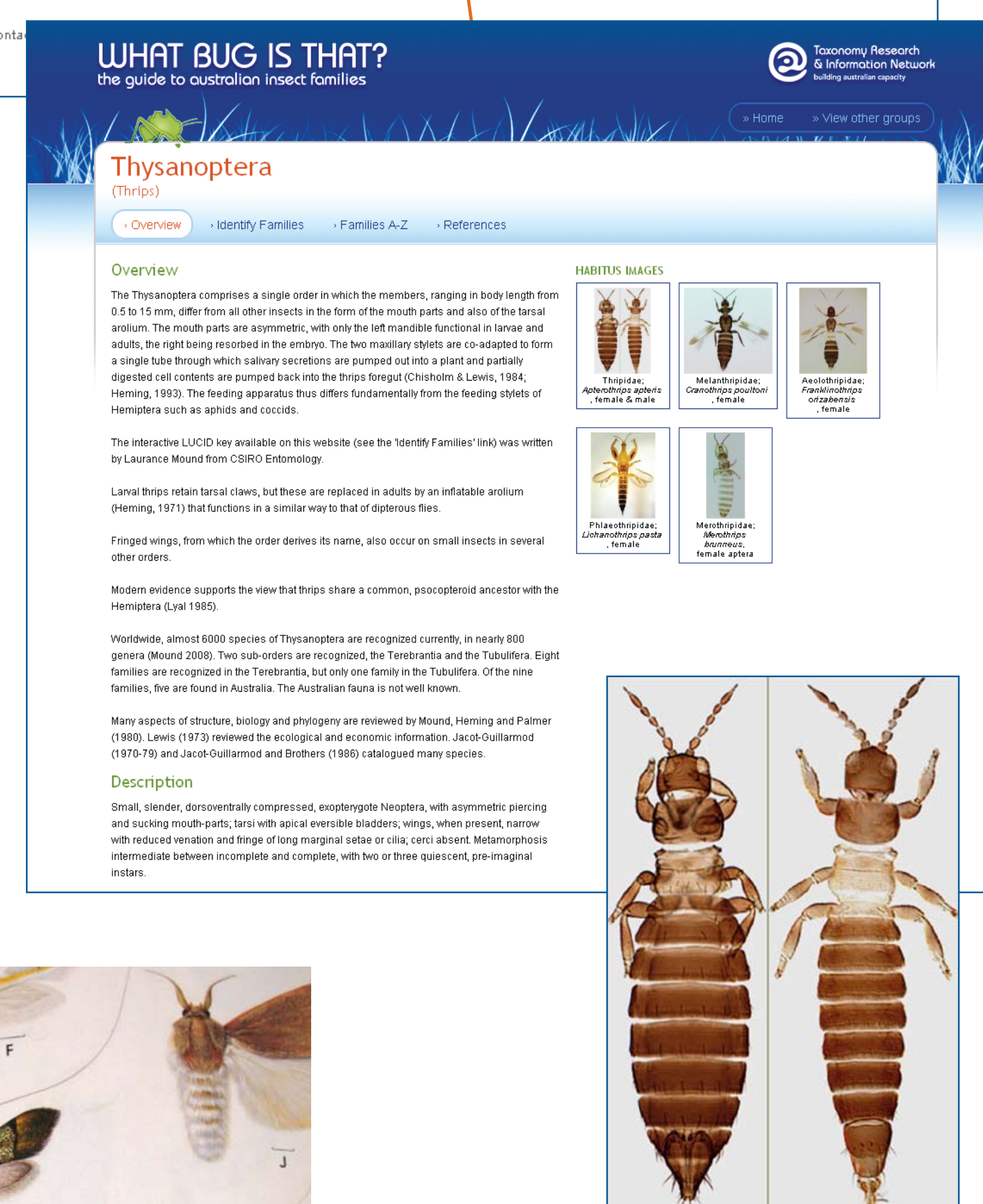


Figure 3: Identification of insect families traditionally involved the use of paper-based dichotomous keys and diagrams.

Future Directions

- "What Bug Is That?" builds the capacity of researchers, students, and members of the public to identify insect species accurately and rapidly (Figure 3).
- The format accelerates knowledge delivery about insect families to key audiences, and will directly benefit citizen science initiatives.
- The project is scalable, and is designed to become an integrated clearing house and resource for identification tools that are developed for groups below the family level, such as keys to genera and species.

<http://anic.ento.csiro.au/insectfamilies/>

The Taxonomy Research & Information Network (TRIN) – funded through the Commonwealth Environment Research Facilities (CERF) program – addresses critical taxonomic knowledge gaps in key Australian animal and plant groups important for effective environmental management. TRIN research outputs underpin efforts in biodiversity conservation and natural resource management.
www.taxonomy.org.au

