



CELEBRATING WORLD WETLANDS DAY

1-2 Feb 2024

The 20th Annual WA WETLANDS CONFERENCE

Scientific Innovation, Cultural Wisdom, Artistic Vision and Collective Action towards
Wetlands and Human Wellbeing: Nurturing Our Natural Connection

e-Program

thewetlandscentre.org.au/conference

184 Hope Rd Bibra Lake WA 6163

Background: Colour Explosion | Anton Blume





The WA Wetlands Conference

The Program



The Leschenault Estuary in Western Australia is a poetic canvas of nature, hosting the region's southernmost white mangroves. These ancient guardians of coastal rivers, estuarine wetlands & bays are crucial for local ecosystems, serving as habitat and filter. To Aboriginal People, mangroves have always been a treasure trove, offering a rich larder of resources and traditional medicines, encapsulating a deep-rooted respect for nature.

["Celebrating World Wetlands Day 2024"](#)

Join us at our spectacular and tranquil institution for

The 20th Annual Western Australian Wetlands Conference

Thursday, 1st February and Friday, 2nd February 2024

The Wetlands Centre Cockburn, 184 Hope Road, Bibra Lake, Western Australia 6163

The Wetlands Centre Cockburn welcomes you to its 20th Annual Western Australian Wetlands Conference. We are glad to have you at the picturesque Cockburn Wetlands Precinct, nestled amidst the Beelihar Wetlands, and to our vibrant and dynamic facility, The Wetlands Centre, for a two-day Conference on the 1st and 2nd February 2024. This Conference commemorates World Wetlands Day: The anniversary of the adoption of the Convention on Wetlands in the Iranian city of Ramsar on 2nd February 1971. Our conference typically draws over 200 attendees from WA and surrounding states and territories from all streams of wetlands-linked work and interests. We will have keynote addresses, expert presentations, sharing of case studies and research, plenary discussions, informal tours and plenty of networking opportunities.

Objectives for our conference:

"To increase knowledge, awareness, understanding and commitment to the conservation, interpretation and management of Wetlands."

"And, to provide an annual networking forum for organisations and individuals involved in the above".

Conference Structure

Aligned with the 2024 Ramsar theme 'Wetlands and Human Wellbeing', our conference unfolds in four half-day sessions – The Floodplains, The Mangroves, The Billabongs, and The Marshes. These sessions showcase the expertise of leading wetland scientists, managers, academics, and artists, offering a blend of cutting-edge research, innovative management practices, and insightful case studies that highlight the essential role of wetlands in our wellbeing and cultural landscape.

01.

THE FLOODPLAINS SESSION

Embodying the vastness and fertility of floodplains, this session delves into the diverse dynamics of wetland ecosystems. It encompasses a range of topics, paralleling the rich diversity and extensive reach of floodplain environments.

02.

THE MANGROVES SESSION

Reflecting the unique convergence of land and sea in mangroves, this panel session merges science with humanities in wetlands. It explores the interplay of ecological knowledge and cultural insights, akin to the intertwined roots of mangroves at the water's edge.

03.

THE BILLABONGS SESSION

Inspired by the secluded and vibrant life of billabongs, this session delves into specialised areas of wetland research. It mirrors the focused and introspective nature of billabongs, highlighting unique and in-depth studies.

04.

THE MARSHES SESSION

Drawing inspiration from the adaptable and broad-reaching marshes, this workshop session covers impactful strategies in wetland management. It reflects the dynamic nature of marshes, emphasising adaptable and wide-ranging approaches to sustaining wetland ecosystems.

Location: The Wetlands Centre Cockburn
184 Hope Road, Bibra Lake, WA 6163


Date: 1st to 2nd February 2024

Refer to the colour code below for concurrent session locations

Main Hall

Education Room

Meeting Room

Start	End	Time	Title	Speaker/s	Organisation	Topic
DAY 1	Morning	Thu 1st Feb	THE FLOODPLAINS SESSION			
7:30 AM	8:30 AM	60 min	Special Walking Tour of Bibra Lake and Birdwatching			Optional activity (walking shoes required) — Arrive at 7:15 am for a 7:30 am start.
8:45 AM	9:00 AM	15 min	WELCOME TO COUNTRY		Robyn Collard supported by Tryse Rioli	
9:00 AM	9:10 AM	10 min	CONFERENCE OPENING		Opening by Hon. Peter Tinley AM, MLA	
9:10 AM	9:15 AM	10 min	Acknowledgement of Sponsors		Prof. Treena Burgess, Chair, The Wetlands Centre	
9:20 AM	10:00 AM	45 min	Keynote	Assoc. Professor Robyn Heckenberg	Dean of Learning and Teaching, Centre for Aboriginal Studies, Curtin University	Story, Place and Identity Within Contemporary Contexts of Eco-Theology and Saving Our Planet
10:00 AM	10:30 AM	30 min	Morning Tea / Networking			
10:30 AM	11:00 AM	30 min	Expert / Case Study Presentations – Round 1	Choose to attend any one of the 3 presentations below		
10:30 AM	11:00 AM	30 min	Expert Presentation	Dr. Essie Rogers	School of Environmental and Conservation Sciences, Murdoch University	Linking Wetland Ecosystem Health to Improved Human Wellbeing: A Win-Win Opportunity
10:30 AM	11:00 AM	30 min	Expert Presentation	Em Charlton	Founder of the Bottle Top Hill volunteer-run community group.	Bottle Top Hill: A Grassroots Movement 'Taking It to The Top' With The 12r's
10:30 AM	11:00 AM	30 min	Case Study Presentation	Ryan Flint	Environmental Officer, City of Stirling	Social Media vs Wetland Biodiversity
11:05 AM	11:35 AM	30 min	Expert / Case Study Presentations – Round 2	Choose to attend any one of the 3 presentations below		
11:05 AM	11:35 AM	30 min	Case Study Presentation	Dr. Ben Roennfeldt	Lecturer, South Metropolitan TAFE, Honorary Research Fellow of the Harry Butler Institute, Murdoch University	Wetland Thievery and Piracy Through the Eyes of a Drone
11:05 AM	11:35 AM	30 min	Case Study Presentation	Sedigheh Ghafari Kondari	PhD Candidate, Rehabilitation of Arid and Mountainous Regions, Faculty of Natural Resources, University of Tehran – Murdoch University	Assessing Water Governance for Livelihoods: Social Relations and Conflict Interactions in the Hoor al-Azim Wetland, Karkheh Basin
11:05 AM	11:35 AM	30 min	Expert Presentation	Anthony Santoro	Project Manager, Saving Our Snake-Necked Turtle project. Murdoch University	The Saving Our Snake-Necked Turtle Project – Two-Year Update

11:40 AM	12:10 PM	30 min	Expert/Case Study Presentations – Round 3	<i>Choose to attend any one of the 3 presentations below</i>		
11:40 AM	12:10 PM	30 min	<i>Expert Presentation</i>	Adrian Pinder	Ecosystem Science Program Leader, DBCA	Desert Wetlands: Just Add Water
11:40 AM	12:10 PM	30 min	<i>Case Study Presentation</i>	Rebecca Cooper	Environment Officer, City of Bayswater	Working Together to Manage a Threatened Ecological Community
11:40 AM	12:10 PM	30 min	<i>Case Study Presentation</i>	Joyce Gadalon and Robyn Walsh	Turtle Trackers, City of Cockburn	Track Your Way: A Volunteer's Perspective – Saving Our Snake-Necked Turtle (SOSNT) Project
12:10 PM	1:10 PM	60 min	Lunch / Networking			
DAY 1	Afternoon	Thu 1st Feb	THE MANGROVES SESSION	Organisation		Topic
1:10 PM	2:25 PM	75 min	Artists meet the Scientists – Round 1	<i>Choose to attend any one of the 2 forums below</i>		
1:10 PM	2:25 PM	75 min	<i>Forum 1 – Part 1</i>	Prof Mindy Blaise & Artists; Centre for People Place and Planet, ECU	Mr Trevor Ryan, Dr Liz Edmonds, Mrs Sabrina Dowling Giudici & Mr Anton Blume	Art and Science: Exhibits and Actions Exhibitions and Performances Presenting Expressions and Perspectives of Wetlands:
1:10 PM	2:25 PM	75 min	<i>Forum 2</i>	Marie Mitchell, Sharon Meredith, Stephne Sands & Alana Grant	Independent Artists, Mandurah	Wetland Stories Presented Through Video, Audio and Interactive Displays
2:25 PM	3:05 PM	30 min	Afternoon Tea / Networking			
3:05 PM	4:20 PM	75 min	Artists meet the Scientists – Round 2	<i>Choose to attend any one of the 2 forums below</i>		
3:05 PM	4:20 PM	75 min	<i>Forum 1 – Part 2</i>	Prof Mindy Blaise & Artists; Centre for People Place and Planet, ECU	Mr Trevor Ryan, Dr Liz Edmonds, Mrs Sabrina Dowling Giudici & Mr Anton Blume	Art, Science and Wetland Knowledges Panel Discussion on Exhibitions and Performances Presenting Expressions and Perspectives of Wetlands
3:05 PM	4:20 PM	75 min	<i>Forum 3</i>	Lakshmi Kanchi & Invited Artists	Miriam Wei Wei Lo, David Whish-Wilson, Liana Joy Christensen and Angela Rossen	Wetland Whispers: Contemporary Arts as a Lens for Environmental Empathy
4:30 PM	5:15 PM	45 min	Plenary Session – Sharing the Learnings	<i>Informal Discussion with presenters (Optional Attendance)</i>		
5:15 PM	6:15 PM	60 min	SUNDOWNER			

DAY 2	Morning	Fri 2nd	Feb	THE BILLABONGS SESSION	Organisation	Topic
7:30 AM	8:30 AM	60	min	Special walking tour of the Roe 8 Revegetation site		Optional activity (walking shoes required) — Arrive at 7:15 am for a 7:30 am start.
8:45 AM	8:50 AM	5	min	ACKNOWLEDGEMENT OF COUNTRY	Lakshmi Kanchi, Chair, WA Poets Inc	
8:50 AM	9:00 AM	10	min	OPENING OF DAY 2 – WA WETLANDS CONFERENCE	Opening by Hon. Dr. Brad Pettitt MLC	
9:00 AM	9:05 AM	10	min	Acknowledgement of Sponsors	Michael Coote WA Wetlands Conference Convenor	
9:05 AM	9:15 AM	10	min	WORLD WETLANDS DAY	Dr. Jane Chambers, Murdoch University	
9:15 AM	10:00 AM	45	min	Keynote	Greg Keighery Western Australian Herbarium, Dept. Biodiversity, Conservation and Attractions	Water Is Life in Our Dry State
10:00 AM	10:10 AM	10	min	Poster Presentation	Shu Tong Liu PhD Candidate, School of Biological Sciences, University of Western Australia	Leaf Phosphorus Allocation to Chemical Fractions and its Seasonal Variation in South-Western Australia
10:10 AM	10:45 AM	30	min	Morning Tea / Networking		
10:45 AM	11:15 AM	30	min	Expert / Case Study Presentations – Round 1	<i>Choose to attend any one of the 3 presentations below</i>	
10:45 AM	11:15 AM	30	min	<i>Expert Presentation</i>	Rick James Wetlands Officer, DBCA Mandurah	The Vegetation Dynamics of Ephemeral Wetlands
10:45 AM	11:15 AM	30	min	<i>Expert Presentation</i>	Thilo Kruger PhD Candidate, School of Molecular and Life Sciences, Curtin University	Precarious Suckers: The Bladderworts of the Cape Le Grand-Mandooneerup Wetlands
10:45 AM	11:15 AM	30	min	<i>Case Study Presentation</i>	Kim Nguyen Senior Aquatic Ecologist, Biologic Environmental Survey	Aquatic and Terrestrial Invertebrate Survey of the Maylands Samphire Flats
11:20 AM	11:50 AM	30	min	Expert / Case Study Presentations – Round 2	<i>Choose to attend any one of the 3 presentations below</i>	
11:20 AM	11:50 AM	30	min	<i>Case Study Presentation</i>	Andy Williams Project Officer, Rivers and Estuaries Branch. DBCA	Ashfield Flats Master Plan
11:20 AM	11:50 AM	30	min	<i>Expert Presentation</i>	Dr. Konrad Miotlinski Geoscientist, UWA	Ecological Indicators of Fire Disturbance Affecting Water Quality in Wetlands
11:20 AM	11:50 AM	30	min	<i>Expert Presentation</i>	Brianna Sullivan Aquatic Scientist, Aquatic Ecology Group, Stantec	The Most Outwardly Wetlands: Current Studies and Future Prospects in Salt Lake Ecology
11:55 AM	12:25 PM	30	min	Expert / Case Study Presentations – Round 3	<i>Choose to attend any one of the 3 presentations below</i>	
11:55 AM	12:25 PM	30	min	<i>Case Study Presentation</i>	Nii Amarquaye Commey Oceanographer and Studying Engineering at University of Yamanashi, Japan	Wetland–Catchment Sustainability: The Case of the Sakumo Ramsar Site, Ghana
11:55 AM	12:25 PM	30	min	<i>Expert Presentation</i>	Assoc. Prof. Alan Lymbery Director, Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University	Rivers And Wetlands of The South-West: A Tragedy in Four Acts
11:55 AM	12:25 PM	30	min	<i>Case Study Presentation</i>	Adj. Assoc. Prof. Dan Carter UWA, Friends of South Perth Wetlands	A Partnership of a Friends Group and Local Council on The Rehabilitation of Foreshore Wetlands
12:25 PM	1:10 PM	45	min	Lunch / Networking		

