

AUSTRALIAN RAINFOREST CONSERVATION SOCIETY



# SUCCESS STORY

25 years  
1982–2007





AUSTRALIAN RAINFOREST CONSERVATION SOCIETY

# SUCCESS STORY



## ACKNOWLEDGMENTS

Photographs: Paul Candlin, cover; Keith Scott, p. iv; Colin Totterdell, pp. 1, 7 and 11; Steve Parish, p. 3; John Sinclair, pp. 4 and 21; Queensland Department of Education, p. 12; Aila Keto, p. 13; Sue Rekdahl, p. 14; Gregg Borschmann, p. 17; Frithphoto, p. 19; Gary Sankowsky, p. 21; Mark Ash, p. 24.

Illustrations: M. Saul, pp. iv, 4–5, 10–11 and 20 (*Tmesipteris truncata*), pp. 3 and 9 (*Psilotum nudum*), pp. 5 and 12 (*Helminthostachys zeylanica*), p. 8 (*Lycopodium squarrosum*); W. Smith, pp. 2 and 18 (*Goniiothalamus australis*); G. Werren, pp. 3, 21 and 22 (lizard); G. Thompson, pp. 5 (possum) and 9 (beetle); J. Van Dyck, p. 13 (brown tree snake); S. Nicol-Smith, p. 14 (cricket); J. Hauser, pp. 6 and 23 (*Macadamia ternifolia*), 15 (*Rhodamnia maideniana*, *Eucryphia jinksii*), 16 (*Symplocos harroldii*, *Elaeocarpus eumundi*) and 22 (*Solanum aviculare*, *Castanospermum australe*); M. Finigan, p. 17 (butterfly); S. Monteith, pp. 18–19 (death adder).

© Australian Rainforest Conservation Society 2007

Copyright protects this publication. Apart from any use as permitted under the Copyright Act, no part may be reproduced by any process without prior written permission from the publisher. Inquiries should be addressed to:

Australian Rainforest Conservation Society  
19 Colorado Avenue, Bardon, Queensland 4065  
Australia

Telephone: (07) 3368 1318  
Email: [keith.scott@rainforest.org.au](mailto:keith.scott@rainforest.org.au)  
Website: [www.rainforest.org.au](http://www.rainforest.org.au)

The original version of this book was edited and produced as part of a group publishing project in the Diploma of Editing and Publishing, Southbank Institute of TAFE, Morningside Campus. Participating students were Gavin Baumber, Jennifer Beale, Gabrielle Buckley, Carolyn Harris, Anna Krieger, Alison Moore, Sharon Smith and Pamela Spencer.

Cover design and formatting: Melinda Rene  
Text design: Debbie Loynes



# Contents

---

WHY CONSERVE AUSTRALIA'S RAINFORESTS? iv

A PROFILE: AUSTRALIAN RAINFOREST CONSERVATION SOCIETY 1

People in the Society 2

Personnel 2

Management Committee 2

Members and volunteers 2

Links with the wider conservation movement 2

About the President 3

Highlights of the Society's work 4

Major achievements 4

Current and future programs 4

CHALLENGES AND SUCCESSES: AUSTRALIAN RAINFOREST CONSERVATION SOCIETY 7

Protection for our major rainforests 8

Wet Tropics 9

Cape York Peninsula 12

Central Queensland Coast 13

South-East Queensland's rainforests and other forests 14

Environmental management and reform 17

Worldwide rainforest management and timber production 17

Native forest management in Queensland 18

Impact assessment in World Heritage Areas 18

Government policy reform 19

Energy resources 19

Public education 20

Economic benefits for the environment and the community 21

Regional and local communities 21

Benefits from World Heritage listing 21

Research, education and training 22

Industry 22

Update on ARCS activities 24

Springbrook 24

# Why conserve Australia's rainforests?

The rainforests of Australia survive as an archipelago of 'island' Gondwanan relicts in a continental 'sea' that is the driest on earth. They are living museums with vital clues and connections to the origins of major forms of life on earth — ferns, conifers, cycads, flowering plants, frogs, marsupials and songbirds. They harbour the majority of Australia's biological wealth and contain the vital genetic stock for future evolution. They are the most diverse assemblage of rainforest oases over the greatest stretch and diversity of terrain and climate of any country on earth — from the dry monsoon tropics of the Kimberley, across Arnhem Land and down the eastern coast, through the tropics and subtropics to the cool temperate realm of the South-West Tasmanian Wilderness.

Professor Michael Archer, Director of the Australian Museum, has described this 'rainforest heritage' as 'the single most important biological resource we hold in trust for Australia's future'. Much of the original heritage, however, has already been damaged and lost.

Rainforests now cover barely 0.3 per cent of the continent, yet are home to more than half our plant and animal species. The rainforests of Australia are extremely scarce, highly fragmented and barely large enough to survive the pressures of fires, recurring drought, alien plants and animals, road building, logging, and wildlife smuggling.

If we are to honour this trust for future generations, we must protect all that remains, repair the damage we have wrought and restore what we can of what has already been lost. This booklet describes progress the Australian Rainforest Conservation Society has made — and continues to make — towards protecting, repairing and restoring our rainforest heritage.



Twin Booyongs in cool subtropical rainforest in one of the few areas on Springbrook Plateau that were not cleared in the early 1900s.



# A profile

---

## Australian Rainforest Conservation Society

- People in the Society
- Highlights of the Society's work

*The Society's members are the life force of the organisation. They demonstrate how a relatively small number of people with few resources can greatly benefit society and the earth's biodiversity.*



# People

## in the Society

*Founded in 1982, the Australian Rainforest Conservation Society (ARCS) is a national, non-government, not-for-profit organisation with headquarters in Brisbane. Its goals are to protect, repair and restore the rainforests of Australia through research, lobbying, public education and grass-roots support. ARCS has succeeded in achieving protection for large areas of Australia's rainforests and continues to play a leading role in the ongoing work required to conserve this rainforest heritage.*

### Personnel

The President, Dr Aila Keto, and her partner, ARCS Director Dr Keith Scott, were co-founders of the Society. Through the 25 years since the inception of ARCS, Dr Keto has worked very largely on an voluntary basis, often for 80 to 120 hours a week. Through leadership, vision, and strategic and technical expertise, ARCS has been able to seize upon or create opportunities for major achievements in conservation.

### Management Committee

ARCS has sought to augment the talents of its staff by attracting eminent and successful individuals from the broader community to membership of the Management Committee. This has helped to provide the direction and accountability that underpins the Society's public credibility and effectiveness. Committee members over the past years have represented a broad cross-section of society, including leaders in a range of professional fields such as environmental and administrative law, rainforest botany, avian ecology, population genetics, medical science, public administration and environmental engineering. Today, members of the Management Committee include:

Dr Aila Keto AO (President); see p. 3

Syd Curtis (Vice-President): a 25-year career as a senior executive in the Queensland National Parks and Wildlife Service; world authority on Lyrebirds

Dr Jan Blok (Vice-President): a scientific career in virology; has recently established her own company, SciFun, to reinvigorate childhood science education

Dr Gayle Johnson (Treasurer): a 25-year professional teaching career in mathematic and science at both secondary and tertiary levels; she is a specialist in animal behaviour and ecology and has nearly 17 years experience in bush regeneration

Ingrid Neilson (Secretary); former ARCS Office Manager and Project Officer; her later career has encompassed sustainable building design and, most recently, Marketing and Projects Manager with the Australian Marine Conservation Society.

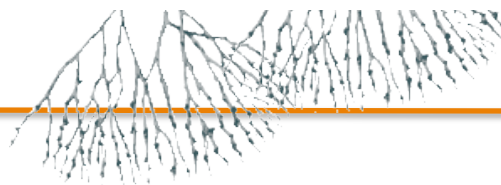
### Members and volunteers

The success achieved by ARCS has been largely due to the efforts and dedication of its members and volunteers. As the life force of the organisation, they demonstrate how a relatively small number of people with few resources can greatly benefit society and the earth's biodiversity.

