

REVIEW OF PROGRESS  
TOWARDS IMPLEMENTATION  
OF  
THE POND APPLE STRATEGIC  
PLAN  
2006-2007

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## **EXECUTIVE SUMMARY**

Pond Apple (*Annona glabra*) is a major environmental weed threatening northern Australia. A national strategy has been developed and the National Pond Apple Management Group established to oversee implementation of the strategy. This report outlines key achievements and progress made through national coordination of pond apple management in 2006/07.

On-ground control, survey, mapping, extension and coordination were funded by the Australian Government's Defeating the Weed Menace and Natural Heritage Trust, and the Queensland Government's Blueprint for the Bush: a Pest Offensive. Support and in-kind contributions were made by the Department of Primary Industries and Fisheries (Qld), Department of Natural Resources, Environment & the Arts (NT), Environmental Protection Agency (Qld), Department of Natural Resources and Water (Qld), Terrain (formerly Far North Queensland Natural Resource Group), Far North Queensland Regional Organisation of Councils and local governments.

In 2006/07, 237 hectares, about 12 per cent of Australia's known pond apple was controlled. Eradication programs continued at outlying infestations near Ingham and on Cape York Peninsula. A previous eradication program at Forest Beach, near Townsville appears to be successful with no further plants found to date.

Native plants as replacements for pond apple were identified and documented. These plants are especially relevant as food sources for the endangered southern cassowary and will assist land managers in their approach to removing pond apple with consideration to the potential impacts on cassowaries.

The completion and launch of a National Pond Apple Management Manual provides a comprehensive guide and collation of current best practice management techniques and case studies. The manual was complimented with the development of demonstration workshops aimed to empower landholders and reinforce best practice management approaches.

A National Pond Apple Extension and Communication plan was also developed and implementation included production of awareness brochures, an identification card, information packs, posters and other materials. Items have also been tailored to target Indigenous communities.

Awareness activities resulting from pond apple being a Weed of National Significance have increased the number of suspected reports of pond apple outside the main infestation areas. Reports as far south as South East Queensland were received, resulting in the identification of two individual pond apple plants

A joint research project between the Department of Natural Resources and Water (Qld) and the Australian Maritime College was undertaken to determine the potential for pond apple seed to be spread by ocean currents. Research identified that the bulk of seed dispersal is in local areas, however, extreme events such as cyclones can cause long distance dispersal by ocean currents. The findings of this report will be included in future management and survey plans.

The greatest challenges for pond apple management are early detection, preventing seed spread by ocean currents and accessing plants in remote, hard to access or unsafe working environments.

## **INTRODUCTION**

Pond Apple (*Annona glabra*), a Weed of National Significance, is a major environmental weed threatening northern Australia. This small to medium size, semi-deciduous tree forms dense stands particularly in swamp areas. It invades fresh, brackish and salt water areas and its thickets are capable of replacing whole ecosystems. Disturbed flood-prone ecosystems are most at risk from pond apple invasion, particularly mangroves, melaleuca woodlands, riparian areas, drainage lines, coastal dunes and islands. Unlike many weeds, pond apple has an alarming ability to invade relatively undisturbed areas. Pond apple is also a pioneering plant and will opportunistically invade areas after disturbances such as cyclones and floods.

There is about 2000 hectares of pond apple in Australia, mainly in the Wet Tropics area of Queensland. Isolated infestations are scattered along Cape York Peninsula and in Torres Strait. Individual plants have been confirmed as far south as Brisbane, Queensland and in Darwin, Northern Territory.

In 2001 a National Pond Apple Strategic Plan was completed. The plan consists of four goals:

1. Alert the community to the impact and seriousness of pond apple
2. Contain the spread
3. Infestations of pond apple are systematically controlled
4. Coordinate management

National coordination of pond apple commenced in September 2003 on a part time basis (a full time position shared between pond apple and hymenachne). The National Pond Apple Management Group was established in 2005 to oversee implementation of the strategy. The management group includes key stakeholders and state agencies with representatives from New South Wales (correspondent), Queensland, Northern Territory and Western Australia (correspondent). Queensland has taken the role of lead state, with Biosecurity Queensland, Department of Primary Industries and Fisheries hosting a National Pond Apple Coordinator to support the management group and assist with implementation of the strategy (note, the responsibilities for invasive weeds were transferred from the Department of Natural Resources and Water on 1 March 2007).

Since the inclusion of pond apple as a Weed of National Significance there has been \$1.7 million committed to its management by the Australian Government with a matching or better contribution from the Queensland Government and local governments. Land owner contributions have been additional to this funding.

