

Nature Glenelg Pty Ltd
[ACN: 153 577 907]

as Trustee for



ABN: 23 917 949 584

Annual Report: 2014-15 Financial Year



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ORGANISATIONAL PURPOSE

Nature Glenelg Trust is a mission-driven, not-for-profit organisation that has been established to operate as:

1. a community environmental NGO;
2. a source of professional ecological knowledge available for delivering project work that improves environmental management outcomes; and,
3. a recipient of charitable donations for supporting habitat restoration and other environmental work consistent with the priorities set out in our Deed of Trust.

This operating model enables the organisation to (1) seek and deliver grants for community environmental benefit, but also (2) provide ecological consulting services under two registered trading names, Aquasave – NGT (for aquatic ecology) and NGT Consulting (for general ecology). In furthering our organisational purpose by working with clients on important conservation management projects, our consulting services also provide a financial contribution to support the costs of running our not-for-profit organisation.

As Nature Glenelg Trust was admitted to the Register of Environmental Organisations in 2014, this model also seeks to diversify organisational funding streams and minimise the need to rely upon any precious future donated funds to support day-to-day operations and administration. In this way, we aim to give potential supporters the confidence that their donation to our Public Fund will achieve maximum impact in furthering the on-ground environmental objectives (such as wetland habitat restoration) of Nature Glenelg Trust.

Everything Nature Glenelg Trust does (including our ecological consulting services) must meet at least one of our organisational objectives, taken directly from our Deed of Trust, namely:

1. To protect and enhance the natural environment, with a particular emphasis on wetland conservation and restoration activities in the Focal Region^{*1}, supported by the Habitat Restoration Fund.
2. To generate and provide high quality scientific information that enhances management of the natural environment.
3. To support and undertake key conservation ecology research predominantly within, but not limited to, the Focal Region.
4. To promote public awareness of nature through education, and involving the community in the activities of the Trust.

^{*1}: Our focal region includes the NRM regions situated between Melbourne (Victoria) and Adelaide (South Australia).

FOREWORD AND ACKNOWLEDGEMENTS

The fourth year of Nature Glenelg Trust (NGT) has seen the organisation consolidate its place as a key deliverer of regional, science focussed and community based conservation – as we strive to effectively ‘bridge the gap’ between environmental policy, scientific research and on-ground action.

Over the past 12 months, we have not only increased our emphasis on environmental education but have also managed to significantly up-scale our on-ground practical restoration works, by continuing to effectively work with government agencies, community groups, private landholders and our other supporters.

It is with great pride that we share several examples of these outcomes in this annual report, delivering results at a scale that may have seemed beyond reach for a small NGO such as ours only a short time ago.

Some key outcomes over the past 12 months include:

- Following on from earlier restoration trials, the delivery of permanent works to restore three significant wetlands on the upper Wannon River (Brady Swamp, Gooseneck Swamp and the Duck Pond), in the Southern Grampians region near Dunkeld across both public and private land.
- Continuation of the restoration trial that commenced last year at Long Swamp (Discovery Bay Coastal Park), with the installation of the third and final restoration trial structure; works that were completed with incredible community support.
- Completion of the most productive and successful year so far of growing a bio-diverse range of seedlings for regional revegetation projects in the NGT cross-border community nursery in Mt Gambier.
- Commencement of the delivery of a major, multi-year regional project (*Restoring the Under-represented Ecological Communities for the South East*) in the South East NRM Region, on behalf of Natural Resources South East.
- Commencement of processing tax-deductible public donations into the NGT Habitat Restoration Fund.
- Holding a highly successful, first annual staff workshop in Robe, to share and celebrate both staff development and organisational success.
- Further improving the overall financial position of Nature Glenelg Trust, the second successive year completed with a positive balance sheet.

As always, thanks to the people in this broad regional area we call home, for being fantastic partners in the work of NGT. It is clear that we are making a real difference.

Mark Bachmann

Director

Nature Glenelg Pty Ltd as Trustee for Nature Glenelg Trust

DIRECTOR'S REPORT

1. Summary of the year's activities

1.1 Project work overview

The 2014-15 financial year has been highly active for Nature Glenelg Trust, with a diverse range of 68 projects underway during the year and 23 of these projects completed before the 30th June 2015.

Type of Project Work	Number of Projects Active during 2014-15 Financial Year
Native flora, vegetation management or ecological monitoring	16
Native fish	26
Other fauna	6
Community engagement	3
Multi-faceted projects (several types combined)	2
Wetlands	15
TOTAL	68

1.2 Grant funded project work

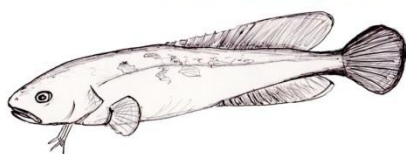
Nature Glenelg Trust was awarded grant funding to commence or continue the delivery of the 22 grant funded projects in the 2014-15 financial year. Four grant funded projects were acquitted during the financial year, with the remaining eighteen remaining active into the 2015-16 financial year.

1.3 Environmental consulting project work

Nature Glenelg Trust delivered a total of 43 contracted environmental consulting projects for a range of (mostly government) clients in the 2014-15 financial year. Nineteen (19) of these projects were completed and closed during the financial year, with the balance remaining active into the 2015-16 financial year.

As previously explained, irrespective of whether they are grant funded or professional contracted consulting projects (as delivered under our registered trading names: Aquasave NGT, or NGT Consulting – logos below), NGT only delivers projects that are consistent with our organisational objectives, making a positive contribution to regional environmental management. The breakdown of these projects by category is included in the overall summary table presented in section 1.1.

AQUASAVE - NatureGlenelgTrust



Ecology, Monitoring, Conservation

NGT Consulting 

1.4 Habitat Restoration Fund

During the 2014-15 financial year, NGT launched our first public appeal for donations, to enable us to undertake critical conservation genetics research into south-eastern Australian populations of the Brolga.

During the year, there were also a small number of other general donations to Nature Glenelg Trust.

NGT has developed a specific accounting and receipting procedure for our Public Fund, to immediately provide donors with the necessary information required to claim the relevant deduction amount on their personal tax return.

After a total of 17 donations during the financial year, amounting to \$9,750, the closing balance of the Habitat Restoration Fund at the end of the 2014-15 financial year was \$10,673.



The focus of our first public appeal for donations: conservation genetics of the Brolga

2. Achievements: Case studies from across the NGT focal region

2.1 The permanent restoration of three wetlands in the Brady Swamp complex, southern Grampians, Victoria

The Brady Swamp Wetland Complex comprises four floodplain wetlands of the upper Wannon River, near Dunkeld in south west Victoria. Artificial channels were constructed from the 1950s to drain these wetlands with the goal of increasing agricultural productivity. Subsequent land purchases by the Victorian Government in the 1980s led to a large portion of these wetlands becoming public land contiguous with the Grampians National Park. In addition, for the past couple of decades, the two remaining farmers who own the balance of the Brady Swamp have supported these important but compromised wetlands being permanently re-instated.

During 2013 and 2014, Nature Glenelg Trust (NGT) initiated trials to test the feasibility of restoring water levels of three of the four wetlands within this complex (see right), and confirmed that under current land tenure the artificial drains are a redundant feature that now risk the environmental values of these wetlands and the wider catchment. Undertaking works that restore increased depth and duration of inundation is crucial for improving site resilience; enabling the greatest diversity of wetland flora and fauna to persist at (or utilise) the site, addressing a key predicted threat (declining flows) associated with climate change.

RIGHT: Volunteer sandbagging crews at the outlets from Gooseneck Swamp (top, August 2013), Brady Swamp (middle, March 2014) and Walker Swamp (bottom, August 2014)

This DELWP funded (formerly Living Victoria Fund) project aimed to permanently re-instate the original earthen banks of three wetlands that were breached through artificial drainage. As part of this project we established surveyed gauge boards and water data loggers across the wetland complex, which when tied in with newly acquired derived digital elevation models of the catchment (inferred from LIDAR data), provide us with a new, highly accurate understanding of the hydrology of the system and tools for modelling this portion of the Upper Wannon River catchment under varying hydrological scenarios (i.e. flooding events).





Brady Swamp in November 2014 – with the trial restoration structure operational for the first time and maintaining wetland levels



Gooseneck Swamp in September 2014 – the second season of the restoration trial at this site

Earthworks were conducted by contractors in December (Gooseneck Swamp) and February-March (Brady Swamp). On site supervision of the earthworks was provided by Nature Glenelg Trust with the contractors successfully completing the jobs within the expected time frames and budgets. After 60 years of drainage and almost three decades of efforts to restore the hydrology of the system, the Gooseneck and Brady Swamp drains have been successfully decommissioned and the natural contours of the landscape restored. This simple task means that these systems will now retain surface water and soil moisture for much longer periods throughout the year, and provide major ecological benefits into the future.

A series of before and after images that show the completed works are below.



November 2014



April 2015

Brady Swamp drain – looking towards the swamp.



November 2014



April 2015

Brady Swamp drain – looking from the trial structure towards the swamp.



November 2014



April 2015

Brady Swamp drain – looking from the trial structure downstream.



November 2014



April 2015

Brady Swamp drain – looking downstream.



September 2014



April 2015

Duck Pond Swamp drain – looking upstream.



September 2014



April 2015

Duck Pond Swamp drain – looking upstream.



September 2014
Duck Pond Swamp drain – looking downstream towards the Wannon River.



April 2015



September 2014
Duck Pond Swamp drain – looking downstream towards the Wannon River.



April 2015



December 2014
Gooseneck Swamp drain – looking over the trial structure upstream towards Gooseneck Swamp.



February 2015



December 2014
Gooseneck Swamp drain – looking downstream towards Brady Swamp.



February 2015



December 2014
Gooseneck Swamp drain – looking upstream towards Gooseneck Swamp.



February 2015



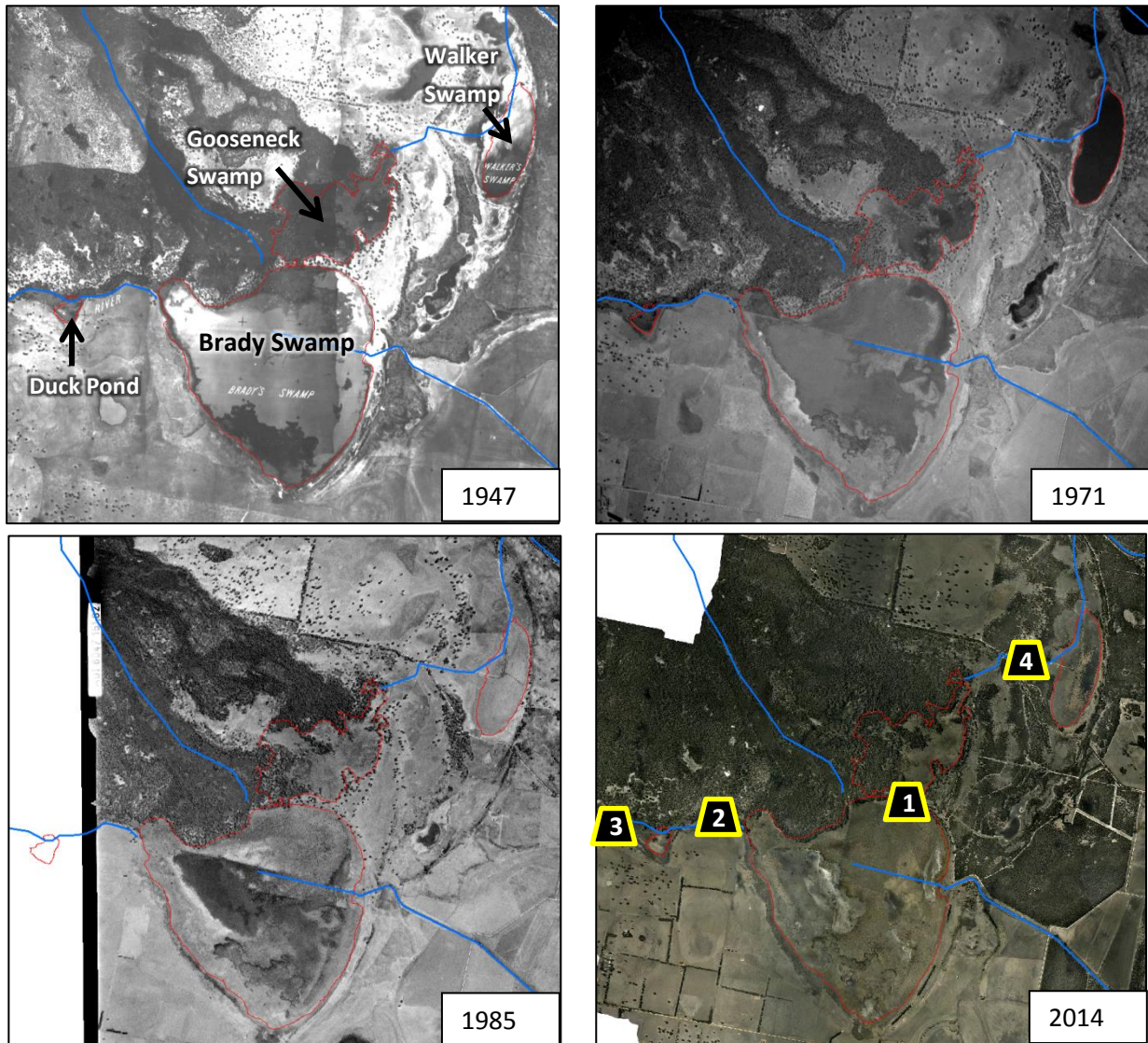
December 2014



February 2015

Gooseneck Swamp drain – looking upstream towards Gooseneck Swamp.