Membership derives from many countries and all Australian states, with a high retention rate of the earliest members. In addition to drawing volunteers from within its own membership, ARCS has over the years also drawn on volunteers from Volunteering Queensland, which up to 2001 had involved more than 200 people. This significant volunteer contribution to conservation projects, research, administration, library and database management is equivalent to at least five full-time staff, valued at \$200 000 annually.

### Links with the wider conservation movement

Driven by the magnitude and rate of loss of the earth's biodiversity — especially of rainforests — ARCS has always dared to take on the big challenges, on a scale rarely contemplated even by larger organisations. However, its organisational capacity alone would not have been enough to ensure success. ARCS, as a driving force, has very successfully networked with a large number of national, state, regional and grass-roots organisations to harmonise goals, skills and resources to great effect. Recognition of the role of ARCS in the conservation movement is evidenced by many outstanding achievement awards from its peers.



## About the President



Dr Aila Keto began her studies in biological sciences at James Cook University and then moved to the University of Queensland to complete her BSc majoring in biochemistry. She was awarded a PhD in 1980.

Dr Keto and her partner, Dr Keith Scott, gave up promising careers in biochemistry to dedicate their professional expertise, time and energy to rainforest conservation. They have worked tirelessly to help avert a biological catastrophe and an extinction crisis unprecedented historically.

In 1982 Dr Keto and Dr Scott founded ARCS and went on to spearhead the national campaign to protect Australia's wet tropical rainforests. Dr Keto is now recognised as an authority in World Heritage matters and has been largely responsible for the preparation of three World Heritage nominations — the majority of Australia's listed forest sites.

## Recognition of ARCS achievements

"I also believe that it was Aila Keto and the Rainforest Conservation Society that contributed most in achieving the successful outcome (for the Wet Tropics). They showed that the rare combination of formidable and detailed scientific knowledge, enormous persistence and shrewd political judgment is unstoppable."

Phillip Toyne 1994. *The Reluctant Nation*. ABC Books

"Since the heady days of protestors chaining themselves to trees, Keto has gained respectability but perhaps she's little different from the person she was then, a hard-working, practical idealist who came in for so much criticism as a mad, radical environmentalist."

Christine Williams 2006. *Green Power — Environmentalists who have changed the face of Australia*. Lothian Books

"ARCS did more than any other Australian organisation to promote the conservation of north Queensland's rainforests."

William Laurance 2000. *Stinging trees and wait-a-whiles — confessions of a rainforest biologist*. University of Chicago Press

In recognition of her contribution to conservation, Dr Keto has received numerous honours and awards, including:

- Volvo Environment Prize 2005<sup>1</sup>
- 'Queensland Great' 2005
- appointed Adjunct Professor in Agriculture and Horticulture, University of Queensland
- Honorary Doctor of Science, University of Queensland, 2003
- Centenary Medal awarded by the Australian Government for "service as an expert on wet tropics and as a leading conservationist and academic"
- Queenslander of the Year, 2000
- Premier's Millennium Award for Excellence (Environment)
- Officer of the Order of Australia (AO)
- Fred M. Packard Parks Merit Award (IUCN Commission on National Parks and Protected Areas)
- UNEP Global 500 Roll of Honour
- BHP Bicentennial Award for the Pursuit of Excellence (Environment)
- Australian Conservation Foundation, Honorary Life Member
- Advance Australia Foundation Award
- Avon Spirit of Achievement Award
- Telecom Australia World Class Achievers Award
- Sunshine Coast Environment Council Special Award for Outstanding Environmental Achievement
- Gold Coast and Hinterland Environment Council Golden Gecko Award
- Wet Tropics Management Authority Cassowary Award
- a listing in Who's Who Australia since 1995
- listing in the inaugural Who's Who of Australian Women in 2006
- listing in the inaugural Who's Who in Queensland in 2007

<sup>1</sup> The prestigious international Volvo Environment Prize has been described as the informal Nobel Prize for the environment ([www.environment-prize.com](http://www.environment-prize.com)).

# Highlights

## of the Society's work

### Major achievements

ARCS is recognised as one of the most successful and longstanding conservation organisations in Australia. Its major achievements include:

- protection of more than 1.5 million hectares of forest, including some of the best rainforests in Australia
- preparation of three successful World Heritage nominations, representing the majority of Australia's listed forest sites
- total cessation of logging in Queensland's rainforests, which represent 85 per cent of the total rainforest estate on mainland Australia
- a pioneering and successful, cooperative, solutions-based approach to resolving conservation conflicts
- numerous far-reaching government policy and legislative reform initiatives in the environment and energy sectors
- government-funded conservation and research programs worth \$280 million (\$40 million in rainforest research) with multi-billion dollar flow-on economic benefits
- a volunteer training and support program designed to enhance employment opportunities for unemployed people, which was valued at \$200 000 annually in terms of in-kind support
- at least 23 international and national awards, prizes and citations in recognition of its achievements.



### Current and future programs

The Society's programs centre on its key objectives to protect, repair and restore the rainforest heritage of Australia.

The Society's current activities are mainly directed at Queensland. These include:

- assisting in the implementation of the South-East Queensland Forests Agreement — an historic agreement that provides for the establishment of a world-class forest reserve system, Queensland's Great Southern Forest Parks
- developing agreements to protect forests and woodlands in:
  - a group of inland bioregions, including the Brigalow Belt which currently has the highest rate of fauna extinctions of any area in Queensland, as well as the highest rate of land clearing in Australia, the most accelerated decline in woodland bird populations, the most critically threatened softwood scrubs (dry rainforests) and the most intact areas of box-ironbark woodlands in Australia
  - the Einasleigh Uplands and areas adjoining the western boundaries of the Wet Tropics where timber resource exhaustion is imminent, and extensive ecosystems are threatened with extinction
  - the Central Queensland Coast where timber resources are being logged to complete depletion
- developing a State Rural Leasehold Land Strategy to achieve sustainable land management and environmental protection over 63 per cent of Queensland; this was the result of a cooperative partnership involving ARCS, AgForce and the Queensland Government
- protecting and restoring the World Heritage values of the Springbrook Area adjoining the Queensland–New South Wales border; this project includes the application of state-of-the-art wireless sensor network technology to environmental monitoring and restoration ecology (See p.24).

This giant kauri, *Agathis robusta*, at Eurong Scrub on Fraser Island is one of the ancient conifers of the southern hemisphere. The species occurs only in the Wide Bay region and the Wet Tropics of Queensland.



### Priority areas are:

- the Wet Tropics where 50 per cent of all regional ecosystems are threatened, including 46 per cent of all rainforest ecosystems
- Einasleigh Uplands and adjoining Wet Tropics bioregion outside the western boundary of the World Heritage Area, which have ecotonal rainforests (wet sclerophyll) that remain unprotected and subject to logging, and where 51 per cent of the area comprises ecosystems that are endangered or vulnerable to extinction
- Cape York Peninsula where 78 per cent of the rainforest ecosystems are threatened
- the Central Queensland Coast where 77 per cent of the rainforest ecosystems are endangered or vulnerable to extinction
- South-East Queensland where 73 per cent of all rainforest ecosystems (a third of all remnant rainforest) are endangered or vulnerable, and old-growth forests are reduced to 1.8 per cent of their original extent
- the Brigalow Belt where 48 per cent of regional ecosystems are endangered or vulnerable, including 79 per cent of rainforest ecosystems.
- the Springbrook Area where rainforests of outstanding international conservation significance were almost entirely cleared in the early 1900s, and
- the State generally, where “Healing the Land” is becoming a national priority.

