

30 years of spatial experience – a fun and exciting journey!

Shaun Kolomeitz, Queensland Parks and Wildlife Service

As a veteran of the professional spatial landscape, Shaun will present a highlights tour of the past thirty years, showcasing the rapid evolution of the increasing intersect between spatial science and society. Spatial science hasn't just interacted with society, it has completely changed our thoughts about, and interaction with, the world around us. The 'Science of Where' has expanded to assist us with finding solutions to some of our most challenging conundrums.

How did we get here?

What are we doing now?

How will things change?

Join Shaun in exploring radical changes in spatial science, fueled by society's increasing acceptance of and demand for data, and enjoy a chuckle at some snaps of spatial science in the workplace from Shaun's personal album.

Shaun Kolomeitz is Manager of Spatial Services at the Queensland Parks and Wildlife Service. Blending IT, environmental science and GIS, Shaun has over 30 years' experience delivering innovative spatial solutions for the Queensland State and Local Government sectors. His leadership in cutting-edge projects, including the integration of AI into spatial analysis, has been influential in reshaping the field, notably through spatio-temporal solutions. Shaun's keynote will explore the evolution of spatial science, sharing valuable insights and lessons learned from a career dedicated to Spatial and IT.

Mapping Hidden Reefs of Northern Australia using Accessible Remote Sensing Tools

Dr Eric Lawrey, Australian Institute of Marine Science

Northern Australia is home to thousands of reefs and shoals, many of which remain unmapped due to their remote locations and the low water clarity of the region. These marine environments are biodiversity hotspots that are currently at risk of being overlooked in environmental assessments for the development of Northern Australia. In this talk, Eric will discuss AIMS's approach to discovering and mapping these challenging-to-observe reefs using remote sensing techniques. Numerous free or affordable tools have emerged for accessing and processing satellite imagery, including EOBrowser, Sentinel Hub WMS, Google Earth Engine, and QGIS, for mapping coral reefs. In this talk Eric will provide an introduction to these tools and how they can be used for more than just mapping coral reefs.

Dr Eric Lawrey joined the Australian Institute of Marine Science 15 years ago to develop the eAtlas, a data repository for research data. His focus is now on leading the Knowledge Systems team to develop information systems that assist researchers and reef managers in accessing environmental research data. Eric has extensive experience with spatial data analysis and remote sensing, mapping the reefs of the Torres Strait, the Keppel Islands and the Coral Sea. Eric studied Computer Systems Engineering and completed a PhD in wireless communications.

Untangling multi-species fisheries data with species distribution models

Susannah Leahy, Qld Dept of Agriculture and Fisheries

Matthew N. McMillan¹, Susannah M. Leahy¹, Kyle B. Hillcoat¹, Montana Wickens¹, Eric M. Roberts², James J. Daniell²

¹ Queensland Department of Agriculture and Fisheries, Queensland, Australia

² Earth and Environmental Sciences, James Cook University, Queensland, Australia

Long-term trends in fisheries catch are key to assessing the effects of fishing on wild populations. However, historical fisheries catch data are often aggregated in multi-species complexes, complicating assessments of individual species. Species distribution models (SDMs) offer an under-utilised tool to disaggregate catch data and enable species-specific stock assessment. Here, we present a case study of

Abstracts & Bios

two species of Moreton Bay Bug (*Thenus* spp.), historically recorded together in commercial fishing logbooks, to illustrate the design and use of catch allocation SDMs to untangle multi-species data. We demonstrate how catch allocation SDMs reveal previously undetected species-specific catch trends and can identify shifts in fishing behaviour, e.g., changes in target species. Finally, we review key assumptions and limitations of this approach, and outline a template to assist researchers and managers working with aggregated multi-species data.

