



Zoological Catalogue of Australia **Volume 35.2 Pisces:**

completion to book and electronic publication

Ms P. Beesley & Dr A. Wells

Fisheries Research and Development Corporation Report

FRDC Project No. 2003/302



Australian Government

**Department of the Environment
and Water Resources**



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Front Cover: A school of Blue Fusiliers, *Caesio teres*. [G.R. Allen]

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Project Title:

2003/302 Zoological Catalogue of Australia Volume 35.2 Pisces — completion to book and electronic publication

Principal Investigator:

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Objectives:

1. To edit and check and correct as necessary following negotiation with the Principal Compiler through ABRS editor Pisces Vol. 35.2 manuscript ensuring the inclusion of CAAB codes for all taxa.
2. To edit graphics (as scans) for inclusion in the volume and on the ABRS web site.
3. Prepare the text and graphics for hardcopy publication and typeset the volume with the title *Zoological Catalogue of Australia, Volume 35.2 Pisces*.
4. Prepare the text and graphics for electronic publication at <http://www.environment.gov.au/biodiversity/abrs/abif/fauna/index.html>.

NON TECHNICAL SUMMARY:**OUTCOMES ACHIEVED TO DATE**

The Zoological Catalogue of Australia Volume 35 provides an accurate and thorough documentation of Australia's fish fauna — 4,482 species are treated. Volume 35, Part 2, which includes about half of the Australian fish fauna, is the component directly attributable to this grant. This work will provide a comprehensive cover of nomenclatural, type, distributional, ecological and bibliographic information vital to state and federal government and natural resource and fisheries managers.

Knowledge of our biodiversity is the most valuable tool we have for conservation and management of Australia's biodiversity, and critical in defence against invasive species. In providing baseline information on Fishes, Volume 35 complements the invaluable set of texts already published and available online by ABRS. Volume 35 gives a readily accessible synthesis of available published information on the group, together with up-to-date input from specialists.

Some 4,482 Australian fish species are documented in this new 3 part set, the *Zoological Catalogue of Australia, Vol. 35, Fishes*, authored by Douglass Hoese, Dianne Bray, Gerald Allen, John Paxton, and others. A previous volume, published in 1989, is updated and integrated into this very comprehensive cover of nomenclatural, type, distributional, ecological and bibliographic information. Of particular value is the extensive information on the status of knowledge of groups and species derived from collaboration with world experts. This new *Catalogue* will be an invaluable resource for research, and fisheries management and industries, and provide the basis for future work Australia's fish fauna.

KEYWORDS: **Australian fishes, bony fishes, cartilaginous fishes, ecology, literature, nomenclature, taxonomy**

ACKNOWLEDGEMENTS

This work would not have been possible without the enthusiasm and dedication from the national and international community of fish taxonomists. Lead by the principal compilers, Douglass F. Hoese and John R. Paxton, the team included Dianne J. Bray, Gerald R. Allen, Jennifer E. Gates, Norbert J. Cross, Connie J. Allen, Anthony C. Gill, Martin F. Gomon, Helen K. Larson, John E. McCosker and Mark A. McGrouther.

We appreciate the generous contributions made by the referees to this work and the assistance given by many experts in compiling the various taxa chapters. The staff of CSIRO Division of Marine and Atmospheric Research (CMAR) provided helpful assistance with CAAB (Codes for Australian Aquatic Biota) numbers and names.

Many colleagues have helped bring this publication together. I especially thank Shane Ah Yong, Lyn Randall and Brigitte Kuchlmayer.

I am grateful for the financial assistance given by the Fisheries Research and Development Corporation to complete this work.

1. GENERAL INTRODUCTION

1.1 Background

Australian Biological Resources Study (ABRS)

ABRS is a program within the Department of the Environment and Water Resources with the brief to document Australia's biological resources. ABRS has made outstanding progress, with accurate recording and dissemination of information on thousands of Australian species.

Zoological Catalogue of Australia

One series ABRS publishes, The *Zoological Catalogue of Australia*, is a concise database of taxonomic and biological information of all animal species known to occur in Australia. The database is a substantial assessment of current knowledge and electronic and hardcopy publications are derived from it. To date 26 volumes of the Zoological Catalogue have been published, covering thousands of species in specific animal groups. Data from the Zoological Catalogues is now incorporated into an online database known at the Australian Faunal Directory; 39,000 species are now available online at <http://www.environment.gov.au/biodiversity/abrs/abif/fauna/index.html>

Fish Catalogues and Database

Documentation of Australia's fishes, one of the largest and most diverse groups of vertebrate animals, is a significant achievement. Fishes (Part 1; Vol. 35.1), published in 1989 in the Zoological Catalogue of Australia series and compiled by J.R. Paxton, D.F. Hoese, G.R. Allen and J.E. Hanley, provided baseline taxonomic information on over 2,000 species.

Volume 35.2, the second Catalogue in the set, completes the documentation of Australian fishes. It provides rigorously researched data on the correct nomenclatural status of scientific names, original literature and museum data on all type material. It also provides a valuable listing of most common names applied to each species, and gives brief distributional and ecological data. CAAB codes are given for each taxon. It covers 2033 species in 105 families.

Relation to other FRDC projects

We refer here particularly to the current FRDC project "Upgrade of national fisheries database to include images and common names of Australian fishes (2001/231)". This project seeks to stabilise the common names of all Australian seafood species. It can only do so if based on a stable scientific nomenclature such will be provided by the current project.

