

Community Biodiversity Survey Manual

2nd edition



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Phone 029299 0000
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Phone 1300 36 1967
www.npws.nsw.gov.au

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National Parks and Wildlife Service

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Second edition

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Foreword

The conservation of biodiversity in NSW is a major challenge which we all face together as a community. By working in partnership to learn about what makes up the biodiversity of our State, region or local area, we can take positive steps to ensure the continued survival of our many unique native plants and animals and their important habitats.

The knowledge and experience held by the community about our natural environment and cultural heritage can contribute significantly to the conservation of biodiversity. By building the capacity of the community to undertake biodiversity surveys we can greatly add to this knowledge which will help us all to ensure biodiversity is protected and conserved for future generations.

The *Community Biodiversity Survey Manual* represents a partnership between the National Parks Association and the NSW National Parks and Wildlife Service and seeks to provide the opportunity for everyone to become involved in learning about our natural environment.

We trust that the information in this manual will provide practical guidance in further exploring the biodiversity of your local area, providing an insight into the surrounding natural environment. Such a journey will prove fruitful in helping all of us to take positive steps to conserve our wonderful biodiversity for the enjoyment of current and future generations.



Roger Lembit
President
National Parks Association of NSW Inc



Bob Debus
Minister for the Environment

Preface

It is my personal belief that for biodiversity conservation to be one of the main focuses for the whole community, we need to have a strong sense of custodianship. One of the best known ways to instill a connection with the environment within people is to provide opportunities for everyone to experience it first hand. In my experience taking this approach to education has always led to a greater connection with the environment and a greater understanding as to why it is important to conserve biodiversity.

The Community Biodiversity Survey Manual can provide this opportunity for many people, groups and organisations and help to contribute to a greater understanding of the biodiversity that surrounds us.

This second edition results from a review of the implementation of the Manual by users. Whilst the content is consistent with only slight alterations, the Manual's structure and layout have been enhanced to facilitate its use.

The Manual seeks to enable any one to undertake surveys, whether large scale or small. Large scale surveys can be a daunting task, however with enthusiasm and the support provided by this Manual community members can become involved in organising and undertaking biodiversity surveys throughout NSW. Since 1995 I have coordinated nine large scale surveys in NSW, this Manual is the result of the knowledge I have gained and has been produced in order to encourage the community to become involved in biodiversity conservation.

I hope that many people find the Manual useful and that it encourages all to take ownership and responsibility for our unique environment.

Claire Carlton
NPA Biodiversity Survey Coordinator

Conservation is no longer something that only happens in national parks or bushland reserves. Increasingly, all forms of land – public and private, agricultural and urban - are also being examined for the role that they play in the conservation of biodiversity across landscapes. Similarly, conservation is no longer something only carried out by a few government agencies. People of all walks of life can contribute through the daily choices they make about using natural resources, or by volunteering their time or money to conservation programs.

Good decisions depend on good information, in conservation as elsewhere. At a time when the biological resources of Australia are under pressure as never before, we need better quality and more widespread information to inform conservation decision making. The Community Biodiversity Survey Manual provides a way for people without specialist skills to contribute to that body of information through survey work.

This manual was made possible by the support of the Biodiversity Survey Program, an activity under the NSW Government's Biodiversity Strategy. The aims of the Biodiversity Survey Program include the establishment of survey guidelines, as an important step towards encouraging more survey, and towards making the results more widely useful.

Miranda Gott
Biodiversity Research and Management Division
National Parks & Wildlife Service

CONTENTS

Introduction

Claire Carlton, National Parks Association

Susan Davis, NSW National Parks and Wildlife Service

Survey Coordinator Notes

What type of survey

Claire Carlton, National Parks Association

Doing research before the survey

Claire Carlton, National Parks Association

Extent of survey

Claire Carlton, National Parks Association

How to select your survey sites

Claire Carlton, National Parks Association

Peter Wilson, NSW National Parks and Wildlife Service

Planning and organising people and equipment

Claire Carlton, National Parks Association

Health and safety

Claire Carlton, National Parks Association

Collection and reporting of data

Claire Carlton, National Parks Association

Where to from here?