Susannah is a spatial scientist and data analyst with a background in marine ecology and fisheries biology. Over the past decade working in ecosystems ranging from arid bushland to the sea floor, she has developed a diverse analytical skill set that includes advanced statistical analysis and modelling, and remote sensing using a range of sensors and platforms. She sees recent advances in technology and analytics as powerful tools to draw conclusions from limited resources and data, with the goal of informing efficient and effective resource management. Susannah has been a Fisheries Scientist with the Queensland Department of Agriculture and Fisheries since 2018. In her current role, she develops and carries out research projects to inform sustainable management of Queensland's marine fisheries.

Deep learning for detecting objects in drone imagery - a user friendly workflow that automates the process of using machine learning algorithms to assist conservationists and ecologists in mapping various features from aerial drone imagery and integrating this data into platforms like ArcGIS

Olivier Decitre, CocoTell Pty Ltd

Olivier's research explored the intersection of drone technology, wildlife monitoring, and artificial intelligence. While drones are increasingly used to collect environmental data, analysing this vast amount of imagery was extremely time-consuming. Olivier's study developed an AI-driven workflow that streamlined and automated the analysis of drone-captured images, significantly enhancing efficiency and accuracy in environmental monitoring. The beauty of this workflow is its versatility; it can be adapted to monitor a wide range of subjects, from birds and trees to solar panels and more. Olivier's research observed giant clams on coral reefs as a case study. Using these helped him refine this workflow, highlighting the challenges encountered and the solutions he implemented.

Olivier Decitre completed his undergraduate studies in Environmental Biology at McGill University and later earned a Master's degree in Marine Biology from James Cook University. Through his studies he developed a growing interest in GIS technologies, appreciating their concrete and real-world applications. This interest deepened when he met Karen Joyce, a remote sensing professor and expert at JCU, and they collaborated on a Master's thesis project focused on developing AI tools from drone imagery to help conservationists and ecologists survey wildlife. Today, Olivier is a GIS Specialist at Cocotell. He works on a variety of spatial projects, creating beautiful maps and assisting in spatial planning and conservation efforts. Olivier says he is living his dream job at CocoTell, using GIS to help make more informed decisions for a better environment.

Dianne, the richest lady in the North, who took everything we had! A case study on survey control, aerial LiDAR, photogrammetry, detail survey and bathymetry - all in one fast-tracked project.

Alistair Hart and Ugurtan Akyurek, Mangoemapping Pty Ltd

This case study explores the challenges, actions and outcomes of completing a detailed survey at Dianne Copper Mine. Demand for critical minerals is forecast to grow as society transitions to low-carbon electricity. Reflecting this, Revolver Resources are planning to recommence copper mining at Dianne, from late 2025. Dianne copper mine was first explored in 1970, and prior to its closure in 1983, the mine, that is 260 kilometres north west of Cairns, was producing 63,758 tonnes of ore with samples assaying at 68% and ore production returning an average copper grade of 22.7 per cent – the highest-grade

Abstracts & Bios

copper in Australia's history. Every mine begins as a map. When sites are as remote as Dianne (near Maytown in the historic Palmer River Goldfields) projects must commence with establishing survey reference marks with low levels of positional uncertainty, from which all of the subsequent survey and set out follows. Additional works included establishing survey control and completing a detail survey of the access road into Dianne mine. As part of this project Mangoesmapping also combined aerial lidar and bathymetric surveys to deliver a detailed 3d model, and completed aerial photogrammetry over this historic mine site, to inform mine planning.

Ugurtan Akyurek is employed as a geospatial scientist at Mangoesmapping. After tertiary education in civil engineering and an early career as site engineer on large-scale, high-rise steel framed construction projects, Ugurtan made the leap into geospatial science, initially working as a GIS Engineer with Brisbane City Council's Asset Services team. Ugurtan joined Mangoesmapping in June 2018 and enjoys his contributions to a wide range of geospatial, aerial survey and asset data improvement projects across government, mining, agriculture and environment.

