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1. INTRODUCTION

The 'Adopt a Bushland Program' is an innovative environmental education program. It provides material for Primary School students, Years 3 to 7, educating them on the value of local bushland. The program is a great opportunity for the City to develop important partnerships with local schools in the environmental education of students.

A milestone reward program for students, teachers and schools will recognise their efforts in adopting a bushland within the City of Wanneroo. There are eight topics, covering bushland management which include:

- 1. Setting The Scene
- 2. Why Do We Need Bushland in Perth?
- 3. Plant Communities
- 4. Habitats
- 5. Flower Design
- 6. Bushland Weeds
- 7. Bushland Critters
- 8. Putting Things Right

The Adopt-a-Bushland program is in accordance with the City's Strategic Plan. The program supports the following objectives of the City of Wanneroo's Strategic Plan for 2006-2021:

Outcome 1: Environmental

Objective 1.1 Improve conservation of local biodiversity in designated areas.

Strategy 1.1.3 Support and build capacity of volunteers to undertake bushcare and other biodiversity conservation initiatives coordinated by the City.

Outcome 2: Social

Objective Improve the capacity of local communities to support each other.

Strategy 2.3.2 Identify opportunities to promote and support youth in the community in a positive way.

Strategy 2.3.3 Assist and support local community groups so that they are able to establish and maintain their operations in the City.

Outcome 4 Governance

Objective 4.2 Improve Community Engagement.

Objective 4.6 Improve support for staff, Council and volunteers.

Strategy 4.6.1 Ensure staff, elected members and volunteers are provided with adequate training and resources to perform their duties.

Strategy 4.6.3 Ensure staff members and volunteers are recognised and rewarded for their contribution.



This program teaches students how to protect remnant areas of bushland in an urban setting. It outlines the issues facing these natural areas and how students can help change social behaviours and practices to protect bushlands for their future. Through adopting a bushland, a school community can develop a nurturing attitude towards the local bushland environment and develop skills of flora and fauna identification, critical thinking skills, problem solving techniques and enhanced social value. Education is the key to change, and the City working in partnership with school communities through this program will achieve a positive environmental change for the future.

2. PROGRAM AIMS

The overall Program Objectives are:

- 1. To educate students and the community about urban bushland values and management issues;
- 2. To involve local schools and community groups in the ongoing management of urban bushland reserves through a hands-on grass roots approach;
- 3. To establish partnerships between the City of Wanneroo, local schools, community groups and key stakeholder agencies involved in urban bushland management;
- 4. To achieve curriculum based learning outcomes for local schools by providing an innovative program structured to complement the Western Australian Curriculum Council's Curriculum Framework.

3. PROGRAM DETAILS

This program has been developed to involve schools in both classroom learning and outdoor hands-on experience while achieving curriculum based learning outcomes. The program is split into eight topics that are designed to be completed as a set, but can be completed individually. The programs components are as follows.

3.1. Topic 1 – Setting the Scene

The introduction 'setting the scene' outlines where the City of Wanneroo is, what suburbs make up the City and how the vegetation changes from the ocean to inland areas.

3.2. Topic 2 – Why Do We Need Bushland in Perth?

This topic describes in more detail the natural areas found in the City and why they are important. Topic 2 introduces threats to local bushlands and how human interactions can have a detrimental impact.

3.3. Topic 3 – Plant Communities

Begins to help students relate to bushlands on a social level. It details how the bushland plant community is similar to a suburb, and that flora and fauna have found ways to coexist and cooperate to survive.

3.4. Topic 4 – Habitats

This investigates more in-depth the bushland ecosystem and the intricate relationships between flora and fauna. The different layers of a bushland are examined to understand how each level has its own unique community.



3.5. Topic 5 – Flower Design

This describes how flowering plants (angiosperms) are so unique and what tricks they use to attract pollinators. The life cycle of an angiosperm, plus all the flower parts, is learnt along with exploring the special relationship between pollinator and flower.

3.6. Topic 6 – Bushland Weeds

This looks at the detrimental effects of weeds to our bushlands and how they can completely change an ecosystem. Five of the most invasive weeds are studied in depth and students will learn to identify them and how they can be managed without harming the ecosystem.