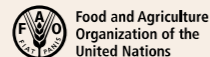
DAY 2	Afternoon	Fri 2nd	Feb	THE MARSHES SESSION	Organisation	Topic	
1:10 PM	1:55 PM	45	min	Keynote	Professor Pierre Horwitz	Centre for People, Place and Planet, ECU	Trends in Ecology – Comments on Resolved and Unresolved Matters
1:55 PM	2:10 PM	15	min	Poster Presentation	Lingling Chen	PhD Candidate, School of Biological Sciences, UWA	Phosphorus-Acquisition Strategies of Acacia Pulchella and Acacia Lasiocarpa in Contrasting Habitats
2:10 PM	2:20 PM	10	min	<i>Set Up Concurrent presentation venues</i>			
2:20 PM	2:50 PM	30	min	Expert Presentations – Round 4	<i>Choose to attend any one of the 3 presentations below</i>		
2:20 PM	2:50 PM	30	min	<i>Expert Presentation</i>	Dr. Alan Cottingham	Research Fellow at Harry Butler Institute, Murdoch University	Canaries Off the Coastline as A Fish Kill Early Warning System
2:20 PM	2:50 PM	30	min	<i>Expert Presentation</i>	Assoc. Prof. Belinda Robson	School of Environmental and Conservation Sciences, Murdoch University	Restoration Of Urban Wetlands for Dragonfly Biodiversity
2:20 PM	2:50 PM	30	min	<i>Expert Presentation</i>	April Sturm	PhD Candidate, Murdoch University	Identifying Conditions for Ex-Situ Incubation of Freshwater Turtle (<i>Chelodina oblonga</i>) Eggs to Optimise Hatching Success
2:50 PM	3:20 PM	30	min	Afternoon Tea / Networking			
3:20 PM	4:40 PM	80	min	Workshops	<i>Choose to attend any one of the 4 workshops below</i>		
3:20 PM	4:40 PM	80	min	<i>Workshop 1</i>	Shane Herbert	Leader, eDNA Frontiers Group, Curtin University	Everything You Wanted to Know About eDNA-Based Monitoring
3:20 PM	4:40 PM	80	min	<i>Workshop 2</i>	Gun Dolva	Project Manager, SERCUL	Connecting With Nature to Improve Management of Wetlands
3:20 PM	4:40 PM	80	min	<i>Workshop 3</i>	Joanne Francis	Independent Artist, Mount Barker	Painting A Picture of Wetlands Around Woogenellup
3:20 PM	4:40 PM	80	min	<i>Workshop 4</i>	Lanie Cottam and Hazel Dempster	Nursery Officer, The Wetlands Centre Cockburn; Nursery Volunteer and Wildflower Expert	Plant Propagation Techniques
CLOSE OF CONFERENCE							

Life interlaced Wetlands and people

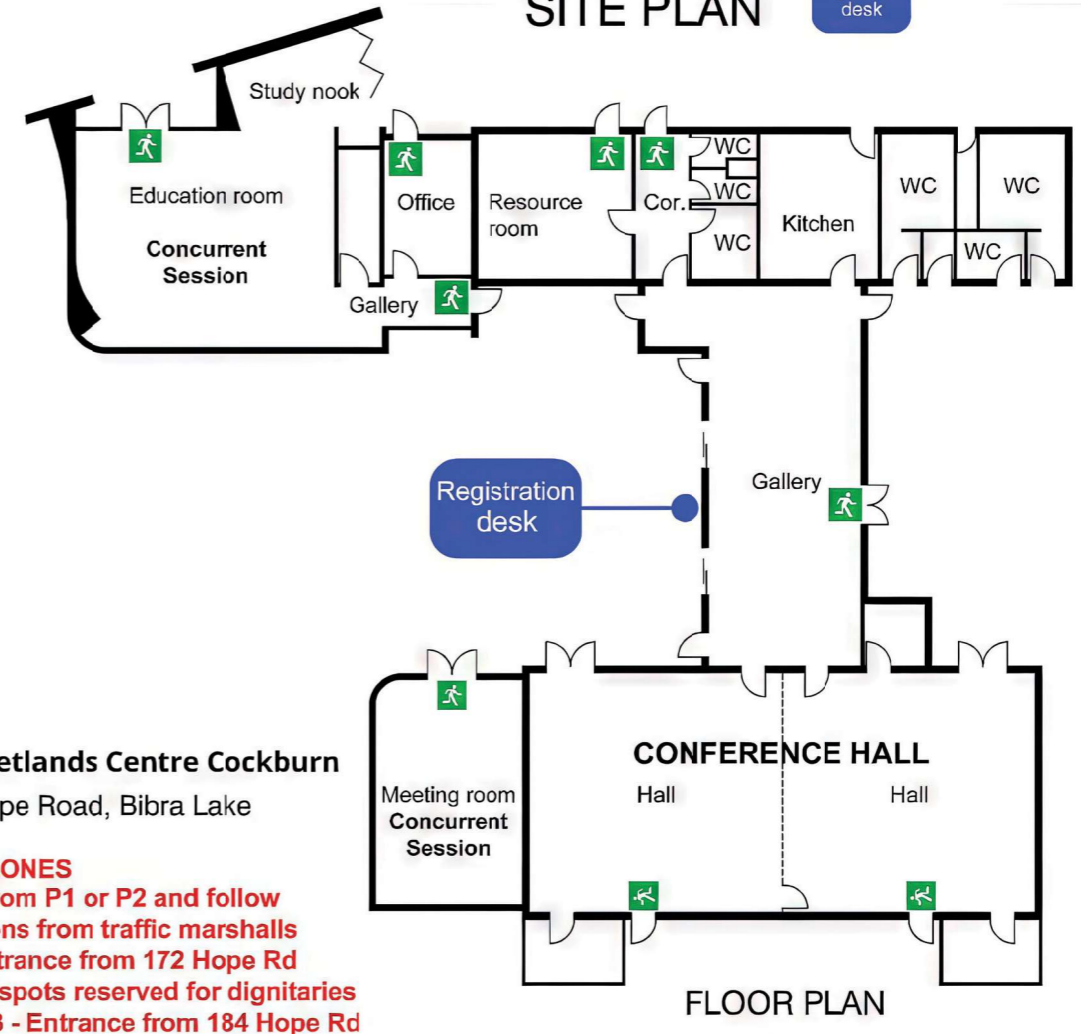
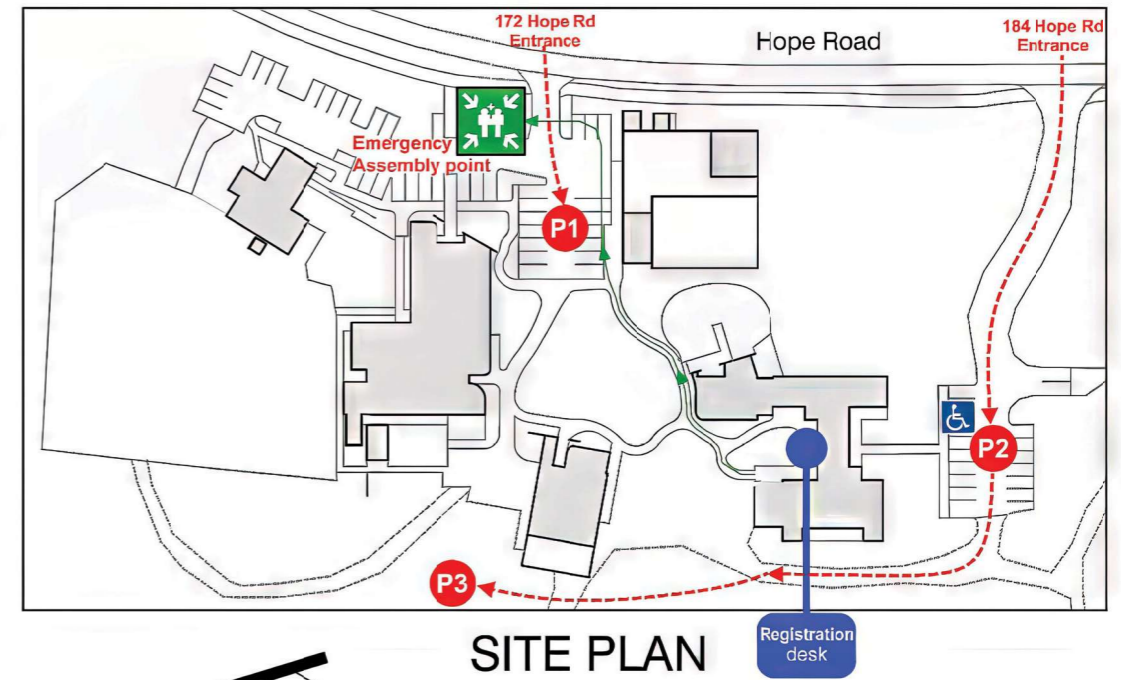
CARE - NURTURE - SUPPORT



**World
Wetlands Day**
2 February 2024
Wetlands and Human Wellbeing



The WA Wetlands Conference 2024 – AREA MAP



The Wetlands Centre Cockburn
184 Hope Road, Bibra Lake

PARKING ZONES

- Enter from P1 or P2 and follow directions from traffic marshalls
- P1 - Entrance from 172 Hope Rd**
- P1 has spots reserved for dignitaries**
- P2 & P3 - Entrance from 184 Hope Rd**

PARKING

1. Please follow directions given by the parking marshalls.
2. Spots with traffic cones are reserved for dignitaries. Also, observe emergency and disabled parking bays in P1 and P2.
3. Grassed area has no demarcations, please use your judgement to park judiciously. Ensure your car does not block exits or hinder flow.

IN CASE OF FIRE OR EMERGENCY DURING THE CONFERENCE

1. If the automatic alarms are not activated, raise the alarm, call '000' and provide location and situation details.
2. Assist in a calm evacuation of visitors and members of the public.
3. Do not attempt to suppress any fire unless it is safe to do so.
4. Provide assistance until Emergency Services arrive.

STAYING COVID-SAFE

1. Please follow all COVID-safe protocols displayed around the venue. Please cooperate with the organisers to ensure that all mandatory health requirements for attending this event are complied with.
2. All doorways and exits are uni-directional to allow contactless passage. Please follow entry/exit signs displayed on all doorways. Sanitisers are placed at numerous accessible locations throughout the venue. Kindly help maintain cleanliness and hygiene standards.
3. If you are unwell, exhibiting COVID-related symptoms or have been instructed to isolate, we request that you **DO NOT ATTEND** this event.