Alistair Hart has been kicking around in the geospatial trenches since 1994, initially employed assisting surveyors in the design and construction of a fibre-optic cable from Adelaide to Perth. Alistair has since moved through a range of roles including time in Marine Parks, Qld Health and 8 years managing GIS in Local Government. In 2014, Alistair incorporated Mangoesmapping and has spent the last 10 years building a profit with purpose organisation, addressing a client base across Australia and the Pacific and seeking to position a better future, including by adopting a triple bottom line approach to business. As someone who has served more than a decade on the FunGIS Executive, Alistair is a passionate local advocate of geospatial science and, of course, FunGIS!

Use of GIS to support the planning of additional public moorings for coral conservation and sustainable visitor access: a case study of the Whitsundays

Nicole Hitchcock, Queensland Parks and Wildlife Service

Cherie Malone, CocoTell Pty Ltd

It is easy for people managing the Great Barrier Reef World Heritage Area (GBRWHA) to feel despondent in the face of the big challenges to reef health. On-ground, practical conservation actions at a local scale, however, can help boost local reef resilience and increase local stewardship. Given the very high volume of boating and anchoring occurring in the Whitsundays, it is vital to minimise local impacts to fringing reefs from anchoring practices by protecting existing coral and enabling sustainable access for visitors and tourism operators. This presentation will focus on the Queensland Parks and Wildlife Service's last expansion of the Reef Protection Program (a network of public moorings and no-anchoring areas) in the Whitsundays in 2022-23. Planning for this infrastructure can be complex with multiple variables to consider including water depth and substrate, mooring size class and swing room, nearby existing infrastructure, prevailing weather conditions, maintenance and budget considerations, as well as stakeholder feedback. With the help of the CocoTell team, a desktop site suitability analysis was performed using the ESRI suite of GIS tools to identify areas potentially suitable for additional moorings. These sites were then reviewed and refined during an interactive stakeholder workshop. This significantly saved on later in-field costs and logistics, resulting in an informed and efficient project delivery model.

Nicole Hitchcock is an accomplished marine protected area management professional with post-graduate qualifications in marine science and protected area management. With 10 years of practical experience working in the reef tourism industry, combined with 15 years within the Great Barrier Reef Joint Field Management Program as a protected area management practitioner, she has project managed and coordinated various on-ground management actions. Over the last eight years, Nicole has delivered

Abstracts & Bios

\$7M of capital projects for the expansion of the Reef Protection Program (a network of public moorings and no-anchoring markers in the Great Barrier Reef).

Cherie's love of GIS began during an Environmental Science lecture at JCU Townsville in 1997, delivered by the inspiring Dr. Marji Puotinen. The lecture was unforgettable—Dr. Puotinen compared GIS to drinking beer at the Uni Bar, making it both entertaining and enlightening. This introduction to GIS complemented Cherie's environmentally focused degree and sparked a career spanning over two decades. Based in Townsville, Cherie's experience includes roles in local, state, and federal governments, private industry, and more recently, the establishment of a small, environmentally focused GIS consultancy. Cherie is passionate about raising the profile of GIS within the community and business sectors, empowering people to make better decisions through its use. She also likes making pretty maps!

Architecting a Global GIS Platform

Alex Geer, NGIS

The recent launch of GHD's Atlas 2.0 marks a significant milestone in GHD's digital transformation journey. As the project delivery partner, NGIS re-architected and implemented the Atlas 2.0 platform. This presentation provides insights from the NGIS Project Delivery Team. Atlas, GHD's global enterprise geospatial platform, offers secure geospatial information and web mapping for over 10,000 users, supporting digital delivery workflows. Built on Azure Cloud, ArcGIS Enterprise, and ArcGIS Pro, and integrated with Azure Virtual Desktops, the high-performance GIS architecture launched in July 2024. It includes six technical environments, ensuring compliance with regional data sovereignty and robust IT governance processes. The project's success stemmed from meticulous design, automated deployment scripts, stakeholder engagement, and comprehensive governance and change management. The collaboration between NGIS and GHD has produced a resilient, scalable, and advanced geospatial platform to support a global geospatial workforce.