Similarly, the proposed *Catalogue* project provides a valuable baseline reference for the FRDC *Handbook* series.

1.2 Need

1. Accurate and thorough documentation of Australia's fish diversity. Accurate understanding of species based on valid nomenclature is vital for effective implementation of the *EPBC Act (Cth)* 1999 and ecological sustainable development (ESD).
2. Stability of fish scientific names applied to fish. Essential for communication and dissemination of knowledge.
3. To have ready access to a searchable database of all names that have ever been applied to the Australian fish fauna.
4. An available master list of names is required for OZCAM (Online Zoological Collection of Australian Museums) and GBIF (Global Biodiversity Information Facility). Once completed "Fish" will be used as the "exemplar" taxa for OZCAM, demonstrating the Faunal Online Web Site.

1.3 Objectives

1. Check, edit and correct as necessary the manuscript of *Vol. 35.2 Pisces*, following negotiation with the Principal Compiler and ABRS editor, and ensure the inclusion of CAAB codes for all taxa.
2. Edit graphics (as scans) for inclusion in the volume and on the ABRS web site.
3. Prepare the text and graphics for hardcopy publication and typeset the volume with the title *Zoological Catalogue of Australia, Volume 35.2 Pisces*.
4. Prepare the text and graphics for electronic publication at <http://www.environment.gov.au/biodiversity/abrs/abif/fauna/index.html>.

2. Methods

The project essentially involves four components: editing, typesetting and graphic manipulation, hardcopy publication and placement of the fish taxa information (partial in the first instance) on the ABRS website.

Editing. The manuscript for Volume 35.2 Pisces is substantial at 902 A4 pages and has been reviewed extensively. The manuscript underwent a thorough edit before preparation for publication. All data, including valid and available names, type data, records for distribution and ecology and references were checked within the manuscript for consistency and accuracy. CAAB Codes were added where necessary and references checked. Any inconsistencies or queries were brought to the attention of ABRS fauna editors. The principal compiler was contacted as necessary and corrections made as required. The final file was exported as a mif file for typesetting. The editor was responsible for generating the preliminary pages and the index. The editor was responsible, with guidance from Fauna Editors, for checking the typeset volume for page layout issues.

Typesetting and graphic manipulation. The volume was typeset using Adobe FrameMaker. The simple line drawings used to illustrate each family were 'cleaned' and enhanced as necessary using Adobe software to produce publishable quality images for both hardcopy and electronic publication.

Hardcopy publication. All the necessary requirements, such as clearance to publish from the Department of the Environment and Water Resources, application to National Library for and receipt of ISBN number and CSIRO marketing plan were completed. The typeset volume with accompanying fonts as electronic files were submitted to CSIRO Publishing. The page proofs were checked once received from CSIRO Publishing, prior to printing.

Website. Text was reformatted for loading on to the ABRS web site. Due to an agreement with CSIRO Publishing only the names and illustrations will be available for the first 12 months, after that all the information contained within the published Catalogue will be available online.

The manuscript was compiled by Douglass F. Hoese, John R. Paxton, Dianne J. Bray, Gerald R. Allen, Jennifer E. Gates, Norbert J. Cross, Connie J. Allen, Anthony C. Gill, Martin F. Gomon, Helen K. Larson, John E. McCosker and Mark A. McGruther.

3. Outputs

- a. Zoological Catalogue of Australia. Fishes Volume 35. A comprehensive and authoritative hardcopy volume in three parts (2173 pp.) detailing nomenclature, references, distribution and ecology. The set of three volumes, published by CSIRO Publishing, is available for purchase from the publishers, see <http://www.publish.csiro.au/pid/5474.htm>.

- b. An online searchable database of Australian fishes at <http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/index.html>. This data base at first only includes the valid, available and common names as well as the CAAB codes and the compilers. After 12 months from the date of publication of the volume all the information will be available online.

4. Benefits

- a. Easy access to core nomenclatural information on Australian fishes.
- b. Brief summaries of the status of the groups in Australia.
- c. An assessment of state of knowledge on Australian fishes.
- d. Availability of information of this important natural resource by federal and state government and industry. Organisations desiring to use this information include demanding the National Oceans Office (linking fish data to OBIS), CSIRO Marine (CAAB list), Australian Museum (for links to OZCAM and Biomaps), Murray Darling Basin Commission, Department of Agriculture, Fisheries and Forestry and the Department of the Environment & Resources.
- e. A valuable listing of most common names applied to each species and the accepted standard name.

5. Difficulties Encountered

The compilation of the Fish volume took much longer than anticipated because of:

- a. The enormity of the task.
- b. Obscurity of much of the early literature.
- c. Non-availability of specialists for particular taxa.
- d. Lack of comprehensive revisions of many taxa.

6. Further Development

The planned outcome states: Contribute to overall fish management in Australian waters (both conservation and sustainable fisheries) by providing improved knowledge of the taxonomic diversity of Australia's fish fauna.

The Fish Catalogue and online database will provide an accessible synthesis of available published information on the fish fauna of Australia. This will provide managers and stakeholders with baseline information on nomenclature and ecological, distributional and bibliographical information.

7. Intellectual Property

The value of FRDC's intellectual property will be 21.77%. This is based on the financial contributions of FRDC and ABRS as described in the project application.

8. Staff

ABRS Staff engaged in this work include Pam Beesley, Alice Wells and Brigitte Kuchlmayr.