Location: The Wetlands Centre Cockburn
184 Hope Road, Bibra Lake, WA 6163

Date: 1st to 2nd February 2024

Refer to the colour code below for concurrent session locations

Main Hall

Education Room

Meeting Room

Start	End	Time	Title	Speaker/s	Organisation	Topic
DAY 1	Morning	Thu 1st Feb	THE FLOODPLAINS SESSION			
7:30 AM	8:30 AM	60 min	Special Walking Tour of Bibra Lake and Birdwatching			Optional activity (walking shoes required) — Arrive at 7:15 am for a 7:30 am start.
8:45 AM	9:00 AM	15 min	WELCOME TO COUNTRY	Robyn Collard accompanied by Tryse Rioli		
Led by :	Robyn Collard; BA Primary Ed, M Ed (Religious Ed)					
Biography :	Robyn Collard is a Nyungar Yorga from the Whadjuk and Ballardong groups, has 9 brothers and sisters and is a mother of three and nana to 15 beautiful and talented grandchildren. Her wider family includes the McGuire, Bennell and Shaw families with connections to the Tiwi Islands. Robyn was a member of the first Aboriginal netball team selected for Western Australia in 1974 -where she met her future husband – Maurice Rioli. She successfully completed Year 12 gaining her leaving certificate at South Fremantle Senior High School. She has developed cultural education programs, offers cultural safety advice from an Aboriginal perspective on a range of issues and builds capacity with everyone she meets. Robyn comes with a wealth of knowledge and experience in her career that covers previous roles within the Government and Catholic education systems as a Principal, Team Leader and Education Consultant across the Northern Territory and Western Australia – she continues in her role of storyteller and educator. Robyn is a very busy Nana with her part time role work as the General Manager Cultural Safety and Partnerships at Wanslea along with all of her cultural and community work in her spare time and supporting her grandchildren in their endeavours at school and sport.					
Accompanied by :	Tryse Rioli					
	Tryse is a Whadjuk Tiwi Maarman on his cultural learning journey. He is one of Robyn's grandsons and performs on the didgeridoo and assists with Smoking Ceremonies and Water Healing Ceremonies					
9:00 AM	9:10 AM	10 min	CONFERENCE OPENING	Opening by Hon. Peter Tinley AM, MLA		
9:10 AM	9:15 AM	10 min	Acknowledgement of Sponsors	Prof. Treena Burgess, Chair, The Wetlands Centre		
9:20 AM	10:00 AM	45 min	Keynote	Assoc. Professor Robyn Heckenberg	Dean of Learning and Teaching, Centre for Aboriginal Studies, Curtin University	Story, Place and Identity Within Contemporary Contexts of Eco-Theology and Saving Our Planet
Presenter/s :	Assoc. Professor Robyn Heckenberg					
Email :	robyn.heckenberg@curtin.edu.au					
Affiliation :	Centre for Aboriginal Studies, Curtin University					
Biography :	Robyn is a Wiradjuri woman whose work over the years has incorporated Indigenous community arts, and education often inclusive of environmental issues. Part of her philosophy is to look through the lens of Indigenous ways of seeing and doing. The very essence of an Indigenous way of Being is always inclusive of relationship to Place and what that means in terms of Indigenous pedagogies of Place. Robyn's way of seeing the world speaks of spiritual connectedness within the larger space of authentic rendering of cultural sovereignty.					
Presentation Title :	Story, Place and Identity Within Contemporary Contexts of Eco-Theology and Saving Our Planet					
Abstract :	This paper speaks of an Indigenous perspective of growing a dialogue within environmental concerns and spiritual and Indigenous knowledges relating to caring for Country and Belonging to Country. In terms of cultural sovereignty, one's connection to the land and waterways plays a significant role in duties and obligations to Country. This paper is interpreting these obligations through eco-theology and the ever expanding community and scholarly engagement with the existential concerns of the Planet and our waterways and water holes in particular. The paper discusses story and place within a dialogue of speaking for Country, indeed focusing on spiritual connection and practical wisdom. How can the way we see the world, connect with the world, and Be in the world bring us to listen to the Earth and be in simpatico with the Earth's groaning for relief and healing?					

10:00 AM	10:30 AM	30 min	Morning Tea / Networking			
10:30 AM	11:00 AM	30 min	Expert / Case Study Presentations – Round 1	Choose to attend any one of the 3 presentations below		
10:30 AM	11:00 AM	30 min	<i>Expert Presentation</i>	Dr. Essie Rogers	School of Environmental and Conservation Sciences, Murdoch University	Linking Wetland Ecosystem Health to Improved Human Wellbeing: A Win-Win Opportunity
Presenter/s :	Dr. Essie Rogers					
Email :	essie.rodgers@murdoch.edu.au					
Affiliation :	School of Environmental and Conservation Sciences, Murdoch University					
Biography :	Dr Rodgers is a lecturer in animal physiology and conservation at Murdoch University. Her research is at the forefront of the emerging field of conservation physiology, which explores the responses of organisms to anthropogenic threats and determines the eco-physiological constraints dictated by current conditions and future environmental change. Essie completed her PhD at The University of Queensland, where she studied the impacts of climate warming on the diving physiology of estuarine crocodiles. Following this, Essie held postdoctoral fellowships at the University of California Davis (USA), the University of Antwerp (Belgium) and the Australian National University where she conducted cutting-edge research.					
Presentation Title:	Linking Wetland Ecosystem Health to Improved Human Wellbeing: A Win-Win Opportunity					
Abstract :	Time spent in nature has measurable human health benefits, providing strong reasons to conserve wetlands in urban areas. People who regularly spend time near wetlands experience improved psychological wellbeing (mental restoration and lower stress levels), a reduced risk of cardiovascular diseases, and greater opportunity for socialisation and physical activity. While the health benefits of spending time in nature are increasingly understood, it remains unknown if these benefits increase with the ecological quality (i.e., biodiversity and organismal health) of wetlands. Wetlands with high ecological quality may confer greater health benefits to people, providing a rare win-win conservation opportunity. This research investigated if the health benefits gained by nature-users increase with levels of ecological quality. Hundreds of wetland-users were surveyed across Perth and these data were coupled with measures of wetland biodiversity and water quality. This research delivers novel insights into the links between wetland ecosystem health and human health, whilst also providing local and international governments with the knowledge necessary for evidence-based conservation planning.					
Co-Author/Presenter:	Dr Daniel Gomez Isaza, Harry Butler Institute, Murdoch University					
10:30 AM	11:00 AM	30 min	<i>Expert Presentation</i>	Em Charlton	Founder of the Bottle Top Hill volunteer-run community group.	Bottle Top Hill: A Grassroots Movement 'Taking It to The Top' With The 12r's
Presenter/s :	Em Charlton					
Email :	bottletophill@gmail.com					
Affiliation :	Founder of the Bottle Top Hill volunteer-run community group.					
Biography :	Em is Founder of the Bottle Top Hill volunteer-run community group and the BTH program, ex-Facilitator Adventure Training, Change Agent, Presenter on Sustainability, Waste Educator, Citizen Scientist (Microplastics), Citizen Scientist (Turtle Tracker) Novice, awarded Westfield Local Hero Finalist 2022, Auspire Active Citizen of the Year 2023, WasteSorted Community Highly Commended 2023, WasteSorted Individual Champion Highly Commended 2023, UNAA(WA) United Nations Day Environment Action Award Winner 2023 and, most importantly, a passionate volunteer and working mum caring for the environment and our shared future.					
Presentation Title :	Bottle Top Hill: A Grassroots Movement 'Taking It to The Top' With The 12r's					
Abstract :	Not just for survival, water is an element to which we are drawn. This calling to the blue space can nurture us with hidden healing powers and a sense of wellbeing. On the surface, the gentle transformations that take place in the Wetlands connects us to a life of tranquillity, helping us to reconnect, to adopt a slower pace, to reduce the stress of a modern world. Below the surface, the impact of our modern world is having a detrimental effect on our waterways, the richness of natural minerals and applying stress to the living organisms that depend on it. In order to protect the environment that we so heavily rely upon, we need to understand our impact, determine ways to protect it, and collaborate with others from all walks of life on a defined pathway for change. Bottle Top Hill is a grassroots movement, using a method (inspired by Traditional Owners to hand down knowledge through a storyline) that can be retold – the 12 R's – teaching us to live sustainably all year round. BTH also encompasses monthly public events to engage with the broader community. First Chapter belongs to First Nations – Respect. The final chapter is brought to life through imagery and art, as shown through an installation featured in the 2023 Sculpture by the Sea exhibition at Cottesloe, WA and Bondi, NSW, aiming to deliver a message of HOPE. You are invited to be part of our Story and to begin a journey to collaborate and inspire others.					
10:30 AM	11:00 AM	30 min	<i>Case Study Presentation</i>	Ryan Flint	Environmental Officer, City of Stirling	Social Media vs Wetland Biodiversity
Presenter/s :	Ryan Flint					
Email :	ryan.flint@stirling.wa.gov.au					
Affiliation :	Environmental Officer, City of Stirling					
Biography :	Ryan Flint is an Environmental Officer at the City of Stirling, focusing on environmental assessments, project planning and management, and supervising conservation works with City staff and volunteers. He reviews environmental management plans, develops and implements interpretation and education programs, and oversees natural area restoration projects. In his spare time, Ryan volunteers with dingoes, advocating for their conservation, education, and awareness.					
Presentation Title :	Social Media vs Wetland Biodiversity					
Abstract :	A small unassuming piece of wetland habitat in the Gwelup area became a community sensation when people started posting high quality content from the secret location. Once the location became public, the Secret Garden became a must visit spot, drawing thousands to people to it. The case study touches on the challenges this raised for the local community and local biodiversity and outlines how the City has managed this evolving space over time.					
Co-Author/Presenter:	Murray Woods, City of Stirling					

11:05 AM	11:35 AM	30 min	Expert / Case Study Presentations – Round 2	Choose to attend any one of the 3 presentations below		
11:05 AM	11:35 AM	30 min	Case Study Presentation	Dr. Ben Roennfeldt	Lecturer, South Metropolitan TAFE, Honorary Research Fellow of the Harry Butler Institute, Murdoch University	Wetland Thievery and Piracy Through the Eyes of a Drone
Presenter/s :	Dr. Ben Roennfeldt					
Email :	broennfeldt@gmail.com					
Affiliation :	Lecturer, South Metropolitan TAFE, Honorary Research Fellow of the Harry Butler Institute, Murdoch University					
Biography :	Dr Ben Roennfeldt lectures in Science and Conservation at South Metropolitan TAFE and is an Honorary Research Fellow of the Harry Butler Institute, Murdoch University. He finds biological and ecological relationships in nature fascinating; spawned from an early childhood upbringing on a remote central Australian Aboriginal community, Ntaria. So far, Ben's had a diverse research and teaching career, working with fish, crustaceans, estuarine larval fish and zooplankton, aquatic viruses and penguins, while developing new ideas around sustainable aquaculture. In his spare time, he enjoys photography and exploring nature with family and friends.					
Presentation Title :	Wetland Thievery and Piracy Through the Eyes of a Drone					
Abstract :	Complex relationships occur between our wetland birds and animals, which often go unnoticed. Through a drones-eye, we will discover that life is not always fair on the water, especially for those that fish for a living. Ethical droning considerations will also be highlighted throughout this presentation featuring ecological relationships in our own backyard/backwater.					
11:05 AM	11:35 AM	30 min	Case Study Presentation	Sedigheh Ghafari Kondari	PhD Candidate, Rehabilitation of Arid and Mountainous Regions, Faculty of Natural Resources, University of Tehran – Murdoch University	Assessing Water Governance for Livelihoods: Social Relations and Conflict Interactions in the Hoor al-Azim Wetland, Karkheh Basin
Presenter/s :	Sedigheh Ghafari Kondari					
Email :	sedigheh.ghafarikondari@murdoch.edu.au					
Affiliation :	PhD Candidate, Rehabilitation of Arid and Mountainous Regions, Faculty of Natural Resources, University of Tehran – Murdoch University					
Biography :	Sedigheh Ghafari Kondari is a determined Ph.D. candidate specializing in Watershed Management Sciences & Engineering at the University of Tehran, Iran. Her research centers around the critical field of water governance and its profound implications for conflict and social violence. Currently serving as a visiting research associate at Murdoch University from June 1, 2023, to March 2024, Sedigheh is fully immersed in her dissertation, titled "Analysis of the Effect of Water Governance on Conflict and Social Violence in the Karkheh Basin in Khuzestan Province." Sedigheh has developed a comprehensive and integrated perspective on issues concerning water resource management and its wide-ranging impacts on societies.					
Presentation Title :	Assessing Water Governance for Livelihoods: Social Relations and Conflict Interactions in the Hoor al-Azim Wetland, Karkheh Basin					
Abstract :	The Karkheh River and Hoor al-Azim wetland, located in southwestern Iran, supports the local economy and livelihoods of surrounding communities. Effective water governance is needed to sustain wetland-dependent livelihoods. The Hoor al-Azim wetland has faced environmental issues in recent years due to factors like water scarcity, dams upstream, pollution, and unsustainable practices, all contributing to its degradation. Water governance involves diverse stakeholders across different administrative levels. This research assesses these networks using social network analysis to provide insights for improving wetland management. Objectives included evaluating networks, identifying key actors, and representing conflicts. Interviews and surveys were conducted with stakeholders in Khuzestan province and the Dashte-e-Azadegan and Hoveyze counties near the Hoor al-Azim wetland in 2023. Institutions were categorized by roles and other attributes. Social network analysis examined network structures and conflicts. Results show central government authorities are influential actors. Restructuring the existing governance model is imperative. For a proposed new model, it is crucial to engage non-governmental stakeholders and civil society representatives in water governance. Ministry of Oil subsidiaries conducting unsustainable oil exploration in the wetland were not influential in interaction networks but were highly embedded in conflict networks. Environmental and water authorities were central in multiple disputes. Findings advance understanding of governance complexity under water scarcity. Assessing dependencies, conflicts, and social relations provides novel perspectives on water governance effectiveness and opportunity for improvement.					
Co-Author/Presenter:	Mehdi Ghorbani, University of Tehran; Ali Salajegheh, University of Tehran, Animesh K Gain, Murdoch University, Oliver Fritsch, Murdoch University					
11:05 AM	11:35 AM	30 min	Expert Presentation	Anthony Santoro	Project Manager, Saving Our Snake-Necked Turtle project. Murdoch University	The Saving Our Snake-Necked Turtle Project – Two-Year Update
Presenter/s :	Anthony Santoro					
Email :	anthony.santoro@murdoch.edu.au					
Affiliation :	Murdoch University					
Biography :	Anthony Santoro is the project manager and lead turtle ecologist for the Saving Our Snake-Necked Turtle project at Murdoch University, Western Australia. His research focusses on the oblong turtle (<i>Chelodina oblonga</i>), a freshwater species endemic to south-western Australia. He started his research career with a first-class Honours in Environmental Science, determining the effect of land use change on turtles. His Ph.D. research identified how stressors such as climate change and urbanisation affect the survivorship, recruitment, and population viability of <i>C. oblonga</i> in Perth's urban wetlands. Anthony enjoys using a mixture of field observations, tracking technologies and modelling to answer applied conservation ecology questions.					
Presentation Title :	The Saving Our Snake-Necked Turtle Project – Two-Year Update					
Abstract :	Southwestern snake-necked turtle (<i>Chelodina oblonga</i>) populations within urban environments are in decline. Road mortality and increased predation are reducing nesting female, nest and hatchling survivorship and thereby recruitment. The Saving Our Snake-Necked Turtle project aims to remedy these threats by uniting turtle ecologists, local councils and citizen scientists throughout southwest WA. This talk outlines the significant expansion and effectiveness of this program over the first two years.					
Co-Author/Presenter:	Jane Chambers, Stephen Beatty, Catherine Baudains					
11:40 AM	12:10 PM	30 min	Expert/Case Study Presentations – Round 3	Choose to attend any one of the 3 presentations below		