3.7. Topic 7 – Bushland Critters

This teaches students the range of native fauna found in bushlands and how to identify them. Students learn what the fauna eat, where they build their homes and what threatens them. Encouraging native fauna to come to your school and become part of everyday education is explored.

3.8. Topic 8 – Putting Things Right

The conclusion reinforces the key elements of the program for students in acting now for the future. Simple, everyday ways to help protect bushlands and its biodiversity are reviewed.

4. CURRICULUM LINKS

The City of Wanneroo has developed a program that teachers can integrate into their yearly curriculum. Adopt a Bushland addresses two main learning outcomes, 'Science' and 'Society and Environment', while still providing opportunities to adapt the activities and address other required learning areas such as Language and Maths.

The City of Wanneroo staff recognise that the teacher will select a range of outcomes depended upon their student's developmental stage and that teachers are in the best position to determine this.



5. MILESTONE ACHIEVEMENTS

The Milestone Rewards Program includes:

- Adoption Papers that will be signed by the City of Wanneroo and School Principal to show 1. commitment to completing the one-year program;
- An 'Adopt a Bushland' sign will be installed in the local bushland that the school has adopted 2. to notify the local community of their achievement. Either the local Ward Councillor or Mayor would be asked to attend;
- 3. Certificates for the completion of each topic will be available for download on the City's website for teachers to give to students.
- A Program Completion Certificate will be awarded to the classroom/ teacher and school at an 4. assembly by the Mayor, Ward Councillor or Conservation Team officer;
- 5. A National Event Competition (Including Clean Up Australia, Weed Buster Week, National Tree Day). Schools are only required to participate in one national event as part of the program, however they can choose to take part in all the ones outlined in the program overview. Classrooms and schools can compete with each other to collect the most number of bags of rubbish or weeds. The prize will be a visit from a local environmental presenter and a City of Wanneroo Worm Farm with a \$50 voucher for worms;
- On going rewards for the teacher to manage in the classroom. Rewards include non-toxic 6. stamps, pens, bending pencils, hand lens, 5 cardboard clipboards per classroom
- 7. Bushland Guru Award. Rewards will be provided to one student from each year group across all partner schools (5 awards per year). Teachers will nominate one student per class and the City will select the winner. Rewards will include either of the following:
 - Family pass to Perth Zoo a.
 - Family pass to SciTech b.
 - Family pass to Armadale Reptile Centre C.
 - d. Family pass to Wanneroo Botanical Golf
 - Family pass to The MAZE e.
- 8. Reward for the participating teachers and teacher of the year. This will include a certificate of participation to all teachers. The teacher of the year will be awarded with a gift to the value of \$100 containing City of Wanneroo local produce (wine, chocolates, olives etc).

Schools that do not want to officially adopt a bushland and complete the entire program will only be entitled to print off certificates for each topic and will not benefit from the entire milestone rewards program.



6. SUPPORT FROM THE CITY

The City of Wanneroo will provide:

- 1. Technical advice assistance in planning the Adopt a Bushland program including linking schools with close proximity bushland; one teacher information evening plus on-going support to plan the program;
- 2. Physical support assistance in the implementation of the Adopt a Bushland program especially on-ground activities linked with National Events;
- 3. In-kind support including the provision of consumables for clean-up / weeding days, litter removal services; and
- 4. Milestone Rewards adoption papers, reward certificates, signage to reflect the school's involvement in managing adopted reserve.

Schools are encouraged to use this program as an opportunity to teach students research skills and encourage them to explore in detail a bushland ecosystem. Reference material is listed in each topic and a list of resources is also provided for schools in the following pages.

6.1. Liability and Responsibility

A copy of the schools Certificate of Currency with the Department of Education and Training will need to be supplied to the City of Wanneroo. To obtain a copy of this, schools are required to contact the West Coast Education District Office on 9406 7300. Private schools will need to provide evidence of their insurance before partaking in any of the outdoor programs. A copy will need to be faxed or posted to the:

Conservation Maintenance Officer CITY OF WANNEROO Locked Bag 1, Wanneroo WA 6946 Fax: (08) 9405 5298

A registration sheet can be found at the end of this document and before any school enters a bushland, it is essential that the school fills out this sheet and stamps it with their school stamp. All attending students, teachers and volunteer names must be listed on the sheet and the completed sheet sent via fax or post to the Conservation Maintenance Officer at the City of Wanneroo.