Alex is Qld General Manager at NGIS – a leading geospatial solutions company. An enthusiastic geospatial professional, Alex has spent nearly 20 years working with spatial data and delivering innovative Geographic Information Systems (GIS) solutions across the UK and Australia. Her core expertise has been gained through the design and application of location-based solutions to solve the complex geographic challenges being faced by organisations – particularly in the natural resources, government and utilities sectors. Alex is passionate about leveraging geospatial technologies and data to give context to decision making through the common language of geography – allowing us to collaborate, communicate and share our collective insight to solve problems. At NGIS, we are fortunate to be able to work with leading technology partners that enable us to deliver best of breed solutions that make an impact in our clients' businesses.

The Modernisation of the Queensland Spatial Cadastre – Migration to Esri Parcel Fabric

Tahlia Seeto, Qld Dept of Resources

The Department of Resources is currently undertaking the Cadastre and Address Modernisation (CAM) Project, which aims to transition our spatial cadastre and location addressing data and operations from the current legacy platforms to Esri ArcGIS Enterprise. While the addressing data is being rehomed to a new separate database, our team has been working on the creation of a new Queensland Spatial Cadastre which is fundamental to land planning, titling and mapping and is a departmental responsibility under the Survey and Mapping Infrastructure Act 2003. With the ever-emerging technologies and an increased demand for a more spatially accurate cadastre with future capabilities, it is now more important than ever to migrate the maintenance operations of the spatial cadastre from our 27 year old CAD based MicroStation environment over to Esri Parcel Fabric which has that capability. The QLD Whole of State

Abstracts & Bios

Cadastre in Parcel Fabric is the largest in the world and has a new and improved data model for increased data capture from survey plans and the potential for digital submission in the future.

Tahlia Seeto works for the Department of Resources in the Cadastral, Geodetic and Permit Data team, for the last two and a half years as the team leader for the Cadastral upgrade team. Prior to this Tahlia worked as a GIS analyst in private industry, helping to maintain the environment on Queensland's defence bases. Although she studied a Bachelor of Environmental Management at The University of Queensland, since encountering GIS in one of her first-year courses she has found that it is her true career passion. Following university, she spent two years in Scotland working as an IT operator with a utilities company.

iLAUNCH, Building Australia's Space Manufacturing Ecosystem

Joni Sytsma, iLAUNCH

The Innovative Launch, Automation, Novel Materials, Communications, and Hypersonics Hub (iLAUNCH) Trailblazer is a \$188 million program building Australia's enduring space capability through the commercialisation of projects, a fast-track accelerator, and skills development to build the workforce of the future. Led by the University of Southern Queensland with The Australian National University, and the University of South Australia and over 25 industry partners, we are designing, developing and manufacturing upstream space hardware and taking it to orbit.

Joni Sytsma is a driven and enthusiastic technology evangelist, internationally experienced science and technology leader, research and development scientist and engineer, innovator, mentor, and diversity advocate with a track record of leading teams to develop deep tech products, projects and programmes towards ambitious launch dates. She is passionate about utilising cyber-physical systems and manufacturing in emerging technologies in aerospace applications to deliver immense value for civilian and defence customers. Joni has experience in executive leadership, strategic business partnerships, product management, lean startups, systems engineering, program management and major government programmes in Australia and the US.

Enabling tomorrow's spatial professionals by embracing neurodiversity: embed to transition case studies (multiple examples, including Dept of Resources and Acciona)

Seath Holswich, Australian Spatial Analytics

Talent Services is a recruitment offering that goes beyond placing talented candidates with other inclusive geospatial organisations. It addresses the need for long-term and sustainable workforce development in the geospatial profession, which is facing severe skills shortages. ASA differs from traditional recruitment in that it focuses on professionally and personally developing young neurodivergent adults, providing comprehensive on-the-job training on real-world projects to prepare them for success at other organisations. This includes ensuring a smooth employment transition through ongoing support for candidates and committed and inclusive partners, such as the Department of Resources (Queensland) and Acciona Engineering and Design. This enables ASA and their partners to create enormous social impact, with each vacated analyst position at ASA backfilled post-transition with junior neurodivergent staff, who face a 34% unemployment rate in Australia. In this presentation, you will discover how ASA can solve your skills shortages while enabling a neurodiverse geospatial workforce.