11:40 AM	12:10 PM	30 min	<i>Expert Presentation</i>	Adrian Pinder	Ecosystem Science Program Leader, DBCA	Desert Wetlands: Just Add Water
Presenter/s :	Adrian Pinder					
Email :	adrian.pinder@dbca.wa.gov.au					
Affiliation :	Ecosystem Science Program Leader, DBCA					
Biography :	Adrian Pinder leads the Ecosystem Science Program in DBCA, which undertakes research to address knowledge gaps at the ecosystem to landscape scales across a wide range of Western Australian environments, including wetlands. Adrian's research has focussed on spatial and temporal patterns of aquatic fauna including the environmental drivers of those patterns and responses to threatening processes. In recent years this has included biological survey, examining responses to climate-change and the impacts of redclaw crayfish on Pilbara riverine ecosystems.					
Presentation Title :	Desert Wetlands: Just Add Water					
Abstract :	Of the thousands of wetlands spread through the Western Australian arid zones very few have been surveyed for their biodiversity values. These include springs and associated aquifers, gnammas, rock holes, river pools, floodplains, freshwater lakes, claypans, and salt lakes. The rare permanent waters provide refuges for relictual species and those without drought tolerance mechanisms. The vast salt lake systems, many as significant as Kati Thandi, include a wide range of wetlands and, when these fill during major rain events, they are an important part of the desert's 'boom' ecology, supporting aquatic and terrestrial biota. Arid zone wetlands have tended to be 'out of sight, out of mind' due to their remoteness, because they tend to be dry most of the time and, until recently, they have been relatively isolated from threats other than pastoralism. Over the last two decades there has been a rapid expansion of interest in the mineral resources in and around the salt lakes, including gold, uranium, potash and lithium, and mining for these has the potential to greatly alter the character of these systems. With almost none of these in the conservation estate there is an urgent need to increase our understanding of the values of arid zone wetlands. This paper summarises new information from recent surveys with data from a number of surveys undertaken over the last 25 years to provide an insight into the extent, distribution and significance of arid zone wetland biodiversity in Western Australia.					
Co-Author/Presenter:	Kirsty Quinlan, Michael Lyons, Aminul Islam, Angus Lawrie, Mahabub Rahman					
11:40 AM	12:10 PM	30 min	<i>Case Study Presentation</i>	Rebecca Cooper	Environment Officer, City of Bayswater	Working Together to Manage a Threatened Ecological Community
Presenter/s :	Rebecca Cooper					
Email :	rebecca.cooper@bayswater.wa.gov.au					
Affiliation :	Environment Officer, City of Bayswater					
Biography :	Rebecca Cooper has been the Environment Officer at the City of Bayswater for over seven years and has been directly managing the Maylands Samphire Flats at Maylands Peninsula for five. Working with the Friends of Maylands Samphires she has obtained over \$150,000 in grants to manage the saltmarsh community at the site and has experience working closely with volunteer groups on a variety of projects. Previously she has also obtained an Honours degree looking at the impact of Off-Road vehicles on beach macrofauna.					
Presentation Title :	Working Together to Manage a Threatened Ecological Community					
Abstract :	Globally there has been a sharp decline in saltmarshes, with the Subtropical and Temperate Coastal Saltmarsh of Australia listed as a Threatened Ecological Community (TEC) in 2013. Saltmarsh communities in Southwestern Australia have a high diversity and endemism of several groups, including Tecticornia species. However, a survey undertaken as early as 1987 found that the Swan River Estuary had lost around 50% of its coastal wetlands. The Maylands Samphire Flats contain a large saltmarsh community that has been historically modified, which has resulted in fragmentation of the samphire community, introduction of weed species, changed topography, and altered hydrological conditions. In this presentation we provide insights and learnings into the management of this saltmarsh community, and how successful partnerships between land manager, volunteers and contractors can lead to optimal outcomes.					
Co-Author/Presenter:	Jo Bower, Friends of Maylands Samphires, TBC, APACE Inc					
11:40 AM	12:10 PM	30 min	<i>Case Study Presentation</i>	Joyce Gadalon and Robyn Walsh	Turtle Trackers, City of Cockburn	Track Your Way: A Volunteer's Perspective – Saving Our Snake-Necked Turtle (SOSNT) Project
Presenter/s :	Joyce Gadalon and Robyn Walsh					
Email :	Please contact Vicky Hartill <vhartill@cockburn.wa.gov.au> Environmental Education Officer, City of Cockburn					
Affiliation :	Turtle Trackers, City of Cockburn					
Biography :	Joyce Gadalon worked in various roles in Government until 2016 when she courageously started a Legal Firm. Unfortunately, in 2019 she had to step away from full time work to care for her father. Joyce discovered the joys of volunteering at Kanyana Wildlife Hospital, Homelessness We Care Perth and Cockburn Turtle Tracking. She has tracked since 2021. Robyn Walsh spends her days working as a senior child protection worker and is passionate about social and environmental justice, sustainability, Dockers and women's sport. She belongs to various bushcare groups, namely Friends of Manning Ridge and Cockburn Community Wildlife Corridor, where she is also an active committee member. She is not shy of a few deputations to Council and state government submissions to enhance conservation of these areas. Before joining turtle trackers in 2022, Robyn had only seen 1 turtle!					
Presentation Title :	Working Together to Manage a Threatened Ecological Community					
Abstract :	This presentation offers a unique volunteer perspective on the efforts to protect and conserve the Southwestern snake-necked turtle, a species facing increasing threats from environmental changes and human activities. The project highlights the success of collaborative efforts involving strategic planning, community engagement, and innovative conservation techniques. The focus is on the significant achievements over the past two years, demonstrating the project's sustainability and effectiveness in fostering a healthier population of this native species. The presentation aims to inspire and inform others about the crucial role of volunteer involvement in wildlife conservation, emphasizing the positive impact such initiatives have on local biodiversity.					
12:10 PM	1:10 PM	60 min	Lunch / Networking	📷 📱 🍷 🍴 🍽️ 🍴		

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DAY 1	Afternoon	Thu 1st	Feb	THE MANGROVES SESSION	Organisation	Topic
1:10 PM	2:25 PM	75	min	Artists meet the Scientists – Round 1	<i>Choose to attend any one of the 2 forums below</i>	
1:10 PM	2:25 PM	75	min	<i>Forum 1 – Part 1</i>	Prof Mindy Blaise & Artists; Centre for People Place and Planet, ECU	Mr Trevor Ryan, Dr Liz Edmonds, Mrs Sabrina Dowling Giudici & Mr Anton Blume Art and Science: Exhibits and Actions Exhibitions and Performances Presenting Expressions and Perspectives of Wetlands:
Conveners :	Dr Mindy Blaise and Dr Pierre Horwitz. Contributors: Dr Liz Edmonds, Mrs Sabrina Dowling Giudici, Mr Trevor Ryan, Ms Lilly Blue					
Email :	p.horwitz@ecu.edu.au					
Affiliation :	Centre for People Place and Planet, ECU					
Abstract :	In this forum ECU's Centre for People Place and Planet will host a series of exhibitions/performances that present expressions and perspectives of wetlands and their components. The audience will be asked to view, and where appropriate participate in, the works, and reflect on their impact, meaning and intent, the ways in which sciences have and haven't contributed to their formulation, and the (often multiple) ways they might be interpreted. This will be followed by a panel discussion where the audience will first respond to the artists and performers, and then co-develop, with the panel discussants, a collective understanding of the types of knowledges required for a holistic understanding of wetlands.					
1:10 PM	2:25 PM	75	min	<i>Forum 2</i>	Marie Mitchell, Sharon Meredith, Stephne Sands & Alana Grant	Independent Artists, Mandurah Wetland Stories Presented Through Video, Audio and Interactive Displays
Conveners :	Marie Mitchell, Sharon Meredith, Stephne Sands & Alana Grant					
Email :	studio@mariemitchellart.com					
Affiliation :	Independent Artists, Mandurah					
Abstract :	The Wetland Stories exhibition is a collaboration of four Mandurah-based artists passionate about wetland conservation who explore the role the local wetlands play in forming personal and community identity. The artists' work is inspired by community stories that have evolved through their interaction with the Peel-Yalgorup Wetlands, an internationally significant wetland. The exhibition invites the viewer to consider how these stories form integral parts of our local cultural identity and their own identity. The artists' aim is to showcase and preserve these community stories, to raise greater awareness for these wetlands and advocate for their protection. Come and experience the stories of hope and loss, resilience and incredible heroism, historical moments, and personal memories close to the hearts of residents.					
2:25 PM	3:05 PM	30	min	Afternoon Tea / Networking		
3:05 PM	4:20 PM	75	min	Artists meet the Scientists – Round 2	<i>Choose to attend any one of the 2 forums below</i>	
3:05 PM	4:20 PM	75	min	<i>Forum 1 – Part 2</i>	Prof Mindy Blaise & Artists; Centre for People Place and Planet, ECU	Mr Trevor Ryan, Dr Liz Edmonds, Mrs Sabrina Dowling Giudici & Mr Anton Blume Note: Attendees of Forum 1 required to join Part 2 in this session Art, Science and Wetland Knowledges Panel Discussion on Exhibitions and Performances Presenting Expressions and Perspectives of Wetlands
3:05 PM	4:20 PM	75	min	<i>Forum 3</i>	Lakshmi Kanchi & Invited Artists	Miriam Wei Wei Lo, David Whish-Wilson, Liana Joy Christensen and Angela Rossen Wetland Whispers: Contemporary Arts as a Lens for Environmental Empathy
Conveners :	Miriam Wei Wei Lo, David Whish-Wilson, Liana Joy Christensen and Angela Rossen on a panel hosted by Lakshmi Kanchi					
Email :	Lakshmi.R.Kanchi@gmail.com					
Affiliation :	WA Poets Inc					
Abstract :	An immersive panel discussion led by Lakshmi Kanchi featuring a selection of nationally renowned contemporary artists. This session delves into the intricate relationship between contemporary art, visual storytelling, poetry, literature and the profound spirituality of wetlands. It will be a dialogue on the dynamic interplay between the humanities and wetlands, where art acts as a medium for environmental awareness and emotional engagement. Reflecting on Kanchi's transformative Poet-in-Residence program at The Wetlands Centre, the panel will explore the role of contemporary art, literature and eco-poetry in fostering community involvement, activism, and awareness of climate change. The session will reveal how these unique initiatives have evolved beyond their initial concept, blossoming into a rich tapestry of workshops, exhibitions, and collaborations. It showcases the compelling ability of art to connect diverse groups, from children to elders, across different cultures, thereby enhancing environmental education. This panel is an invitation to witness the transformative influence of art, as it captures the essence of the wetlands and inspires a deeper commitment to environmental care and collective well-being.					
4:30 PM	5:15 PM	45	min	Plenary Session – Sharing the Learnings	<i>Informal Discussion with presenters (Optional Attendance)</i>	
5:15 PM	6:15 PM	60	min	SUNDOWNER		

