

## 8. Awareness

Education is a very important, but an under-utilised, tool in weed management. Awareness of what weeds are and the problems they cause will help land managers and owners to understand why long term weed management is so important. Knowledge about the impacts of weeds on biodiversity is urgently needed.

Handbooks, field guides and field herbaria should be made available at all NLC regional offices and at its headquarters. NLC regional staff must be made aware of the importance of weed management.. When a regional officer first starts in a district he/she should be made familiar with the management problems of the area, including all weed infestations. NLC vehicles are likely vectors of weed dispersal. Vehicle inspection and hygiene should be a part of everyone's daily work schedule.

Aboriginal people are mobile groups with a great potential to spread weeds. Education and involvement are the most effective tools. One of the main ways Aboriginal people learn about land management issues is through contact with other Aboriginal land managers.

Useful educational tools would be to organise demonstration projects, workshops on Aboriginal land and visits to other landholders and communities to see first-hand what is being done, e.g. a bus trip, in the mid to late wet season, for Aboriginal traditional owners in areas at risk of invasion, to view major weed threats such as infestations in the Darwin/Adelaide River area would be useful. It would be advantageous to use members of other organisations (i.e. NTDPIF Weeds Branch, PWCNT and CSIRO) to give talks to the group to show that weeds are an issue that extends over wide areas.

These educational tools could possibly be broadened by visits to show major potential threats. This particularly applies to those areas that are under the threat from invasive weeds such as *Mimosa pigra* (mimosa), *Hymenachne amplexicaulis* (olive hymenachne), *Andropogon gayanus* (gamba grass) and *Cryptostegia grandiflora* (rubber vine).

### 8.1 Resources for weed management

Apart from having staff well trained in the identification of weeds there are other resources available for weed identification and management. Unfortunately there is very little material targeted directly at Aboriginal people. What has been produced is also inappropriate. Identified as a need in this study was the development of culturally appropriate information at all levels so Aboriginal people have access to scientific knowledge in order to make informed decisions about land use and management. There is an urgent need to carry this out.

It is recommended that the NLC liaise with interested parties such as ALEP, NTDPIF, TS-CRC and Weeds CRC etc. to form an information transfer group to examine the production of appropriate material about weed issues as well as the programs and policies of government departments. Many communities identified the need for culturally appropriate posters, videos, field identification guides and explanation sheets with the emphasis on pictures and graphics rather than words. Written and audio material should be in appropriate languages for different regions or in widely spoken languages such as Kriol.

*Recommendation 25:* NLC liaise with interested parties such as ALEP, ILMF, DPIF, TS-CRC and Weeds CRC etc to form an information transfer group to examine the production of appropriate material about weed issues as well as the programs and policies of government departments.

#### 8.1.1 Books

- *Weeds of Natural ecosystems. A field guide Environmental weeds of the Northern Territory*, Smith, N.M. (1995), NT Environment Centre. It includes photographs, identification notes, drawings, descriptions of impacts and control measures for over 60 environmental weed species found in the Northern Territory. The funds from sale of this book are under consideration for re-use to produce another volume. The NLC could approach the Northern Territory Environment Centre to collaborate on a volume that is targeted at an Aboriginal audience.