Seath brings over 20 years of experience in employment and community services to his role as ASA's Transitions Coordinator. He coaches and supports ASA's 100+ data analysts as they prepare for the next stage of their career, post-ASA, as well as working with host employers to ensure analysts have a seamless transition into their next workplace. Seath is passionate about ensuring each neurodivergent

Abstracts & Bios

analyst leaves ASA with the career-building and job-searching skills needed to be successful in their next job and chosen career. As a father to two neurodivergent children, Seath's passion for this role is deeply personal.

Instant GIS - just make me an app!

Len Olyott, Len Olyott Consulting

Apps are a facet of our daily lives, "there's an app for that" has a firm place in our lexicon as sure as "have a nice day". GIS is no exception and the "app"ification of spatial capabilities has proven to be one of the biggest growth sectors in spatial science. However, providing this capability at a low cost of entry can have unanticipated consequences with app proliferation often overwhelming and bypassing traditional IT processes and policies. The challenge for spatial scientists is to balance the needs and wants of an instant gratification society with solid solution design and data management processes.

Growing up in South Africa, Len's interest in the natural environment led to majors in Geography, Botany and Zoology. With a strong passion for all things fishy, he completed a Master of Science thesis on the spatial biology of a commercially important squid species. With a career spanning 23 years, Len has worked in state and local government as well as in the not-for-profit sector and the private sector. Highlights include: six years with the former Queensland Department of Primary Industries & Fisheries as a Senior Fisheries Scientist and Fisheries Data Coordinator. Eighteen months as Chief Executive Officer of Recfish Australia where he participated in national and international fisheries management advisory committees and expert panels. Six years at Esri Australia, where he was an industry solutions senior consultant with a focus on local government but working across many different industries and sectors. Four incredible years with Queensland Parks and Wildlife Services as Spatial Services Manager. Then after two years consulting to Brisbane City Council, Len decided to offer his unique insights and expertise to a larger audience through Len Olyott Consulting – a Queensland company dedicated to enabling spatial for all users, big and small.

Merging Queensland's legacy electrical network databases into a Unified Geographic Information System: the largest project of its kind in the world

Charles Anderson, Australian Spatial Analytics

ASA was engaged by Enzen Australia on behalf of Energy Queensland to help merge multiple Energex and Ergon datasets to create a Unified Geographic Information System (UGIS): creating a 'single source of truth' for Queensland's electrical infrastructure in ArcGIS. Since Energex and Ergon were separate government entities, an enormous amount of highly technical work was required, including data extraction, data entry, quality control, and building parts of Queensland's electrical network from field information and the legacy systems. The ASA team cleans, validates, and merges legacy asset datasets using the Esri ArcGIS Pro Utility Network Model (UNM), which is widely considered the utility management benchmark. Hence, the new database reflects the real-world Queensland electrical grid. The work requires ASA analysts to understand network data principles, the UNM, and asset data editing. To date, ASA analysts have undertaken data checks and updates over 53,000 sites across 16,000 tasks and 68,000 hours. EQL's UNM is currently the largest deployment globally, with over 25 million spatial features in the system. Millions more are expected to be created as the future grid is designed and constructed. This is one of the largest projects of its kind in the world, keeping track of the physical location and details of Queensland's electrical infrastructure, consisting of a massive database of over 300,000 subnetworks. ASA has had, on average, 33 full-time equivalent staff working on this project since 2021. It has brought spatial data services for critical infrastructure back to Australia, contributing over \$5 million to the local economy. Because of this project, ASA now has over 50 qualified UNM users—one of the largest of any spatial consultancy in Australia. The Geospatial Council of Australia Queensland

Abstracts & Bios

division also recognised ASA's work as this landmark project won the 2023 Technical Excellence Award. In this session you will find out how Enzen and Energy Queensland have embraced the unique spatial skills of neurodiversity to meet their data needs whilst also having an enormous social impact on the lives of neurodivergent people.