DAY 2	Morning	Fri 2nd	Feb	THE BILLABONGS SESSION	Organisation	Topic
7:30 AM	8:30 AM	60	min	Special walking tour of the Roe 8 Revegetation site		Optional activity (walking shoes required) — Arrive at 7:15 am for a 7:30 am start.
8:45 AM	8:50 AM	5	min	ACKNOWLEDGEMENT OF COUNTRY	Lakshmi Kanchi, Chair, WA Poets Inc	
8:50 AM	9:00 AM	10	min	OPENING OF DAY 2 – WA WETLANDS CONFERENCE	Opening by Hon. Dr. Brad Pettitt MLC	
9:00 AM	9:05 AM	10	min	Acknowledgement of Sponsors	Michael Coote WA Wetlands Conference Convenor	
9:05 AM	9:15 AM	10	min	WORLD WETLANDS DAY	Dr. Jane Chambers, Murdoch University	
9:15 AM	10:00 AM	45	min	Keynote	Greg Keighery Western Australian Herbarium, Dept. Biodiversity, Conservation and Attractions	Water Is Life in Our Dry State
Presenter/s :		Greg Keighery				
Email :		bjkeighe@it.net.au				
Affiliation :		Western Australian Herbarium, Department of Biodiversity, Conservation and Attractions				
Biography :		Greg Keighery was a Senior Principal Research Scientist in the Science Division of the Western Australian Department of Biodiversity, Conservation and Attractions. He was a botanist in the biogeography program, largely responsible for regional scale surveys to establish conservation networks.				
Presentation Title :		Water Is Life In Our Dry State				
Abstract :		In a mediterranean to semi arid climate wetlands in South West Australia are normally ephemeral, but are vital components for our world class plant diversity. This can be demonstrated using a series of examples from our many surveys over the past 40 years. Saline systems mainly of the Wheatbelt (old and under appreciated). Claypans, mainly on the Swan Coastal Plain (? young and incredibly biodiverse). Seeps and Springs, especially in the northern Jarrah Forest, at Julimar Forest where our current surveys have been focused. These are diverse in unusual plants and plant communities, but very poorly known and understood. They were probably a major refuge for climate change in the past, and present. Finally linear wetlands which are major plant corridors linking the Forest and the Swan Coastal Plain. While many people focus on lakes as our vanishing wetlands (and they are significant) this review will hopefully demonstrate that WAs incredible diversity of plants is intimately linked to our broad, diverse range of ephemeral wetlands and these face many challenges now and in the future. One example is the rediscovery of a small everlasting in a wetland near York this year that was last recorded in 1849! If this wetland had been lost so would that species.				
Co-Author/Presenter:		Bronwen Keighery, Research Associate Western Australian Herbarium, Department of Biodiversity Conservation and Attractions.				
10:00 AM	10:10 AM	10	min	Poster Presentation	Shu Tong Liu PhD Candidate, School of Biological Sciences, University of Western Australia	Leaf Phosphorus Allocation to Chemical Fractions and its Seasonal Variation in South-Western Australia
Presenter/s :		Shu Tong Liu				
Email :		shutong.liu@uwa.edu.au				
Affiliation :		PhD Candidate, School of Biological Sciences, University of Western Australia				
Biography :		Shu Tong Liu is a PhD student in plant biology at the University of Western Australia (UWA). She has just successfully submitted her doctoral thesis for examination. Throughout her academic journey, she has been deeply engrossed in researching the phosphorus and nitrogen utilization strategies of native species thriving in diverse environments with varying water and nutrient availabilities in south-western Australia.				
Presentation Title :		Leaf Phosphorus Allocation to Chemical Fractions and Its Seasonal Variation in South-Western Australia				
Abstract :		South-western Australia is a global biodiversity hotspot and has some of the oldest and most phosphorus (P)-impoverished soils in the world. Proteaceae is one of the dominant P-efficient plant families there, but it is unknown how leaf P concentrations and foliar P allocation of Proteaceae and coexisting dominant plant families vary between seasons and habitats. To investigate this, we selected 18 species from Proteaceae, Myrtaceae and Fabaceae, six from each family, in two habitats from Alison Baird Reserve (32°1'19"S 15°58'52"E) in Western Australia. The reserves provides different habitats to native plants: wetlands where water accumulates and waterlogs plant in winter, and the Bassendean dune that has soil that is moist in winter, but never waterlogged. Total leaf P and nitrogen (N) concentrations, leaf mass per area, photosynthetic rate, pre-dawn leaf water potential and foliar P fractions were determined for each species both at the end of summer (March 2019 and early April 2020) and at the end of winter (September 2019). Soil P availability was also determined for each site. We found differences in total leaf P and N concentrations among families and in total P and photosynthetic traits between two habitats, but not in total leaf N concentrations. We found little convergence common traits of foliar P allocation within family, season, or habitat. Each species exhibited a specific species-dependent pattern of foliar P allocation, and many species showed differences between seasons. Native plants in south-western Australia converged on a high photosynthetic P-use efficiency, but each species showed its own unique way associated with that outcome.				
Co-Author/Presenter:		Clément Gille, Toby Bird, Kosala Ranathunge, Patrick Finnegan, Hans Lambers				
10:10 AM	10:45 AM	30	min	Morning Tea / Networking		

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- Our water use increased sixfold in **100 years** and rises 1% annually.
- Almost all global freshwater sources are compromised: **82%** of the world's population is exposed to high levels of pollution in their water supply.

- Urban and water resource planning that incorporates wetlands and their benefits delivers improved health and wellbeing for city residents.
- We could have enough water if we better value and manage wetlands and water – through protection, restoration and wise use.



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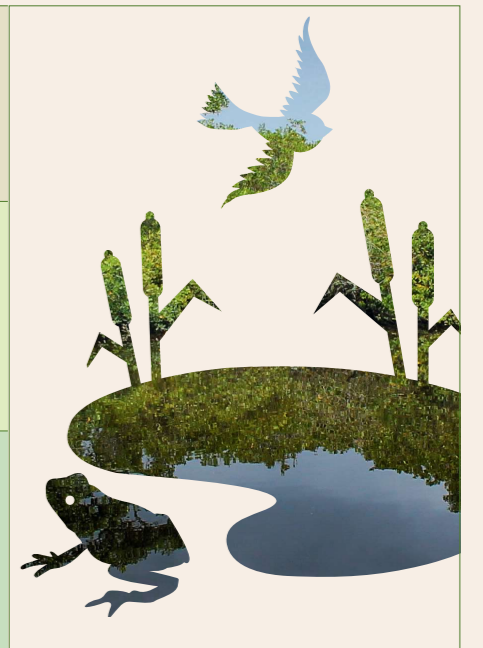
Wetlands and Biodiversity

THE RICH BIODIVERSITY OF EARTH'S WETLANDS NURTURES HUMAN WELLBEING

- Wetland biodiversity is critical to sustainable human development.
- About **40%** of the world's plant and animal species depend on wetlands.
- Wetland biodiversity supplies food, clean water and jobs, protects against storms and floods, and mitigates the impacts of climate change.

- Biodiversity losses are rising and are tied to changes in land use.
- Plastic pollution is severely impacting wetlands and the species that depend on them. Ingestion, entanglement and other dangers posed by plastic pollution are affecting more than **800** marine and coastal species.
- Climate change and biodiversity loss are linked.

- Meeting global biodiversity, climate and Sustainable Development Goals requires halting the loss of wetlands and rapidly scaling up restoration.
- Maintaining well-managed, intact ecosystems and native biodiversity – by applying wise use and One Health principles – can help control emergent zoonotic diseases and bring health benefits to all.



10:45 AM	11:15 AM	30 min	Expert / Case Study Presentations – Round 1	Choose to attend any one of the 3 presentations below		
10:45 AM	11:15 AM	30 min	Expert Presentation	Rick James	Wetlands Officer, DBCA Mandurah	The Vegetation Dynamics of Ephemeral Wetlands
Presenter/s :	Rick James					
Email :	rick.james@dbca.wa.gov.au					
Affiliation :	Wetlands Officer, DBCA Mandurah					
Biography :	Rick has 30 years' experience as an NRM professional. He worked as a Rivercare officer on the mid-north coast of NSW, before moving to the Albury – Wodonga area on the NSW / Vic. border where he established the consultancy business Riparian Management Services (RMS). He operated for 14 years' operating under the banner of RMS, during which time he completed projects in Qld., NSW, Vic. and Tasmania. In 2018 he moved to WA where he worked initially at PHCC in their "Co-ordinator Wetlands Science & Management" position before moving to the local Mandurah DBCA office in 2022 as the local Wetlands Officer.					
Presentation Title :	The Vegetation Dynamics of Ephemeral Wetlands					
Abstract :	Wetland vegetation dynamics were assessed over a ten-year period on the floodplain of the Ovens River, downstream of Wangaratta in north-east Victoria. Transects were assessed twice a year with conditions varying from "normal", to drought, to significant flooding during the 2010 / 2011 La Nina year on the east coast, and finally back to "normal" again. This study provided a dramatic picture of vegetation change over time in response to the changing conditions. Similar vegetation changes can be observed at many wetlands, with ephemeral wetlands being particularly dynamic. Learnings from this study can be applied to wetlands in WA where Climate Change induced reductions in rainfall are leading to flow regime changes e.g. extended dry periods. These changes are reflected in vegetation community composition but, where additional water sources are available, can be reversed – just add more water.					
10:45 AM	11:15 AM	30 min	Expert Presentation	Thilo Kruger	PhD Candidate, School of Molecular and Life Sciences, Curtin University	Precarious Suckers: The Bladderworts of the Cape Le Grand-Mandoowernup Wetlands
Presenter/s :	Thilo Kruger					
Email :	t.krueger@postgrad.curtin.edu.au					
Affiliation :	PhD Candidate, School of Molecular and Life Sciences, Curtin University					
Biography :	Thilo Krueger is a PhD student at Curtin University (Perth, Western Australia) researching carnivorous plants. He is particularly interested in their ecology, taxonomy, and conservation, primarily studying them by field research throughout Western Australia. Currently, he is researching plant-animal interactions such as prey spectra and pollinators, describing new species, and preparing assessments of the conservation status of potentially threatened species.					
Presentation Title :	Precarious Suckers: The Bladderworts of the Cape Le Grand-Mandoowernup Wetlands					
Abstract :	The pristine freshwater wetland systems of Mandoowernup (Cape le Grand) near Esperance support a unique suite of aquatic plants and are also significant cultural heritage places. As part of his PhD project, Thilo Krueger conducted a collaborative research project with the Esperance Tjaltjraak Native Title Aboriginal Corporation to study aquatic bladderworts (genus Utricularia) which occur in exceptional diversity at Mandoowernup. These carnivorous plants capture small aquatic prey animals in a fraction of a second using their intricate suction traps, enabling them to obtain supplementary macro nutrients to thrive in extremely nutrient-poor habitats. Two bladderwort species are endemic to a very small area within these wetlands and are potentially threatened by eutrophication from nearby farmlands as well as climate change.					
10:45 AM	11:15 AM	30 min	Case Study Presentation	Kim Nguyen	Senior Aquatic Ecologist, Biologic Environmental Survey	Aquatic and Terrestrial Invertebrate Survey of the Maylands Samphire Flats
Presenter/s :	Kim Nguyen					
Email :	kim@biologicenv.com.au					
Affiliation :	Senior Aquatic Ecologist, Biologic Environmental Survey					
Biography :	Kim Nguyen is a Senior Aquatic Ecologist, with over 12 years experience as an environmental consultant, specialising in aquatic ecology. Kim's experience includes environmental impact assessments, targeted surveys for threatened aquatic fauna, and aquatic ecology surveys in the Pilbara, Perth Metro and South West regions.					
Presentation Title :	Aquatic and Terrestrial Invertebrate Survey of the Maylands Samphire Flats					
Abstract :	<p>The Maylands Samphire Flats, located in Clarkson Reserve, are a naturally occurring saltmarsh and contains the Threatened Ecological Community 'Subtropical and Temperate Coastal Saltmarsh'. The site has been modified through the clearing of native vegetation, residential development and the digging of drainage lines. Since 2012, the Friends of Maylands Samphires have been weeding and revegetating the saltmarsh and, in 2020, the City of Bayswater commissioned a ten-year management plan to guide future restoration of the Maylands Samphire Flats.</p> <p>In September 2022, Biologic surveyed aquatic and terrestrial invertebrate fauna survey in order to understand how some of the fauna use the saltmarsh as habitat. Terrestrial sampling methods included sweep netting and foraging, while aquatic sampling methods included in-situ water quality, habitat assessments, and kick-sweeping with dip nets for macroinvertebrates. Water quality ranged from saline to hypersaline, and dissolved oxygen was generally low. We recorded 36 terrestrial invertebrates and 71 aquatic macroinvertebrates. Aquatic taxa included a mix of freshwater and marine species. Two freshwater fish species were also recorded: the native Pseudogobius olorum (Swan River goby) and introduced Gambusia sp. (mosquitofish). Overall, conditions were considered suitable for supporting invertebrate fauna and demonstrates the general health of the Maylands Samphires.</p> <p>Planting native vegetation is often the main focus of restoration projects but its value as habitat is often not assessed. Our results show the value of surveying invertebrates to demonstrate the success of habitat creation in saltmarsh restoration, and should be considered in future management planning.</p>					
11:20 AM	11:50 AM	30 min	Expert / Case Study Presentations – Round 2	Choose to attend any one of the 3 presentations below		