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- *Noxious Weeds of Australia* (1992). W.T. Parsons and E.G. Cuthbertson, Inkata Press. Includes identification notes, control prescriptions and photographs for Noxious Weeds only. Covers the whole of Australia.
- *Waterplants in Australia* (1988). G.R. Sainty and S.W.L. Jacobs, published by Sainty and Associates. Basically a pocket sized field guide to Australian water plants. Contains some weed species with identification notes pictures, diagrams.
- *Plants of the Northern Australian Rangelands*. (1994) T. Wheaton (ed.). N.T. Lands and Housing. It is primarily a field guide for rangeland plants or plants from the pastoral areas of the Northern Territory, however has some of the more common Noxious Weeds and some pasture species that are classed as weeds. Has identification notes and pictures.
- *Weeds. target List*. (1998) B.M. Waterhouse and A.A. Mitchell. Australian Quarantine Service. A binder of notes on the AQIS targeted list includes drawings and identification notes of targeted species. These are basically those species that are known invasive weeds in close by countries that at all cost are prevented from entry into Australia. A set of these notes should be stored at regional offices.
- *Flora of the Darwin Region* (1995) C.R. Dunlop et. al. A flora work which covers some weed species in the Darwin region only, however is generally applicable over a wider area such as the humid zone of the Northern Territory. Contains detailed botanical descriptions and drawings. Needs some botanical knowledge to use this book.
- *Flora of the Kimberly Region*. (1992) J. Wheeler (ed.) A flora work which covers some weed species in the Kimberly region only, however is generally applicable over a wider area such as the pastoral zone of the Northern Territory. Contains detailed botanical descriptions and drawings. Needs considerable botanical knowledge to use this book.
- *Crop weeds of Northern Australia* (1995) B.J. Wilson, D. Hauton & A.A Duff. NTDPIF Qld.
- *Western Weeds: a guide to the weeds of western Australia*. (1997) B.J. Keighery, R.D. Cousens, J. Dodd & S.G. Lloyd. Plant Protection Society of W.A. A comprehensive guide book for weeds of tropical and temperate Australia. Contains numerous descriptions and photographs.

### **8.1.2 Agnotes/Fact Sheets**

NTDPIF has produced a wide range of Agnotes dealing mainly with agricultural or noxious weeds, their impact and control. A set of copies should be kept at NLC main office and at each regional office.

Queensland's Department of Natural Resources also publish a very useful Pest Fact series that cover some of the noxious weeds found in the NT. They have comprehensive identification notes, impact notes, control techniques and excellent graphics. It is well worth obtaining the relevant copies and housing them alongside the NTDPIF notes mentioned above<sup>16</sup>.

### **8.1.3 Poster/Calendars**

A range of posters aimed at the general community are produced by the DPIF. An annual weeds calendar is also available. It is recommended that NLC regional offices and NLC main office need to be put on the mailing list for this calendar and other educational material so they can be received directly.

### **8.1.4 Major Herbaria**

Parks and Wildlife Commission of the NT house two of the major herbaria in the Territory. Darwin Herbarium (DNA) is located on the ground floor of the Gaymark Building, Mansfield Place at Palmerston. The Northern Territory Herbarium (NT) is located at the Desert Wildlife Park in Alice Springs. NTDPIF (Berrimah Farm Darwin) house a small herbarium of noxious weeds and assorted plants that may be useful in identification.

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<sup>16</sup> These Pest fact sheets are also available on the Internet at [http://www.dnr.qld.gov.au/fact\\_sheets/pestfacts.html](http://www.dnr.qld.gov.au/fact_sheets/pestfacts.html)

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### **8.1.5 Experts**

#### **Parks and Wildlife Commission:**

- NT Herbarium Staff (Palmerston ) Tel: (08) 8999 4516.
- Alice Springs Tel: (08) 89518 211.
- Weed Management officer, Colin Wilson Tel: (08) 8999 4698.

#### **Northern Territory Department Primary Industry & Fisheries:**

- Weeds' Branch Staff at Berrimah Farm, Darwin; Tel: (08) 8999 2270.

#### **District Weeds Officers:**

- Jabiru Tel: (08) 8979 2159
- Katherine Tel: (08) 8973 9755
- Tennant Creek Tel: (08) 8962 4488
- Victoria River Tel: (08) 89875 0307

#### **North Australian Quarantine Service:**

- Darwin Tel: (08) 89992104.

It is very important to collect plant specimens and present them to experts for identification. Knowing the correct name of the weed in concern is paramount to proper control. If plant specimens are properly collected they may also be extremely useful records of weed distribution and associated information that can be used by land managers for the control of weeds.

When collecting weed specimens attempt to get a whole plant, roots and all and, if possible, any flowers and fruit present. It is critical not to exacerbate the weed problem by dropping any seeds and spreading the weeds to non-infested areas. Ensure plants are sealed in large plastic bags before transport if seed drop is a possibility. Records should be made of as many useful details as possible for example, location, habitat, soil type, size, other vegetation and any distinctive features, such as odour, flower or fruit colour and bark characteristics.