Biodiversity surveys of aquatic flora, fish, frog, macroinvertebrate, and bird communities conducted in 2014-2015 reveal highly abundant and speciose assemblages, including a number of rare and threatened species. Data from these surveys also indicate that the wetlands provide important connecting and nursery habitat for aquatic species groups. Temporal analysis of vegetation community extent, via historical aerial imagery, reveals changes in the extent of several ecological vegetation classes, and provides insights into likely system response with restored hydrology.



Time series of aerial imagery for the Brady Swamp complex showing area of inundation during 2014 (red polygons) and current watercourses and drains (blue lines), and the locations of permanent works to reinstate the earthen banks that drain 1. Gooseneck Swamp; 2. Brady Swamp; and 3. The Duck Pond; while 4. is the restoration trial structure location on the outlet drain from Walker Swamp.

Expected changes include greater areas of near-permanent inundation, increasing areas of aquatic hermland and receding fringing areas of swampy plains woodland. Collectively these findings highlight the importance of enhancing the hydrology of the system to enhance its environmental values. Being a key wetland system in south west of Victoria, a region where much of the wetland habitat has been lost or degraded, this newly restored system is expected to provide critical connecting habitat, refugia for wetland specialist species, and a range of environmental services to the local catchment and wider bio-region into the future.

2.2 Translocated Nationally Threatened Orchid populations

The 2014-2015 financial year saw the culmination of four years of planning, collecting and growing of terrestrial orchid species in the South East of South Australia, with the translocation of four nationally threatened species back into the wild. This translocation represents the largest translocation of terrestrial orchids in South Australia, focusing on the nationally endangered Metallic Sun-orchid (*Thelymitra epipactoides*) and Little Dip Spider-orchid (*Caladenia richardsiorum*), and the nationally vulnerable Elegant Spider-orchid (*Caladenia formosa*), and Swamp Greenhood (*Pterostylis tenuissima*). The project was undertaken as part of the Restoring the Under-represented Ecological Communities project, which is funded by the Australian Government's National Landcare Programme.



Metallic Sun-orchid



Little Dip Spider-orchid



Elegant Spider-orchid

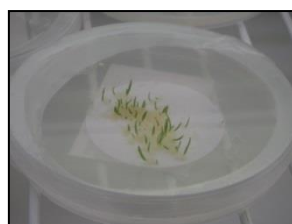


Swamp Greenhood

It was a significant achievement to see the orchids go back into their natural habitat, as the translocation process was first started back in 2012 when the orchids were hand-pollinated and seed collected by NGT, under a separate contract from NRSE. To ensure the seeds continued to grow on from tiny germinants they needed to be combined with their respective mycorrhizal fungus, which was collected and cultured from wild plants in 2012 by Dr Noushka Reiter in Victoria. The relationship between fungi and orchids is so specific and essential that without the fungi the tiny ground-pepper-like orchid seeds simply do not have the energy reserves to grow. The seed was given to Dr Reiter to propagate at the specialist orchid propagation facilities at Royal Botanic Gardens in Cranbourne, Victoria



Seed collected 2012



Orchid germinants



Orchid germinants



Greenhouse facilities

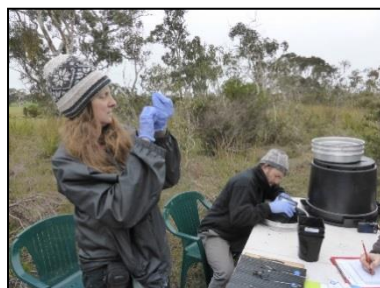
Threatened orchid propagation at the Victorian facilities in 2012/2013 (photo credits O. Sweeney)

Prior to the planting a concerted effort was made in 2013/2014 to select the most appropriate site for translocation. Key considerations included the vegetation community, proximity to known populations, tenure of the site, pollinator presence, micro-topography and micro-climate. Given the complex requirements of the terrestrial orchids, the new sites were required to mirror existing populations as closely as possible. For example, the Swamp Greenhood needed a weed free site, with total canopy cover and peat soils that stayed hydrated through-out the year, but did not flood.

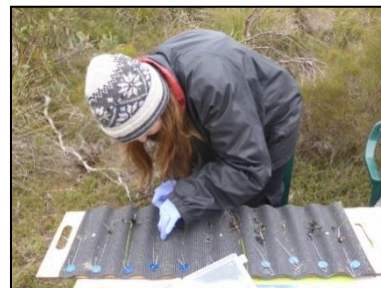
The translocation of the four orchid species was completed through twelve days of intricate and rewarding planting, which resulted in successfully establishing eight sites across the South East Region. A total of 26 volunteers, seven NGT staff and two Natural Resources South East (NRSE) staff spent over 430 hours extracting, measuring, planting, and fencing the nearly 900 purpose grown orchids from the Royal Botanic Gardens. It was a huge effort by all involved, as the weather was often inclement and some sites were difficult to work in. The translocation days required a team effort to undertake the various intricate tasks required, including setting up the base-camp gazebo to create shade the orchids during extraction and measuring. The orchids were carefully extracted from their pots, being particularly careful not to break any roots, runners or stems. The size of each tuber and leaf from each of the 900 plants were measured, before placing it on a purpose made tray alongside its own numbered tag.



Patently extracting orchids



Measuring of tubers

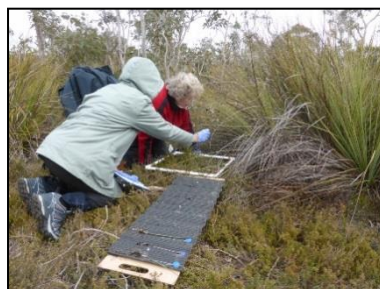


Measuring of leaves with tags

The orchid trays were then carried to the planting sites (often within 30m up to 300m away due to terrain/access). At each planting site a quadrat was ready, having been pegged out with a temporary 10cm grid to help with placing the orchid and tag in accurate positions. The quadrat was used so that over time we can easily relocate where we planted the orchids within each quadrat. Following planting the quadrat was caged to prevent herbivory, keeping the rabbits, wombats, wallabies and/or deer out. The type of caging used was dependant on the herbivores present at the site. Each quadrat was thoroughly watered in to ensure the best establishment conditions.



Planting within the locational grid



Planting



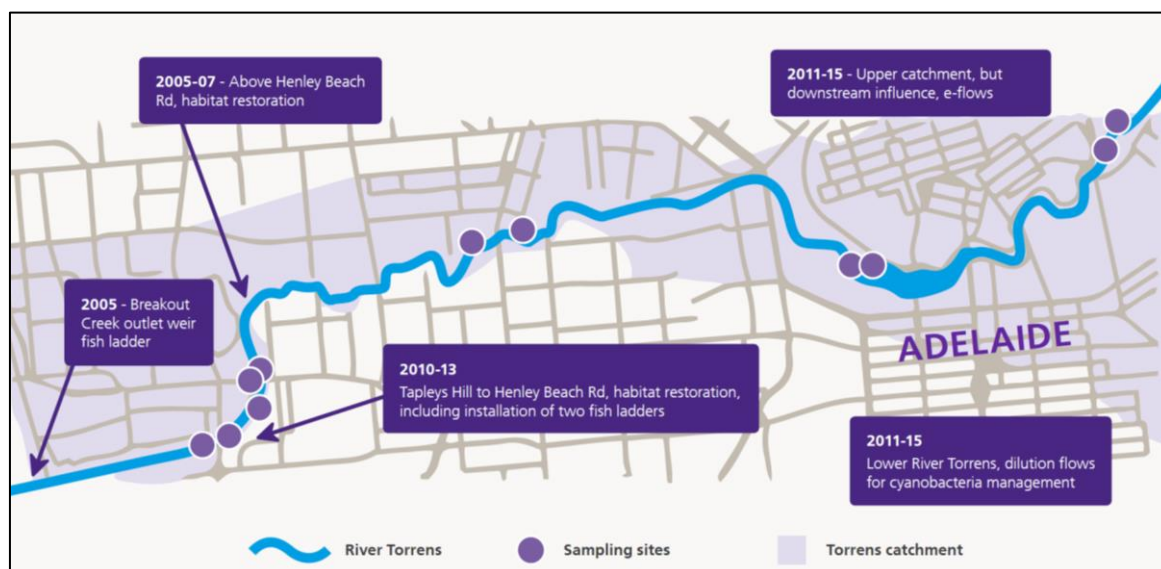
Securing caging multiple orchids

Over the 2015-16 growing season, rainfall will be closely monitored to ensure the orchids are receiving the monthly average rainfall and required moisture conditions. At the end of each fortnight the rainfall will be compared with the monthly average, if there is a deficit the orchids will be watered with the required amount. The first rounds of monitoring have shown a good result, with a proportion of the individuals flowering and being pollinated in their first season. We look forward to following the orchid populations over the coming years and working to address threats if they arise.

2.3 Restoring fish communities of the lower River Torrens, Adelaide, South Australia

The River Torrens catchment is a highly modified and regulated system flowing through the heart of Adelaide, South Australia. A long history of urban development since European settlement has dramatically impacted the catchment and resulted in reduced aquatic biodiversity. In particular, freshwater fish – forming a significant component of aquatic biodiversity in the region – have been severely impacted, with the loss of species, declines in range and abundance occurring. In fact, only eight of the 16 indigenous freshwater fish species now occur.

There is increasing recognition of the need to restore urban waterways, not only to improve ecological function and connectivity but to also enhance social and economic values. In the lower River Torrens (see map below) concerted restoration efforts have recently been implemented to address over a century of cumulative detrimental impacts associated with urbanisation and flow modification.



These efforts have included the installation of three fish ladders (to improve connectivity), enhancement of localised aquatic habitat, dilution flows through Torrens Lake to ameliorate the risk of cyanobacteria blooms as well as upstream environmental flows that have an influence on the lower River Torrens.

Fish monitoring

Freshwater fish are considered useful indicators of environmental change and monitoring patterns in the number and extent of different species provides valuable data to assess the effectiveness of restoration efforts. Fish communities across the lower River Torrens have been monitored by setting replicate fyke nets overnight (see left) and recording all individuals across the different species encountered. Environmental descriptors (habitat, water quality) are also noted to assess the prevailing conditions.

Fish monitoring has occurred along the lower River Torrens between the city and ocean annually over 2011–2013 with more recent sampling of 11 sites (green dots on map) by Aquasave-NGT occurring bi-annually (autumn and spring) over 2014 and 2015.

Status of fish communities

The monitoring of fish communities over recent years has recorded 13 fish species over the lower River Torrens including fish species endemic to the Torrens Catchment, Murray-Darling Basin species translocated and established from the Murray-Darling Basin and alien species. The fish community includes species with both specific (freshwater specialists) and broad habitat requirements (freshwater generalists), and estuarine species as well as those that require movement between ocean and freshwater to complete their life cycle (diadromous species).

The fish community of the study region has changed considerably over recent years, with differences in the numbers and composition. Most noticeably, very high numbers (>5000 individuals) of juveniles of the diadromous common galaxias found during the spring 2014 sampling and consolidation of the population was observed in autumn 2015. The other diadromous species, congolli, is gradually increasing in the numbers although is yet to expand its range to city weir. Freshwater generalists (flathead gudgeon, carp gudgeon, Murray rainbowfish) continue to represent the dominant functional group, with high abundances across broad distributions and the presence of new recruits, mature individuals and survivors. Freshwater specialists (mountain galaxias and freshwater catfish) and estuarine species (western bluespot goby) are occasionally observed whereas alien species regularly account for almost one third of the fish community.