11:20 AM	11:50 AM	30 min	Case Study Presentation	Andy Williams	Project Officer, Rivers and Estuaries Branch. DBCA	Ashfield Flats Master Plan
Presenter/s :	Andy Williams					
Email :	andrew.williams@dbca.wa.gov.au					
Affiliation :	Project Officer, Rivers and Estuaries Branch. DBCA					
Biography :	Andy Williams is a project officer with the Department of Biodiversity, Conservation and Attractions, working in the Rivers and Estuaries Branch (formerly the Swan River Trust). Andy has received a Bachelor of Applied Sciences (in Architecture) and a Graduate Certificate in Indigenous Australian Cultural Studies from Curtin University. His work involves the strategic planning and spatial design of areas associated with the Swan Canning River Systems. Andy Williams is a project officer with the Department of Biodiversity, Conservation and Attractions, the lead agency involved in the development of the Ashfield Flats Master Plan. Andy received a Bachelor of Applied Sciences, specialising in Architecture, and a Graduate.					
Presentation Title :	Ashfield Flats Master Plan					
Abstract :	<p>Ashfield Flats is the largest remaining river flat in the Perth metropolitan area. The site contains a large occurrence of subtropical and tropical coastal saltmarsh which is recognized as a threatened ecological community by state and federal legislation. It is also a Bush Forever site (214), it hosts threatened migratory bird species and other native fauna, and is subject to unique natural processes that speak to Perth's precolonial geomorphology. Ashfield Flats is much loved by a local and regional audience as place to connect with these natural qualities, but also as place for the community to connect with each other. Historic and current land use place pressures on the environment, and the future outlook will change how the site functions and is used, particularly in the face of climate change. A long term plan is required to address the current and anticipated pressures; conserve and adapt the natural values; and ensure that the social and cultural values remain viable; into the long term.</p> <p>The Ashfield Flats Master Plan is a joint initiative between Department of Planning, Lands and Heritage, Water Corporation, Department of Water and Environmental Regulation, Town of Bassendean and Department of Biodiversity, Conservation and Attractions (DBCA) who are the lead agency. Together, and with a multi-disciplinary consultant team, development of the Ashfield Flats Master Plan has been created to outline initiatives and resource implications for the long term management of the site.</p> <p>Ashfield Flats is the largest remaining river flat in the Perth metropolitan area and contains a large occurrence of subtropical and temperate coastal saltmarsh, a recognised threatened ecological community by State and Federal legislation. The site hosts threatened migratory bird species and other fauna, and natural processes that speak to Perth's pre-colonial geomorphology. Ashfield Flats is a much loved reserve by the local and regional community.</p>					
11:20 AM	11:50 AM	30 min	Expert Presentation	Dr. Konrad Miotlinski	Geoscientist, UWA	Ecological Indicators of Fire Disturbance Affecting Water Quality in Wetlands
Presenter/s :	Dr. Konrad Miotlinski					
Email :	konrad.miotlinski@gmail.com					
Affiliation :	Geoscientist, UWA					
Biography :	Konrad is a geoscientist passionate about quantification and protection of water resources. He has twenty years of international experience in research, teaching and consulting. Konrad's interests focus on the use of numerical models to understand physical and chemical processes affecting water quality. During PhD he studied the effects of variable recharge on mobilisation of trace metal to groundwater. Later he worked in CSIRO on managed aquifer recharge and on determining the effects of mining on groundwater dependent ecosystems. Then, he moved to Brazil to work as a consultant and visiting professor of environmental engineering. Since 2020 Konrad has interest in fire impacts on water quality.					
Presentation Title :	Ecological Indicators of Fire Disturbance Affecting Water Quality in Wetlands					
Abstract :	<p>Wildland fires generate loads of nutrients, organics and metals that may consequently pollute rivers, lakes, reservoirs, and groundwater. However, the chemical composition of samples often shows significant variability resulting in difficulties in assessment of impacts. To assess the stage of thermal transformation of soils and litter, we performed laboratory burning followed by the evaluation of the chemical composition of leachate. This paper shows that activities of Ca²⁺ and CO₃⁻² are efficient ecological indicators of the degree of post-fire transformation. The indicators are derived from (1) pH, (2) alkalinity, and (3) Ca concentrations. They not only inform on the thermal transformation or burn severity, but they imply what other contaminants are likely to be released during wildland fires. Furthermore, the indicators typically show a significant spread in typical temperatures of wildland fires and they are independent on the time since the previous fire. Finally, the indicators give promising results in the field conditions, when water samples of surface runoff were taken using simulated rainfall. In conclusion, the Ca²⁺ and CO₃⁻² activities serve as a quick evaluation tool of water quality effects of prescribed burns and wildfires. Either ash composition or surface runoff water quality samples suffice to perform the assessment. There is a need to evaluate the indicators in the wider range of ecological settings.</p>					
Co-Author/Presenter:	Kuenzang Tshering, Mary C. Boyce, David Blake, Pierre Horwitz					
11:20 AM	11:50 AM	30 min	Expert Presentation	Brianna Sullivan	Aquatic Scientist, Aquatic Ecology Group, Stantec	The Most Outwardly Wetlands: Current Studies and Future Prospects in Salt Lake Ecology
Presenter/s :	Brianna Sullivan					
Email :	brianna.sullivan@stantec.com					
Affiliation :	Aquatic Scientist, Aquatic Ecology Group, Stantec					
Biography :	Brianna Sullivan (BSc Environmental Science) is an aquatic scientist that works in the Aquatic Ecology Group at Stantec. She has been studying salt lakes in Western Australia for the past two years, and her passions lie in assessing the impacts of a changing climate on aquatic ecological systems.					
Presentation Title :	The Most Outwardly Wetlands: Current Studies and Future Prospects in Salt Lake Ecology					
Abstract :	Salt lakes are one of the most unique and extreme wetland systems that dominate the landscape of Western Australia. Their size, diversity, and spatial distribution makes them an interesting and key ecological system to study. Salt lake systems, and the paleochannels that connect them, provide habitat for an extensive range of biota, ranging from microscopic algae to extremophilic aquatic fauna, and some of the largest concentrations of waterbirds. Biologically, these systems are extremely dynamic, showing significant fluctuations driven by rainfall events, shifting from a dry, hypersaline system with dormant propagules, to an					

	inundated mesohaline oasis, following significant flood events. Our team has been studying salt lakes in Western Australia for a cumulative period of over 100 years. Our focus within these unique systems has ranged from innovative approaches in spatial and temporal sampling, to improving taxonomic resolution of less-known species, to species distribution mapping, to ecotoxicology studies, to hydrological and hydrogeological modelling, to future climatic analysis. This talk will summarise the challenges, opportunities, frontiers and future directions in studying salt lake systems in Western Australia.					
Co-Author/Presenter:	Brooke Hay, Stantec; Ru Somaweera, Stantec					
11:55 AM	12:25 PM	30	min	Expert / Case Study Presentations – Round 3	<i>Choose to attend any one of the 3 presentations below</i>	
11:55 AM	12:25 PM	30	min	<i>Case Study Presentation</i>	Nii Amarquaye Commey	Oceanographer and Studying Engineering at University of Yamanashi, Japan
Presenter/s :	Nii Amarquaye Commey					
Email :	cniiamarquaye@yahoo.com					
Affiliation :	Oceanographer and Studying Engineering at University of Yamanashi, Japan.					
Biography :	Nii Amarquaye Commey, a Ghanaian oceanographer and environmental consultant, is pursuing a postgraduate engineering degree at the University of Yamanashi, Japan. His previous work focused on coastal ecosystem sustainability and environmental education. In Japan, Nii's research centres on Ghana's coastal Ramsar sites, investigating change patterns and drivers. His work blends a passion for conservation with scientific rigour, providing invaluable insights into preserving these critical ecosystems. Nii's presentation offers a compelling case study, shedding light on Ghana's environmental challenges and opportunities, drawing from his diverse expertise and perspective.					
Presentation Title :	Wetland–Catchment Sustainability: The Case of the Sakumo Ramsar Site, Ghana					
Abstract :	Coastal wetlands, intricate ecosystems rich in biodiversity, play a pivotal role in supporting human well-being. They offer a multitude of advantages, including flood mitigation and essential resources for local communities. However, these unique ecosystems are increasingly vulnerable to both natural and human-induced disturbances, exacerbated by factors like industrialization, urbanization, and the spectre of climate change. The threats confronting coastal wetlands worldwide have relevance to Ghana, especially in the case of the Sakumo Ramsar site, which grapples with imminent peril from land modifications. To identify the key factor influencing the Sakumo Ramsar Site and to chart a sustainable path forward, the study assesses critical land use and land cover (LULC) changes between 1990 and 2020 in the Sakumo wetland catchment area. Using geospatial techniques and intensity analysis, patterns of LULC changes and other factors were examined. These changes were overwhelmingly attributed to a surge in human activities. The study outcomes underscore the pressing need for comprehensive and proactive methods of LULC change analysis to safeguard the Sakumo Ramsar site and similar ecosystems. By enhancing our understanding of these transformations, we can actively promote biodiversity conservation and ensure the sustainable utilization of wetland resources, thereby advancing human well-being while preserving these invaluable ecosystems.					
Co-Author/Presenter:	Jun Magome, ICRE, University of Yamanashi; Hiroshi Ishidaira, ICRE, University of Yamanashi; Kazuyoshi Souma, ICRE, University of Yamanashi					
11:55 AM	12:25 PM	30	min	<i>Expert Presentation</i>	Assoc. Prof. Alan Lymbery	Director, Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University
Presenter/s :	Assoc. Prof. Alan Lymbery					
Email :	a.lymbery@murdoch.edu.au					
Affiliation :	Director, Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University.					
Biography :	Alan Lymbery is Director of the Centre for Sustainable Aquatic Ecosystems at the Harry Butler Institute, Murdoch University. Alan's research focuses on the conservation of freshwater biodiversity.					
Presentation Title :	Rivers And Wetlands of The South-West: A Tragedy in Four Acts					
Abstract :	Freshwater environments support much greater biodiversity than either the land or the sea, but this diversity is being lost at an alarming rate, with global populations of freshwater species having declined by an average of 83% in the last 50 years. Despite this, freshwater ecosystems receive very little political, public or even scientific interest, in comparison to terrestrial and marine ecosystems. In Western Australia, 80% of river systems have had major disturbances to their hydrology and ecology, and 70% of wetlands on the Swan coastal plain have been lost since European settlement. The terrestrial reserve system is ineffective in preventing the loss of freshwater biodiversity, as highlighted by recent research on freshwater fishes and macroinvertebrates. In addition, although the integrity of waterways is ostensibly protected by many separate pieces of legislation, a lack of integration and prioritization of human use over ecosystem health values often means that protection is sub-standard. The conservation of Western Australia's unique freshwater biodiversity requires a major change in political and public mindset.					
11:55 AM	12:25 PM	30	min	<i>Case Study Presentation</i>	Adj. Assoc. Prof. Dan Carter	UWA, Friends of South Perth Wetlands
Presenter/s :	Adj. Assoc. Prof. Dan Carter					
Email :	carterdj@omninet.net.au					
Affiliation :	UWA, Friends of South Perth Wetlands					
Biography :	Retired, PhD University of Western Australia, Adjunct Assoc. Professor School of Environmental Studies, Murdoch University (2005-2010), Certified Practising Soil Scientist Level 3, 40 years member of Birdlife Australia and ex-Chairman Darling Ranges Naturalist Club. Dan worked as a research soil scientist for the WA Department of Agriculture 1976-2013 and now does volunteer work for Friends of South Perth Wetlands Group and Friends of Jirdarup (Kensington Bushland). He has maintained an interest in ornithology for all his working career.					
Presentation Title :	A Partnership of a Friends Group and Local Council on The Rehabilitation of Foreshore Wetlands					
Abstract :	Since formation in 2019, a Friends Group has worked in partnership with the City's Parks Environment team to restore and rehabilitate the wetlands by planting native vegetation, monitoring the waterbird populations and reporting on the well-being of the wetlands.					