The Lemuroid Ringtail Possum, the only member of its genus, is one of four ringtail possum species that occur only in the Wet Tropics of Queensland.

Until 2007, ARCS had not been directly involved in on-ground restoration activities. Its role was:

- to provide a strategic ‘big-picture’ framework for directing restoration and acquisition programs, or conservation agreements with private landholders, within a broad landscape perspective
- to foster partnerships and influence government policies and programs so that the project has the support and resources necessary for success
- to develop and coordinate specific programs for the initial focus of the project, which is restoration of the world’s last stronghold of subtropical rainforests in South-East Queensland; key centres include the Kin Kin Scrub and the Greater Springbrook National Park.







# Challenges and successes

---

## Australian Rainforest Conservation Society

- Protection for our major rainforests
- Environmental management and reform
- Economic benefits for the environment and the community

*ARCS is widely respected both nationally and internationally for the scope and quality of scientific research it conducts to achieve action on environmental matters. This has enabled ARCS to influence important decisions about environmental management and to take a leadership role in initiating reforms that benefit society and the earth's biodiversity.*



# Protection

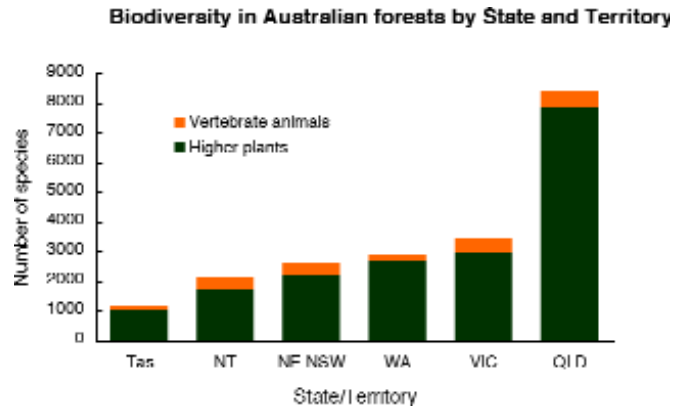
## for our major rainforests

*When ARCS was formed in 1982, the most urgent rainforest conservation tasks lay in Queensland.*

*As the graph on the right shows, Queensland has the highest level of forest biodiversity of any state in Australia.*

*Queensland has 70 per cent of Australia's surviving rainforests (85 per cent of those on mainland Australia).*

*These forests have the highest endemism and refugial status of any in the country, but in 1982 they were most at risk from continued logging, clearing and burning.*



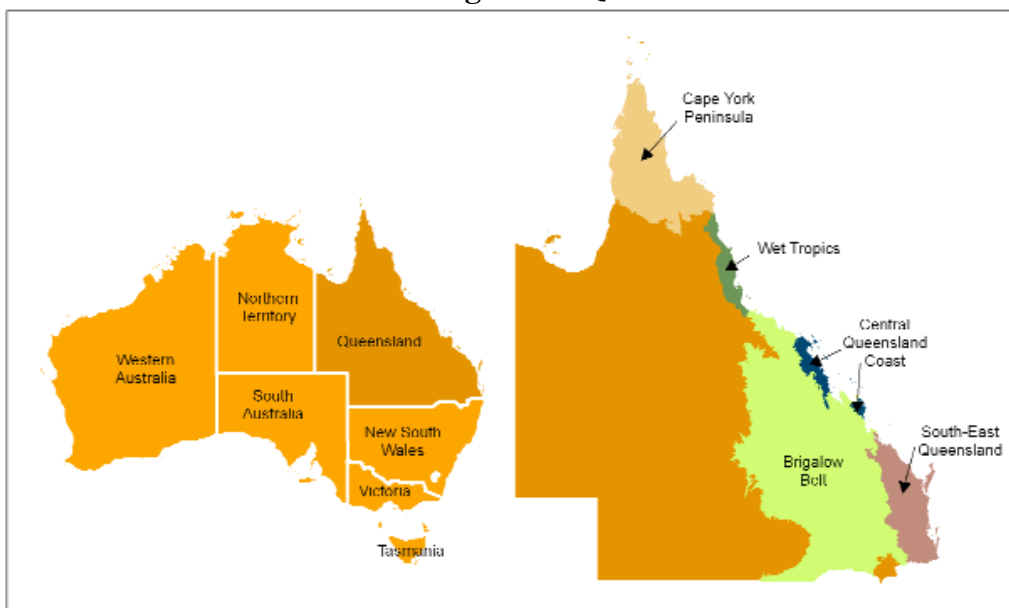
**Source:** *Australia's State of the Forests Report 1998*. National Forestry Inventory. Bureau of Rural Sciences. Data for the whole of NSW were not available at the time of publication.

The 2.6 million hectares of rainforest in Queensland occur as major and discrete 'island' isolates in five separate bioregions of the state:

- Wet Tropics
- Central Queensland Coast
- Cape York Peninsula
- South-East Queensland
- Brigalow Belt

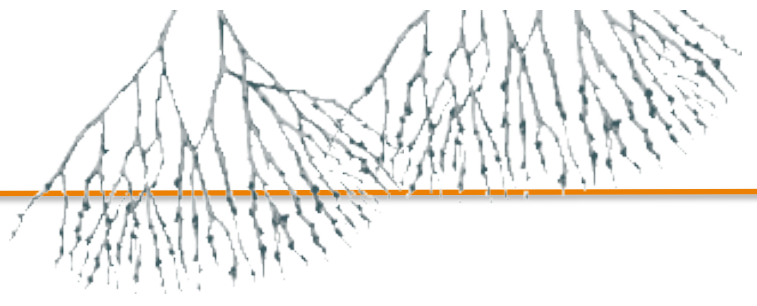
ARCS has essentially secured the protection of the majority of the rainforests on public land in all five bioregions.

### Rainforest bioregions in Queensland



**Source:** Environmental Protection Agency (Queensland)





## Wet Tropics

The largest single area of rainforest in Australia is located in the Wet Tropics of Queensland World Heritage Area (900 000 hectares) between Cooktown and Townsville. This is the most biodiverse yet extinction-prone bioregion for plants and animals in Australia. These tropical rainforests represent only one-thousandth of the area of Australia, yet provide homes for more than 3000 plant species, a third of the country's mammal species, half of the birds and a quarter of the frogs and reptiles. At least 700 species of plants and 70 species of vertebrate animals occur only in the Wet Tropics.

### *Seeking World Heritage listing*

From the 1960s, conservation groups had campaigned for national park protection of the rainforests in the Wet Tropics, particularly from the devastating effects of logging. The Queensland Government was unresponsive, leaving conservationists no option but to turn to the Federal Government for assistance.

In 1984 the Australian Heritage Commission engaged ARCS to report on the conservation significance of the rainforests of north-east Queensland. In preparing this report, ARCS assessed the values of the area in relation to the criteria for inclusion of a site on the World Heritage List of cultural and natural heritage properties established by the UNESCO World Heritage Committee.<sup>1</sup> The authors concluded that the area met all four criteria for inclusion of a property on the World Heritage List as a natural heritage. The report provided a critical impetus to achieving protection of the area's outstanding natural heritage values, with the Australian Heritage Commission recommending to the Federal Government that it proceed with World Heritage nomination.

### *Conservation proposals and scientific argument*

ARCS believes that conservation proposals must be based on sound scientific argument, and very early on saw the need to develop a database of biological and other information relating to the Wet Tropics.