Common name	Recent monitoring (2011 to 2014)					Present range (2014 to 2015)						
	Summer 2011	Summer 2012	Winter 2013	Autumn 2014	Spring 2014	Autumn 2015	Below Tapleys Hill Rd	Tapleys Hill Rd weir to stage 2 weir	Stage 2 weir to Henley Beach Rd weir	Henley Beach Rd weir to Holbrooks Rd weir	Holbrooks Rd weir to city weir	Torrens Lake (to second creek outlet weir)
Carp Gudgeon	5360	2347	336	2699	3890	3991						
Common Galaxias	32	756	1	24	6838	269						
Congolli	1	9	8	7	39	10						
Dwarf Flathead Gudgeon	0	0	0	0	5	1						
Flathead Gudgeon	7712	9157	370	695	1281	5729						
Freshwater Catfish	64	193	32	183	81	198						
Mountain Galaxias	0	0	0	0	2	0						
Murray Rainbowfish	2931	2410	11	371	433	3656						
Short-finned Eel	0	1	0	0	0	0						
Western Bluespot Goby	1	3	0	11	17	8						
Eastern Gambusia	1205	702	2	141	351	5436						
Common Carp	4	1710	0	4	5660	22						
Goldfish	5344	278	1	0	15	4						
Total	22,654	17,576	761	4,135	18,612	19,324						

The recent responses are summarised based endemic, translocated and alien (and other species) groupings below.

Torrens endemics

Six endemic species occur in the lower River Torrens. The freshwater generalist flathead gudgeon (left) is dominant whereas western bluespot goby is patchily distributed downstream of Tapleys Hill as well as downstream Second Creek weir. The other two endemics, dwarf flathead gudgeon and mountain galaxias (right), were first observed across the lower River Torrens in spring 2014, but with the latter abundant in upper reaches of the catchment. Endemic diadromous species have steadily increased in numbers reflecting improved fish passage.



Murray-Darling translocations

Three fish species have been translocated across from the Murray-Darling Basin and are now established throughout the lower River Torrens. The species are freshwater catfish (left), Murray rainbowfish (right) and carp gudgeon. Monitoring has revealed robust population structures across all three species indicating regular recruitment as well as the persistence of older fish. Whilst freshwater catfish are translocated, the species is fully protected in South Australia so the lower River Torrens population is of conservation value.



Alien and other species

Three alien species – goldfish, common carp and eastern gambusia – are well established across the lower River Torrens. These species occur regularly in high numbers and control of them must be considered for further restoration of the lower River Torrens. Additionally, shortfinned eel was first recorded in the lower River Torrens 2007 but this rare species has only been observed once (2012) in recent years. Whilst the endemism of this species is unclear, its presence is important. A total of 18 freshwater species, along with marine vagrants, have been recorded downstream of the Breakout Creek outlet weir, five of which have not been observed in the lower River Torrens.

Other aquatic animals

The lower River Torrens is home to other aquatic animals, including (left to right) common yabbies, long necked turtles and frog species.





Diadromous species re-colonised the lower River Torrens following installation of a fish ladder on the Breakout Creek outlet weir – in the case of common galaxias the species was absent for almost 80 years. The outcomes of recent monitoring highlight that diadromous species

are expanding their range and numbers across the lower River Torrens - juvenile common galaxias were recorded moving upstream en masse in spring 2014 and consolidated their range in autumn 2015. Assessment of the two fish ladders, installed between Tapleys Hill Road and Henley Beach Road, show they are largely allowing the passage of fish species. Whilst greater improvement in populations of diadromous species are anticipated, number of barriers to fish passage remain across the lower River Torrens and the ability of fish to navigate them remains unclear.

Influence of dilution flows



The summer dilution flows, aimed at controlling cyanobacteria bloom formation in the Torrens Lake, are unseasonal (i.e. peak flows naturally occur over late winter/early spring not summer months) and must be robustly assessed before they can form part of the long-term

management of cyanobacteria in the Torrens Lake. The frequency of fish monitoring makes it difficult to explicitly separate the influence of specific dilution flows from other, potentially confounding, factors such as atypical natural flows (which have occurred over the past two summers), improved habitat connectivity and abrupt disturbance events. With these particular constraints in mind, the outcomes of the recent monitoring suggests that the dilution flows are not negatively impacting native fish populations across the study region, even possibly contributing to increased native fish abundance and diversity.

Summary

The outcomes of recent monitoring highlight positive changes in the fish community following restoration of a heavily altered urban river system. Overall, native fish communities continued to improve, with broad recruitment of native species (across freshwater specialist and generalist functional groups) and expansion of the range of diadromous species; although high numbers of alien species are regularly observed.

Continued restoration efforts are necessary, including further enhancement of habitats of the lower River Torrens, and accompanying monitoring will be important to document changes to the fish community.

IMPACTS OF THE MAY 2014 FISH KILL

Unseasonal rainfall and subsequent flows in early May 2014 added a large organic load, which coupled with unusually warm air temperatures, caused the deterioration of water quality and the development of an algal bloom in the area upstream of Henley Beach Road weir for a short period by mid May 2014. This resulted in a substantial fish kill and a large biomass of dead fish where removed over a three day period.

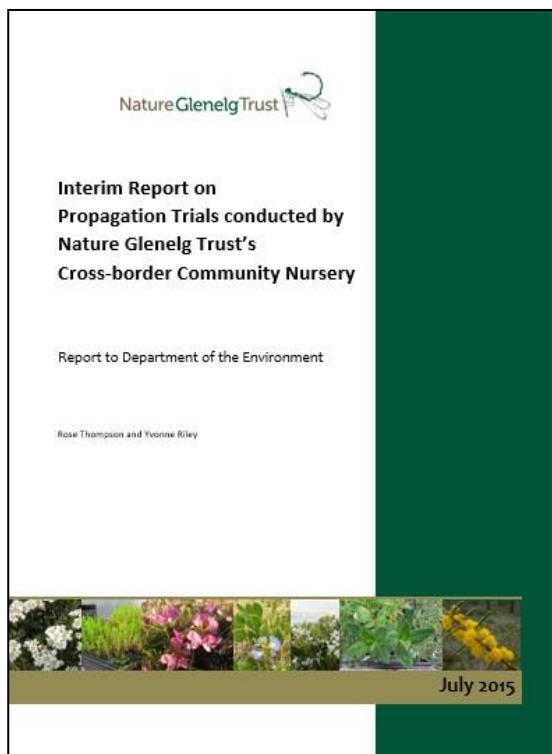


Monitoring since the event has revealed the steady recovery of the fish community. Fish species, with the exception of adult adult freshwater catfish, have returned to comparable levels to those observed prior to the event. Re-colonisation of the affected area by diadromous species is also evident (e.g. common galaxias).

2.4 Cross-border community nursery update

Cross-border Community Nursery update

Interim Report on Propagation Trials



The Community Nursery has a focus on understorey, rare, and threatened plants because many of these species are uneconomical for commercial nursery production and are therefore currently unavailable in the market. Reasons for commercial non-viability stem primarily from difficult seed collection (for example, isolated populations or species where seed is released quickly) or complex dormancy and propagation difficulty; that is, the germination cues (dormancy breaking triggers) are unknown or only poorly understood.

Increasing knowledge in this area, and knowledge sharing, is a major objective of the Community Nursery, and to this end the nursery has undertaken a large number of propagation and germination trials since its inception in 2012. Data from the trials completed to date were collated, summarised, and presented in an Interim Report this year. The report will be distributed to growers, and will be publically

available on the website in the near future.

The report summarises trials on 33 species, including five federally Endangered or Vulnerable species, and a further 12 species listed at state level in either South Australia or Victoria. Propagation trials used both vegetative and sexual reproductive techniques (cuttings and seeds, respectively), with trials involving seeds utilising numerous dormancy breaking techniques such as the use of smoke-water, hot water treatment, and cold storage (stratification). Trials also compared the success of cutting methods, and different materials (native seed raising mix compared to coir plugs, for example).

The trials generated new knowledge, as well as data which supports existing knowledge. One of the most interesting trials conducted last year was germinating a collected emu scat which was full of unidentified seed. The success of this trial in producing thousands of seedlings (Muntries *Kunzea pomifera*, in this case) has inspired a number of other emu scat trials currently underway in the nursery.



Muntries seedlings germinated en masse

Native Plant Display Gardens

In addition to the propagation report, work continued on installing the final three (of eight) native plant display gardens in Naracoorte, Mount Gambier, and Port Fairy. In each case, we focussed on partnering with young people, working with a scout group and two school groups. As future caretakers of our environment it is particularly important to ensure our younger generations have a sense of connectedness to nature, and learning about the plants as they watch them grow can be a great tool.



Interpretive signage at the Plants of the South East display garden, Natural Resources office, Mount Gambier

Approximately 800 – 1000 locally indigenous plants went in at each garden, while top up plantings also occurred at the gardens which were established last year.

Interpretive signage was finalised for each garden and delivered to project partners for installation. The signage helps visitors identify and learn about the plants in the gardens. Webpages for each garden were also finalised and can be found by either scanning the QR code on garden signs, or using the URL bit.ly/NGTgardens.

Workshops

The Nursery ran four workshops throughout the year which attracted a diverse range of participants from around our region. Butterfly garden workshops proved popular with capacity crowds in both Mount Gambier, and Naracoorte, where the workshop was offered in conjunction with Natural Resources as a Professional Development for teachers. Butterfly garden starter packs were on offer at each workshop, consisting of 20 specially chosen indigenous plants and an information pack.

A seed collection workshop took place at Eaglehawk Waterhole Restoration Reserve in December 2014 with Neville Bonney as guest speaker (see Case Study 2.10 for more details), and a native plant propagation workshop was held at the Portland Community Garden with Kevin Sparrow teaching and demonstrating cutting techniques.



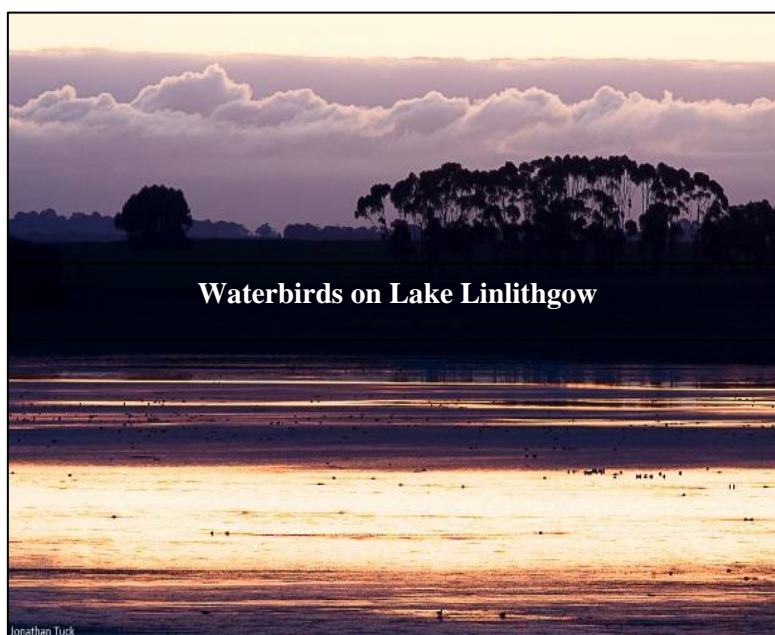
L – R: Nursery co-ordinator Yvonne Riley speaking about butterfly attracting plants; searching for ripe seed at Eaglehawk; practicing plant propagation at Portland

2.5 Threatened flora of the Western Victorian Volcanic Plains

The Volcanic Plains in western Victoria occupy 2.3 million hectares, lying south of the Western Uplands and stretching from the Otways in the south-east to the South-Australian border in the south-west. This region is part of the broader Victorian Volcanic Plains (VVP) bioregion and is characterised by relatively fertile basalt sediments formed by volcanic lava flows dating from 5 million years ago. Endangered vegetation communities such as Plains Grasslands and Plains Grassy Woodland are iconic to this bioregion, notably for their spectacular and colourful spring and summer flowering displays, as well as for their rarity. Since European Settlement, more than 99% of grasslands in the VVP has been lost or substantially modified. A high number of flora and fauna species within these remnant vegetation communities are now rare or threatened and therefore highly significant for biodiversity conservation.

Nature Glenelg Trust, through the funding support of the Victorian Government – Department of Environment, Land, Water and Planning (DELWP), is delivering a number of flora conservation projects within the Western Volcanic Plains with a primary aim of restoring and enhancing habitat values at three unique public reserves - Lake Linlithgow, Maam Reserve and Mortlake Common.

The **Lake Linlithgow** and Bullrush Swamp Lake Reserve encompass a number of volcanic lakes that have been formed by the molding and weathering of basalt lava flows. Aside from the importance as habitat for waterbirds, the reserve contains a number of significant vegetation communities. Nature Glenelg Trust has been working with the Hamilton Field Naturalists Club (HFNC), Parks Victoria and the Southern Grampians Shire Council to undertake strategic management



of weeds in the reserve and also to promote the site and its values to the wider community. Activities undertaken at Lake Linlithgow have included:

- Mapping and treatment of invasive weeds including spiny rush, boxthorn, tall wheat grass and phalaris.
- Monitoring of the endangered (EPBC) salt lake tussock grass (*Poa sallacustris*).
- Working bees and other community events.