	<p>In 2020 the construction of Djirda Miya (a waterbird habitat island in the Swan River), initiated the group to establish a monitoring program to record changes in waterbird numbers and assess the impact of this project on the adjacent lakes of Hurlingham and Douglas.</p> <p>The outcomes of the collaboration are rehabilitation of the lakes' riparian zone with endemic species, the establishment of a waterbird database, an improved understanding of the use of the combined area by waterbirds and improved community engagement of the wetlands, albeit a passive resource.</p> <p>Dan Carter, Rod and Jenny Safstrom and Emily Harvey, Friends of South Perth Wetlands Paul Reed Environmental Operations, City of South Perth.</p>							
Co-Author/Presenter:	Rod and Jenny Safstrom, Emily Harvey - Friends of South Perth Wetlands; Paul Reed, Environmental Operations Coordinator, City of South Perth							
12:25 PM	1:10 PM	45 min	Lunch / Networking					
DAY 2	Afternoon	Fri 2nd Feb	THE MARSHES SESSION	Organisation	Topic			
1:10 PM	1:55 PM	45 min	Keynote	Professor Pierre Horwitz	Centre for People, Place and Planet, ECU	Trends in Ecology – Comments on Resolved and Unresolved Matters		
Presenter/s :	Professor Pierre Horwitz							
Email :	p.horwitz@ecu.edu.au							
Affiliation :	Centre for People Place and Planet, Edith Cowan University							
Biography :	Pierre Horwitz has research interests and expertise in the links between wetland ecosystems, biodiversity, health and sustainable water resource management, with research projects based in Western Australia, South East Asia and Oceania. He was the theme coordinator for wetlands and health for the Ramsar Convention on Wetlands (2009-2015), and is currently the Co-Editor-in-Chief for the journal PLOS Water. He has supervised to completion 45 PhD and Masters by Research students.							
Presentation Title :	Trends in Ecology – Comments on Resolved and Unresolved Matters							
Abstract :	Like most socio-cultural endeavours, science follows trends, and as a field of science wetland ecology is no exception. The relative emphasis on water chemistry, wetland geomorphology and hydrology, wetland plants and animals, wetland functions and processes, wetland management, wetland policy, and so on, varies, particularly over decadal time frames. What has been current and emphasized at the time regularly reflects broader international agendas, and national and State priorities. Trying to explain where these agendas and priorities themselves come from requires a closer look at emergent environmental themes, successful leaders in the field, political priorities, and where funding is directed. This talk will trace some of these patterns for wetland ecology with a focus on Western Australian wetlands, and draw a commentary on activities and outcomes, and the degree to which knowledge accumulates and policies and practices have changed.							
1:55 PM	2:10 PM	15 min	Poster Presentation	Lingling Chen	PhD Candidate, School of Biological Sciences, UWA	Phosphorus-Acquisition Strategies of Acacia Pulchella and Acacia Lasiocarpa in Contrasting Habitats		
Presenter/s :	Lingling Chen							
Email :	lingling.chen@research.uwa.edu.au							
Affiliation :	PhD Candidate, School of Biological Sciences, UWA							
Biography :	Lingling Chen, a full-time PhD student in the School of Biological Sciences, enrolled at Western Australia University on 20/01/2022. The PhD project of Lingling Chen focuses on the phosphorus (P) nutrition of plants in phosphorus-impooverished and fire-prone environments including phosphorus acquisition and utilization. Lingling grew up in north China and completed her undergraduate and master's degrees at Northwest A&F University and Tianjin University. She focused on plant nutrient transport in her master's project, which inspired her to discover more about plant nutrition and physiology.							
Presentation Title :	Phosphorus-Acquisition Strategies of Acacia Pulchella and Acacia Lasiocarpa in Contrasting Habitats							
Abstract :	Severely Phosphorus (P)-impooverished soil is one of the obvious environmental features of Southwest Australia, a biodiversity hotspot which has led to plant species in this region having traits that have evolved over millions of years to enhance their P-acquisition efficiency. Plant species in this region can express various and/or multiple P-acquisition strategies, which depend on their genetic capacity (e.g., mycorrhizal vs. cluster-root-producing strategies), time (since fire or germination) and position in the landscape (soil P concentrations or P-mobilising neighbours). Alison Baird Reserve, our study site, contains more than 400 native terrestrial plant species contributing significantly to the diversity of Southwestern Australia. Although the soils in this Reserve are P-impooverished, the site comprises a combination of clay flat areas and Bassendean sand dunes, which differ in soil depth, water content and P concentration. Flat areas with low, but not extremely low, soil P concentrations in Alison Baird Reserve are always wet in winter, and Acacia lasiocarpa only grow here with low leaf P concentrations. Acacia pulchella only grows on the Bassendean dune in Alison Baird Reserve with severely low soil P concentration, but there is no information about their P-acquisition strategies. Therefore, I aim to further research the P-acquisition strategies of these two species. To achieve this aim, I have conducted field studies with biochemical analyses of leaves, roots and soil and I will conduct hydroponic studies to further determine whether they can release carboxylates.							
Co-Author/Presenter:	Hans Lambers, Kosala Ranathunge, Patrick M. Finnegan							
2:10 PM	2:20 PM	10 min	Set Up Concurrent presentation venues					
2:20 PM	2:50 PM	30 min	Expert Presentations – Round 4	Choose to attend any one of the 3 presentations below				

Wetlands and Climate

WETLANDS ARE NATURAL GUARDIANS AGAINST POLLUTION AND CLIMATE CHANGE

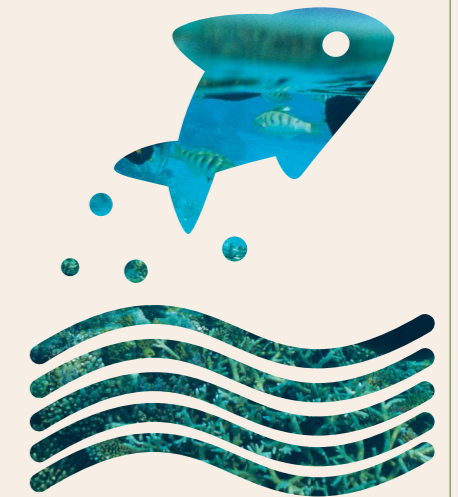
- Wetlands capture CO₂ from the atmosphere and store more carbon than any other ecosystem on Earth.
- Peatlands store about **30%** of land-based carbon – twice the amount of all the world's forests.
- Coastal blue carbon ecosystems (mangroves, seagrass beds, salt marshes) capture and store carbon in their sediment up to **55 times** faster than tropical rainforests.
- Wetlands safeguard the **60%** of humanity along coastlines against storm surges, hurricanes and tsunamis.
- An acre of wetland can store up to **1.5 million** gallons of floodwater.
- Wetlands are at high risk from climate change, severely impacting many economically marginalized people.
- Wetlands are integral components of resilient urban planning, restoration and vital contributors to One Health.
- Meeting the climate challenge requires ambitious wetland conservation and restoration across society.



Wetlands and Food

WETLANDS AID FOOD SECURITY

- Wetlands have underpinned the development of civilizations for thousands of years, providing people with access to fish, other food and freshwater for crops and livestock.
- Fish harvested from wetlands provide the primary source of protein for more than **1 billion** people.
- Rice paddies feed **3.5 billion** people annually.
- Unsustainable agricultural practices are damaging and destroying wetlands.
- More than half of Wetlands of International Importance are damaged by agriculture.
- Agriculture accounts for **70%** of water withdrawals from the Earth's wetlands.
- Aquaculture is growing faster than any other food production sector.
- Major changes to global agricultural systems can help stop wetland conversion and reduce water use and pollutants – while providing a future of sustainable food production for the world's growing population.



Wetlands and Culture

WETLANDS ARE A CHERISHED PART OF CULTURAL AND SPIRITUAL LIFE

- The wetland landscape reflects the close relationship between humans and wetlands over millennia.
- Down the ages, water has been venerated as the sustainer of life and plays an important role in the world's major faiths.
- Wetlands have inspired humankind's creative and spiritual minds from the earliest times and have contributed to the artistic heritage of perhaps all cultures around the world.
- People living near wetlands have developed socio-cultural values around wetlands that are integral to their culture, spiritual life, sense of place and current existence.
- Wetlands provide a connection to nature that contributes to improved mental health and wellbeing.
- Song, dance and stories as collective expressions of reverence towards wetlands are rich traditions that remain part of everyday life for many of the estimated **3 million** indigenous people living within at least **5,000** distinct cultures worldwide.
- The degradation of wetlands has consequences for the mental health of populations who live in those settings, including solastalgia – grieving over the loss of place.
- Their distinct roles and experiences within societies across the globe supply women with unique knowledge and valuable perspectives on wetlands. Women can play a crucial role in conserving the culture, folklore, music, mythology, oral traditions, customs and traditional knowledge around these precious ecosystems.



Wetlands and Livelihoods

WETLANDS PROVIDE JOBS AND HELP ERADICATE POVERTY

- Wetlands provide more than **1 billion** livelihoods across the world – delivering food, water supplies, transport and leisure.
- More than **660 million** people depend on fishing and aquaculture for a living.
- Almost **1 billion** households in Asia, Africa and the Americas rely on rice growing and processing for their main livelihoods.
- Half of international tourists seek relaxation in wetland areas, supporting **266 million** jobs in the travel and tourism sectors – which is **8.9%** of the world's total employment.
- Wetlands offer economic opportunities for indigenous populations, including traditional livelihoods that entail harvesting and processing medicinal plants, dyes, fruits, reeds and grasses.
- Farmers and herders look to wetlands for a consistent water supply for livestock grazing.
- Ongoing wetland loss is driving a vicious cycle of declining biodiversity and deepening poverty.
- The Sustainable Development Goals underline that we must protect and restore ecosystems such as wetlands to reduce poverty.