Before entering the bushland the City of Wanneroo is to be advised where the excursion will take place, how long students will be in the bushland and approximately how many students will be attending. This can be done by phoning the Conservation Maintenance Officer on 9405 5000.



7. RESOURCES

The following is a list of resources that will assist students in learning further about local bushland environments.

Beard, JS (1990) Plant Life of Western Australia. Kangaroo Press, Kenhurst NSW.

Blair, P, Swain, T, & Annison, D (2003) *Extraordinary Plants*. University of Western Australia, Perth WA.

Burbidge, AA (2004) *Threatened animals of Western Australia*. Department of Conservation and Land Management, WA, Perth.

City of Wanneroo (2003) *Birds and Reserves of the City of Wanneroo*. City of Wanneroo and Birds Australia Western Australia Inc., Perth WA.

Clark, I & Lee, H (1987) Name that Flower. Melbourne University Press, Melbourne Vic.

Government of Western Australia (2002) *Bush Forever Volume 2.* Department of Environmental Protection, Perth WA.

Garnet, ST & Crowley, GM (2000) *The action plan for Australian birds 2000*. Environment Australia, Canberra.

Greening Australia (1996) *Bush Plants for Perth Gardens*. National Trust of Australia, WA.

Greening Australia (1999) *Bushland Investigators*. Greening Australia (WA) and the Ministry for Planning, WA.

Heffernan, DA (1995) *The Australian Biology Dictionary*. Longman Australia Pty Ltd, Melbourne Australia.

Hoffman, N & Brown, A (1998) Orchids of South-West Australia. University of Western Australia Press, WA.

Ireland, K (2000) *Our Bushland Classroom*. Bayswater Integrated Catchment Management and Noranda Primary School, WA.

Keighery, B & Huston, J (1994) Our Wild Plants. Greening Australia, Perth WA.

Knox, B, Ladgies, P & Evans, B (1994) *Biology*. McGraw-Hill Book Company Australia Pty Ltd, NSW.

Knox, B, Ladgies, P, Evans, B & Saint, R (2001) *Biology*. McGraw-Hill Company Australia Pty Ltd, NSW.

Powell, R (1990) *Leaf and Branch. Small Trees and Shrubs of Perth.* Department of Conservation and Land Management, WA.

Quinns Rocks Environmental Group Inc (2002) *Discover Your Local Bushland.* Perth WA.



Rippery, E & Rowland, B (1995) *Plants of the Perth Coast and Islands*. University of Western Australia, WA.

River Science Issue 19 (2001) Aquatic Plants in the Canning River. Swan River Trust, WA.

Sainty, GR & Jacobs, SWL (1994) Water Plants in Australia. Sainty and Associates, Sydney.

Wake, D & Reeves, N (1995) *Discover Your Local Bushland: finding out about and caring for Perth's urban bushland.* Quinns Rocks Environmental Group Inc, Quinns Rocks WA.

Water Note 1 (May 2000) Wetlands and Weeds. Water and Rivers Commission, Perth WA.

Weednote 1/99 (1999) Aquatic Weeds. Department of Agriculture and Food, Perth WA.

Australian Weed Committee, Weeds Australia – An Australian Weeds Committee National Initiative. www.weeds.org.au

Birds Australia (2007). www.birdsaustralia.com.au

Council of Australasian Weed Societies Inc. (2007). home.vicnet.net.au/~weedss/

Department of Agriculture, Fisheries and Forestry (2007) www.daff.gov.au

Department of Agriculture and Food (2007) www.agric.wa.gov.au

Department of Environment and Conservation (2007) NatureBase. www.naturebase.net/

Department of Environment and Conservation – Western Australian Herbarium (2007) FloraBase. www.florabase.calm.wa.gov.au/

Department of Environment and Water Resources (2007). www.environment.gov.au

Environmental Weeds Action Network, Weeds or Wildflowers. http://members.iinet.net.au/~ewan/

Waratah Software, images of Australian flora and fauna. www.waratahsoftware.com.au

Water Corporation (2006). www.watercorporation.com.au



8. PROGRAMS

Anyone can participate in the following programs, as an individual or group. These programs can be linked to complement the Adopt a Bushland program or participated in as extra school activities.

