Science & Waterways Project REPORT



PHCC General Meeting – 18 June 2020 Steve Fisher, Program Manager, Science & Waterways

RLP – Wetlands and people: A community restoring the ecological character of the Peel-YalgorupRamsar 482 Wetlands (The Ramsar Project)Nov 2018 – June 2023 \$4,996,221

Year 2 Quarter 4 Reporting Coordinated by Steve Fisher

- The team is working furiously to deliver and report against the remaining services for Year 2 (2019/2020) of the Project, in particular the On- ground and Collaborative Science and Management components.
- Year 2 is the most challenging of this 5-year project with approximately ¼ of the total cash value of the project and a complicated revegetation project to be delivered. Thanks to a huge effort by the team, we are on track to meet our deliverables (✓) with the exception of a portion of the 30 ha of revegetation works (±) which we hope to complete in July.
- The remaining services are:
 - 2 baseline data sets collected and/or synthesized 🗸 (Lake Clifton groundwater quality; thrombolites)
 - 6 on-ground works on private land 🗸 (weed control to complement works within Ramsar Site)
 - 50 ha controlling access ✓ (fencing at McLarty Nature Reserve to control vehicle access)
 - 74 ha treated for pest animals, initial 🗸 (feral pig, fox and rabbit removal at Kooljerranup)
 - 90 ha treated for pest animals, follow up ✓ (monitoring, baiting & trapping foxes, feral cats Serpentine River corridor)
 - 2 agreements established ✓ (Landholder Works Agreements)
 - 165 ha area surveyed for fauna ✓ (Lake McLarty Invertebrates, Shorebird 2020 count)
 - 65 days of project planning and delivery ✓
 - 1 planning and delivery documents for delivery of the project services \checkmark (Onground work plan)
 - 114 ha of initial weed removal \checkmark (on Ramsar Site: spiny rush at Lake Preston, cotton bush at Myalup)
 - 52 ha of follow-up weed removal ✓ (woody weeds at Lake Clifton; cotton bush at Kooljerranup & Yalgorup National Park)
 - 30 ha revegetated ± (preparation, planting and fencing at 6 sites within Ramsar Site and catchment)

Component 1: Science and Collaborative Management

Managed by Rick James, Coordinator Wetlands Science and Management

- Yalgorup Lakes Surface Water Quality Monitoring (YLSWQM) Program
 - **19 sites are being assessed** covering the 17 discrete waterbodies that comprise the Yalgorup Lakes system.
 - Regular monthly monitoring continued (April & May).
 - May round included DBCA involvement with Robbie Jordan the Yalgorup NP Ranger assisting with sampling.
 - The May assessment revealed that many of the lakes are starting to re-fill. Only Linda's Lagoon and Lake Josephine at Myalup remained dry.



Myalup Lagoon (at the southern end of Lake Preston) has started to re-fill after drying out in mid-Feb.

- Lake Clifton Thrombolites Groundwater Assessment (LCTGA) Program.
 - No further action due to time spent assisting with on-ground works (see next point) but will commence in June with collection of baseline data.
- Providing Assistance to Deliver the On-ground Component of the Wetlands & People Project
 - Organising the Year 2 revegetation program:
 - Assessment of all the proposed revegetation sites carried out (6 main revegetation areas, with 18 individual sub-sites across these Areas).
 - Complete overhaul of the proposed works to bring them within the available budget.
 - Consulted with all stakeholders (DBCA, City of Mandurah, and Shire of Murray) to make sure they're happy with the new proposals.
 - Appointed the contractor and conducted familiarisation visits to all sites.
 - Finalised the plant orders (approx. 36,000 plants to be planted over 27 hectares).
 - Organisedfencing contracts for work at two sites.
 - Site preparation work due to commence 8 June.
- Aerial Vehicle Survey of the Lake Clifton Thrombolite Community
 - Geo-reference points established on 8 May so that imagery from aerial photography can be accurately matched to location.
 - Aerial photography flown 10 May using a manned aeroplane in preference to a drone. Using an aeroplane enabled coverage of the entire extent of the lake in a single flight and allowed us to use bigger (heavier) cameras with improved capability for video, still shots and Near Infrared Reflectance (NIR) imagery
 - Imagery obtained using visible light photography to identify the extent of the thrombolites and NIR photography to detect photosynthetic activity (i.e. signs of life in the thrombolite community)
 - Full consultant's report and mapping is due mid-June. This will provide a comprehensive map showing the extent of the thrombolites across the lake with some clues as to their health / viability.