Research by the Department of Primary Industries and Fisheries (Qld) has documented a range of effective control techniques and management strategies for pond apple. If applied correctly, chemical control of pond apple will result in almost 100% kill.

In 2004, the Wet Tropics Management Authority in conjunction with the Environmental Protection Agency (Qld) and funded by the Australian Governments Natural Heritage Trust produced a comprehensive report including maps of pond apple in the Wet Tropics region. This report combined with effective control techniques has provided the basis for the current coordinated management program in the Wet Tropics.

This report outlines key achievements made by national coordination of pond apple management in 2006/07 relevant to the goals of the national strategy.

## GOALS AND ACHIEVEMENTS

### **GOAL 1 Alert the community to the impact and seriousness of pond apple**

Australian Government funding with support from the Department of Primary Industries and Fisheries (Qld) and the National Pond Apple Management Group accelerated outcomes of this goal.

#### *Management manual and workshops*

Key achievements were the production of a National Pond Apple Management Manual and launch of the manual by Mayor of Johnstone Shire, Neil Clarke. In support of the manual, a control demonstration workshop was developed and two pilot workshops were run. This manual provides land managers with a comprehensive guide to managing pond apple and includes a diverse range of case studies to help readers relate to different situations. The workshops, run in partnership with the relevant local government, are intended to equip land managers with hands-on experience, knowledge, skills, provide a forum for questions and demonstrate easy ways to control pond apple. It also creates important access and contact points for land managers with their local government weed officers and is intended to encourage local ownership of the problem. The workshops will also allow land managers to share their experiences with neighbours and peers both present and absent from the workshop.

#### *Extension and communication*

A National Pond Apple Extension and Communication plan was developed and implementation has commenced with product development to support the plan. The plan contains background objectives, key messages, a comprehensive action plan targeting all key stakeholder groups, an extensive stakeholder list, monitoring and evaluation mechanisms.

An identification card, awareness flyer, sticker, magnet and tailored information packs were produced (see Appendix 1). Information packs containing samples of products and product ordering procedures, a compact-disc with support materials such as photographs and media releases for general use were distributed to Torres Strait rangers at an AQIS training workshop.

All local government areas known to have pond apple have extension activities as part of their annual pest management plan activities. Actions in 2006/07 included one-on-one interaction with landholders, field tours for school groups and displays as part of Weedbuster week, media releases and at local events.

Success in gaining funds from Defeating the Weed Menace has been promoted by Terrain (formerly FNQ NRM – a regional body) with media releases and interviews supported by the National Coordinator including a 15 minute live radio interview with ABC Far North Queensland on pond apple, its impacts and management.

#### *Targeting Indigenous communities*

Information packs were compiled and distributed to Torres Strait rangers including a poster for Traditional Owners. Presentations were made at the Cape York Peninsula Pest Management Group which includes members of all Cape communities. Control manuals were also distributed to this group. Aboriginal communities of Yarrabah and Hope Vale have actively joined the on-ground control project funded by Defeating the Weed Menace, Blueprint for the Bush and local governments. Neighbouring local governments and the regional pest management officer (employed by FNQROC and

funded under Terrain) has provided additional support for these communities. Torres Shire has also been involved with support from Cook Shire.

#### *Increased awareness and recognition*

Awareness of pond apple has increased because of the WoNS program. An example of a positive outcome of the program was the discovery and correct recognition of a single plant in Mackay, Queensland an area removed from the main pond apple infestations.

A suspected pond apple plant was also reported by a local government in South East Queensland, where previously there was limited knowledge of pond apple. The plant was not pond apple but a related species that is not declared nor considered invasive.

A pond apple plant in South East Queensland was also identified by an off-duty Department of Primary Industries and Fisheries (Qld) staff member at a local tourist attraction. Action has been taken by the department to ensure appropriate removal of the plant. Surveying of the area has also taken place with no further plants found.

Raising community awareness of pond apple is ongoing and set to increase with the planned distribution of products for promotion in targeted areas and the further implementation of the National Extension and Communication Plan.

#### *Variances to the national strategy*

An objective of the national strategy that has not been progressed is the nomination of pond apple as a key threatening process under Australian Government legislation. The national management group has placed this action on hold pending the outcome and experiences from the Gamba grass submission as a key threatening process. It should also be noted that pond apple is now declared a noxious weed across northern Australia.

## **GOAL 2     Contain the spread**

Containment of spread remains a serious challenge for the national management of pond apple. The main spread mechanism for pond apple is from seed or fruit floating in water being spread within catchments but also long distance spread by ocean currents. Some local spread does occur by animals including cassowaries (up to 1.2 km) and feral pigs (up to 10 km).