The Society's scientific analysis of 1984 showed that the area originally proposed by conservation groups as needing protection (the Greater Daintree National Park) failed to include the areas with the greatest concentrations of restricted endemic plant species; in fact, the whole rainforest area between Cooktown and Townsville needed protection to preserve all the significant values of the area. By 1987 ARCS had become the recognised authority on the natural heritage values of the Wet Tropics; at this time too, the Federal Government decided to proceed with World Heritage nomination. The Department of the Arts, Sport, the Environment, Tourism and Territories (DASETT) invited ARCS to provide a report (Wet Tropical Rainforests of North-East Queensland: Values and Impacts) to establish a sound basis for the Wet Tropics nomination.<sup>2</sup>



This beetle, *Monteithium ascetum*, from the summit of Mt Sorrow, near Cape Tribulation, is one of a group of mainly rainforest species that has apparently survived from Gondwanan times with little change. It was named after Geoff Monteith of the Queensland Museum as "a tribute to his pioneering efforts in discovering so many exciting new taxa in the Queensland rainforests".

By mapping the distribution of a range of species that contributed to the World Heritage values of the Wet Tropics, ARCS was able to confirm the earlier conclusion that conservation of the whole of the remaining rainforest area between Cooktown and Townsville would be necessary if the World Heritage values were to be protected.

<sup>1</sup> ARCS 1986. *Tropical Rainforests of North Queensland: Their Conservation Significance*. Special Australian Heritage Publication Series No. 3, AGPS, Canberra

<sup>2</sup> Rainforest Conservation Society of Queensland & the Department of the Arts, Sport, the Environment, Tourism and Territories (DASETT) 1987. *Wet Tropical Rainforests of North-East Queensland: Values and Impacts*. Consultancy report.

## *Meeting World Heritage criteria*

The Operational Guidelines for the Implementation of the World Heritage Convention (WHC/2 Revised January 1987) state that areas nominated should:

- be outstanding examples representing the major stages of the earth's evolutionary history; or
- be outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment ...; or
- contain superlative natural phenomena, formations or features, for instance, outstanding examples of the most important ecosystems, areas of exceptional natural beauty or exceptional combinations of natural and cultural elements; or
- contain the most important and significant natural habitats where threatened species of animals or plants of outstanding universal value from the point of view of science or conservation still survive.

### **Criterion 1: Outstanding examples representing the major stages of the earth's evolutionary history**

Dr Keto developed the concept of the Wet Tropics as a region that conserves, in its biota, elements that relate to eight major stages in the earth's evolutionary history:

- (1) the Age of the Pteridophytes
- (2) the Age of the conifers and cycads
- (3) the Age of the Angiosperms
- (4) the final break-up of Gondwana
- (5) biological evolution and radiation during 35 million years of isolation
- (6) the origin and radiation of the songbirds
- (7) the mixing of the biota of the Australian and Asian continental plates
- (8) the extreme effects of the Pleistocene glacial periods on tropical rainforest vegetation.

It was this concept that provided the justification for the area's fulfilling the first criterion for World Heritage listing.

Dr Keto's research included the first description of the Wet Tropics as a centre of convergence and survival of the major genetic lineages of the ancient conifers and cycads. Of particular significance was the compilation of a list of plant genera, represented in the Wet Tropics, whose origins could be traced to East Gondwana — that part of the great southern supercontinent that broke away from Antarctica some 50 million years ago to form Australasia and New Caledonia. This new research greatly enhanced understanding of the biogeographic significance of the Wet Tropics.

### **Criterion 2: Outstanding examples representing significant ongoing geological processes, biological evolution and man's interaction with his natural environment**

ARCS had quantified the level of endemism among the flora of the Wet Tropics, showing it to be second only to New Caledonia with respect to the number of endemic plant genera per unit area. ARCS also concluded that the Tall Open Forests on the western margin of the Wet Tropics and the melaleuca and mangrove complexes contained some of the oldest existing roots of an evolutionary continuum that originated from ancestral rainforests.

### **Criterion 3: Superlative natural phenomena, formations or features**

The Wet Tropics was accepted by the International Union for the Conservation of Nature (IUCN, now the World Conservation Union) and the World Heritage Committee as fulfilling the third criterion for listing. The nomination document described the area as:

- one of the most significant regional ecosystems in the world
- having exceptionally high genetic diversity and endemism, making it a superlative example of a tropical rainforest
- a key to the origins and ancient habitats of primitive flowering plants
- a key to the processes of past climatic sifting of taxa (plant and animal groups) and community types
- a biological link with temperate and other tropical zones
- containing the best conserved living history of the evolution of rainforest flora in the world.

### **Criterion 4: Most important and significant natural habitats where threatened species of animals or plants of outstanding universal value still survive**

The ARCS report to DASETT identified 197 rare or threatened plant species and 35 rare or threatened animal species in the area, many of which are of outstanding value to science and conservation.





### *Achieving World Heritage listing*

The decision to inscribe the Wet Tropics of Queensland on the World Heritage List was made at the meeting of the World Heritage Committee in Brasilia in December 1988. In presenting the nomination to the World Heritage Committee, Dr James Thorsell described the background documentation for the nomination as 'the most comprehensive ever received for a natural World Heritage nomination' and ranked the area within the top 10 of the world's natural heritage sites.

The long-term effect of the Society's work on the Wet Tropics is the permanent protection of one of the world's outstanding natural treasures. The Wet Tropics of Queensland became one of an elite group of only 11 sites on the World Heritage List that fulfil all four criteria for listing (a property need fulfil only one criterion to qualify for listing).

### *Heritage management: The Wet Tropics Management Authority*

The Wet Tropics of Queensland area is now under the control of the Wet Tropics Management Authority. The detailed description of the natural heritage values of the Wet Tropics by the ARCS team provided a basis for management decisions and will no doubt continue to do so for some time to come.

As one of two nominees of the Federal Government on the inaugural Wet Tropics Management Authority, Dr Keto played a major role in the management of the World Heritage Area. Both as a member of the Management Authority and as President of ARCS, she campaigned intensively for the independence of the Authority. ARCS led the non-government conservation organisations in lobbying the Queensland Government to establish a sound legislative framework for management of the World Heritage Area. In November 1993 the Wet Tropics World Heritage Protection and Management Act 1993 was proclaimed, which gave the Authority and its planning instruments a statutory basis.



Rainforest now encompassed by Wooroonooran National Park in North Queensland has acted as a refuge for plants and animals that survived past dramatic climate extremes.

## Cape York Peninsula

Cape York Peninsula, which has 470 000 hectares of rainforests, is one of Australia's and the earth's last wilderness areas. The rainforests of the McIlwraith– Iron Ranges and Bamaga in this area have biological links with both the Wet Tropics and New Guinea. They also have the third highest levels of rare and threatened rainforest plants, the richest orchid flora, and the highest concentrations of regionally restricted birds in Australia.



The mainly rainforest-inhabiting spotted cuscus is one of just two species of cuscus in Australia. The Queensland subspecies is found only on Cape York Peninsula and lowland New Guinea.

### *Protection from clearing, mining and development*

During the 1980s and early 1990s, ARCS was successful in combating a number of threats to the rich but fragile rainforest ecosystems of Cape York Peninsula.

The Society's achievements included:

- protecting the Lockerbie Scrub at Bamaga (the most northerly rainforest in Australia) from clearing for cashew plantations
- preventing mining in a key coastal wilderness area adjoining the Great Barrier Reef and the rainforests of the McIlwraith Range
- preventing freeholding and inappropriate coastal development on the Silver Plains leasehold property near the McIlwraith Range.

ARCS saw the need for more secure protection of the McIlwraith Range and set about preparing a national park proposal for the area in 1989. The proposal was the most comprehensive report ever prepared on the heritage values of the McIlwraith Range, providing conclusive evidence of the area's significance — in particular, that it contains:

- the only extensive area of upland rainforest in Cape York Peninsula
- several unique vegetation and community types and species
- some of the richest areas in Australia for orchids, butterflies and restricted bird species
- the second highest concentration in Australia of rare and threatened rainforest plants
- a vital faunal corridor for north–south movement of migratory species, especially for species shared with New Guinea
- the widest topographical diversity of any area on Cape York Peninsula
- a key wilderness area of exceptional beauty with spectacular gorges, tall rainforests, perched dune lakes, river systems, and unspoilt coastline with sandy beaches adjoining the Great Barrier Reef.