<u>Component 2: Wetlands & People (Community Engagement)</u> Managed by Sharon Meredith, Coordinator, Ramsar Community Engagement

- Easter Holiday Drawing Competition

- The Easter drawing competition was run through the Easter school holidays (8 – 30 April) and winners announced on 4 May. Winners received a hamper.

- Coordinated the Micro Plastic Video Presentation

 Sharon Meredith and Kate Born recorded a video presentation to present the results of the micro plastics in estuary foreshore sediments survey to Coodanup College students. The video was presented to students 5 May.

- Nairns Bird Hide

Met with the City of Mandurah on 20 May to discuss progress on the Nairns Bird Hide including modifications, maintenance and temporary signage. Held a follow up meeting 26 May to progress temporary signage further. The aim of the signage is to alert recreational users and residents to the migratory season and reinforce the positive behaviours that can be embraced when using the foreshore to protect wetlands and migratory birds.

- Online Education Hub

- The Educational Hub aims to **capture the educational programs** currently being delivered by PHCC **make them available for students and teachers to interact with online**. This includes educational videos and worksheets.
- Developed a rollout plan.
- Developed and sent out a **request for quote to local videographers** to develop a series of educational videos aiming for filming to take place in July.
- **Collaborating with Charlie Jones** and others at the **Children's University at UWA** to develop worksheets.

- Wetlands Weekender

- Conducted **stakeholder consultation** with 5 key stakeholders.
- Met with MANPAC to discuss the potential to host art markets for the Wetlands Weekender.
- A meeting of the internal Working Group is scheduled for 16 June. The Working Group will provide **recommendations and framework for the festival**. A **draft program is to be proposed** and decided upon, along with the time frame for the festival.

- Coodanup Foreshore Masterplan

- **Coordinated the PHCC response** to revised plans of the Coodanup Foreshore Masterplan, comments to be submitted by 23 June.

- Ramsar Signage Strategy – Concept Paper

- **Conducted research** and prepared a structure for the Concept Paper outlining the **vision for, and the benefits of, having consistent messaging in signage to educate the community in the wise use** of the **Ramsar wetlands**. The intent is for the Concept Paper it to be shared between decision-makers in government, business and other sectors to engage and galvanise them to work together to create a Scoping Document for the Signage Strategy for the Peel-Yalgorup Wetlands.

- Avi-tourism Mini business case
 - Provided **evidence based research** to Whitney Consulting Agency to **develop a mini-business case** for avi-tourism in the Peel.
- Seedling Giveaway
 - Supported the Seeling Giveaway event at the Lake Clifton Community Centre on 7 June assisting with promotion and coordinated the event on the day.
 - **50 residents** from the Lake Clifton and Herron area **received a tray of 20 seedlings** to assist in **restoring habitat** on their properties.



Jenny Rose, Megan LeRoy and Jennie Beeson at the Lake Clifton seedling give-away.

Component 3: On-Ground

Managed and delivered by Mike Griffiths, Wetlands Restoration Officer with support from Rick James and Steve Fisher

- Weed control
 - Spiny Rush (*Juncus acutus*) treated in an area of over 100 ha on Lake Preston foreshore; eastern and western shorelines surveyed comprehensively and mapped for Spiny Rush and Narrow leaf Cottonbush.
 - Priority weeds including woody and grassy weeds controlled across 26 ha in Kooljerranup Nature Reserve, Harvey Estuary foreshore.
 - Follow-up control work on Wild Fig and Brazilian Pepper completed at Lake Clifton eastern foreshore (subject to minor follow-up treatment mid-June 2020) covering approximately 6 ha. Last patch of pepper trees at this site removed and treated in April.
 - Mixed priority weeds including **woody weeds**, Cottonbush and "garden escapes" controlled in Shire of Waroona reserve on western shores of Lake Preston North.
 - Follow-up to Year 1 cottonbush control works completed in Yalgorup National Park, Ellis Road Myalup, covering most of :"Phase 1" area, 80 ha in total.
 - "Phase 2" cottonbush control underway at Ellis Road, Myalup, over 25 ha of new area covered. To be completed mid-late June 2020.