Charles has a Bachelor of Data Science from James Cook University. Since joining ASA in their Cairns office he has provided leadership via numerous geospatial data projects, including the Department of Resources roads and address validation project for the Sunshine Coast Area, and working on Queensland's electrical assets. Charles specialises in data cleansing, machine learning, data visualisation, natural language processing, and computer vision. He also provides personal and professional support for ASA's young neurodivergent team across Australia.

Updating Queensland Waterways mapping and the benefits for fish passage.

Hans Wurzel, Qld Department of Agriculture and Fisheries

Queensland has millions of kilometres of waterways providing essential fish habitat critical for productive fisheries. Waterways providing for fish passage are recognised as a Matter of State Environmental Significance and any potential barrier to fish movement within a waterway could be considered waterway barrier works. It has been shown that waterway barriers are one of the largest limiting factors to freshwater fish populations, due to restricting adults from breeding, accessing habitat and fragmenting populations. The primary role of the Fisheries Impact Assessment and Management (IAM) unit is to minimise the impacts of proposed development on fisheries resources and productivity. A key tool developed by IAM to facilitate this role is the Queensland waterways for waterway barrier works mapping. It helps users identify waterways for the purpose of waterway barrier works under the Fisheries Act 1994. This talk will begin by discussing the Queensland waterways mapping and how it fits into Queensland's Planning framework, highlighting the importance of maintaining fish passage by ensuring waterway barriers are constructed appropriately, and followed by details on the recent major update of the Queensland waterways mapping from version 2 to version 3 and the Python scripted GIS workflow developed to streamline/simplify the update.

Hans Wurzel currently works as a Senior Fisheries Biologist with the Fisheries Queensland, Impact Assessment and Management (IAM) unit. He is passionate about working with spatial data to support and enable users in making informed decisions. Hans's focus over the last 5 years has been the development of GIS Workflows to maintain, update and migrate IAM's key spatial datasets. He counts the update of the statewide 'Queensland Waterways for Waterway Barrier Works' open data mapping layers as a key success as it will drive improved outcomes for fish passage and fisheries productivity.

What are Regional Report Cards (RRCs), and how can we use GIS tools to enhance and expand their impact?

Adam Shand, Healthy Waters Partnership for the Dry Tropics

Adam Shand takes us through his organisation: the Healthy Waters Partnership for the Dry Tropics (HWP), his work as an environmental data analyst, and his efforts to bring GIS to the RRCs. Adam's presentation will touch on spatial topics including climate analysis, vegetation extent, site mapping, satellite modelling, digital elevation models and StoryMaps – there is something here for everyone!

Adam Shand is an Environmental Data Analyst working at the Healthy Waters Partnership for the Dry Tropics (HWP). He holds an Honors degree in Marine Science at Griffith University. Over the past two years, Adam has been learning how to combine his love for the environment with his passion for all things data.

Assessing Global Land Use/Land Cover Map Reliability with Drone Data

Amy-Nicole Peters, James Cook University

10 minute lightning talk: Exploring how high-resolution drone data can enhance the accuracy of global Land Use/Land Cover (LULC) maps. Discussing the differences in precision among various LULC products and emphasizing how integrating drone data in their validation processes could significantly improve their reliability.

Amy-Nicole Peters is a Master's student at James Cook University working in remote sensing. Her research focuses on improving Land Use/Land Cover map accuracy through the integration of drone data, aiming to support effective environmental management and informed policy-making.