Flora ramble at Maam Reserve

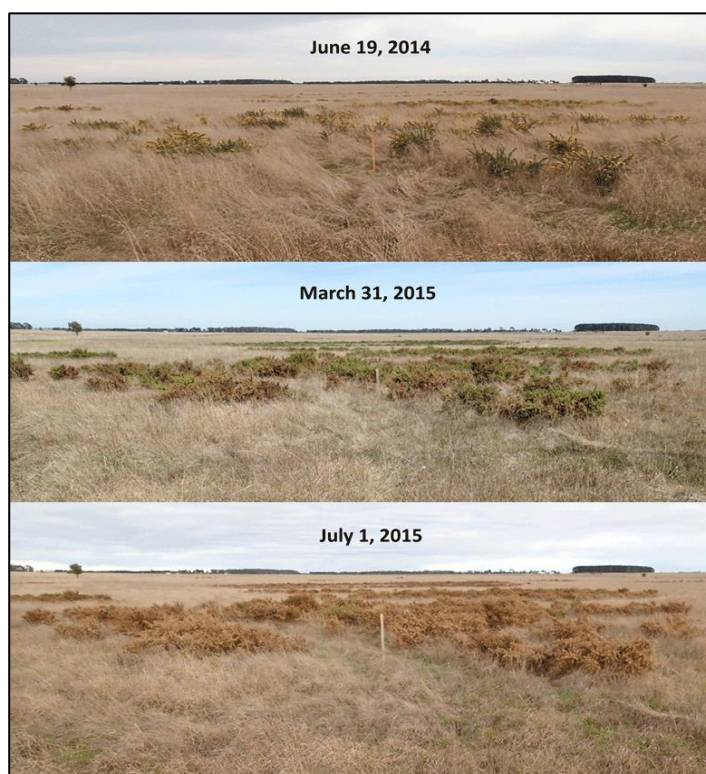
Sparrow and the Warrnambool Society for Growing Native Plants (WSGAP), who have been instrumental in recognising and documenting the outstanding floral diversity which occurs at this site.

The **Mortlake Common** Flora Reserve represents one of the largest and most herb-rich grasslands within the Western Volcanic Plains region at around 300 hectares in size. The reserve encompasses Plains Grassland/Plains Grassy wetland mosaics, and formerly Grassy Woodland, as indicated by the presence of scattered river red gums (*Eucalyptus camaldulensis*) and tree everlasting (*Ozothamnus ferrugineus*). NGT has been working to control a large gorse infestation and invasive grasses including phalaris, cocksfoot and Yorkshire fog, as part of a coordinated approach toward conserving the western gaping leek-orchid.

Later stages of the project involved development of a weed and biomass management plan in conjunction with DELWP and Parks Victoria, giving a direction for future management. Mortlake Common was also visited as part of a grassland tour in September, hosted by NGT and taking in two other sites – the Bolac Plains Road grassland and a Woorndoo Landcare Group direct seeding project.

In each of these three project sites, significant progress has been made on not only addressing the most pressing threats to threatened flora populations, but also to develop strategic directions for conserving each population into the future. NGT is committed to finding ways to continue work at these sites over the coming year, to build on the positive progress made so far.

Maam Reserve, near Allansford is a small (7 Ha) area of public land centred around a permanent wetland. The reserve contains significant flora diversity, with 111 native species being recorded, including 44 significant, threatened or rare species (GW Carr 2011). The fragile balance of the site is threatened by the march of woody weeds into the site, and NGT has worked to remove invasive coast wattle, gorse and wild gladiolus, with a particular focus on protecting and monitoring the basalt leek-orchid. This work complements efforts by Kevin



Gorse control at Mortlake Common – before and after

2.6 Status of southern purple-spotted gudgeon in the SA Murray-Darling Basin (update from autumn 2015)

Background

Southern purple-spotted gudgeon (SPSG) is a small robust freshwater fish that is *Critically Endangered* in South Australia. The species was historically common in the River Murray system, including wetlands along the main channel and the lower Finniss River. However, widespread contraction in range has occurred over the last 50 years and the species was believed extinct in the southern Murray-Darling Basin (last verified record in SA was 1973). In 2002, SPSG were recorded from a wetland on the River Murray between



The original re-discovered purple-spotted gudgeon

Murray Bridge and Mannum. Just as the species was rediscovered, drought conditions severely threatened the population. Urgent conservation measures were instigated with the rescuing of fish and establishing captive maintenance and breeding hatchery facilities. In 2010-11, the drought broke and water availability and stream flow improved across the region. In response, individuals have been reintroduced back into the wild sites. To transition from captive breeding to less labour extensive fish management, three surrogate locations have also been established. Initial follow up monitoring indicates short-term persistence of the species in all locations, except for the rediscovery sites. The species remains highly threatened in South Australia and ongoing conservation measures are required.

Conservation measures over 2014–15

Over the past year, funding from Natural Resources, SA Murray-Darling Basin has allowed ongoing conservation measures to be undertaken, including:

- Continued production of fish in captive breeding facilitates
- Monitoring of wild and surrogate locations in spring 2014 and autumn 2015
- Releases of over 300 fish into wild (250 fish to Jury Swamp) and surrogate locations (62 fish to Greenlands)
- Ongoing promotion of conservation status, with maintenance of fish displays at Cleland Conservation Park and Adelaide Zoo
- Submission of scientific paper (led by Mike Hammer) highlighting rediscovery and conservation efforts.



Recaptured individual (left); surrogate location (middle); and releasing fish into wild (right)

Current status

As of May 2015, the status of the species in South Australian remains precarious. Whilst captive breeding facilities and surrogate locations are in place as a safe guard, the inability for wild populations to establish is of concern. The fact remains that the species has not been recorded in the wild since spring 2014 and in particular no individuals have been recorded at the rediscovered site since spring 2009. The status of wild and surrogate locations, including details of releases and monitoring (spring 2014 and autumn 2015), is summarised below:

Type	Site name	Details of fish releases			Monitoring		Population status (good, moderate, bad)
					Spring 2014	Autumn 2015	
		No. & size range	Timing	Source	No. & size range		
Surrogate	Beyond (top)	200 (42–75mm)	1 release (Sept 2013)	AQ	76 (42–109mm)	16 (51–96mm)	Reasonable numbers & broad size range
	Beyond (bottom)	250 (30–45mm)	1 release (Sept 2013)	AQ	42 (53–103mm)	34 (22–122mm)	Good numbers, recent recruitment
	Greenlands	85 (33 during 1 st release; 52 during 2 nd release; 10 during 3 rd release) (40–115mm)	3 releases (Feb 2012; Nov 2014; April 2015)	P (1 st); U (2 nd & 3rd)	1 (88mm)	10 (65–109mm)	Increase in numbers, but no signs of recruitment
Wild	Paiwalla	271 (40–80mm)	3 releases (Mar 2010; Nov 2010; May 2011)	AQ; U; A	1 (-)	0	Irregular catches and wetland going through drying phase (to meet other objectives)
	Lower Finniss	1120 (25–60mm)	4 releases (Nov 2011 to March 2013)	AQ	2 (73–84mm)	0	Regular recaptures (<i>n</i> =13) since original releases, but site has been heavily degraded over past year (dried, cattle access) and no fish recorded in autumn 2015
	Jury Swamp	225 (1 st release), 250 (2 nd release) (25–60mm)	2 releases (April 2014; April 2015)	U	0	0	No released fish detected

Source of fish is: Aquasave - NGT Hatchery (AQ), Paiwalla (P), Urrbrae (U) and Alberton (A).

The next steps

Releases and monitoring will continue over the next year, but greater attention must be directed to ensuring the water security and habitat suitability of wild locations. The present project is ongoing with the following actions planned over the next year:

- Continued captive breeding of fish at three hatcheries (with rejuvenation broodstock)
- Monitoring of wild and surrogate locations in spring 2015 and autumn 2016
- Habitat restoration of wild sites to enhance habitat suitability
- Wild reintroductions in spring 2015 and autumn 2016
- Assess the applicability of environmental DNA (eDNA) technology to enhance detection ability
- Explore suitability (and need) of additional surrogate locations as well as wild locations

2.7 Learning more about the burrowing crayfish in western Victoria

There are 35 species of Australian burrowing crayfish (genus *Engaeus*), of which 22 are endemic to Victoria. The genus includes some of the most endangered freshwater crayfish species in Australia.

Western Victoria is home to the hairy burrowing crayfish (*Engaeus sericatus*) and Portland burrowing crayfish (*Engaeus strictifrons*), both of which are listed as vulnerable at the state level. Typically recognised by the chimney-like structures at the entrance of their burrows, these species are highly cryptic and only venture to the surface at night. Previous monitoring has used sampling methods that have been either inefficient (low captures) or destructive (loss of burrows and/or crayfish) meaning that the acquisition of information on their distribution, abundance and general ecology has proven difficult.



The Portland burrowing crayfish (*Engaeus strictifrons*) (left) and the hairy burrowing crayfish (*Engaeus sericatus*) (right).

Over the past year Nature Glenelg Trust has undertaken investigations into the regional distribution of these species with a focus on the following:

- undertake baseline surveys using existing sampling methods to increase our understanding of the current distribution and abundance, habitat requirements and threats of *E. strictifrons* and *E. sericatus*,
- raise stakeholder and community awareness of the conservation and management of these species, and
- trial the use of environmental DNA as an alternative sampling method, offering the potential for easier monitoring and ultimately improving our understanding of these species.

Baseline surveys

Surveys were undertaken using modified Norrock traps and some small scale burrow excavation. At Apex Park, in the township of Hawkesdale, surveys using Norrocky Traps failed to capture any individuals; however, several burrows along the edge of the creek were excavated using trowels and two *E. sericatus* were recovered. This species was not recorded at any of the other sites, presumably reflecting their more inland and eastern distribution.

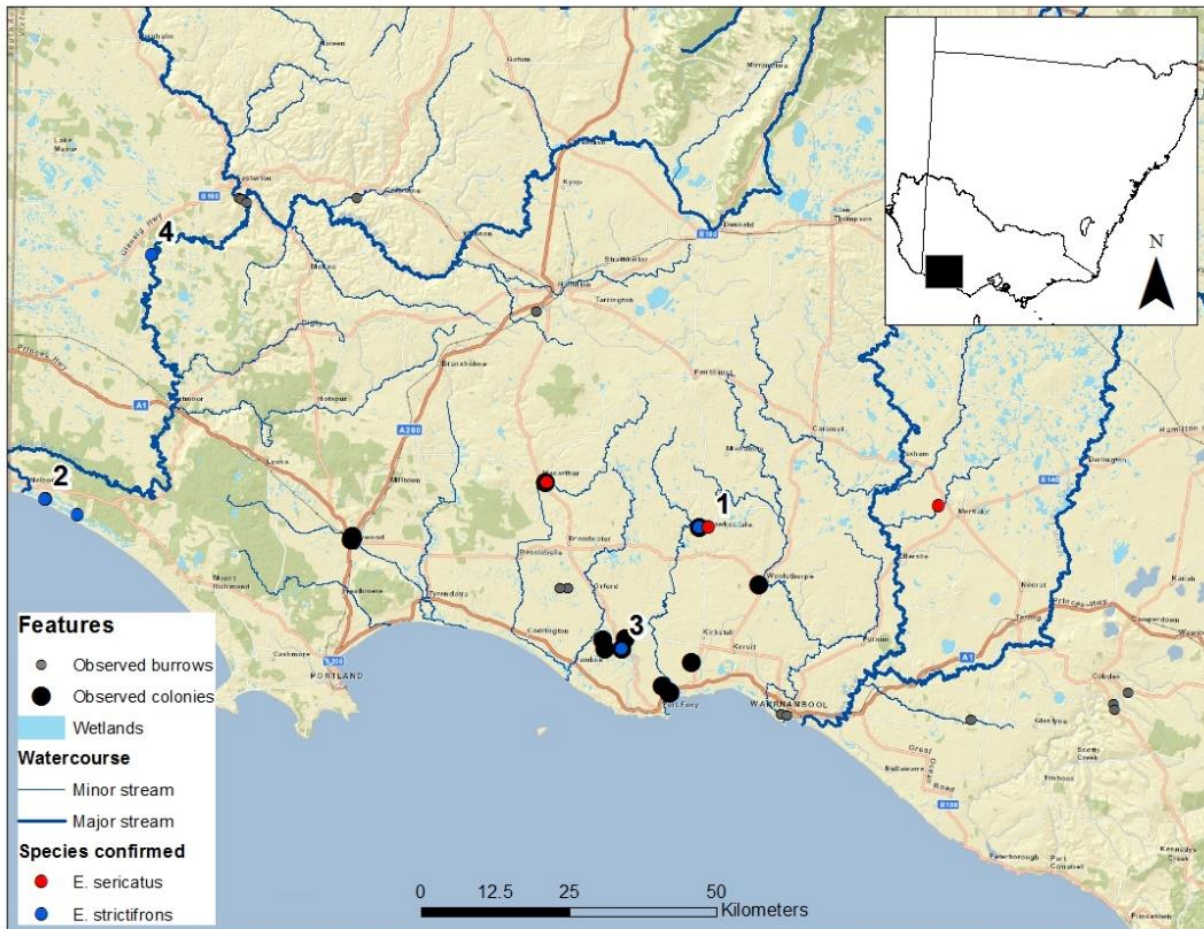


Varying numbers of *E. strictifrons* were caught using Norrocky Traps at three sites - near Port Fairy, Casterton and Nelson - with the highest capture occurring close to the Glenelg River near Casterton. Overall,



catch rates were low but comparable to survey trials in Gippsland.