The Society's efforts culminated in a \$4.5 million government package to acquire the Silver Plains leasehold property as the basis for establishing a world-class national park on the McIlwraith Range and adjoining coastal wilderness. Following in the footsteps of ARCS and others, a number of conservation groups, Aboriginal people, and local communities are now working to secure the full protection of the entire Cape York Peninsula as one of the great wilderness and rainforest areas of the world.



## Central Queensland Coast

The Central Queensland Coast bioregion includes the Clarke Range west of Mackay and the Conway Range near Proserpine. The long-isolated rainforests (400,000 hectares) are one of the major refuges in the State for relict plants and animals of Gondwanan origin. The region has affinities with the flora and fauna of tropical and subtropical rainforests to the north and south, as well as numerous unique species of plants and animals. Half the rainforest ecosystems in the Clarke and Conway Ranges are endangered or vulnerable to extinction.



As a result of a campaign led by ARCS, logging in the rainforests of the Mackay Highlands ceased in 1994.

### *An end to logging*

ARCS was largely responsible for bringing about an end to logging in the rainforests of the Central Queensland Coast in 1994. Despite a Queensland Government election commitment in 1989 to stop all rainforest logging on publicly owned land, and contrary to the Queensland Forest Service's public statements, ARCS discovered that logging was continuing in the rainforests of the Clarke and Conway Ranges.

ARCS immediately began urging the Queensland Government to phase out the logging. Members of the Society also made regular field visits to the area and obtained photographic evidence of the damage, which Dr Keto described as the worst she had seen anywhere.

Over a period of several months, ARCS accumulated data relating to flora and fauna in the area, and the history and impacts of logging. This included extensive aerial-photograph interpretation of the condition and integrity of all rainforest areas in state forests. The result was the most comprehensive evaluation of the rainforests of Central Queensland at that time.

ARCS established that the Forest Service had no yield plots in the region and therefore no data on growth rates, mortality or recruitment for calculating sustained yield; it had been using data from the Wet Tropics instead. By examining aerial photographs taken over the past 40 years, ARCS also identified significant errors in the Forest Service's estimates of the area of remaining virgin rainforest.

ARCS succeeded in drawing public attention to the issue through the media. As a result, all rainforest logging in the area was stopped in September 1994. This brought to an end rainforest logging on public land in Queensland.



The brown tree snake, one of Australia's diverse array of venomous snakes, occurs in coastal areas of eastern and northern Australia in a range of habitats including rainforests, mangroves, eucalypt forests and heaths.



## South-East Queensland's rainforests and other forests

South-East Queensland is part of the world's last stronghold of subtropical rainforest. The Society's work in this bioregion has focused on:

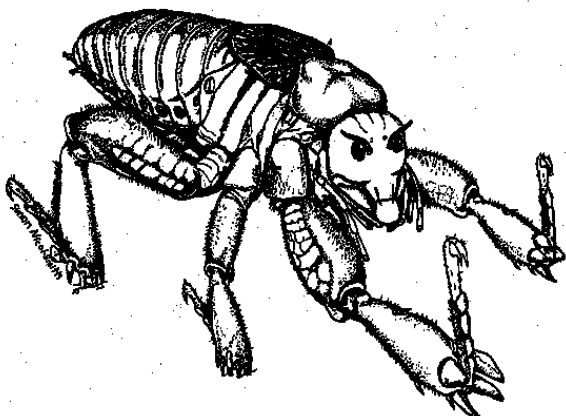
- Fraser Island and the Great Sandy Region
- Central Eastern Rainforest Reserves of Australia
- negotiation of the South-East Queensland Forests Agreement.

### Fraser Island

Fraser Island, the world's largest sand island, is 125 km long and 160 000 hectares in area. It is part of the Great Sandy Region, a section of coastline that stretches from the north shore of the Noosa River to Sandy Cape on the northern tip of the island. Logging of the tall hardwood forests of the island was, until the early 1990s, a particularly controversial issue.



This log dump on Fraser Island was photographed in 1988. Two years later, all logging on the Island ceased.



The Cooloola Monster, *Cooloola propator*, a carnivorous, burrowing, cricket-like insect, was discovered only about a decade ago. It represents the first new family, endemic to Australia, to be added to the Order Orthoptera for 75 years.

### The Commission of Inquiry

In 1990 the Queensland Government set up the Commission of Inquiry into the Conservation, Management and Use of Fraser Island and the Great Sandy Region. Six major conservation groups in Queensland formed an informal alliance, the Joint Conservation Groups, for the purposes of the inquiry. The submissions prepared by ARCS covered the natural heritage values of the forests, the impacts of logging, and the sustainability of timber production.

Dr Keto prepared a 200-page report on the sustainability of timber production from Fraser Island, based on an analysis of the growth data from the yield plots. She concluded that the data did not provide any support for the long-term sustainability of timber production from Fraser Island.

Other submissions prepared by ARCS dealt with the impacts of logging on flora, fauna and forest structure, particularly in relation to logging of old-growth forests. It was concluded, on the basis of a detailed and comprehensive review of the scientific literature, that continued logging represented a threat to the integrity of the forests and to the long-term survival of fauna dependent on mature or old-growth forests.

### Recommendations of the Commission

The report of the Commission concluded that logging represented a significant threat to the major proportion of the tall hardwood forests of Fraser Island and that sustainability of timber production had not been proven. As a result, the Commission recommended a phase-out of logging within six months. It also recommended that the Great Sandy Region, including Fraser Island, be nominated for World Heritage listing. The recommendations were essentially implemented by the Queensland Government.

Although the Great Sandy Region as a whole was not granted World Heritage listing, the heritage values of Fraser Island were recognised. This sand island was inscribed on the World Heritage List in 1992.

### Criteria for studying the ecological impacts of logging

As part of the submission on ecologically sustainable forest management, Dr Keto defined the criteria she considered necessary for a comprehensive study of the ecological impacts of logging. These criteria represent 'terms of reference' for such a study. The Commission accepted these criteria and included them in the final report as recommended criteria for assessing and monitoring the ecological impacts of logging, fire and other management programs.

## Central Eastern Rainforest Reserves of Australia

The Central Eastern Rainforest Reserves cover an area of approximately 366 500 hectares in South-East Queensland and North-East New South Wales. The area, which includes warm temperate, cool temperate, subtropical and dry rainforests, is the home for many rare and threatened plants and animals, some of which have ancient origins.



*Rhodamnia maideniana* is found only in the rainforests of the Gold Coast Hinterland, particularly on Springbrook Plateau.

### Extending World Heritage protection

In 1986 several rainforest areas in North-East New South Wales were inscribed on the World Heritage List as the Australian East Coast Subtropical and Temperate Rainforest Parks World Heritage Area. A number of these rainforest areas extend across the border into Queensland; however, the Queensland areas were not included in the World Heritage nomination.

In the early 1990s the Queensland Government agreed to pursue the possibility of adding the Queensland rainforest areas to the World Heritage site. As a recognised authority on World Heritage matters, ARCS was engaged to prepare a new nomination that would incorporate areas in both states into one site.