Wild Fig regrowth after follow-up control; 27 May 2020 Lake Clifton

- Onground works on privately-owned land

- Delivered using targeted Landholder Works Agreements (LWAs) to complement weed control works within the Ramsar Site boundary
- Follow-up weed control works completed for **four properties previously treated in Year 1 targeting woody weeds, Cottonbush**.
- Weed control works completed for **one property identified for new works in Year 2** under a LWA targeting **woody weeds, cottonbush**.
- Second property identified for new works in Year 2, LWA formalised, on-ground works due to be completed mid-June.
- Controlling Pest Animals
 - Intensive **pig and feral animal survey and control** completed covering **250 ha** at southern end of **Kooljerranup Nature Reserve**: 5 pigs, 6 foxes, many rabbits were removed.
- Access Control
 - Agreement with contractor formalised for fencing at McLarty Nature Reserve with the aim of managing four-wheel-drive vehicle access to protect over 70 ha of conservation land. All preparations now complete, fencing works due to be completed by 16 June 2020.

Managed by Jo Garvey, Coordinator Healthy Waterways, supported by Jesse Rowley

- Communicating and Promoting the Alcoa Foundation Project

- **Production of a series of short films** showcasing the project has commenced with the videographer scheduled to film the **Karu Bilya wetlands planting** in June.
- Our posting promoting the Karu-Bilya Wetlands Restoration project was featured in the National NRM Regions Snapshot.
- Articles promoting the project featured in PHCC's Wattle and Quoll e-newsletter, distributed to approximately 400 recipients.
- Edition 5 of the **Project's Newsletter** has been released and was **sent to 194 recipients** with a further feature in the latest edition of Wattle and Quoll

- Karu Bilya Wetlands Restoration Project

- Site preparation including **weed control and ripping for revegetation activities over 5.7ha** at Site A is now completed.
- Revegetation works are planned to occur in the week commencing 22 of June with GP Forestry and the Bindjareb Noongar community teaming up (under the direction of the PHCC) to plant almost 12,000 native species across 7ha.
- DBCA have removed illegally dumped rubbish and have pruned/tidied up tracks to allow safe entry for volunteers and contractors undertaking planting and fencing type on-ground works.
- Working closely with the stakeholders such as the Water Corporation, Main Roads and the Department of Water and Environmental Regulation (DWER) to help control unauthorised 4WD access through both the Karu Bilya and Peel Main Drain project sites.
- Vegetation monitoring completed for Site A prior to revegetation works commencing to observe changes in the vegetation community over time. This was achieved using the National Vegetation Information System (NVIS) methodology developed by the Federal Governments Department of Agriculture, Water and the Environment.

Hymus Creek Restoration Project

- An agreement with the **Lowlands Conservation Association** has been drafted (currently under review) to commence this project, aiming to improve the condition of Hymus Creek, a tributary to the Serpentine River which was affected by a fire in the summer of 2020.
- Including a cash contribution from the Ramsar Project, this project will result in:
 - The reinstatement of control of livestock access to **protect and conserve 3.8ha** of remnant vegetation on both sides of the Hymus Creek **covering an 800 m reach**. This will also promote natural regeneration of native plant species.
 - Planting of **1500** *Lepidosperma persecans* (Lowlands provenance) in fire affected areas to reconnect habitat corridors.