An alternative method of survey, targeting environmental DNA (eDNA) associated with burrow soil, was trialled as part of an honours project undertaken through Latrobe University and funded by NGT. Positive DNA matches were recorded for the two focal species *E. sericatus* and *E. strictifrons*, as well as *E. curvisuturus*, *E. quadrimanus*, and *E. tuberculatus*, and one species of *Geocharax*. While this technique still needs a lot of work to make it practically viable, the ease and speed of species detection make it a worthwhile protocol to pursue and will hopefully enable a much more thorough survey of species' distribution to occur in the near future.



Distribution of burrowing crayfish species (confirmed by capture or eDNA) along with locations of burrows where species were not confirmed

Community awareness

A key focus of our work on burrowing crayfish was to raise stakeholder and community awareness about the conservation and management of *E. sericatus* and *E. strictifrons* in western Victoria and a key part of this has involved working with teachers and students. NGT staff provided Year 10 Environmental Science students at Hawkesdale with a background on the ecology, conservation significance and current threats of burrowing crayfish and also ran a field exercise where students had an opportunity to observe burrowing crayfish in their natural environment and learn more about the species ecology, habitat requirements and cryptic behaviour.

Students at Port Fairy Consolidated School became citizen scientists by taking part in a burrowing crayfish survey at a nearby freshwater wetland on private property. While out



on this ecological fieldtrip, students worked in groups to record important information, including the height and width of crayfish burrows, burrow density (numbers per m²), habitat characteristics (e.g. vegetation type, distance from permanent water, surrounding land-use) along with details of any crayfish captures. The education continued into the classroom, where students enjoyed sculpting their own interpretations of burrowing crayfish and 'chimneys' in art class. Finally, students were given some 'homework' to record the location and number of crayfish burrows they saw along their bus routes, taking notes on adjacent land-use and helping to formulate ideas on threats and threat management.

This education focus has now been captured in an education resource kit, developed through Glenelg Hopkins CMA landcare grant funding and is being promoted and taken up by schools in the region. A copy of the kit is available online (<http://natureglenelg.org.au/current-projects/burrowing-crayfish-of-southwest-victoria/burrowing-crayfish-education-resources/>).



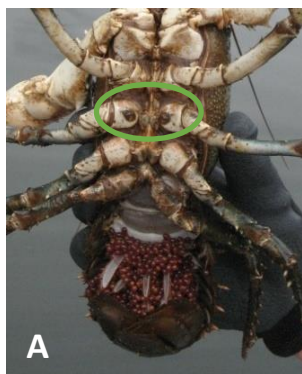
2.8 Managing the recovery of Murray Crayfish in the Murray River in NSW and Victoria.

Background

Murray crayfish is the second largest freshwater crayfish in the world and the most widely distributed spiny crayfish species (historically up to 12,500km of southern Murray-Darling Basin). This iconic species is long-lived, slow-growing, has a long maturation period and low fecundity – attributes that make it vulnerable to a range of long-term threats. Since the 1950's, Murray crayfish have undergone declines in distribution and abundance associated with river regulation (weir construction, thermal pollution), habitat degradation, adverse water quality (pesticides, pollution) and commercial/recreational fishing. They are now considered to be absent from the lower 950km of the Murray River, upstream impoundments (i.e. Euston weir pool and Lake Hume) and locally rare in the lower Murrumbidgee River (below Darlington Point). Most recently they have undergone further declines across the southern Murray-Darling Basin (including Murray and Edward Rivers) due to a widespread hypoxic blackwater event over 2010-11 (population loss estimated at 81% in blackwater affected areas of Murray River) and in the mid-Murrumbidgee River due to an unknown cause.



Fishing regulations



Murray crayfish are a highly valued recreational fishing species in NSW and Victoria under prescribed fishing regulations. The five key recreational fishing regulations for Murray crayfish are consistent across NSW and Victoria. These include a minimum legal length (MLL) (100 mm occipital carapace length (OCL)), maximum slot limit where no more than one individual can exceed 120 mm OCL, restricted fishing season (open season between

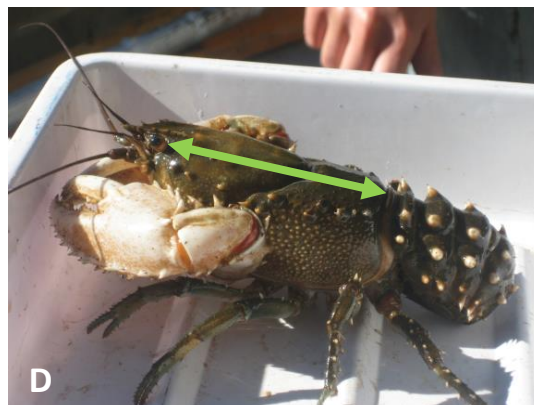
1 June – 31 August inclusive), protection of berried females, daily bag limit (2), possession limit (4) and area closures (Please refer to the NSW and Victorian Recreational Fishing Guides for full fishing regulation guidelines).

A - Berried female Murray crayfish (note the gonopores (sex organs) located on the base of the 3rd (middle) pair of pereopods.

B - Males have genital papillae located on the base of the 5th (last) pair of pereopods.

C - Murray crayfish larvae.

D - Measuring Murray crayfish from the rear of the eye socket to the centre rear of the carapace.



Present research

As part of the present collaborative project the following activities are being undertaken to provide a sound scientific basis for the managing the recovery of the species:

- **Engage recreational fishers** – Engage recreational fishers in the collection of scientific data on Murray crayfish populations within the Edward River.
- **Comprehensive benchmarking** – continue standardised monitoring across the NSW (and Victorian) range of the species to assess the present status.
- **Targeted blackwater sampling** – repeat monitoring of the affected and unaffected Murray River sites to assess recovery trajectories against pre-blackwater status.
- **Genetic assessment and population model** – determine genetic structure of species and develop a population model to help assist management decisions for the species.
- **Establish a long-term monitoring strategy** – develop the most efficient monitoring strategy to track the long-term recovery of the species based on the outcomes of the present study.

The key achievements to date include: engagement of recreational fishers in the population monitoring of Murray crayfish in the Edward River; hosting a Murray crayfish forum to allow stakeholders to have input into management scenarios to be fed into a population model; sampling of over 100 benchmarking sites across NSW; preliminary genetic analysis indicating moderate to high genetic diversity and extremely weak genetic differentiation (e.g. lots of mixing between populations); and targeted blackwater sampling revealing partial recovery in some affected areas (and increased abundance in areas currently open to fishing).



This project is a collaboration between NSW DPI and Aquasave – NGT with support from ARI and Melbourne University. The project is funded by grants from the NSW Recreational Fishing Freshwater Trust Expenditure Committee (RFFTEC), Murrumbidgee Local Land Services, Murray Local Land Services, Victorian DEPI and the Victorian Recreational Fishing Grants Program.

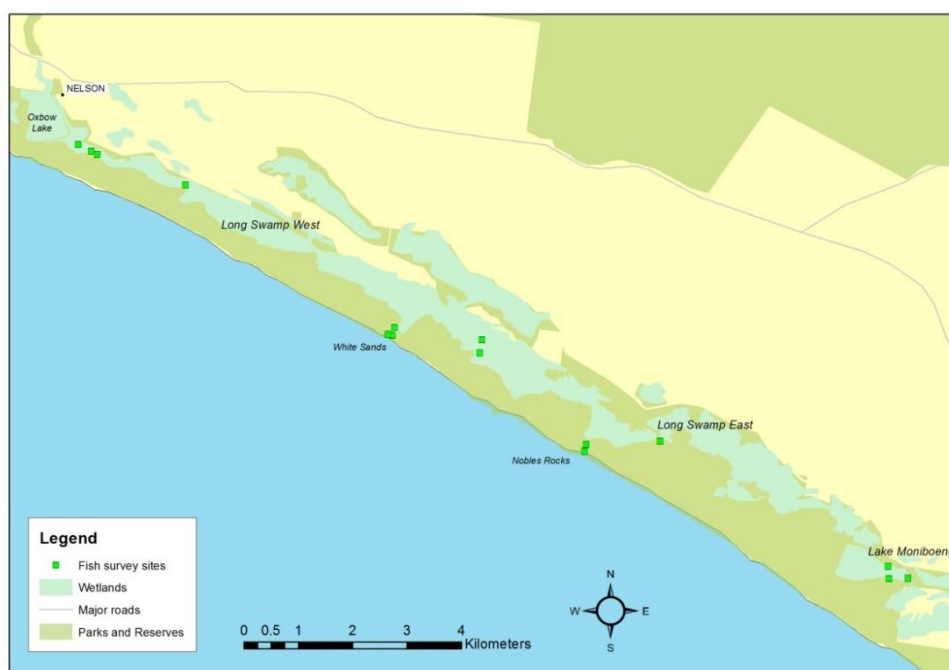
The next steps

The present project is ongoing with the following actions planned over the next year:

- Larger scale engagement of recreational fishers in population monitoring
- Murray crayfish specific fisher forums
- Undertake fisher interviews
- Development of population model
- Finalise genetic assessment
- Commence benchmarking of Victorian waterways

2.9 Phase 3 of the Long Swamp restoration trial

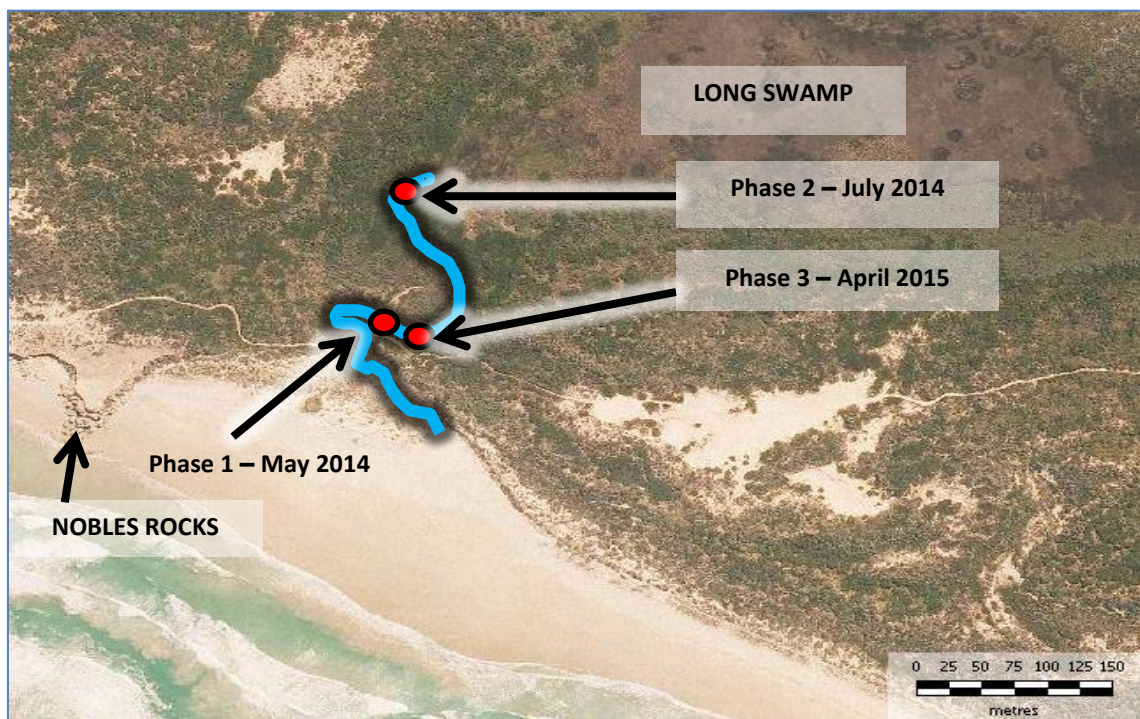
Long Swamp is a 15 km long coastal freshwater wetland complex in south-western Victoria, which supports a diverse suite of nationally threatened species and is currently undergoing a Ramsar nomination process. While the wetland originally discharged into the ocean via Oxbow Lake and the Glenelg River mouth at Nelson, changes to hydrology, including sand drifts and artificial drainage activities, have led to an interruption of flows, contributing to a long-term drying trend in the wetland complex. The ecological benefits observed from the natural closure of an artificial outlet at White Sands during the millennium drought, coupled with a strong community interest in restoring the natural hydrology of Long Swamp, led to the current restoration trial aimed at regulating the second and final artificial outlet at Nobles Rocks (see map below). Primary objectives of this restoration project are to increase the availability and diversity of aquatic habitats, and to enhance connectivity throughout Long Swamp, in order to benefit a wide range of wetland dependant species across a broad range of taxonomic groups. With this in mind, the project has had a particular focus on monitoring the population recovery of two nationally vulnerable freshwater fish species; dwarf galaxias (*Galaxiella pusilla*) and Yarra pygmy perch (*Nannoperca obscura*).