In preparing the nomination, ARCS researched the biogeography of the flora and fauna of rainforests in the area. The findings provided new insights into the significance of these rainforests — in particular that they contain:

- a secondary centre of endemism for primitive flowering plants originating in the Early Cretaceous that complements the Wet Tropics of Queensland
- the most diverse assemblage of relict angiosperm taxa representing the primary radiation of the dicotyledons in the Mid–Late Cretaceous
- a unique record of the evolutionary history of Australian rainforests representing the ‘golden age’ of the Early Tertiary
- a unique record of Miocene vegetation that was the antecedent of modern temperate rainforests in Australia.



*Eucryphia jinksii*, the first member of the genus to be found in Queensland, was discovered in rainforest at Springbrook in 1994 by David Jinks. The Gondwanan origins of the genus are indicated by its occurrence only in Australia and Chile. Another species has been described from Mt Bartle Frere in the Wet Tropics of Queensland.

The IUCN report to the World Heritage Bureau stated:

The re-nomination of the site has incorporated a considerable amount of new ecological information ... that reinforces the rationale for the property and provides clear evidence that the Queensland additions are an integral component.

The area was inscribed on the World Heritage List in 1994 as the Central Eastern Rainforest Reserves of Australia.

## South-East Queensland Forests Agreement

During the past decades, intense conflict has occurred in many parts of Australia between conservationists and members of the timber industry — between those seeking to protect native forests and those whose businesses and employment depend on continuous and secure access to supplies of timber.

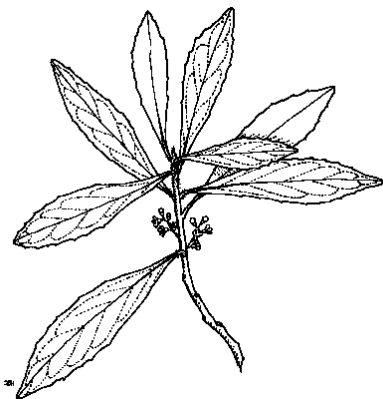
As a framework for the permanent resolution of these conflicts, the Federal Government and State Governments signed a National Forest Policy Statement in 1992 to establish a system of regional forest agreements throughout the country. Although intended to be based on sound science and consultation, these agreements have generally failed to provide real solutions or resolve ongoing conflict.

ARCS began working towards an alternative solution for South-East Queensland, initiating and

leading negotiations between conservation groups, timber industry representatives and the Queensland Government. The result was the South-East Queensland Forests Agreement signed in September 1999 by ARCS, the Queensland Conservation Council, The Wilderness Society, the Queensland Timber Board and the Queensland Government.

The agreement realised the Society's vision of a cooperatively agreed outcome that established the basis for both an internationally competitive timber industry and a world-class forest reserve system — Queensland's Great Southern Forest Parks.

This was undoubtedly an historic agreement — one that set a precedent for a different way of resolving forest issues. It achieved outcomes of benefit to the forests, the timber industry and its associated rural communities and avoided the typical confrontation that has been a hallmark of forest issues around the country.



The protection of species such as *Symplocos harroldii* (left) and *Elaeocarpus eumundi* (right) has been significantly increased by the South-East Queensland Forests Agreement.

### Key features of the South-East Queensland Forests Agreement

Successful outcomes included:

- the Queensland Government's purchase of one of the state's largest sawmills in order to reduce the overall log requirement for the region, and thus allow many smaller mills to remain viable during a transition from native forest logging to a plantation-based industry
- the addition of 425 000 hectares to the conservation reserve system
- a guaranteed 25-year supply of timber to most hardwood sawmills
- a commitment to expand hardwood plantations as a means of providing long-term resource security for the timber industry and of phasing out native forest logging
- a commitment to end all native forest logging on public land by 2025 and the consequent addition of 1 million hectares to the forest reserve system.



# Environmental

## management and reform



*ARCS is widely respected both nationally and internationally for the scope and quality of scientific research it conducts to achieve action on environmental matters. This has enabled ARCS to influence important decisions about environmental management and to take a leadership role in initiating reforms that benefit society and the earth's biodiversity.*

### Worldwide rainforest management and timber production

For many years, there has been ongoing debate worldwide about sustainable timber production from tropical rainforests, both from an ecological viewpoint and in terms of timber volume harvested annually.

At the beginning of the 1990s, it was estimated that around half of the world's rainforest had been destroyed, with about 800 million hectares remaining. At the estimated rate of destruction of 16–17 million hectares annually, all tropical rainforests outside reserves will have been cleared within 40 years.

There are many contributing factors, but industrial forestry, directly and indirectly, is highly significant.

### ARCS challenges proposed model

ARCS is committed to the principle of ecological sustainability and has an active interest in government and industry proposals for rainforest management systems related to timber production.

In the early 1990s, ARCS played a central role in preventing the worldwide acceptance of the Queensland Department of Forestry's North Queensland rainforest logging model as proof of ecological sustainability. The model, if accepted, would have entrenched industrial forestry in the world's rainforests. This high-risk strategy would have undermined economic investment in plantations as an alternative, more viable long-term option.

As a result of detailed research and field inspections, the Society's scientists were able to demonstrate that the Queensland model was fundamentally flawed. Their findings were presented at workshops and conferences in Asia and the Pacific, as well as at the World Resources Institute's colloquium on sustainability in Washington in 1991.

This colloquium was attended by more than 90 policy makers, including representatives of the United States Agency for International Development, the Environmental Protection Agency, Departments of State and Treasury, Congressional committees, and intergovernmental development institutions such as the World Bank, Inter-American Development Bank, and Food and Agriculture Organisation. Some of the world's leading scientific authorities on tropical rainforests also participated in the colloquium.

In the paper she presented to this colloquium, Dr Keto not only reiterated the Society's earlier findings but also presented an analysis of other research relating to the ecological effects of logging in the tropical rainforests of North Queensland. A representative from the Queensland Forest Service presented a paper arguing in favour of the North Queensland model.



Downey Creek, about 30 km east of Innisfail, was one of the few remaining areas of virgin rainforest in North Queensland until logging began in 1984. The anti-logging campaign was led locally by Yvonne Cunningham (pictured) of the Innisfail Branch of the Wildlife Preservation Society of Queensland.

## *Rejection of model*

Ultimately, forestry experts decided that the Queensland model was not appropriate for worldwide application. In its summary report from the colloquium, the World Resources Institute reached the following conclusions:

... it is hard to prove that the management system was sustainable. Furthermore, high research and management costs made the system's forest operations expensive ... The high costs of management in Queensland limit this model's ability to be transferred to developing countries where most tropical forests are found. Given the debate over sustainability in a case where more data exist than nearly any other tropical forest management project — and in a case where social, economic and institutional factors are not at issue — one wonders whether if absolute sustainability in tropical forest management can ever be achieved.

It should be emphasised that ARCS would welcome a tropical forest management system that is shown to be truly ecologically sustainable. However, the assumption that sustainable timber production is possible has been an obstacle to considering other more acceptable alternatives that would not only maintain the values of the forests but also pose no threat to indigenous peoples who still depend on the rainforests for their cultural survival.

## **Native forest management in Queensland**

Members of the forest industry throughout Australia have lobbied extensively to gain long-term security of access to native forests. This has always been opposed by conservation groups because of the threat it poses to forest areas that may be of considerable significance, but have not yet been adequately studied.

Australian scientists have predicted major extinction episodes in the future for old-growth-dependent fauna if logging of native forests continues. At least 42 per cent of Australia's mammals use tree hollows that take a minimum of 100 years to develop. Moreover, Australia has already been responsible for 50 per cent of all mammal species extinctions worldwide over the last 200 years. There have also been more plant extinctions in Australia than in southern Africa or continental USA.

In Queensland, ARCS has been at the forefront of opposition to resource security for the native forest industries and has, over many years, steadfastly worked towards achieving a more conservation-oriented approach to native forest management. The culmination of the Society's work was the historic South-East Queensland Forests Agreement, signed in 1999 by major conservation groups, the Queensland Timber Board and the Queensland Government. This agreement established the basis for both an internationally competitive timber industry and a world-class forest reserve system — Queensland's Great Southern Forest Parks.