### *Cultivation and trade*

Spread by the horticultural industry seems to be nil with pond apple no longer used as root stock in the production of custard apple (Clarkson J 2005 pers. comm., 22 March). There is evidence of long distance spread occurring by humans unaware that pond apple is not native and collecting seed from the Wet Tropics and growing plants for ornamental purposes. This seems to be rare with only two cases recorded but creates potential for long distance spread. Once identified the owners have been cooperative and controlled the plants.

Historic planting sites of pond apple as either custard apple root stock or exotic fruit trees continue to be identified as result of increased awareness of pond apple amongst weed professionals. Landholders have generally been cooperative in ensuring removal of such plants.

### *Survey and mapping*

A key aspect of containing spread is knowing the location of all pond apple plants. Survey and mapping has expanded in areas where on-ground control is occurring as part of the Australian Government's Defeating the Weed Menace program. In 2006/07 23,173 ha across 15 catchments were surveyed as part of this program.

Caboolture Shire Council in Qld has also been actively surveying the general area where a past specimen was recorded by the herbarium record. To date no pond apple plants have been found.

A single map of areas of pond apple in the wet tropics area has been collated (see Appendix 2). This map was developed in 2006, using data from the previous year and will be updated once 2006/07 survey data is collated.

Funding has been provided by the Queensland Government as part of the Blueprint for the Bush: Pest Offensive initiative for the survey of the east coast of Cape York Peninsula. This is a highly strategic area with few pond apple infestations believed to be present. The survey is scheduled for 2007/08.

### *Dispersal mechanisms*

Research into ocean dispersal of pond apple fruit and seeds was conducted by the Marine Modelling Unit, Australian Maritime College in conjunction with the Department of Primary Industries and Fisheries (Qld) and funded through the Australian Governments National Heritage Trust 2 (NHT2) program. The final report is yet to be completed but preliminary results have identified that most pond apple seed entering the ocean reached land close to its release site within three months. In extreme events such as tropical cyclones, seed can potentially travel from the Innisfail region, which has dense infestations of pond apple, over 1300 km to the Torres Strait. Seed is able to remain floating for up to 17 months in either fresh or salt water. Approximately 30% of these seeds are able to germinate once removed from water and placed on soil.

Identification and reporting networks are working well, partly as a result of increased regional pest management in Queensland and from raised awareness through the CRC for Australian Weed Management's Weed Spotters network. An example is the process followed early this year when a pond apple plant was suspected at Mackay, Queensland. The networks in place resulted in formal identification by the state herbarium and the relevant government agencies and NRM organisations were advised, with action taken to ensure the plant was removed and surrounding areas were surveyed for spread. No other plants were located.

*Questions which remain?*

How far and wide can pond apple naturalise in Australia? There are no records of pond apple naturalising south of Townsville, North Queensland. Although individual plants have been recorded in gardens or orchards as far south as northern New South Wales, there has been no evidence of their natural spread or establishment in these areas.

### **GOAL 3     Infestations of pond apple are systematically controlled**

Strategic control of pond apple is a critical part of its overall management. In 2006/07 on ground control of pond apple occurred over 10 local areas as part of the Australian Government's Defeating the Weed Menace program as well as the Queensland Government's Blueprint for the Bush: Pest Offensive funding and with support from the local governments involved and other stakeholders, including Terrain the regional NRM group. These programs controlled 237 ha which is about 12% of the known pond apple in Australia. Control programs are working from upstream to downstream areas to reduce the risk of reinfestation. These funding programs will see large-scale control work on pond apple continue until June 2009 with an estimated 25% of Australia's pond apple targeted for complete removal.

Control efforts in 2006 were hindered in the Wet Tropics by prolonged rain throughout winter, which is usually a dry period. Pest management staff across the worst pond apple areas including Cardwell Shire, Johnstone Shire and Cairns City Council were involved in the Tropical Cyclone Larry clean-up effort for most of 2006, impacting on their scheduled pest work.

#### *Outlying infestations*

Queensland Parks and Wildlife Service have controlled all 300 plants found at Chilli Beach, near Lockhart River and surveyed the surrounding area.

An unconfirmed record of pond apple in the north eastern Northern Territory has been reported. The Northern Territory Department of Natural Resources, Environment & the Arts is investigating further.

During 2006/07 two plants were found on Prince of Wales Island. Both plants should have been controlled by the land managers, however, a follow-up visit will be required to ensure this has occurred.