Map of Long Swamp, showing the location of the natural outlet into the ocean via Oxbow Lake (and the Glenelg River estuary) at Nelson, and the two artificial outlets at White Sands and Nobles Rocks.

Since these two species rely on water permanency for survival, they are highly susceptible to any change in the landscape that results in losses of aquatic habitat. Extensive artificial drainage of wetlands in south-eastern Australia, particularly those on private land, has dramatically reduced the abundance and distribution of Yarra pygmy perch and dwarf galaxias. For this reason, restoring a deeper aquatic component within the large expanse of wetland habitat in Long Swamp, within the Discovery Bay Coastal Park, through regulation of the Nobles Rocks outlet drain was considered a key action to enhancing populations of Yarra pygmy perch and dwarf galaxias and assisting in their overall conservation in Victoria.

The restoration trial has progressed in three stages over the past two years, enabling us to progressively record and measure the impacts of hydrological restoration in real time, and provide the information necessary for determining a future permanent solution (see below).



Aerial view of Nobles Rocks artificial outlet, detailing the location of the three trial sandbag structures.

As reported in last year's Annual Report, the first stage of the restoration trial involved 45 volunteers from the community working together on 9th May 2014 to construct a low-level temporary sandbag structure at Nobles Rocks, initially at the most accessible and technically feasible section of drain in this rugged coastal environment. A few hours and 600 sandbags later, the trial structure was in place and operating as planned, with water spilling down the drain at the new trial retention height.

The second phase of the trial was completed on the 1st July 2014 with the help of 11 volunteers, which in conjunction with the first trial structure, enabled us to better manage and monitor the hydrological behaviour of the site through the first winter season. On the 27th April 2015, the third and final structure (see right) was completed, following two days of preparation and nine days of sandbagging (using about 6,600 sandbags), which were put in place with the dedicated help of over 30 volunteers.



NGT staff and volunteers from the local community celebrate the completion of the third and final sandbag structure.

A series of gauge boards were placed at key locations in the outlet channel and upstream into Long Swamp proper, to monitor the change in water levels throughout the three phases of restoration works and into the future. As a result of early breaking rains at in early April 2015, over the nine days of construction associated with the final structure, water levels upstream of the weir increased almost immediately in response to each additional layer of sand bags, as they were laid.



***View of the Phase 3 Restoration Trial Structure location;
LEFT – prior to construction in March 2015, and RIGHT – in June 2015***

Following the completion of this sandbag weir, which resulted in the phase two structure being inundated (and hence re-inundating the length of the artificial channel in between), the rate of increase in water level slowed as every incremental rise in water elevation resulted in an ever increasing area of wetland habitat within the swamp upstream of the phase 2 structure being influenced. This progressive change at the Phase 2 structure location is shown below.



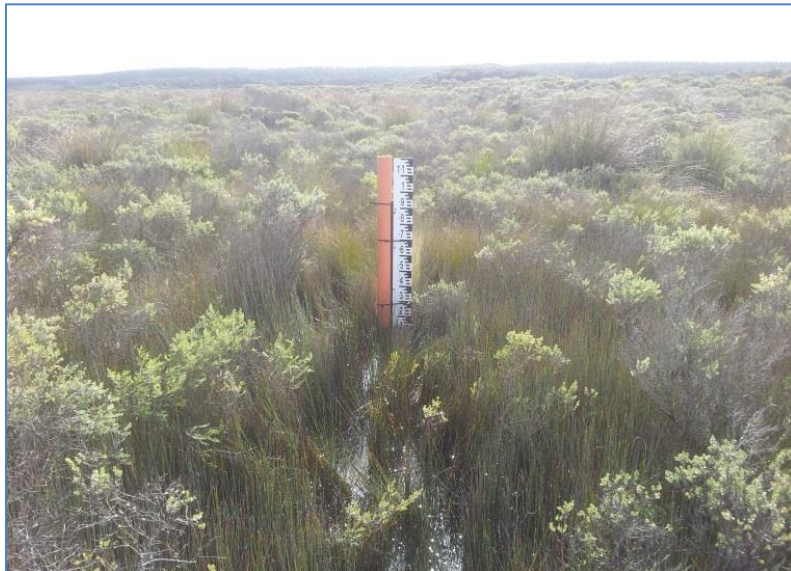
The Phase 2 structure in early April 2015 (LEFT) prior to commencement of the Phase 3 structure, in late April 2015 (CENTRE) as it became redundant for the first time, and in September 2015 (RIGHT) completely submerged as wetland levels have recovered – note the recovering aquatic reeds in the left foreground.

Over the months following the completion of the structure, water level in the swamp immediately upstream had increased in the deepest corner of Long Swamp, from 34 cm (in April 2015) to 116 cm (in early September 2015) – see images (top) over page.

Further upstream, in a shallower area more representative of the impact on the adjacent portion of Long Swamp, levels increased from being dry in April 2015, 14 cm deep in May, through to 43 cm deep in early September 2015, also shown in the images (below) over the page. This is a zone where the visible shrub invasion is typical of the drying trend being observed in Long Swamp, and will be an important long-term monitoring location for detecting the influence of the trial on shrub cover and sedgeland health.

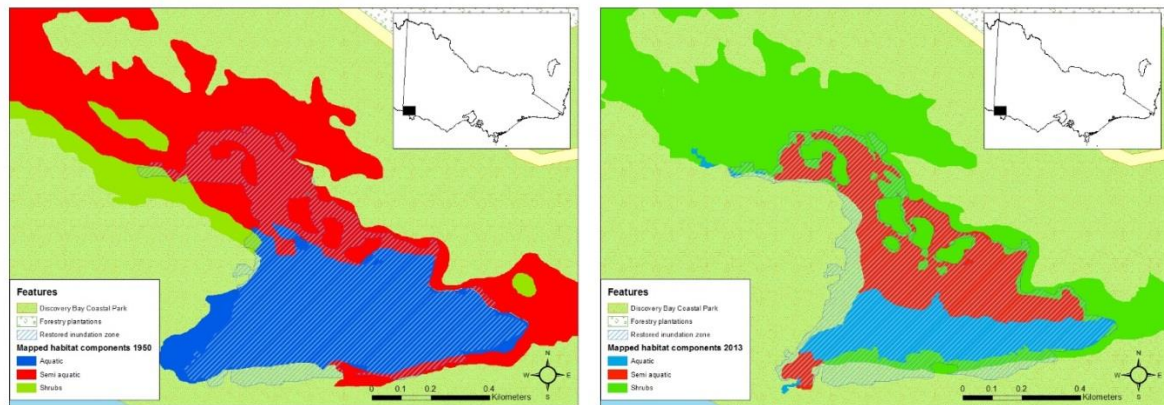


Left - The deepest corner of the swamp after the early April downpour, but before the Phase 3 structure was complete. Depth – 34 cm; Right - The same view, 5 months later in September 2015, with Water Ribbons (foreground) taking immediate advantage of the return of deeper water for the first time in decades. Depth – 116 cm (Note that the gauge board has been added to in height)

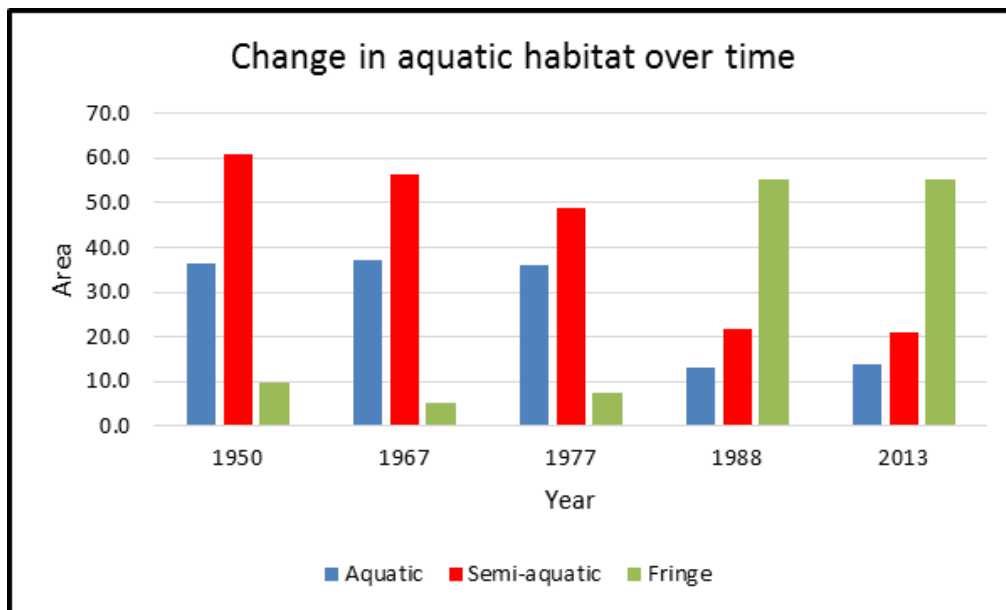


Left – Further inland in the swamp after the Phase 3 structure was complete, shown here in May 2015. Depth – 14 cm; Right - The same view, 4 months later in September 2015, clearly showing the impact of the trial structure in this zone where shrub invasion (indicating drying) was threatening sedge habitat. Depth: 43 cm.

To evaluate the response of habitat to short and longer-term hydrological change, we also undertook longer-term landscape change analysis through GIS-based interpretation of aerial photography. This information indicates that prior to the trial, both aquatic and semi-aquatic vegetation types have undergone a reduction in extent over time, primarily as a result of fringing shrub invasion caused by the underlying change in hydrological regime (Figures 8 and 9). Through the restoration trial, we have currently recovered approximately 60 hectares of total surface water at Nobles Rocks, not including larger gains across downstream habitats as a result of groundwater mounding and sub-surface seepage that has been observed.



Comparison between habitats in 1950 (left) and 2013 (right) as derived from aerial imagery showing the restored zone of inundation (post 2015) and anticipated new extent of aquatic habitat.



Change in the area (hectares) of different habitat types (aquatic, semi-aquatic and fringing) recorded for Long Swamp at different intervals over the past 60 years.

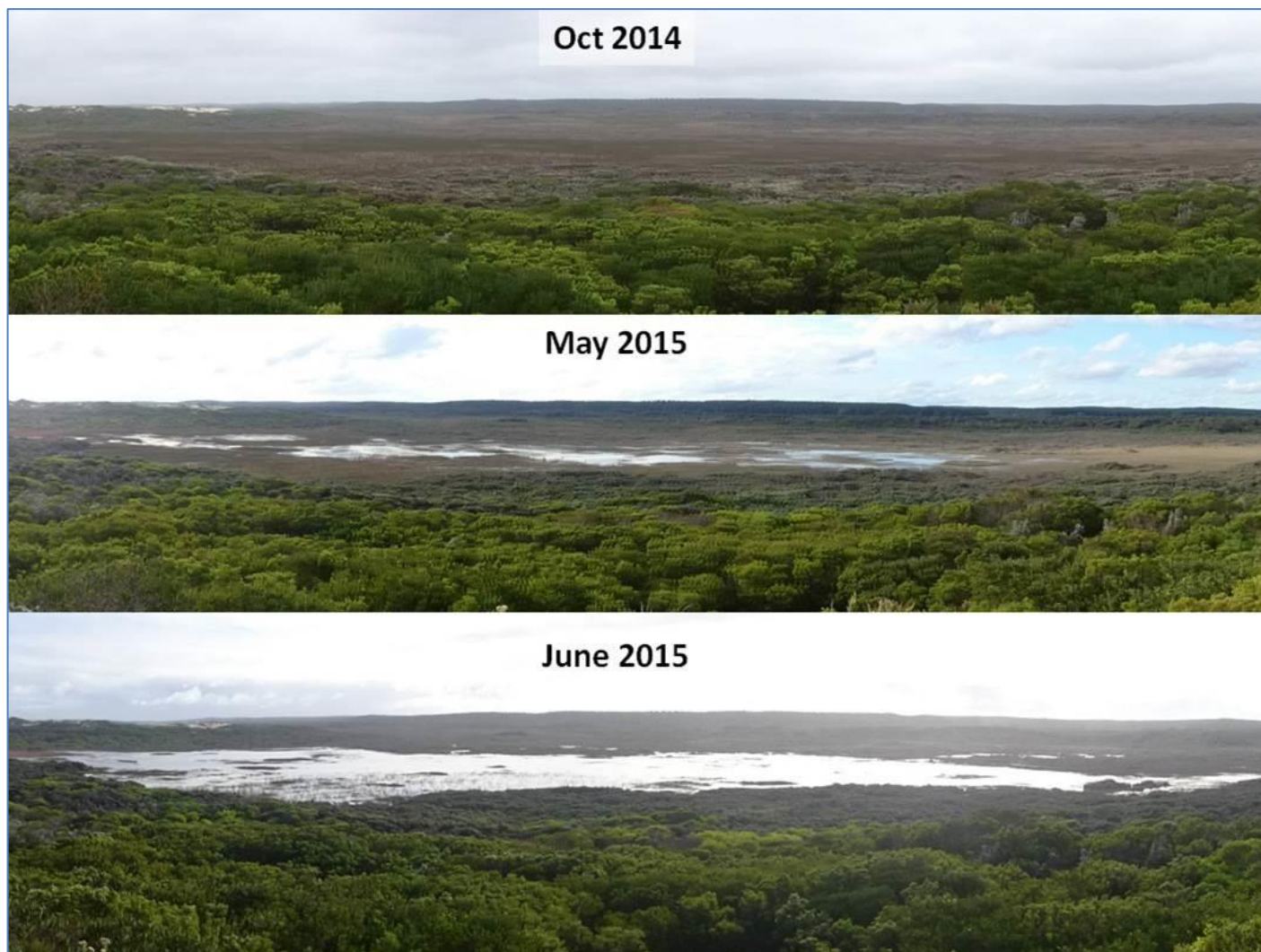
Photopoints at key locations across Long Swamp have been invaluable in visualising the gradual recovery of aquatic habitat upstream of the Nobles Rocks outlet and associated short-term responses of flora communities, following our restoration activities – as shown in the following images.