## **Impact assessment in World Heritage Areas**

ARCS recognised that there would be many difficult decisions to be made regarding development proposals within the Wet Tropics World Heritage Area. Some of these proposals related to essential services such as the provision of water and energy supplies, and road construction. Others related to tourist developments, only some of which could be expected to be sensitive to environmental values.

If these decisions were to be made on a sound and rational basis — while ensuring adherence to the principal objective to maintain World Heritage values — there would need to be some carefully considered and well-defined guidelines for developers and assessors.

Early in 1990, ARCS took the initiative by drafting a set of guidelines for assessment of impacts within a World Heritage Area. Although the guidelines were principally targeted at the Wet Tropics, they were sufficiently general to apply to other World Heritage Areas.



## Government policy reform

ARCS has had a major impact in the area of environmental policy reform in Queensland.

In 1989, prior to the Queensland state election, ARCS initiated and coordinated the preparation of an historic 'log of claims' — a wide-ranging agenda for environmental reform involving 112 items in 24 separate policy areas. It was accepted in full by the Labor Party, which subsequently was elected to government. The document and associated lobbying shaped the Labor Party's own policy statements, which then became government policy. On election, the new government set out an action program to implement the content of the log of claims.

ARCS has also successfully campaigned for the establishment of independent statutory scientific advisory committees under the state's nature conservation legislation, the Nature Conservation Act 1992 (an outcome of the log of claims) and the Wet Tropics World Heritage Protection and Management Act 1993. ARCS prepared the terms of reference of the scientific advisory committee under the Nature Conservation Act. These terms of reference were accepted and will ensure independence, and appointments based on specified expertise.

## Energy resources

ARCS has long recognised a close relationship between environmental protection and society's use of energy resources. Energy demand projections indicate that, within 100 years, new mega-power stations would need to be constructed every two months, with devastating effects on greenhouse gas emissions and local environments. A proposed hydro-electric project, the Tully–Millstream scheme, involved a dam that would have flooded part of the Wet Tropics World Heritage Area.

In 1990 the Queensland Government established a task force to investigate future electricity needs in Queensland and to identify possible alternative ways of meeting those needs, with specific reference to the requirement for the proposed Tully–Millstream hydro-electric scheme. ARCS presented a submission that:

- showed numerous means by which the demand for electricity was being artificially inflated at the expense of energy conservation or renewable resources
- identified sustainable energy alternatives
- proposed a new structure for the Queensland electricity supply industry.

The submission concluded that the Queensland Electricity Commission may have acted beyond its legislative powers in entering into special deals ('all-electric agreements') that infringed the Trade Practices Act. These deals acted as disincentives to demand-side management and to alternative, renewable energy supplies.

The ARCS submission included detailed calculations showing the extent to which energy savings could be made in the domestic, commercial and industrial sectors. This was the most extensive and comprehensive analysis ever produced in Queensland. It showed that:

- demand-side management programs proposed in the submission could provide a net saving to Queensland of \$700 million
- no additional generating capacity was required before the year 2011 if the proposed demand-side management initiatives were implemented
- the Tully–Millstream scheme could be deferred indefinitely with a net saving (in net present value terms) of \$409 million
- the next scheduled coal-fired power station could be deferred until 2011 at a saving of \$455 million.

As a result of this submission, the special deals and 'all-electric agreements' previously made with developers stopped. In addition, the electricity industry was restructured, which led to the generation and supply sectors being separated. There were also procedures established to ensure greater accountability.



The proposed Tully–Millstream hydro-electric project threatened significant habitat for the Fluffy Glider



## Public education

Another way in which ARCS seeks to achieve environmental progress and reform is through public education.

### *Publications and website*

The Society has produced and distributed a number of publications to heighten awareness of rainforest conservation issues — for example:

- an information folder (media kit) on values and impacts within the Wet Tropics and the history of the campaign to protect the rainforests of the area
- a series of information sheets on a range of forest conservation issues
- a very successful illustrated identification guide to South-East Queensland rainforest plants, aimed also at conservation and restoration of rainforest remnants (Fragments of Green: An Identification Field Guide for Rainforest Plants of the Greater Brisbane Region to the Border Ranges by Janet Hauser and Janet Blok).

The ARCS website ([www.rainforest.org.au](http://www.rainforest.org.au)) has a range of material on environmental matters, including downloadable information sheets and maps.

ARCS also arranged for the production of a paperback edition of its report to the Australian Heritage Commission, *Tropical Rainforests of North Queensland: Their Conservation Significance*, so that an inexpensive version of the document could be sold and distributed to schools.

### *Involvement in education programs*

Dr Keto and other ARCS members have regularly given talks to schools, universities and community groups. Dr Keto has also acted as resource advisor on the environment to the Queensland Ministerial Consultative Council on Curriculum.

### *Rainforest reference library*

ARCS has established one of the most comprehensive reference libraries in Australia on rainforests and related forests. It contains 800 monographs and books, more than 4000 scientific journal articles, an aerial-photo library with aerial-photo interpretation facilities, Landsat imagery of major Queensland rainforest areas, large photograph and map collections, and extensive historical and archival material. There is a comprehensive reference catalogue on an electronic database. The facility is used regularly by university and secondary school students as well as members of the public concerned about the environment.



# Economic

---

## benefits for the environment and the community

*Since its formation in 1982, ARCS has promoted initiatives that have led to government-funded programs totalling \$280 million for conservation and industry. These initiatives have had major flow-on effects for the communities concerned, particularly through nature-based tourism, employment and the development of alternative businesses. The Society's activities have also created opportunities in research, education and training and had important impacts on a range of industries.*

### Regional and local communities

ARCS played a crucial role in developing and negotiating the historic South-East Queensland Forests Agreement (1999), a cooperative solution, unprecedented in Australia, supported by the timber industry, conservationists and the Queensland Government. This Government has allocated \$80 million for the implementation of the agreement. It has also provided an immediate five-fold boost in funding for the management of new reserves (425 000 hectares), from \$3 to \$16 per hectare per annum. The agreement will bring benefits to regional communities through nature-based tourism, the processing of plantation wood products and native floriculture.

ARCS was responsible for the Central Queensland rainforest decision which marked the end of all rainforest logging on public land in Queensland. One of the results of this decision was a \$450 000 Commonwealth-funded Community Rainforest Reforestation Program in the Mackay–Proserpine region employing 23 persons to establish 90–150 hectares of rainforest plantation (September 1994).

### Benefits from World Heritage listing

ARCS was instrumental in nominations of all but one of the terrestrial World Heritage sites in Queensland, totalling 1.1 million hectares (99 per cent of the entire World Heritage Area estate) and representing 25 per cent of the protected area estate in Queensland. The protected area estate generates \$1.2 billion for the Queensland economy annually.

ARCS also campaigned successfully to protect the forests of Fraser Island and Cooloola in the Great Sandy Region, which resulted in the cessation of logging in both areas, World Heritage listing of Fraser Island, and a \$38 million growth and development package for the region (1991–93).

World Heritage listing of the Wet Tropics of Queensland (1988) led to \$80 million of Federal Government funding for a rainforest reforestation and industry development program. These funds were recouped in three to four years through taxes paid by newly thriving alternative industries and businesses. An economic study of tourism in North Queensland in 1993 concluded that the Wet Tropics World Heritage Area contributed \$753 million in total regional economic output for that year.



Noah Creek, near Cape Tribulation, is part of the Wet Tropics World Heritage Area. World Heritage listing has brought major economic benefits to many communities in North Queensland.