2:20 PM	2:50 PM	30 min	Expert Presentation	Dr. Alan Cottingham	Research Fellow at Harry Butler Institute, Murdoch University	Canaries Off the Coastline as A Fish Kill Early Warning System
Presenter/s :	Dr. Alan Cottingham					
Email :	a.cottingham@murdoch.edu.au					
Affiliation :	Research Fellow at Murdoch University's Harry Butler Institute					
Biography :	Dr Alan Cottingham is a Research Fellow at Murdoch University's Harry Butler Institute. Alan's research is largely focused on conservation of aquatic ecosystems and, in particular, on improving knowledge of human and climate change impacts on south west's unique aquatic fauna to help develop solutions to help sustain these important ecosystems.					
Presentation Title :	Canaries Off the Coastline as A Fish Kill Early Warning System					
Abstract :	Water quality monitoring provides valuable information on understanding the impacts of anthropogenic influences on aquatic fauna. Such inferences are often derived from a small suite of parameters which may not encapsulate the wide range of stressors, some of which lead to fish kills. Monitoring even a small proportion of the potential pollutants at appropriate temporal and spatial scales is near impossible. Further hindering fish kill investigations are that dead fish initially sink and are only reported, if at all, when floatation is induced following bacterial decomposition, a process that takes at least several days. Thus, causes of fish kills often remain a mystery and this can only be overcome through the development of an early warning and response system. Biomonitoring, which directly measures the response by the fauna, has the potential to overcome these limitations. Bivalves, such as mussels, are synonymous to the canary in the coalmine, and are likewise highly susceptible to pollution. As filter feeders, bivalves, continuously taste the water for food and when pollutants are detected they close their shell for protection. Advancements in new technologies now enables this behavior to be monitored using sensors attached to the mussel's shell and data livestreamed to the network in real time. Using this technology, this project aims to develop an early warning and response system for fish kills in the Peel region. This will be undertaken at six locations, with each station linked to school and ranger groups, who, in many cases will be the first responders.					
2:20 PM	2:50 PM	30 min	Expert Presentation	Assoc. Prof. Belinda Robson	School of Environmental and Conservation Sciences, Murdoch University	Restoration Of Urban Wetlands for Dragonfly Biodiversity
Presenter/s :	Assoc. Prof. Belinda Robson					
Email :	b.robson@murdoch.edu.au					
Affiliation :	School of Environmental and Conservation Sciences, Murdoch University					
Biography :	Dr Belinda Robson is an Associate Professor at Murdoch University. She has been doing research on the ecology of rivers, lakes and wetlands for more than 30 years in Tasmania, Victoria and Western Australia. Her research focuses on the ecology of seasonal rivers and wetlands and adaptations by species and ecosystems to drying caused by global warming. She was the 2021 winner of the Hilary Jolly Award for research, a career achievement award presented by the Australian Freshwater Science Society. Belinda is also the Editor in Chief of the Wiley journal Freshwater Biology, the premier journal globally for freshwater ecology research.					
Presentation Title :	Restoration Of Urban Wetlands for Dragonfly Biodiversity					
Abstract :	Dragonflies are some of the most aesthetically pleasing and most loved wetland insects, yet we know almost nothing about the ecology or biology of Australian species. Our research focused on understanding patterns of species diversity of dragonflies to identify the qualities of wetlands needed to maximise dragonfly diversity. The Beelie wetlands were sampled in spring and summer to collect aquatic dragonfly nymphs, their exuviae, and to record adult presence/absence at species level. A variety of water quality, vegetation and landscape variables were also recorded. We found that vegetation (both aquatic and terrestrial) and water temperature were the variables most important to dragonflies. Dragonfly diversity was highest at wetlands with extensive stands of submerged and emergent aquatic plants and fringing trees, and at wetlands that were connected to other wetlands by native vegetation. This was because dragonfly nymphs use submerged vegetation to hunt and hide from predators and use emergent and fringing vegetation to emerge from the water and transform into the flying adult. Freshwater paperbark trees provide important habitat for metamorphosis and vital shade in summer. Common species tend to emerge as smaller adults in summer than in spring, and this may be due to changes in daylength. Laboratory experiments manipulating water temperature and depth showed that while warmer temperatures did not influence dragonfly emergence, declining depths did. As the climate continues to dry and wetlands are inundated for shorter and shorter periods, some dragonfly species may disappear from our wetlands. When restoring natural wetlands or managing created wetlands, it is vital that there is sufficient aquatic and terrestrial vegetation to support dragonflies and that some wetlands retain water all year round.					
Co-Author/Presenter:	L. Mackintosh, Centre for Sustainable Aquatic Ecosystems, Harry Butler Institute, Murdoch University					
2:20 PM	2:50 PM	30 min	Expert Presentation	April Sturm	PhD Candidate, Murdoch University	Identifying Conditions for Ex-Situ Incubation of Freshwater Turtle (<i>Chelodina oblonga</i>) Eggs to Optimise Hatching Success
Presenter/s :	April Sturm					
Email :	april.sturm@murdoch.edu.au					
Affiliation :	PhD Candidate, Murdoch University					
Biography :	April Sturm completed a Bachelor's degree in Environmental Science, specializing in Conservation and Wildlife Biology as well as Marine Biology. After completing her BSc, April completed an Honours degree in Environmental Science, where her research focused on optimising the incubation conditions for <i>Chelodina oblonga</i> (southwestern snake-necked turtle) eggs. April is now pursuing a PhD that will focus on enhancing our understanding of <i>C. oblonga</i> hatchlings.					
Presentation Title :	Identifying Conditions for Ex-Situ Incubation of Freshwater Turtle (<i>Chelodina Oblonga</i>) Eggs to Optimise Hatching Success					
Abstract :	Turtle populations worldwide are under threat, with many species listed as threatened or near threatened. Our endemic species, the southwest snake-necked turtle (<i>Chelodina oblonga</i>) is under pressure from habitat alteration, increased predation by feral and invasive species, as well as motor vehicle accidents. Higher predation rates of eggs and adults lead to low numbers of juveniles in urban wetlands. Interventions to increase juveniles in these areas are crucial to prevent local extinctions. Ex-situ incubation of eggs and the release of the resultant hatchlings has been used as a conservation method for several species with varying results. Very little research exists regarding ex-situ incubation methods for <i>C. oblonga</i> , and the effective implementation of ex-situ incubation programs depends on comprehensive research. This study investigated how incubation temperature and moisture levels impact <i>C. oblonga</i> hatching success. Eggs were collected from natural nests and deceased females and then incubated under varying conditions. A fluctuating temperature resembling natural nesting and a constant 28°C were tested, alongside wet and dry substrates. Hatching success was significantly higher under the fluctuating regime than the constant one. The interaction between					

	temperature and moisture significantly affected hatchling survival, especially in the fluctuating temperature treatment, where moist conditions positively influenced survival. Post-mortem examinations revealed that most hatchlings that died in the constant treatment lacked an essential egg tooth. This study has direct implications for ex-situ breeding programs, providing valuable insights into enhancing the survival of the near-threatened southwestern snake-necked turtle.					
Co-Author/Presenter:	Supervisors: Dr. Jane Chambers, Dr. Stephen Beatty, Dr. Anthony Santoro					
2:50 PM	3:20 PM	30	min	Afternoon Tea / Networking		
3:20 PM	4:40 PM	80	min	Workshops	Choose to attend any one of the 4 workshops below	
3:20 PM	4:40 PM	80	min	<i>Workshop 1</i>	Shane Herbert	Leader, eDNA Frontiers Group, Curtin University
Presenter/s :	Shane Herbert					
Email :	shane.herbert@curtin.edu.au					
Affiliation :	Leader, eDNA Frontiers Group, Curtin University					
Biography :	Shane leads the eDNA Frontiers group at Curtin University which is the sister group to the well-known Trace & Environment DNA lab (TrEnD) lab who have been consistent global leaders in eDNA research. eDNA Frontiers translates the innovative technologies developed by the TrEnD lab and applies them to research and commercial projects for various groups across industry and government. Shane and the eDNA Frontiers team have seen eDNA research techniques develop into a robust biomonitoring tool utilised across all environments where applications can span from identifying species of conservation interest to detecting invasive species, as well as conducting full biodiversity audits for environmental impact assessments.					
Presentation Title :	Everything You Wanted to Know About eDNA Based Monitoring					
Abstract :	What is eDNA? Every organism sheds DNA into the environment – this is eDNA. We can now detect and identify these trace amounts of DNA from almost any substrate – soil, water, even air. This provides us with a means to rapidly and accurately identify species and survey biological communities. Just as cold cases in human crime scenes are solved with DNA we have developed an even more sophisticated sampling and analysis protocol that literally detects the footprints of an insect. When combined with high throughput DNA sequencing technologies, eDNA provides a wealth of information on biodiversity, food web dynamics, diet analysis, restoration ecology and invasive species which, until this technology, was unavailable to stakeholders. In this 1 hr workshop we will introduce you to eDNA, get you sampling eDNA from water, and have you analyse and interpret real DNA sequence data collected from Bibra Lake.					
3:20 PM	4:40 PM	80	min	<i>Workshop 2</i>	Gun Dolva	Project Manager, SERCUL
Presenter/s :	Gun Dolva					
Email :	gundolva@sercul.org.au					
Affiliation :	Project Manager, SERCUL					
Biography :	Dr Gun Dolva has a long-term interest in conservation, ecosystem management and bringing people together with nature. Having worked within education and training, she is currently employed at SERCUL managing several monitoring projects. She is also developing an increasing interest in ecocentric views and philosophies that focus on human and nature relationships, and examining how such knowledge can be used to better manage and protect nature.					
Presentation Title :	Connecting With Nature to Improve Management of Wetlands					
Abstract :	Connecting with nature refers to how we relate to and experience nature. Our human history remains intrinsically tied to nature, yet nature-based philosophies developed by philosopher over the last 2000 years initially separate human beings from non-human beings. It is only since the emergence of science that nature-based philosophies that place humans within nature have re-emerged in human philosophical discussions. Such discussions are particularly important as human activities continue to threaten the existence of species and processes of nature. There are therefore increasing calls for us human beings to re-assess our relationships with nature. This workshop will provide participants with an overview of the history and current nature-based philosophies and provide them with information for them to assess their own level of nature connectedness based on this information. The context will be by considering the relationships participants have with the ecology of wetlands. Developing such self-realization about our own nature-based philosophy can be used to improve how we relate to nature and therefore serve the needs of nature better.					
Co-Author/Presenter:	Dr Rose Weerasinghe					
3:20 PM	4:40 PM	80	min	<i>Workshop 3</i>	Joanne Francis	Independent Artist, Mount Barker
Presenter/s :	Joanne Francis					
Email :	joanne.francis2661@gmail.com					
Affiliation :	Independent Artist, Mount Barker					
Biography :	Overlooking wetlands south of the Stirling Ranges has strong influence. Artworks reflecting the beauty and harshness of the environment - with increasing awareness of the fragile life forms as landscape transforms from apparently barren when dry to teeming with life with rains. An ECU fine arts graduate, awards received are for paintings landscape/portraiture and 3D natural forms. Exhibiting solo and in groups works are in private and public collections. Described as an environmental artist by Rod Giblett in his book "Wetlands and Western Cultures – Denigration to Conservation", he positively references her paintings and her works in natural fibres.					
Presentation Title :	Painting A Picture of Wetlands Around Woogenellup					

Abstract :		Joanne Francis has dedicated the past 12 years to meticulously observing and artistically capturing the essence of local wetlands. Her artistic journey involves translating the marvels she witnesses onto canvas, reflecting the seasonal and annual shifts that influence water levels, foliage, and wildlife. Joanne's visits to these sites are a continuous learning experience, revealing new facets of the wetlands with each encounter. Her artworks poignantly depict both the beauty and the harshness of these environments, increasingly highlighting the delicate life forms that flourish when rains transform the landscape from barren to vibrant. Joanne's work is not just a visual feast but also a spiritual experience; she finds that these places have a unique ability to quieten and soothe the spirit, a quality she hopes resonates through her art. She notes that certain parts of the wetlands, seemingly untouched by human presence, offer a sanctuary where even large animals cannot penetrate the dense foliage. In her upcoming presentation, Joanne will showcase a selection of her artworks, each representing the diverse observations she has made over the years. Her pieces, varying from detailed close-ups to broader landscape views, capture the intricate interplay of foliage, surface textures, and water reflections. Through her art, Joanne invites viewers into a special world, one that calms the soul and celebrates the hidden wonders of the wetlands.				
3:20 PM	4:40 PM	80 min	Workshop 4	Lanie Cottam and Hazel Dempster	Nursery Officer, The Wetlands Centre Cockburn; Nursery Volunteer and Wildflower Expert	Plant Propagation Techniques
CLOSE OF CONFERENCE						



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