Above - The view from the dune next to the Phase 3 structure, looking inland towards Long Swamp in April 2015

Below - The same view, 4 months later in August 2015. This is the zone where the most dramatic transformation is underway, with terrestrial species being displaced, as wetland plants bounce back. Note the yellowing coastal wattle plants, a dry land species that had invaded this part of the wetland as it dried out.

As we anticipated, the newly inundated area upstream of Nobles Rocks outlet has undergone an obvious immediate shift from supporting a largely terrestrial based plant community (e.g. coastal wattle and tea-tree) to one that has become increasingly dominated by submerged and emergent species (e.g. aquatic herb species).



Oblique view over Long Swamp, in the area of restored wetland habitat inland from Nobles Rocks, as its appearance has changed during the implementation of the trial.

To assess the native fish responses to the restoration trial, ecological monitoring was undertaken prior to restoration in autumn 2014, during restoration in spring 2014 and immediately following the completion of the main restoration trial structure in autumn 2015. Monitoring in autumn 2015 indicated that dwarf galaxias had successfully colonised the newly inundated habitat at Nobles Rocks outlet, where the species had previously been absent prior to restoration. As a greater area of fringing, densely vegetated habitat becomes available through the combined effects of restoration and winter-spring rainfall, we anticipate seeing a continued increase in the abundance and distribution of dwarf galaxias at Nobles Rocks. While Yarra pygmy perch are yet to be detected at the site, increasing the connectivity between Nobles Rocks and wetland areas immediately to the east and west will in time, enable this species to colonise the recreated wetland habitat. Yarra pygmy perch are expected to show particular preference for the deeper waters immediately upstream of the structures, where water ribbons (*Triglochin procerum*) is now thriving following the return of water (see image over page)

Floating aquatic reed beds favoured by the Yarra pygmy perch are rapidly reforming in the restored areas of deeper water (50-70 cm deep) in the swamp inland of Nobles Rocks. The long-term reduction in the availability of this habitat within Long Swamp was a threatening process for these species that the trial is directly addressing.



While this monitoring has been effective in assessing the short-term native fish responses, longer-term monitoring is now required to detect the future expected colonisation (or indeed possibly an assisted future translocation) of Yarra pygmy perch to the site. As we continue to see increased hydrological connectivity between upstream of Nobles Rocks and adjoining areas of the wetland, the fish communities of Long Swamp will undoubtedly continue to change. Future and on-going ecological surveys are therefore critical in gaining a complete and comprehensive understanding of the full effects of restoration - knowledge that will greatly assist the development and success of similar projects in the future.

In summary, the restoration trial of Long Swamp has been a huge achievement not only from an ecological perspective but also from a social and cultural point of view. With passion and foresight in their desire to see Long Swamp restored to its former glory, the local community of Nelson has been a key driver in the development and indeed the successful execution of this project. Through enabling community members, groups and landholders an opportunity to come together and be directly involved in on-ground restoration work, this project has provided a platform for promoting partnerships between the community, conservation groups and organisations, and government agencies, demonstrating environmental leadership in the south-west region of Victoria.



Nobles Rocks outlet in 2014 (above) and 2015 (below) showing the impact of phase 3 of the restoration trial

2.10 Eaglehawk Waterhole Habitat Restoration Reserve Update from 2014-15

Eaglehawk Waterhole is NGT's first Habitat Restoration Reserve, a 684 ha property in the Upper South East of SA, purchased in late 2013 thanks to the generous financial support from the Native Vegetation Council and Nature Foundation SA.

PART 1 - Spring 2014 Working Bee:

The first Eaglehawk Waterhole working bee was led by Bryan Haywood, NGT's property manager, in Spring 2014, and signalled the beginning of our long-term restoration plans. With a great turn out of ten volunteers from Sunday 28th September to Wednesday 1st of October, many hands helped with a range of tasks and enjoyed the peaceful surroundings of the Bangham area, making the campout a great success. This outing also combined forces with DEWNR's Landscape Links project to expose volunteers to a range of regeneration techniques, land management and habitat survey activities.



Restless Flycatcher seen around camp

Sunday the 28th was filled with setting up camp and exploring the boundaries of the property, which revealed the extent of the natural regeneration occurring, along with reviewing weed outbreaks and vermin issues. It was anticipated that rabbit numbers would be high, however very few were observed (<15) on the first nights spotlighting, a very pleasing initial result. Only one fox was observed during the entire 4 days.

Insect surveys were undertaken during the day and night with a UV light trap set up in Stringybark habitat to attract a diversity of nocturnal insects. This was a perfect activity for kids and the resulting critters were sorted the following morning. An encouraging number were seen (>30 species) including wasps (1), beetles (4+), moths (20+), lace wings (1), cockroach (1), flies/mosquitoes (2-3) and spiders (2). Day flying insects were in short supply however it was anticipated that the season would improve closer to summer. In all we saw:



Setting up a roofing tile grid in Stringybark woodland

butterflies (7) including the migratory Caper white, and dragonflies (2). Other insects were observed but not touched and grids of 50 roofing tiles were placed out for ants in three sites.

Seed collecting was undertaken for a range of species like *Melaleuca uncinata* (Broombush), *Callitris gracilis* (Slender Pine), *Leptospermum continentale* (Prickly Tea-tree), *Banksia ornata* (Desert Banksia), *Elymus scabra* (Common Wheat grass), and *Callistemon rugulosus* (Scarlet Bottlebrush). The intent is for NGT to collect as many species as possible and undertake re-establishment through

the property as time and resources permit. A further outing was scheduled for December to collect other species – particularly wattles as seed becomes available in early summer.

As Eaglehawk was a farming property for many years, the task of **controlling pasture weeds** will be a long term one. However after some time spent on mapping in the last 12 months we began the control of Salvation Jane, Phalaris and Golden-wreath Wattle. Our October and November outings will also focus on some further weed control.

RIGHT: Volunteers spot spraying Salvation Jane in Blue Gum Woodland, and BELOW: Cut and swab of Golden Wreath Wattle (*Acacia saligna*), a WA species not welcome in the South East of SA



There is a long history of wood cutting and/or harvesting throughout Eaglehawk Waterhole. We have now found four large piles of sawn timber which could be utilised for building recreation facilities, signs or track demarcation posts. During our stay we began the process of sorting through a pile to determine pieces that could be suitable for such purposes.

A visit to the bush could not be complete without the camera to capture the **wildflowers**. Several ramble surveys were undertaken in two habitats to further document the interesting flora for the site with several new species (to Eaglehawk) observed. We found a small pocket of Common Wheat grass (*Elymus scabra*), a large population of Beard-orchid (*Calochilus robertsonii*), many Sun-orchid leaves and buds, several species of Sun-dews (*Drosera*) and two species of Heath-myrtle (*Calytrix*).

During the trip we assisted the **Landscape Links** project officer Cassie Hlava from Natural Resources SE with prickly tea-tree matting establishment, burning of *Banksia ornata* cones to promote seed dispersal and germination, and set up a roofing tile grid for monitoring of fauna within the revegetation area.

RIGHT: Banksia cones being burnt to stimulate natural regeneration.

And lastly – but not least – were the birds, mammals and reptiles. We spotted more stumpy lizards than you could poke a stick at! The echidna's were patrolling around at a quick pace, and the restless flycatchers and white-bellied cuckoo-shrikes around the campsite was just fabulous. Peaceful doves drinking from the dam and Red-tails roosting in dense Blue gums were a real treat.

All in all, the first working bee was an eventful and productive trip.



PART 2 – December 2014 Seed collecting:

Saturday the 6th of December 2014 saw a combined NGT event, with our Community Nursery hosting a Seed Collecting workshop at Eaglehawk Waterhole.

Neville Bonney was our insightful and knowledgeable workshop leader and the 20 or so attendees learnt so much about so many species!

RIGHT: Local expert Neville Bonney led the workshop



Attendees, ranging from beginner to expert, collected green Holly Grevillea (*Grevillea ilicifolia*) seed pods, searched underneath Brush Heath (*Brachyloma ericoides*) for dropped seed, and admired the 'sleeping duck' seed pods of Beaked Hakea (*Hakea rostrata*). We also enjoyed seeing and trying to photograph (to varying levels of success) the beautiful flowers of several species including the Rosy Hyacinth-orchid (*Dipodium roseum*), Chocolate Lily (*Arthropodium fimbriatum*), Magenta Storkbill (*Pelargonium rodneyanum*), and Sweet Apple Berry (*Billardiera cymosa*).



The beautiful floral displays of Sweet Apple Berry, Rosy Hyacinth-orchid, and Magenta Storkbill

More than 40 species were covered on the day, with seed collected from many. The seed will be cleaned and banked by the Community Nursery staff and volunteers, with some seed being propagated for use at Eaglehawk and other NGT projects in the near future.

Subsequent revegetation plantings at Eaglehawk Waterhole proceeded in July and August 2014.

These information and a host of other activities are available on the NGT website blog, and will reported in the next (2015-16) NGT Annual Report.



Searching for seed in a Horny Cone-bush (*Isopogon ceratophyllus*)

3. Plans for the 2015-16 Financial Year

3.1 Strive to be universally viewed as leaders in aquatic ecology and wetland restoration in south-eastern Australia

Nature Glenelg Trust has already had considerable success delivering a wide range of general biodiversity projects. However, consistent with having an organisational emphasis on aquatic ecology, we continue to strive to be universally viewed by current and future project partners as leaders in aquatic ecology and wetland restoration in south-eastern Australia.

Goals:

- Forge new partnerships to achieve positive on ground results for aquatic habitats and species, based on the ecological expertise of Nature Glenelg Trust.
- Increase the geographic reach of NGT's wetland restoration activities in south-eastern Australia.

3.2 Continue to consolidate NGT's presence within our focal region

Although Nature Glenelg Trust has staff based at a number of locations in western Victoria, creating a regional community hub in the South West similar to the successful nursery site in Mount Gambier (South Australia), would have obvious benefits for the organisation, our work and the wider community we are seeking to engage with. However, this concept relies on the right site and tenure arrangements becoming available; hence it remains a priority for NGT to be attentive to potential opportunities and willing to capitalise on this concept in the future should the opportunity arise.

Goal: Establish a community hub and small office in Warrnambool in the next 2 years.

3.3 Continue to explore opportunities for creating a strategic wetland restoration demonstration site

The *Habitat Restoration Reserve* concept focusses on Nature Glenelg Trust:

- tackling property-scale habitat restoration in our focal region;
- empowering the regional community to participate with us in the land management process;
- inspiring others to act similarly on private land; and,
- delivering a tangible environmental benefit that people can see and experience.

The successful purchase of Eaglehawk Waterhole as a *Habitat Restoration Reserve* in the Bangham district is a perfect illustration of NGT's mission in this regard, and something the organisation is keen to repeat over the coming years at a small number of strategic demonstration sites situated across our focal region. A site that requires property-scale wetland (hydrological) restoration works in a strategic location for wider conservation benefit is a currently identified priority.

Goal: To purchase and establish at least one additional Habitat Restoration Reserve, with an emphasis on wetland restoration, over the next 2-3 years.