If it is not possible to get a specimen to an expert within 24 hours, the plant should be preserved before it shrivels by pressing it between sheets of newspaper. The paper will need to be changed daily to prevent the specimen going mouldy (never preserve a plant in a plastic bag for more than 24 hours unless it is stored in a refrigerator). Plants can be frozen in plastic bags but basically turn to mush once thawed. Furthermore photographs of the living plant showing any flower, leaf, fruit or bark colourings may also be useful to help botanists identify the plant.

### **8.1.6 Electronic resources**

Websites relating to weeds are rapidly expanding in numbers. Most provide a wide range of information aimed at educating the public or providing detailed information for managers. Nearly all sites have links to other weed and associated sites and can provide useful starting points for chasing information. The following are some useful websites that cover aspects of weed management and identification that are freely available to anyone with Internet access. ENVIROWEEDS network is an excellent way of getting answers to questions relating to identification, control, management etc of weeds that only requires email access.

#### **Overseas sites**

- International and Herbicide resistant weeds: <http://www.helsinki.fi/kmus/botecon.html>
- International Directory of Botany: <http://www.Helsinki.fi/kmus/botmenu.html>
- Invaders Database System: <http://invader.dbs.umd.edu/>—A database system for the detection and tracking of invasive alien plants and weedy natives of north west United States. Provides names and distributional information.
- Non-indigenous Aquatic Species Information Resources: <http://nas.er.usg.gov>
- Noxious Weed Project of North America: <http://dogwood.itc.ncrs.usda.gov:90/weeds>—Provides information about weeds in North America including distribution, biology and control.
- Plants Database—USA: <http://plants.usda.gov/plants/qurymenu.html/>
- Poisonous Plants: <http://hammock.ifas.ufl.edu/txt/fairs/wg/39633.html/>
- Web Page Index USA: <http://ext.agn.uiuc.edu/wssa/index.html/>

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- TROPICOS-Missouri Botanic Gardens: <http://mobot.mobot.org/Pick/SEARCH/pick.html/>
- Index to Worldwide Databases: <http://ifs.plants.ox.ac.uk/wwd/bacon5.html>
- Invasive Plants of Canada: <http://www.rbg.ca/cbcn/en/library/invade>

### **Australian sites**

- Botanical Gardens Lists of Plants: <http://155.187.10.12/chabg/cenus/cenus.html/>
- Enviroweeds Listserver: ENVIROWEEDS@majordomo.nre.vic.gov.au
- Index of Weed Sites:  
<http://www.agric.wa.gov.au/progserv/plant/weeds/weeds/weedlist.html/>
- Naturalised Plants book (Hnatiuk (1990) searchable:  
<j://newplants/plants/weeds/CenusAVP.mdb/>
- Plant Finder database (<http://www.plantlife.co.au/>)
- National Weeds Strategy: <http://www.weeds.org.au>
- Tropical Savannas CRC—Savanna Information: <http://savanna.ntu.edu.au/information/information.html>
- Weeds Navigator (Sandy's links Page):

<http://www.agric.wa.gov.au/progserv/plants/weeds/links.html>

## **8.2 Recommendations**

*Recommendation 26:* NLC to increase education and involvement of Aboriginal traditional owners in weed issues.

*Recommendation 27:* NLC to organise field trips for Aboriginal traditional owners to view major weed threats of infestations in the Darwin area.

*Recommendation 28:* NLC to provide weed identification booklets, fact sheets posters and information as it becomes available to NLC regional offices .

*Recommendation 29:* Regional and NLC main office to be on the mailing list for calendars and any weed information as it becomes available.

*Recommendation 30:* NLC to consider some form of interpretive material e.g. poster or calendar about who to contact for weeds information. Consideration should be given to presenting information in different languages. NLC to liaise with interested parties on this e.g. NTDPIF, Weeds CRC, Tropical Savannas CRC, ALEP, ILMF, AQIS etc. on this.