Combining remote sensing and Indigenous knowledge of Trinity Inlet, Gimuy (Cairns, Australia)

Redbird Ferguson, James Cook University

Redbird Ferguson (a, b), Karen Joyce (a, b), Marji Puotinen (b, c), Christian Reepmeyer (d, e), Rachel Groom (f, g), Kellie Pollard (h), and Gudju Gudju Fourmile (i)

(a) College of Science and Engineering, James Cook University, Cairns, Qld 4878, Australia

(b) AIMS@JCU, Australian Institute of Marine Science and James Cook University, Townsville, Qld 4811, Australia

(c) Indian Ocean Marine Research Centre, Australian Institute of Marine Science, Crawley, WA 6009, Australia

(d) College of Arts, Society, and Education, James Cook University, Cairns, Qld 4878, Australia

(e) Commission for Archaeology of Non-European Cultures (KAAK), German Archaeological Institute, Bonn, Germany

(f) Northern Institute, Faculty of Arts and Society, Charles Darwin University, NT 0815, Australia

(g) ARC Centre of Excellence for Indigenous and Environmental Histories and Futures, James Cook University, Cairns, QLD 4870, Australia

(h) College of Indigenous Futures, Education & the Arts, Charles Darwin University, Darwin, NT 0815, Australia

(i) Gimuy Walubara Yidinji Elders Corporation, Cairns, 4870, Australia

Our study uses remote sensing technologies to evaluate and monitor estuary health, and to confirm the seasonal calendar of the Gimuy Walubara Yidinji. This co-designed project evaluates Trinity Inlet, an estuary system on the northeast coast of Australia at Gimuy (Cairns). Estuaries are important highly productive social-ecological systems, situated in the ecological transition zone between terrestrial and marine environments. And yet, they are one of the most anthropogenically impacted ecosystems in the world. This research uses satellite-based remote sensing techniques and spatial analysis to capture and analyse critical environmental parameters throughout the year. Freely available satellite data is an efficient, cost-effective, and non-invasive approach to monitoring these dynamic ecosystems. Combining Indigenous knowledge in the form of seasonal calendars with remote sensing data enhances our understanding of the estuary and its seasonal shifts. This is particularly important in the tropical zone where northern hemisphere temperate seasons do not align well with southern hemisphere seasonality. There is growing recognition that bringing together Indigenous knowledges and western scientific approaches to protect and conserve Sea Country in Northern Australia and throughout the world is of vital importance. Recognising Indigenous knowledge and tribal science as more than an additional form of environmental knowledge will improve how heritage is managed and conserved for future generations.

Redbird Ferguson is descended from Choctaw ancestors and European settlers of North America and now makes Australia her home. Redbird is an archaeologist, cultural heritage manager, spatial scientist, and post-graduate researcher who has worked with Indigenous communities on projects in the Pacific and Northern Australia. She believes that understanding the world around us and our connections to the past is key to our future success and survival. She collaborates with Traditional Owners and Indigenous communities to improve how Western scientific knowledge and Indigenous knowledge are

brought together. By creating culturally sensitive frameworks she works to preserve Indigenous culture and heritage while challenging colonial biases and standards of practice.

A dynamic foraging habitat distribution estimate for green turtles in the Great Barrier Reef

Emily Webster, James Cook University

The definition of fine-scale habitat boundaries and resource requirements for threatened species is central to understanding their responses and resilience to habitat changes. Where habitat studies delineate an overlap between habitat and manageable anthropogenic threats, this information is critical for implementing protective measures. This study explicitly targets identified actions for management of green turtles (*Chelonia mydas*) by the Queensland Marine Turtle Conservation Strategy 2021-2031 (DES): 1) identifying important inshore, shallow foraging grounds, and 2) recording changes over time in foraging habitat. We identify the environmental characteristics underpinning foraging habitat suitability for green turtles, in the inshore Great Barrier Reef using state space modelling and boosted regression trees incorporating 23 candidate predictors. We predict potentially suitable foraging areas for green turtles in the inshore region and compare our results to the known distribution of green turtle foraging habitat. We evaluate changes in habitat availability in 2010 and 2022 and the temporal trends in key variables driving this change. Additionally, we determine the proportion of suitable foraging habitat that falls within existing marine park zones and designated port areas. Our results identify coastal infrastructure, seagrass community type, river mouths, bathymetry and large zooplankton as influencing the distribution of foraging turtles.