3.4 Implement a philanthropy strategy for NGT

Nature Glenelg Trust's Habitat Restoration Fund was accepted onto the Register of Environmental Organisations on the 15th of April 2014. This makes NGT a Deductible Gift Recipient under Australian taxation law, with donations over \$2 eligible for a tax deduction. At the time of writing, three strategic private purchase/restoration projects are currently available to NGT to pursue (similar to Eaglehawk Waterhole), hence an immediate focus for NGT is developing our tools for communicating such opportunities to potential donors. As these projects require significant finance, this is something that clearly requires active promotion. A simple mechanism for smaller-scale donating to NGT will also be introduced to our website, making it easier for supporters to financially invest in our work.

Goals:

- to communicate strategic purchase/restoration opportunities to potential donors; and,
- to introduce new content on the NGT website that increases awareness and makes it easier for supporters to financially invest in our work.

3.5 Complete the NGT website upgrade

The NGT website (developed by Pixel Harvester) has served the organisation extremely well since our launch in January 2012. However to keep pace with changing technology, improve functionality and services for internal staff and to enhance our communication with the regional community, the website is due for an upgrade. While most of the background work for the upgrade was completed in the 2014/15 year, content updates are still required before the new website can be launched.

Goal: The website upgrade will be completed as a priority in the coming financial year.

3.6 Encourage staff to pursue their ecological interests

As our greatest asset, Nature Glenelg Trust staff are encouraged to develop their ecological expertise through their work with NGT. Where possible, staff are encouraged to pursue and develop their professional skills and interests through their work with us, and we aim to provide diverse and meaningful opportunities for them.

Goal: To encourage our staff to pursue their ecological interests where possible within the scope of their roles with NGT.

3.7 Celebrate our success so far

It has been an incredible journey that began with NGT's launch on the 16th January 2012, and our upcoming 4th birthday in 2016 should provide a great opportunity to share our successes with our staff and supporters by holding an open day for the public, with a series of talks that share our successes and a BBQ at the NGT community nursery in Mount Gambier.

Goal: To hold a 4th birthday celebration for NGT in January 2016, open to the general public.

4. Employee Statistics

Nature Glenelg Trust employed a total of twelve full-time or part-time staff throughout the 2014-15 financial year, and a further eight staff on a casual basis.

All of these full-time or part-time staff remained in active service at 30th June 2015:

1. Mark Bachmann (Manager / Principal Ecologist)
2. Jessica Bouchier (Administration Support and Project Ecologist)
3. Catherine Dickson (Senior Threatened Species Ecologist)
4. Lachlan Farrington (Senior Wetland and Landscape Ecologist)
5. Bryan Haywood (Senior Ecologist)
6. Lauren Kivisalu (Project Ecologist)
7. Adam Miller (Research and Restoration Ecologist)
8. Yvonne Riley (Community Nursery Officer)
9. Rose Thompson (Project Ecologist)
10. Jonathan Tuck (Project Ecologist)
11. Lauren Veale (Aquatic Ecologist)
12. Nicholas Whiterod (Senior Aquatic Ecologist)

5. Membership

As a duly constituted fixed trust, Nature Glenelg Trust does not have its own financial membership base. As an organisation committed to filling gaps, we are specifically interested in using our expertise to work with (not compete with) other membership-based community groups to increase their effectiveness, and ultimately help them to retain and attract members. We also hope to provide regular and meaningful volunteering opportunities for these groups' members through participation in our projects.

With Nature Glenelg trust on the Register of Environmental Organisations), we aim to seek tax-deductible financial contributions to our Public Fund from NGT supporters. Supporters of Nature Glenelg Trust are also being encouraged to register their email address on our website (www.natureglenelg.org.au) to receive regular updates on our projects and organisational activities.

The Board of the Trustee for Nature Glenelg Trust, currently has six voting members:

1. Mark Bachmann
2. Catherine Dickson
3. Lachlan Farrington
4. Michael Hammer
5. Melissa Herpich
6. Nicholas Whiterod

At present, the members of the Trustee for Nature Glenelg Trust, also comprise the organisation's Committee of Management, which meets 3-4 times a year to oversee the strategic direction of the organisation, and are legally accountable for the administration of the Public Fund (the Habitat Restoration Fund).

6. FINANCIAL STATEMENT

6.1 Statement of Comprehensive Income

Nature Glenelg Trust
Statement of Comprehensive Income
For the year ended 30 June 2015

	2015 \$	2014 \$
Income	1,194,712	1,478,346
Less		
Distribution expenses	(6,391)	(4,209)
Cost of Sales	(865,391)	(672,830)
Administration expenses	(231,822)	(145,522)
Operating surplus (deficit) for the period	<u>91,108</u>	<u>655,785</u>

The accompanying notes form part of these financial statements.

6.2 Balance Sheet

Nature Glenelg Trust Balance Sheet as at 30 June 2015

	2015 \$	2014 \$
Current Assets		
Cash assets	987,954	879,391
Receivables	163,480	219,678
Inventories	864,528	441,240
Other	1,680	650
Total Current Assets	2,017,642	1,540,960
Non-Current Assets		
Property, plant and equipment	555,228	561,662
Total Non-Current Assets	555,228	561,662
Total Assets	2,572,870	2,102,622
Current Liabilities		
Payables	23,052	17,132
Financial liabilities	11,059	1,301
Current tax liabilities	61,504	132,840
Provisions	167,828	79,167
Other	1,536,393	1,207,730
Total Current Liabilities	1,799,836	1,438,170
Non-Current Liabilities		
Provision for long service leave	37,760	20,286
Total Non-Current Liabilities	37,760	20,286
Total Liabilities	1,837,596	1,458,455
Net Assets (Deficiency)	735,275	644,167
Equity		
Contribution by settlor	10	10
Accumulated surplus	735,265	644,157
Total Equity	735,275	644,167

The accompanying notes form part of these financial statements.

6.2 Notes the Financial Statements

Nature Glenelg Trust Notes to the Financial Statements For the year ended 30 June 2015

Note 1: Summary of Significant Accounting Policies

The trustee has prepared the financial statements of the trust on the basis that the trust is a non-reporting entity because there are no users dependant on general purpose financial statements. The financial statements are therefore special purpose financial statements that have been prepared in order to meet the requirements of the trust deed, and the information needs of the stakeholders.

The trustee has prepared the financial report in accordance with the following applicable Australian Accounting Standards and UIG Interpretations

AASB 108 : Accounting Policies, Changes in Accounting Estimates Errors

AASB 110 : Events after the Balance Sheet Date

AASB 1031 : Materiality

The financial statements have been prepared in accordance with the significant accounting policies disclosed below, which the directors of the trustee company have determined are appropriate to meet the purposes of preparation. Such accounting policies are consistent with the previous period unless stated otherwise.

The financial statements have been prepared on an accruals basis and are based on historical costs unless otherwise stated in the notes. The accounting policies that have been adopted in the preparation of the statements are as follows:

(a) Property, Plant and Equipment (PPE)

Property, Plant and Equipment are carried at cost or at independent or directors' valuation. All assets, excluding freehold land and buildings are depreciated over the useful lives of the assets to the trust. Increases in the carrying amount arising on revaluation of land and buildings are credited to a revaluation reserve in shareholders' equity. Decreases that offset previous increases of the same asset are charged against fair value reserves directly in equity; all other decreases are charged to the income statement. Each year the difference between depreciation based on the revalued carrying amount of the assets charged to the income statement and depreciation based on the asset's original cost is transferred from the revaluation reserve to retained earnings.

The carrying amount of plant and equipment is reviewed annually by directors to ensure it is not in excess of the recoverable amount from these assets. The recoverable amount is assessed on the basis of the expected net cash flows that will be received from the asset's employment and subsequent disposal. The expected net cash flows have not been discounted in determining recoverable amounts.

(b) Inventories

Inventories are measured at the lower of cost and net realisable value. Costs are assigned on a first-in first-out basis and include direct materials, direct labour and an appropriate proportion of variable and fixed overhead expenses.

(c) Provisions

Provisions are recognised when the trust has a legal or constructive obligation, as a result of past events, for which it is probable that an outflow of economic benefits will result and that outflow can be reasonably measured. Provisions recognised represent the best estimate of the amounts required to settle the obligation at reporting date.

Nature Glenelg Trust
Notes to the Financial Statements
For the year ended 30 June 2015

(d) Cash and Cash Equivalents

Cash and cash equivalents include cash on hand, deposits held at call with banks, other short-term highly liquid investments with original maturities of three months or less, and bank overdrafts. Bank overdrafts are shown within borrowings in current liabilities on the balance sheet.

(e) Revenue and Other Income

Revenue is measured at the fair value of the consideration received or receivable after taking into account any trade discounts and volume rebates allowed. For this purpose, deferred consideration is not discounted to present values when recognising revenue.

Interest revenue is recognised using the effective interest rate method, which, for floating rate financial assets, is the rate inherent in the instrument. Dividend revenue is recognised when the right to receive a dividend has been established.

Revenue recognised related to the provision of services is determined with reference to the stage of completion of the transaction at the reporting date and where outcome of the contract can be estimated reliably. Stage of completion is determined with reference to the services performed to date as a percentage of total anticipated services to be performed. Where the outcome cannot be estimated reliably, revenue is recognised only to the extent that related expenditure is recoverable.

All revenue is stated net of the amount of goods and services tax (GST).

(f) Goods and Services Tax (GST)

Revenues, expenses and assets are recognised net of the amount of GST, except where the amount of GST incurred is not recoverable from the Tax Office. In these circumstances, the GST is recognised as part of the cost of acquisition of the asset or as part of an item of the expense. Receivables and payables in the balance sheet are shown inclusive of GST.

(g) Employee Benefits

Provision is made for the liability for employee entitlements arising from services rendered by employees to balance date. Employee benefits have been measured at the amounts expected to be paid when the liability is settled, plus related costs.

(h) Trade and Other Payables

Trade and other payables, including bank borrowings and distributions payable, are recognised at the nominal transaction value without taking into account the time value of money.

6.3 Independent Audit Report

INDEPENDENT AUDIT REPORT TO THE TRUSTEE OF THE NATURE GLENELG TRUST

Scope

We have audited the attached special purpose financial report of the Nature Glenelg Trust for the year ended 30 June 2015, being the Balance Sheet, Statement of Comprehensive Income, Notes to the Accounts and the Trustees Declaration. The Trustee is responsible for the preparation and presentation of the financial report and the information contained therein. We have conducted an independent audit of the financial report in order to express an opinion on it to the Trustee of the Nature Glenelg Trust.

Nature Glenelg Trusts' responsibility for the financial report

Nature Glenelg Trust is responsible for the preparation and fair presentation of the financial report in accordance with its Constitution, Australian Accounting Standards as described in Note 1 to the Accounts, and for such internal controls as the Trustee determines are necessary to enable the preparation and fair presentation of a financial report that is free from material misstatement, whether due to fraud or error.

Auditor's responsibility

Our responsibility is to express an opinion on the financial report, based on the audit. We have conducted an independent audit of the financial report in order to express an opinion on it to the Trustee. We have complied with the auditor independence requirements prescribed by our professional body membership.

Our audit has been conducted in accordance with Australian Auditing Standards. These standards require that we comply with relevant ethical standards relating to audit engagements, and plan and perform the audit to obtain reasonable assurance as to whether the financial report is free from material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial report. The procedures selected depend on the auditor's judgement, including the assessment of the risks of material misstatement of the financial report, whether due to fraud or error. In making those risk assessments, the auditor considers internal controls relevant to the Nature Glenelg Trust's preparation and fair presentation of the financial report in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Nature Glenelg Trusts' internal controls. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of accounting estimates made by the Nature Glenelg Trust, as well as evaluating the overall presentation of the financial report. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Auditor's opinion

In our opinion, the attached special purpose financial report of the Nature Glenelg Trust is in accordance with its Constitution including:

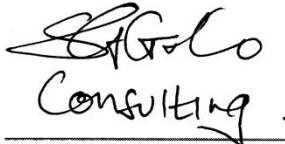
I. giving a true and fair view of the Trusts' financial position as at 30 June 2015 and of its performance for the year ended on that date; and

II. complying with Australian Accounting Standards to the extent described in Note 1 to the Accounts.

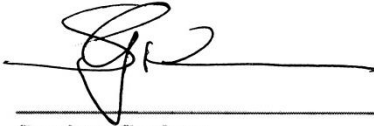
**INDEPENDENT AUDIT REPORT TO THE TRUSTEE OF
THE NATURE GLENELG TRUST**

Basis of Accounting

Without modifying our opinion, we draw attention to Note 1 to the financial report, which describes the basis of accounting. The financial report is prepared to assist the Nature Glenelg Trust to meet the reporting requirements of its Constitution. As a result, the financial report may not be suitable for any other purpose.



SGG & Co Consulting
Chartered Accountants



Stephen Graham
Partner

Dated at Adelaide this  day of October 2015