Aboriginal Heritage Activities – Department of Environment and Conservation www.naturebase.net

Air Watch Australia – Australian Government www.airwatch.gov.au/default.pasp

Alcoa Frog Watch – WA Museum www.museum.wa.gov.au/frogwatch/

Alge Busters – Phosporus Action Group www.sercul.org.au/pag.html

Birds in Backyards – Australian Museum http://www.birdsinbackyards.net

Carnaby's Black Cockatoo Recovery Project – Birds Australia http://www.hotgecko.com/carnabys/Carnabys.htm

Clean up Australia – Clean up www.cleanup.org.au/au

Fire – A Force of Life – Department of Environment and Conservation http://www.naturebase.net/content/view/2265/1090/1/3/

Grow us a Home www.growusahome.org.au/

Million Trees Program – Men of the Trees Inc www.menofthetrees.com.au

Ribbons of Blue – Waterwatch WA www.wrc.wa.gov.au/ribbons/

School Watch - Fire and Emergency Services Authority of Western Australia www.fesa.wa.gov.au

Spineless Wonders – run by David Knowles www.spinelesswonders.com.au

Waste Wise WA – Zero Waste www.zerowastewa.com.au

Water Wise School Program - Techshelp http://waterwise.org.au/Mambo/index.php

Weedbusters (2007) Grow me instead. www.weedbusterweek.info.au



9. DEFINITIONS

Angiosperm: a flowering plant

Anther: found in flowering plants. Makes up part of the stamen (see definition below) and contains the developing male reproductive cells.

Arthropod: an invertebrate (see definition below) that has a segmented body and jointed limbs.

Biological Decomposition: the break down of plant material by fungi, bacteria and invertebrates.

Community: the population of plants, animals and microbes found living together in a given area and often interacting with one another.

Corolla: the petals of a flower (see petal below).

Chemical Decomposition: the break down of plant material by water, oxygen, carbon dioxide and organic acids.

Carpel: the female reproductive part of a flowering plant.

Decomposer: an organism (see definition below) that consumes and breaks down the dead plant material, releasing it as inorganic nutrients.

Ecosystem: a community of plants an animals interacting with the non-living environment (rocks, soil, etc...).

Filament: part of a flowering plant. The stalk which supports the anther (see definition above).

Folivore: an organism that feeds only on leaves.

Food web: the feeding relationships and hierarchy between organisms (see definition below) within an ecosystem (see definition above).

Germination: when a seed or spore starts to grow into a young plant.

Habitat: the environment where an organism (see definition below) lives.

Humus: the leaf litter layer of a bushland.

Invertebrate: an organism that does not have a spinal column.

Leaflets: a serries of small leaves, which span out from a central point.

Mycorrhizal: the relationship between fungi and plant roots which enhances the plants ability to uptake nutrients.

Omnivore: an organism which eats both plants and animals.

Organism: a living plant or animal that has the ability to carry out metabolic activities.



Ovule: found in flowering plants. Makes up part of the carpel (see definition above) and contains the developing female reproductive cells.

Petal: mutated leaves that are colourful and shaped to attract insects, animals or the wind.

Pollination: the process where the pollen of a flowering plant is transferred to the stigma (see definition below) for fertilisation.

Stamen: the male reproductive part of an flower, made up of the anther and filament (see definitions above).

Stigma: the section of a flowering plant that the pollen lands on.

Seed: a structure containing the necessary cells, surrounded by a protective external coating, from which a new plant develops.

Sepal: small leaves that surround the petals when the flower bud is developing.

(Knox et al., 2001 and Heffernan, 1995)



Bushland Excusion Registration sheet

Before taking your class on a visit into a bushland, please fill out the following information for the City of Wanneroo's records. This information will help us to monitor how much time is spent by schools in our natural areas and help us in gaining support to continue protecting the bushlands in your community.

School Name/Stamp:	
Teacher(s) Name(s):	
Class Grade:	Student Age Range:

Please post or fax this form, before entering the bushland, to the:

Conservation Maintenance Officer City of Wanneroo Building 2 - Ashby Operations Centre 1204 Wanneroo Road Ashby WA 6065 City of Wanneroo ADOPT A BUSHLAND TEACHER'S INFORMATION KIT

Fax: (08) 9405 5298