- Serpentine River Action Plan (RAP)

- This document has now been finalised and planning is underway to undertake on-ground works at priority sites identified by the Plan.
- Dung Beetle Project

- North Dandalup Primary School students are continuing to learn about the benefits and importance of Dung Beetles through a variety of subjects including Maths, Science and English.
 - Unfortunately, due to the **late arrival of the Spring Dung Beetle** species, *Onthophagus vacca*, these beetles **will not be ready for release onto private properties** in the Alcoa Foundation project timeframe. This is due to the long periods of time it takes for this particular species to breed.
- In place of this, event planning is underway to raise awareness about the importance of dung beetles when living on properties abutting the Serpentine River (closed event).
 - Jacob Berson who is a Research Associate at the Faculty of Science, School of Biological Sciences from the University of Western Australia will be the main speaker of the event
 - The event will be held on private property Kalga Farm (Rupert Richardson)
 - Focus will be placed on understanding how increased dung beetle activity on riverine properties can help reduce nutrient run off into the waterway
 - A **trapping demonstration** will be showcased to inform landholders how to check if they have high or low dung beetle activity
 - Live beetles will be displayed and tips will be shared on how to correctly identify different species
 - **Advice will be shared** on how private landholders and community members can quickly and easily report their observations through the **MyDungBeetle** mobile phone or tablet app

- Funding Opportunities – Planning for the future

 Following positive feedback from Alcoa to the Grant Concept Paper for the 'Healing Bilya – Restoring the Murray and Serpentine Rivers' project, Jo Garvey and Steve Fisher have completed and submitted a full application for funding for the next three years from Alcoa Foundation (see also 1FTE Science Advisor Report below).



Undertaking NVIS monitoring at Site A as part of the Karu Bilya Wetlands Restoration project.

Royalties for Regions: Peel-Harvey Estuary Grants Jun 2018 – Sep 2021 \$750,000

Managed by Jo Garvey, Coordinator Healthy Waterways, supported by Jesse Rowley

- Fish Friendly Farms

- PHCC is **supporting a number of projects** occurring in the Peel Catchment that align with the Fish Friendly Farms initiative. We are **aiming to have a landscape scale impact** rather than an 'ad-hoc' approach. These have been divided into the following 'Delivery Components'.
 - Delivery component 1: Re-snagging Rivers Feasibility study
 - PHCC is considering **financially supporting** this project coordinated by OzFish Unlimited.
 - After reviewing the Scoping Study provided by Andrew Matthews from OzFish Unlimited, PHCC is getting advice from various stakeholders, including State Government departments, on approvals to trial the deployment of concrete modules in the aim to enhance habitat for recreational fish species in the Murray River.
 - Delivery Component 2: Mussels in Farm Dams to improve water quality (Carter's Freshwater Mussels)
 - The team will receive an **update from Alan Lymbery (Murdoch University)** later in June to determine if support is required in **landholder engagement to progress** this project.
 - Delivery Component 3: Enhancing Fish Habitat using Shellfish
 - Delivery 3.1: Shellfish Gardening Program, coordinated by The Nature Conservancy (TNC)
 - Using **Blue Mussels**, TNC are planning to engage local community members living on the canals to grow their own **Shellfish Garden** using baskets.
 - Raising awareness on the **importance of shellfish reefs** is also a high priority in this project as they are in rapid decline across Australia.
 - Through the growing of mussels in baskets, TNC also hope to use this as a **supplement to the seeding of a Shellfish Reef** aiming to be constructed in the Peel Inlet by May/June 2021.
 - Planning is underway to support this project through providing funding to purchase materials required to roll out the program including baskets, monitoring equipment and mussels to kick-start the gardens.
 - Delivery 3.2: Restoring the Black Pygmy Mussel in the Murray River, coordinated by Alan Cottingham from Murdoch University
 - PHCC has engaged Alan Cottingham to undertake a study of **Black Pygmy Mussel** populations throughout the Murray River with particular focus on the area **between South Yunderup and the Pinjarra Weir**, and if possible, engage with private landholders further upstream **to determine if Black Pygmy Mussels are present**.
 - The aim is to locate populations of Black Pygmy Mussels and encourage growth to create additional food sources and habitat for native recreational fish species such as black bream.
 - Alan Cottingham has sent though a proposal which is currently with PHCC to review.
 - Delivery 4: Fish Community Index Sampling
 - The team is exploring the option of contracting Murdoch University to undertake Fish Community Index Sampling.