Claire Carlton, National Parks Association

Susan Davis, NSW National Parks and Wildlife Service

Recording site details

Claire Carlton, National Parks Association

Jane Chalson, NSW National Parks and Wildlife Service

Mammal survey methods – baseline

Claire Carlton, National Parks Association

Mammal survey methods – comprehensive

Claire Carlton, National Parks Association

Voucher specimens

Miranda Gott, NSW National Parks and Wildlife Service

Reptile and frog survey methods – baseline

Claire Carlton, National Parks Association

Reptile and frog survey methods – comprehensive

Claire Carlton, National Parks Association

Voucher specimens

Miranda Gott, NSW National Parks and Wildlife Service

Bird survey methods-baseline

Claire Carlton, National Parks Association

Bird survey methods-comprehensive

Claire Carlton, National Parks Association

Voucher specimens

Miranda Gott, NSW National Parks and Wildlife Service

Plant survey methods-baseline

Claire Carlton, National Parks Association

Jane Chalson, NSW National Parks and Wildlife Service

Plant identification

Gwen Harden, Royal Botanic Gardens

Plant survey methods-comprehensive

Claire Carlton, National Parks Association

Jane Chalson, NSW National Parks and Wildlife Service

Plant identification

Gwen Harden, Royal Botanic Gardens

Introduction to invertebrate surveys

Miranda Gott, NSW National Parks and Wildlife Service

Susan Davis, NSW National Parks and Wildlife Service

Stephen Fellenberg

Invertebrate survey methods-baseline

Miranda Gott, NSW National Parks and Wildlife Service

Susan Davis, NSW National Parks and Wildlife Service

Insect survey methods-comprehensive

Stephen Fellenberg

Insect identification and preservation

Stephen Fellenberg

Field workbook

Field data sheets

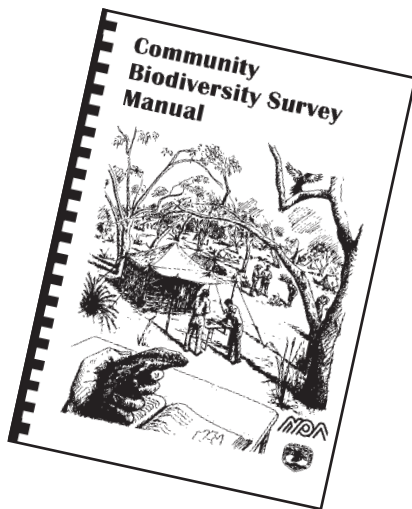
Introduction

Claire Carlton

Biodiversity Survey Coordinator, National Parks Association

Origin and purpose of the manual

Welcome to the second edition of the *Community Biodiversity Survey Manual*. This *Manual* has been developed to provide information in a user-friendly way to assist community groups across the State in gathering data needed to make informed decisions about how to conserve our natural environment. The *Manual* was instigated by the National Parks Association and results from a partnership with the NSW National Parks and Wildlife Service. It provides the opportunity to increase cooperation between community groups and environmental scientists so that knowledge is shared leading to a better understanding of issues relating to biodiversity.



The first edition was prepared with funding assistance from Hawkesbury-Nepean Catchment Management Trust, Western Catchment Management Committee, National Parks and Wildlife Service and significant in-kind contribution from the National Parks Association. The *Manual* was released in 1998 and has been successfully used by many community groups in undertaking biodiversity surveys. Using the first edition National Parks

Association of NSW have carried out surveys at:

- Abercrombie River – Oberon
- Bargo River – Bargo
- Benandarah State Forest - Batemans Bay
- Goonoo State Forest – Dubbo
- Kings Waterhole – Wollemi National Park
- Kumbatine National Park – Port Macquarie
- O'Hare's Creek – Campbelltown
- Sunny Corner State Forest – Bathurst
- Woomargama State Forest - Holbrook

This second edition has been developed after reviewing the implementation of the first edition at the grass-roots level. Consultation with current and potential users of the manual provided the opportunity to enhance the layout and structure of the *Community Biodiversity Survey Manual*. By continuing to assess the effectiveness and usefulness of the manual, we can ensure that future amendments provide an effective tool for the community in undertaking biodiversity surveys.

Feedback regarding the first edition has been positive, and the manual has resulted in an increased understanding of the workings of biodiversity surveys and an increase in the knowledge we have of our natural environment. This *Manual* offers an opportunity to understand biodiversity first hand by monitoring changes and establishing what makes up the biodiversity in our natural environment.

What is biodiversity?

Most people have heard the word or may have some idea of what biodiversity means, but do we really understand what it is and how much a part of our lives it is? The *National Strategy for the Conservation of Australia's Biological Diversity* defines biodiversity in the following way:

Biological diversity is the variety of all life forms: the different plants, animals and microorganisms, the genes they contain and the ecosystems of which they form a part. It is not static, but constantly changing; it is increased by genetic change and evolutionary processes and reduced by processes such as habitat degradation, population decline and extinction. The concept emphasises the interrelatedness of the biological world; it covers the terrestrial, marine and other aquatic environments.