Infestations remain on Horn Island, Thursday Island and in Torres Shire. Pest management planning is incorporating long-term control strategies for these sites, however, community capacity, stability and workforce issues continue to be the greatest challenges.

The southern most infestation in Australia, near Ingham is subject to an eradication campaign. Wider surveying in 2006/07 revealed more pond apple plants that have subsequently been controlled, with the exception of a small area that remains inaccessible.

Individual plants found at Mackay and Nambour have been controlled.

Local governments are maintaining focus and momentum on pond apple work. The greatest challenge for pond apple control is accessing remote sites for survey and control work.

#### *Native replacement options and predation*

The CRC for Australian Weed Management has identified native replacement options for pond apple. Practical information has been collated into factsheet for use by the general public and land managers.

Observations and investigation into the predation of pond apple plants and seeds in the Wet Tropics (by *Coccotrypes carpophagus* (Hornung)) are continuing.

#### **GOAL 4      Coordinate management**

The National Pond Apple Management Group continues to provide direction, guidance, monitoring and review of the implementation of the National Pond Apple Strategy. In 2006 the group identified delimitation survey and extension as key aspects of the strategy that required progress. This has been addressed with a planned survey for the entire east coast of Cape York Peninsula, a highly strategic area. The development and implementation of the National Extension and Communication plan is fulfilling the extension requirements of the strategy.

##### *On-ground control and extension*

The national coordinator provided assistance with three funding applications for on-ground and survey work on pond apple. Two of the applications were successfully funded. Terrain (formerly FNQ NRM) is providing overarching coordination by developing and submitting funding applications and managing both the Defeating the Weed Menace and the Blueprint for the Bush: Pest Offensive funding. With the support of the FNQ ROC (Far North Queensland Regional Organisation of Councils) regular meetings (twice a year) of stakeholders are held to discuss progress of the program, challenges and future direction. Further discussion occurs at regional pest management meetings that take place quarterly.

Local governments have also developed 12 catchment unit plans to compliment the on-ground control work by assisting with land manager ownership and understanding of the problem, prioritise work within catchments and provide a framework for long-term management.

## APPENDIX 1

Pond apple products developed in 2006/07.





Financial reporting table  
Detailed expenses for 2006/2007 funding

		<b>Planned budget</b>		<b>Actual Expenditure</b>	
<b>Employees and Positions Held</b>		<b>Proponent Funds</b> (without GST)	<b>Australian Government Funds Sought</b> (without GST)	<b>Recipient's Contributions Expended</b> (without GST)	<b>Australian Government Funds Expended</b> (without GST)
Coordinator (AO6) 1.0 FTE including on-costs x 12 mths			<b>44,000</b>		<b>48,552</b>
Manager and land protection staff		<b>25,000</b>		<b>26,928</b>	
National management groups member's time (including meeting attendance)		<b>22,500</b>		<b>23,100</b>	
<b>A</b>	<b>Total employment costs</b>	<b>45,500</b>	<b>44,000</b>	<b>50,028</b>	<b>48,552</b>
<b>Operating Cost Items</b>		<b>Proponent Funds</b> (without GST)	<b>Australian government Funds Sought</b> (without GST)	<b>Recipient's Contributions Expended</b> (without GST)	<b>Australian Government Funds Expended</b> (without GST)
Vehicle (0.5 use of vehicle including fuel & insurance)			<b>4,200</b>		<b>4,140</b>
Travel (coordinator) <sup>1</sup>			<b>6,500</b>		<b>3,250</b>
National Pond Apple Management Group – 2 meetings/yr expenses (venue & equipment hire, catering, 2 teleconferences/yr costs)			<b>4,000</b>		<b>91</b>
National Pond Apple Management Group – 3 community reps' expenses (travel & accommodation)			<b>4,500</b>		
National Pond Apple Management Group travel and accommodation expenses – 9 departmental, agency and industry representatives		<b>13,500</b>		<b>1,000</b>	
Admin, office support accommodation, IT		<b>9,250</b>		<b>9,250</b>	
National community awareness activities, education and publications (individual brochures & posters for pond apple and hymenachne. Includes hymenachne forum)		<b>1,500</b>	<b>4,750</b>	<b>500</b>	<b>828</b>
<b>B</b>	<b>Total operating costs</b>	<b>24,250</b>	<b>23,950</b>	<b>11,750</b>	<b>8,309</b>
<b>C</b>	<b>Total costs</b>	<b>\$69,750</b>	<b>\$67,950</b>	<b>\$61,778</b>	<b>\$56,861</b>