- This technique was developed by Murdoch University to assess the ecological **condition of rivers and estuaries using fish as indicators**. It has proven to be a robust tool for quantifying ecological health responses to local-scale environmental issues.
- A meeting is scheduled between PHCC and Murdoch University to determine if this type of study is feasible through the Fish Friendly Farms project.
- Stock Enhancement of Black Bream in the Murray River (see also 1FTE Science Advisor Report)
 - John Tonkin College have renovated an outdoor classroom into a **fully functional and controlled aquaculture facility** following advice from the Department of Education.
 - The school is now prepared and equipped to **commence the second phase** of this project.
 - Murdoch University will be providing an update to PHCC soon regarding their capacity to deliver.

- Harvey River Demonstration Reach / Marron, more than a meal

- On-ground works are progressing with planting occurring at **three existing revegetation sites** along the lower **Harvey River** (Nell's Block, Bristol Road & a site near Forest Highway) to create habitat corridors and promote vegetation enhancement.
- **Fencing** is also planning to commence before the winter rains to **exclude livestock** from the Bristol Road revegetation site.



A beautiful Murray River black bream — cuter than a numbat and a lot easier to find. Hopefully some of our John Tonkin College-reared fingerlings will grow into something resembling this beauty in 20 years from now.

Royalties for Regions: 1FTE Science Advisor

May 2018 – Oct 2021 \$345,000

Managed by Steve Fisher, Program Manager, Science and Waterways (in addition to oversight of the projects above)

- Attended the following key meetings via Zoom with:

- Mat Hipsey, Brendan Busch and Peishing Huang (University of WA), Matt Barnes and Ian Teakle (BMT), Rod Peake, Brett Flugge and Tom Lerner (Shire of Murray) and Jane O'Malley (PHCC) on 27 May to kick-off the consultancy by UWA and BMT Point Grey Marina Estuary Impact Assessment – see Provision of Advice / driving projects to assist in the restoration of Peel Waterways below for a detailed description.
- **Peel Bright Minds Steering Group** on 9 April; 7 May, 27 May and 4 June including participating in the recruitment process of **PBMs new Program Director, Skipper van Heer**
- Cath Pattenden, Leesa King and Stephanie Miles (Newmont) and Mel Durack (PHCC) and Jane
 O'Malley on 21 April to discuss PHCC's "Rivers Partnership" in the Hotham-Williams with
 Newmont, in particular how closely the Science and Waterways projects on the coastal plain are aligned with and our willingness to support the Hotham-Williams Program.
- Anika Serer (Peel Alliance) and Adrian Parker (PDC) on 8 May to discuss interests and potential funding for The Nature Conservancy's "Valuing Nature" proposal i.e. quantifying the economic value and the value of the ecosystem services and benefits that the Peel-Harvey Estuary provides.
- Fiona Valesini, Simon Reeves and Chris Gillies (The Nature Conservancy, TNC) on 13 May as a follow up to the above to refine the scope of the proposal. Simon and Chris were authors (amongst others) of Mapping Ocean Wealth report, where the value of estuaries on the south eastern coast of Australia were similarly quantified through an ARC Linkage Project with Deakin University. Stay tuned for more progress on this exciting prospect (the holy grail!!).
- Jane Townsend (HRRT) and Jane O'Malley on 27 May to explore opportunities to better support the *Marron, more than a meal* initiative in the Harvey River catchment through our current and future projects. We've committed to this being an ongoing conversation as we plan our activities for 2020/21.
- The 'Stock enhancement of black bream in the Murray River' project team i.e. Kim Savins, Barb Sing, (John Tonkin College, JTC), Jo Garvey and Jesse Rowley (PHCC) on 12 May to discuss progress on relocation of aquaculture facilities within the JTC campus and the impacts of the COVID-19 pandemic on the program. The new facility is now complete and JTC is keen to continue the aquaculture program. It is now very likely that we will release of bream fingerlings again in December 2020 (see also Royalties for Regions: Peel-Harvey Estuary Grants project summary above).
- Alex Hams, Fiona Valesini (TNC), Alan Cottingham (Murdoch University) and Jesse Rowley and Jo
 Garvey on 8 May to progress collaboration between PHCC and TNC on the Fish Friendly Farms
 project (see also Peel-Harvey Estuary Grants project summary above).
- Made the following presentations
 - None