The Strategy considers biodiversity at three levels:

genetic diversity — the variety of genetic information contained in all of the individual plants, animals and microorganisms that inhabit the earth; genetic diversity occurs within and between the populations of organisms that comprise individual species as well as among species;

species diversity — the variety of species on earth;

ecosystem diversity — the variety of habitats, biotic communities and ecological processes. In our everyday life we experience biodiversity.

There are a significant number of plants and animals which are found only in Australia. We also have a wide variety of environments ranging from alpine to coastal, estuarine, wetland, arid and semi-arid, woodland, grassland and forests. This environmental diversity has enabled Australia's animal and plant life to evolve into the huge species diversity we find today. Although extinction can occur naturally, since European settlement the natural environment has been modified dramatically and, in many cases, the rate of extinctions is accelerating. Loss of species means loss of biodiversity.

Biodiversity has many values. It helps maintain healthy environments. For example a variety of vegetation types ensures a variety of habitat and food resources for many animals. Vegetation also reduces soil erosion and provides valuable nutrients to the soil. There are many other benefits that biodiversity provides us such as aesthetic, economic and recreational values. Without maintaining a high level of biodiversity we may not survive nor have the quality of life we so desire.

What is a biodiversity survey?

A biodiversity survey is an inventory of the plant and/or animal life of an area including their habitats.

There are many complex data collection methods used for biodiversity surveys. The data collection methods in this *Manual* have been selected on the basis that they are the most commonly used and have been effectively trialed by non-expert people. These methods are recognised and used by the government agencies responsible for the management of our natural environment.

This *Manual* looks at two types of study, *baseline* surveys and *comprehensive* surveys. Each approach requires a different level of participation and advice from scientific experts.

Baseline survey

A *baseline* survey is designed to provide valuable preliminary information, giving first-timers an opportunity to conduct a study about the environment with a small degree of expert scientific support. It does not require a lot of equipment.

A *baseline* survey is designed mainly for small to medium-sized groups such as:

- any community group that may or may not have conducted plant and/or animal surveys; and
- groups that want to assess whether they have the motivation and resources required to conduct a more comprehensive survey.

Comprehensive survey

A *comprehensive* survey requires scientific experts to help in planning and team leadership. This survey will indicate what plants and animals are present or absent, providing a basis for further research and information for a range of planning purposes.

It is designed for people who have some experience or involvement with surveys and may or may not have relevant qualifications such as:

- community groups already conducting a study on one or two aspects of the environment and want to broaden what they are studying while ensuring the information can be used by decision makers;
- people who have no relevant qualifications or experience but are available to organise a biodiversity survey that will involve the local community and local experts;
- people who have had experience with scientific environmental studies, have relevant qualifications and want to use this survey to involve people from the community to create awareness while conducting research; and
- community groups, government agencies or research institutions wanting to conduct a survey with the aim of involving people from the wider community.

Habitat is the location or physical environment where a given plant or animal naturally grows or lives.

Pass me a lager ma, I'm off to Woomargama!

A personal account of the Woomargama biodiversity survey, April 21-25, 2000

It was eleven o'clock at night and I was lying very comfortably in the dark under a tree in Woomargama State Forest. There were a couple of gliding possums up in the branches and it was my intention to remain where I was until they took to the air. But the slamming of car-doors announced that the rest of my spotlighting team was about to return to camp, so I got up and began running along the fire trail towards the cars. I couldn't see a great deal as I had lent my torch to my friend Monty; and I was just falling into a creek when the engines started up and both 4-wheel-drives roared away. I chuckled at the excellent practical joke Mammals Team One was playing on me. Although I was sure that the cars would return shortly to pick me up, I set out on the walk back to camp. Eventually I realised that I had in fact been genuinely forgotten. But the gibbous moon was up, it was a beautiful night for walking and I couldn't stop chuckling as I strolled along. The only bugger was that I had no light and so could not check out all the animals that were rustling in the forest around me. Oh well, oh well, nothing's perfect.

Meanwhile at camp Monty was trying to return my torch to me. Presently it dawned on everyone that they had heartlessly abandoned me in the middle of the wilderness. A vehicle was dispatched and when I heard it coming I leant against a tree. Susan Davis and Ben Addison were my heroic rescuers, may their names resound in eternity. But the night was by no means over!