## Research, education and training

ARCS helped secure \$6.6 million for the implementation of the Wet Tropics World Heritage Area Research Program (1990–98). This was a targeted scholarships and grants program for top-quality scientific research for conservation management based primarily at Australian universities.

In 1985 ARCS played a critical role in sourcing \$22.25 million for the National Rainforest Conservation Program which was the first coordinated, nationwide program of research, inventory, protection, management and world-class presentation of Australia's rainforests.

The Queensland Government allocated \$34.5 million for the Plantations, Forests and Future Directions Program (1995–2000) which included native species plantation research and establishment. Again, ARCS was the prime driving force behind securing this funding.

ARCS also proposed and scoped a project through the South-East Queensland Regional Forest Agreement process. A total of \$90 000 was provided for implementation of this project (Genetic Diversity and the Design of a Comprehensive, Adequate and Representative Reserve System for Forests in South-East Queensland).

Dr Keto was the convenor for the World Heritage Tropical Forests Conference, 'Science for Better Management and Understanding', with 200 delegates from 18 countries (2–6 September 1996). ARCS secured sponsorships worth \$160 000 for the conference, which showcased Queensland research into tropical rainforests and their management.

ARCS has established a regional herbarium at its headquarters in Bardon and instituted a botanical survey program in South-East Queensland (1998–2000) at a cost of \$60 000 plus \$120 000 in the form of in-kind support. The herbarium, equipped with temperature and humidity control, stores geo-coded, verified and archived specimens in conditions identical to those at the Queensland Herbarium. Much of the equipment for archiving was donated at cost. For every dollar invested, there are effectively two dollars of in-kind volunteer contributions, and the significant cost savings have ensured the extension of survey efforts to areas previously ignored through lack of funding. The program has identified many new biodiversity 'hotspots', range extensions and potential new taxa with possible benefits to many industries such as ecotourism, pharmaceuticals, floriculture, essential oils, wild foods, macadamia and native timber species plantation.

For many years, ARCS maintained a skilled and semi-skilled volunteer program with an annual replacement value of \$290 000 for the permanent skilled volunteers and more than \$200 000 for non-permanent, project-based volunteers. ARCS programs developed skills and knowledge in young and unemployed people and were very successful in assisting volunteers achieve full-time employment. The Society has supervised special scientific projects involving secondary and tertiary level domestic and international students, sometimes collaboratively with institutions such as the Queensland Museum. Net benefits to Queensland from these initiatives include the social and economic benefits of achieving and improving employment opportunities for the unemployed, and significant, cost-effective conservation and education programs through both professional and volunteer contributions.

## Industry

The conservation of natural areas and their biological resources brings benefits to a range of industries through the delivery of 'free' environmental services and genetic diversity. The pharmaceutical, floriculture, macadamia nut, and timber plantation industries are important examples.

### Pharmaceutical

About 25 per cent of all prescription drugs in the western world contain active ingredients extracted from higher plants. AstraZeneca, the third largest pharmaceutical company in the world and spending about \$1 billion dollars per year on research and development, has invested heavily in Queensland in the race to discover and rapidly develop innovative drugs. The protection of Queensland's unique flora through the Society's initiatives will safeguard and nurture this investment.



*Solanum aviculare* (left) and *Castanospermum australe* (right) contain compounds that have the potential to be effective anti-cancer agents.



## Floriculture

Queensland has the richest flora of any state or territory in Australia. ARCS is currently pursuing \$13.5 million funding for research and development in the native floriculture industry to underpin greater regional development and employment opportunities through increased exports into the global market — now worth \$40 billion annually and growing at a rate of 6–9 per cent annually. This initiative, with the realistic potential for generating US\$45–1000 million per annum, exemplifies the economic benefits from biodiversity conservation.

Given the proven skills of Queensland scientists, a projected 10-fold or greater expansion of the industry within 10 years is realistic. The genetic resources in the wild will critically underpin selective breeding and biotechnology to improve growth rates, quality, post-harvest durability and transportability of flora and foliage products. To date, \$4 million was allocated for the establishment of the Centre for Native Floriculture — the most significant in the Southern Hemisphere— at the University of Queensland, Gatton campus.

## Macadamia nuts

The macadamia nut industry in Australia is currently valued at about \$100 million annually. The yields, and hence the profits, could increase by as much as 20 per cent (\$20 million per annum) through more effective pollination by native *Trigona* bees by safeguarding their rainforest habitats. *Trigona* bees are currently threatened with extinction. Conservation of natural areas also enhances the capacity to improve yields and quality through harnessing genetic variability in wild populations.

Queensland has the highest diversity of macadamia species in the world (90 per cent). The successes of ARCS have considerably improved the protection of these wild populations that will be increasingly important globally. Macadamia production, now involving 11 different countries (Australia, Brazil, China, Costa Rica, Guatemala, Kenya, Malawi, Mexico, New Zealand, South Africa and the United States), is expected to treble in five to ten years.

## Fibre composites

The application of fibre composites to the civil engineering sector can revolutionize the construction industry, substituting for increasingly scarce hardwood traditionally used in bridge construction, railway sleepers, electricity transmission poles. ARCS successfully lobbied for a State Policy on Fibre Composites to foster a flourishing industry in Queensland that reduces pressure on native forests.

## Timber plantations

Genetic diversity protected through the Society's successes will be important for provenance selection for hardwood plantations to improve pest and disease resistance, general resilience, productivity and special wood qualities. It is these qualities in trees that underpin growth, sustainability and competitiveness in an industry increasingly reliant on plantations.



Macadamias are well known for their edible nuts. There are eight species of macadamia, seven of which are endemic to Australia and occur in Queensland and North-East New South Wales. *Macadamia whelanii* (above) is found only in North-East Queensland. *Macadamia ternifolia* (below) is found only in South-East Queensland, mainly in the Sunshine Coast hinterland.



# Update

## on ARCS activities

*This book was originally put together in 2002 by Diploma of Editing and Publishing students at Southbank Institute of TAFE, Morningside Campus. Throughout the text, a number of changes have been made to bring it up to date. This section incorporates the most recent of the Society's activities.*

### Springbrook

Springbrook is a unique, isolated remnant of the ancient Mt Warning shield volcano — one of the world's best preserved — erupting 23 million years ago when Australia was, in part, still equably warm and wet (the Golden Rainforest Era). It remains the wet heartland of Australia's subtropics, the last surviving microcosm of that ancestral rainforest era that transformed all Earth's biodiversity. It is a World Heritage, a nationally recognized hotspot of threatened biodiversity, an evolutionary sister to the Wet Tropics, preserving ancient lineages as no other.

### Does World Heritage Listing make Springbrook safe?

World Heritage listing formally recognises places of outstanding universal value of sufficient integrity to survive if they are managed well. But Springbrook National Park is too small and unmanageable with its slivered boundaries, jagged intrusions and unconnected fragments. More alarming, World Heritage values are mostly outside, on private land severely cleared last century. It is a World Heritage in danger.

### Springbrook Rescue

“Springbrook Rescue” is an ambitious vision conceived by ARCS to protect and restore the World Heritage rainforests of the Springbrook region. It involves seven imperatives:

- 1 buying land for conservation
- 2 restoring rainforests and streams to health
- 3 giving World Heritage a meaningful role in the community
- 4 establishing scientific and monitoring programs to guide the restoration and response to climate change
- 5 improving governance to protect World Heritage
- 6 presenting this iconic heritage to all and future generations
- 7 inviting the world's active participation in this rescue.

The Queensland Government has allocated \$40 million to purchase land at Springbrook for future addition to the national park. Some of this land is remnant rainforest, some is regeneration of various ages and some is cleared land that will be restored.

### Rainforest Restoration

ARCS will be responsible for planning and managing restoration on Springbrook properties purchased by the Queensland Government.



The view from the top of Goomoolahra Falls, Springbrook