- Provision of Advice / driving projects to assist in the restoration of Peel Waterways
 - Attended the Steering Committee meeting for PHCC's Regional Estuaries Initiative projects on 28
 May and provided some useful advice (I hope) regarding the monitoring and evaluation of the
 "Mayfield" and Peel Main Drain Diversion Trial projects.
 - With Jo Garvey submitted a revised Grant Concept Paper to Alcoa Australia on 30 April describing PHCC's vision for the *Healing Bilya-Restoring the Murray and Serpentine Rivers* project (i.e. the next Phase of the *Connecting Corridors and* Communities – *Restoring the Serpentine River*, see Alcoa Foundation project report above). Our nominal budget was revised down from USD\$ 700 K to USD\$ \$600 K over three years 2021-2023.
 - Alcoa invited us to complete a full application for this project which we submitted for their review on 15 June. We are hopeful that Alcoa will support our full proposal and present it to the Alcoa
 Foundation for their consideration at their August Board Meeting, noting that the Foundation has been briefed on the Grant Concept Paper by Alcoa. We will know if we are successful by late 2020.
 - Assisted in development of the concept and the progress of the *Point Grey Marina Estuary Impact Assessment* project to be delivered by UWA and BMT. This project is an extension of the ARC
 Linkage Project *Balancing societal and estuarine health in a changing environment* where the
 modelling will be refined to forecast impacts of the proposed Point Grey Marina Development on
 the Peel-Harvey Estuary. Outcomes of the project will include:
 - development of a sediment transport model to forecast the rate of siltation of the proposed navigation channel
 - forecasting the **accumulation of seagrass and macroalgae wrack** by the marina and entrance channel
 - forecasting the impact of the marina development on the ecological health of the estuary (e.g. seagrass habitat; formation and accumulation of monosulfidic black ooze) under different climate change scenarios.
- Assisted Kristie Tonkin (Peel Bright Minds) in the successful application to Scitech for funding to host an event during National Science Week 17-23 August. The event, entitled *Breaming with Opportunities* will showcase how the *Stock enhancement of black bream in the Murray River* project inspires students to embrace Science Technology Engineering and Mathematics (STEM). It will be recorded as a video of interviews of the teachers, students and scientists involved in the project and include footage of the release of the black bream into the Murray River. PHCC will provide support for this event through the Ramsar project and the *Peel-Harvey Estuary Grants*.
- Accepted an in vitiation from Pierre Horwitz (Edith Cowan University, ECU) to join the Stakeholder Reference Group for the *Predicting the Impacts of Fire on Water Quality (PIFWaQ)* project. This project is funded by the Water Corporation and will examine the impacts of fire on water quality in drinking water catchments in southwest WA. It is an extension of a previous project undertaken by ECU, PHCC, HRRT and DWER in response to the 2016 Yarloop and Waroona bushfires. Dave Blake presented an overview of both projects at PHCC's Strategic Planning meeting on 20 February 2020.

- Other

- Completed the annual progress report for the Peel-Harvey Estuary 1FTE Project and submitted to
 Department of Primary Industries and Regional Development (DPIRD) via the Peel Development
 Commission on 30 April. DPIRD accepted the report, triggering the final payment for this project.
- Provided advice (with assistance from Neil Carrol, City of Mandurah) regarding **management of seagrass wrack** on Doddie's Beach to a concerned community member on 7 April (see also correspondence).

Events (PHCC sponsoring or presenting)

- Previous events 17 April to 18 June:

-	30 April 2020	Easter Holiday Drawing Competition
		(see Wetlands & People Community Engagement)
-	7 June 2020	Seedling Giveaway Lake Clifton Community Centre
		(see Wetlands & People Community Engagement)

- Future events (after 18 June):

-	16 July 2020	The Benefits of Dung Beetles
		(see Connecting Corridors and Communities)
-	18 August 2020	Peel Bright Minds National Science Week: Breaming with Opportunities
		(see 1 FTE Science Advisor)

 Scheduled events have been postponed or cancelled due to the physical distancing restrictions of the COVID-19 pandemic. Sharon Meredith continues to explore options on how to present these and others as virtual events using e.g. video-conferencing, webinars into the future so please watch this space.

Work Health and Safety

- No incidents or near-misses to report