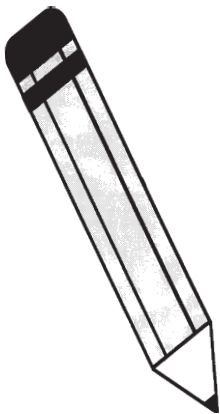
Around the campfire debate raged over the identity of the gliding possums we had seen. I asserted that they were yellow-bellied gliders; others doubted this. I claimed great expertise and swore by my life that yes, they were most certainly yellow-bellied gliders. A party was assembled to go and check. So within minutes of returning from my 'adventure' in the forest I was back in the tray of a 4-wheel-drive, knotted together with about a hundred other biodiversity-surveyors in a seething sea of limbs. I reckon travelling along a stony road in the back of a ute in the middle of the night in the middle of the bush underneath a sky of stars with a bunch of laughing people is just about the most fun thing you can do.

Invigorated, we walked to the tree under which I had earlier been lying. One of the gliders was still there. Everyone gazed and gazed; we had a tremendous view. The weight of expert opinion came down against its being a yellow-bellied glider. The consensus was that it was a plain old greater glider. I wiped egg off my face all the way back to camp.

It's amazing how much can happen in just three and a bit days. It would take a short book to relate all the goings-on at Woomargama. We saw frogs and bats and orchids and phantom wattles and antechinuses and possums and wombats and owls and the endangered swift parrot; and many of us made fools of ourselves around the campfire. Catherine Hulme dived into a freezing dam to rescue a drowning bat. Nigel Jones led us through tracts of prickly scrub to discover pristine pools and waterfalls in a hunt for brush-tailed rock wallabies. Clive Barker caught snakes in his hat and danced the dance of the small mammal. Averil Bones led us in songs around the campfire. Janie White had too much sugar; and Claire Carlton, Bronwyn Englaro and Susan Davis did a terrific job of organising things.

Thanks to everyone who came for an unforgettable time!

Brian Hawkins
Environmental Science, New South Wales University



Why do a biodiversity survey?

How will a biodiversity survey assist the conservation of our natural environment?

The continued existence of native plants and animals on private land provides an indication that something right is being done. Many landholders maintain small native bush areas which provide a haven for our native species. In addition the knowledge and experience held by the community about our natural environment can contribute significantly to the conservation of biodiversity. However, it's true that we still lack some simple information about our natural environment. Without this knowledge it can be difficult to assess the impacts humans have on our biodiversity. Increasing our knowledge will help us to ensure biodiversity is protected for future generations.

Government planning and policy development at all levels has started moving towards integrating biodiversity considerations into the decision-making process. It is essential that environmental planning processes and reporting mechanisms have accurate and up-to-date information for them to be effective.

The work already being done by community groups in gathering information for environmental planning is extremely valuable. This *Manual* aims to ensure these activities are standardised and coordinated to avoid losing information and guaranteeing it can be shared across the State.

How to make the best use of your survey results

The methods used in this *Manual* will provide data to discover what plants and animals are present or absent. If particular

plants and animals have not been found in your survey area and it was thought they would be, this is important information as recommendations can be made to ensure that additional surveys are conducted in other seasons. Some plants and animals may only be present or obvious in particular seasons. It may mean that new sites within the area should be surveyed to establish if those plants and animals are there or not.

The reason why you are doing the survey will help to determine what should happen to the data you collect. The most important thing to remember is that the more people that have access to your data so that it can be used for planning and management purposes, the more useful your data will be.

Your survey results could be used in the following way:

- Help you plan the management of your land. By knowing what is there you can think about the most sustainable ways of managing your land.

Atlas of NSW Wildlife

The *Atlas of NSW Wildlife* is the main database for plants and animals in New South Wales. Data held in this database is shared by NPWS with all interested agencies, institutions and community groups. To ensure others can use your data you should forward it to the Atlas of NSW Wildlife.

Ensure that all the data collection methods you use are well documented and that the data sheets have been completed in full. Then send these to NSW National Parks and Wildlife Service so that the data can be entered onto the Atlas of NSW Wildlife.

Results should be as complete and accurate as possible.

- Produce a short report with the data attached for the local council so that it can be used to make management decisions.
- Share the knowledge with your neighbours so that a bigger picture of what is in your area can be established.
- Use the results to produce fact sheets and a short report in a format that can be used by various interested agencies.

How to use this manual

The *Manual* is designed to be user friendly and provides a step by step guide to coordinating, planning and implementing a biodiversity survey. When planning a survey, one of the first things to consider is who to involve. Think about any existing groups in your area, local landholders and any local Aboriginal communities. It's amazing the array of people that have both knowledge and interest in the biodiversity around them. The manual has been divided into separate components to ensure it is easy to follow and use. Following is an outline of the layout.