Emily has a biological science degree from UNSW where she did her Honours research studying the responses of colonially nesting waterbirds to environmental flows. She started her PhD at JCU in 2019, specialising in the movement ecology of marine turtles. In her PhD thesis she uses GPS locations of tracked animals and environmental data to make inferences about what is driving the movement behaviour and distribution of foraging turtles in human-modified habitats. Emily is excited about bringing multiple data sources together to uncover new information about ecosystems, and presenting that information in ways that can be intuitively interpreted and interrogated by managers. Emily also works part time at the Great Barrier Reef Marine Park Authority as a data analyst in the Science for Management section, who consider themselves to be “science knowledge brokers”.

Which way to Chandwas? A triptych of tales with marginal notes by an amateur observer

John Brisbin, EthicalFeast

In this session John Brisbin will scatter some coordinates across a broad landscape of ideas focused on the intersection of mapping, abstractions and the mysteries of Modernity.

John is a passionate appreciator of maps and their power to help people orient themselves. John has been a deep sea navigator, a cross country wanderer, and an explorer of imaginary territories.

Spatial Science and Society: Unlocking Potential with DuckDB

Thorsten Hohenstrater, Yurika, part of Energy Queensland

Spatial science is essential in tackling various societal challenges, from urban planning and environmental conservation to disaster management. This presentation explores the intersection of spatial science and society, with a special focus on the capabilities of DuckDB, an in-process SQL OLAP database management system designed for efficient and high-performance data analysis. DuckDB offers remarkable speed and precision in handling large datasets, making it an invaluable tool for thorough data analysis and informed decision-making without the “big data” price tag typically associated with such processes. Additionally, DuckDB supports modern data file formats such as Parquet, allowing for

Abstracts & Bios

efficient storage and quick retrieval and import of large datasets locally and across the internet. We will examine how DuckDB integrates seamlessly with GIS tools, enhancing the ability to analyse and visualise spatial data effectively. With technical demonstrations, attendees will see how DuckDB can be leveraged by spatial professionals. Join us to discover how DuckDB's advanced features and integration capabilities are transforming spatial science, driving innovation, and improving societal outcomes. This presentation aims to provide a comprehensive understanding of how leveraging DuckDB can enhance the efficiency, reliability, and impact of spatial science applications, making sophisticated analysis accessible and cost-effective.

Thorsten is a passionate Spatial Technology Enthusiast with over 15 years of experience in the electrical utility industry. A Cairns local, Thorsten currently works for Energy Queensland and is one of the founders of "Lookup and Live". He specialises in leveraging innovative GIS, remote sensing and mapping technologies to enhance the efficiency, reliability, and safety of utility infrastructures. With expertise in industry-leading software such as ESRI Enterprise/ArcGIS Online and Safe FME, Thorsten is dedicated to advancing the field through continuous learning and innovation.

GIS - The Lead Actor in Today's Society – Series 1, Ep 2

Greg Hickey, Esri Australia

Ep2: The changing face of GIS:

- Access ever changing technology at work and home
- Use on your Android, Apple or web device
- Now access anytime, anywhere
- Use offline, inline, online

An inside look at GIS today, where did it all start?, where will it trend to? Including review of case studies.

Over the last 30 years Greg has been directly involved in the IT industry spatial information working with commercial business and government departments to integrate GIS into their business. Greg began his career with the then Department of Lands working as a geodetic and licenced cadastral surveyor. It was with the Department that Greg was first introduced to GIS. Over the years Greg has seen Esri GIS progress from a technical backroom solution to a solution that is now the basis of much of our business innovation. At Esri Australia Greg works with a range of clients, introducing the benefits GIS offers to new clients and helping existing clients improve their business outputs and efficiencies to deliver greater benefits for their stakeholders and communities.