▪ **Survey Coordinators Notes**

For those people who will organise, coordinate and implement biodiversity surveys. This section covers where to start, which type of survey to select, how to plan a survey, selecting a survey site, and organising a survey.

It includes guidance to logistics, operating survey teams and coordinating people.

▪ **Recording Site Details booklet**

This section provides instructions on the completion of site details for your survey. Included are diagrams and tables to assist in recording the

physical environment such as grid reference, altitude, slope, aspect, habitat, soil, site history and vegetation.

▪ **Survey methodology**

Survey methodology is divided into 10 sections, providing a guide to methodology for each discipline (plants, mammals, reptiles and frogs, birds, and invertebrates) addressed in the *Manual*. Methodology has been separated into two different types: *baseline* and *comprehensive* surveys. *Baseline* surveys are intended for those who do not have experience and do not have access to scientific expertise.

Baseline surveys provide the opportunity to learn about biodiversity surveys and build skills in undertaking simple survey methodology.

Comprehensive surveys are intended for those who have experience or access to experience and include persons who hold the appropriate licences. Methodology for baseline surveys and comprehensive surveys have been separated into the following:

- Plants – *Baseline* Surveys
- Plants – *Comprehensive* Surveys
- Birds – *Baseline* Surveys
- Birds – *Comprehensive* Surveys
- Introduction to Invertebrates
- Invertebrates – *Baseline* Surveys
- Insects – *Comprehensive* Surveys
- Insect Identification and Preservation
- Mammals – *Baseline* Surveys
- Mammals – *Comprehensive* Surveys
- Reptiles and Frogs – *Baseline* Surveys
- Reptiles and Frogs – *Comprehensive* Surveys

- ***Field Workbook***

Designed to be used in the field to help in data collection. Included with this booklet are blank copies of the data collections sheets for photocopying. It provides all the information required to fill in data sheets.



Community Biodiversity Survey Manual

feedback form



Your comments on the *Community Biodiversity Survey Manual* and how you have used it will help us to improve future editions. Please complete this form and return it to:

National Parks Association
Biodiversity Survey Co-ordinator
PO Box A96
SYDNEY SOUTH NSW 1235

How have you used the Manual? _____

What sections were most useful and why? _____

What other information would you like to see added to the Manual to make it more useful?

Any other comments?

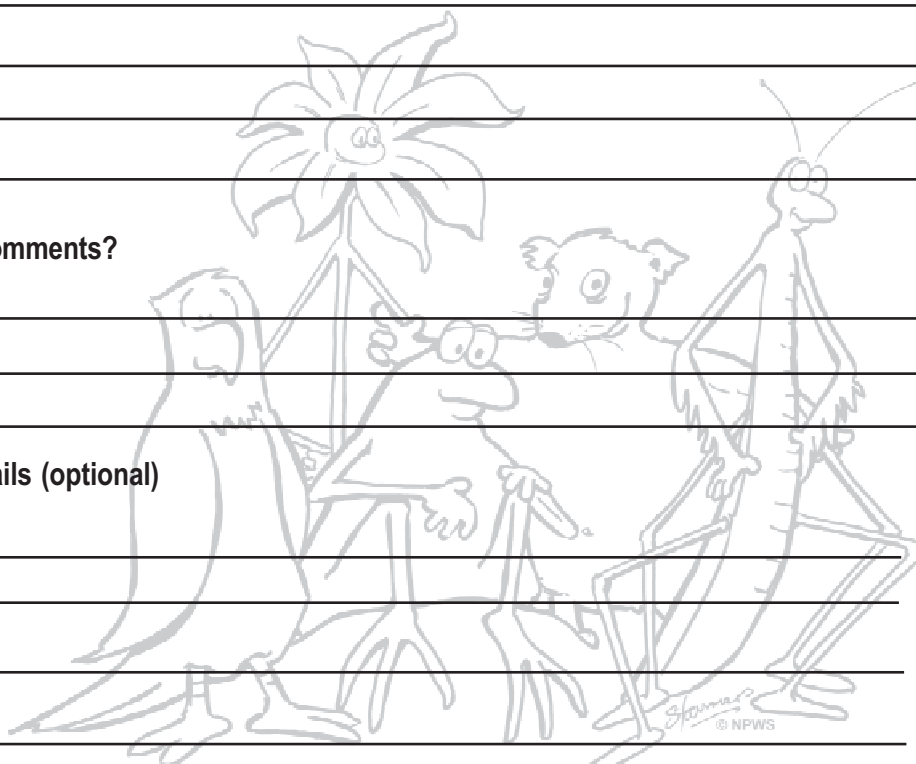
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Thank you for your comments

