Murdoch University | Harry Butler Institute

2022 ANNUAL REPORT

Harry Butler **Institute**

We champion a space where the needs of community, human development and biodiversity can co-exist, spearheaded by our multidisciplinary research.

CONTENTS

The Harry Butler Institute acknowledges the Traditional Owners of Country throughout Australia. We pay our respects to Elders past and present.

COVER PHOTO DOLPHIN MOTHER AND CALF. DELPHINE CHABANNE.
PHOTO BARROW ISLAND. ZOHARA SCOTT

Pro Vice Chancellor's Report

Professor Simon McKirdy
PRO VICE CHANCELLOR, HARRY BUTLER INSTITUTE

Biodiversity conservation and sustainability are at the core of everything we do at the Harry Butler Institute, balanced with the needs of community and human development. Driven by necessity and a rapidly changing world, we are innovating solutions with industry and community that halt biodiversity decline, lower environmental impacts, and fill gaps in our understanding of system, processes, and species, while still enabling human development.

The HBI Centres focus on real-life solutions for real-world problems via translational research and hands-on community engagement.

Biosecurity and One Health recognises the linkages between health, biosecurity and the environment. Policy, legislation and social science perspectives are taken to address these complex problems that relate to the health of animals, plants and people. Healthy freshwater, estuarine and marine ecosystems underpin economic development and provide social and recreational values for communities in Australia and throughout the world. Terrestrial Ecosystem Science and Sustainability works with community, industry and management partners towards a shared vision of maintaining sustainable and biodiverse ecosystems. Supplies of water and energy are fundamental to modern life, as is the management of waste. Energy generation from new wind and photovoltaic technologies, to wastewater treatment and desalination, with integrated water, energy and waste technologies that enable smart buildings which lead to healthy urban areas and rural communities.

The health and wellbeing of the land and people are connected. Our research is underpinned by this knowledge and our impact demonstrates this.

As an institute, we believe that collaboration with industry, government, community and across academia, both locally and internationally, is a key factor in creating tangible, long-lived, successful research outcomes.

Across our four research centres, our academics and research students have worked hard to secure funding grants, donations, scholarships and support to keep their work going. Together, we secured more than $14 million dollars in new funding awards, a significant increase on 2021 funding.

Pro Vice Chancellor's Report *(cont.)*

A number of key projects were awarded and initiated in 2022, including conservation and citizen science projects, *Noorlarks Forever – Keep Carnaby's Flying* and *Saving Our Snake-Necked Turtle* — both funded by Lotterywest. The Western Australian State Government funded a multitude of HBI projects through various agencies including an investigation of tick species found on or near cattle farms, through the Department of Primary Industries and Regional Development's (DIPRD) Cattle Industry Funding Scheme.

We also commenced work on two new projects funded through the Future Battery Industries CRC; one investigating the *Beneficiation and Chemical Processing of Lithium Minerals*, and another working on the *Development and application of Vanadium Redox Flow Batteries (VRFB)*.

HBI researchers published more than 283 scientific peer-reviewed journal articles in a wide range of scientific journals, including Nature. We have also seen an increase in the impact of our published research, signifying a rise in citations.

The high standard of research, innovation and leadership within the HBI has been acknowledged both within the university and among academic and industry groups, with many awards and accolades received by HBI research and professional staff during the year. Locally, HBI was well represented among the recipients of 2022 Murdoch University Staff Awards.

The Young Tall Poppy Science Awards named Dr Charlotte Oskam, Parasitologist and champion for Women in STEMM, as the 2022 WA Young Tall Poppy for her dedication to communicating her work beyond the walls of the laboratory. Internationally, Dr Rachel Standish, Dr Maninder Kaur, and myself were selected as 2022 Fulbright Scholars, participating in a cultural exchange with academic institutions in the USA.

While accolades can help to highlight where we are achieving or impacting beyond expectations, they are not what drives us at HBI. Quite simply, we push ourselves to achieve the best outcomes through the highest quality research to create a better world. We strive to achieve real, tangible outcomes for the species, systems, communities and processes on which we centre our efforts. A read through this report will show clearly that we have been doing what we set out to achieve – coexistence of biodiversity and human development which was a key message of Harry Butler.

Professor Simon McKirdy
Pro Vice Chancellor
Harry Butler Institute

FAUNA TRAPPING AND SURVEILLANCE.
PHOTO JESSICA DAVIS

PELICAN ON A ROCK.
PHOTO KAT SAMBROOKS

Achievements & impact in 2022

SCIENTIFIC PUBLICATIONS

Total publications in 2022

284

percentage in Q1 outlets: **77%**

percentage in top 10% of outlets: **41.1%**

Number of publications in the top 10% journals by CiteScore

2022	2018–2022
40.9%	37.4%

CITATIONS

Field-weighted citation impact

2022	2018–2022
1.72	1.67

(usually done on a 5 year rolling average)

NEW FUNDING AWARDS

(income to MU where Chief Investigator is in HBI):

$14,012,310

PHOTO BARROW ISLAND, ZOHARA SCOTT

HIGHER DEGREE RESEARCH

Load

113.20

Equivalent Full-Time Student Load (EFTSL)

Completions

31*

* based on best available data

RESEARCH OUTPUTS

Percentage of research outputs with international collaborators

2022

69.9%

2018–2022

61.2%

COLLABORATIONS

Top collaborating institutions 2018–2022:

UNIVERSITY OF WESTERN AUSTRALIA
CURTIN UNIVERSITY
EDITH COWAN UNIVERSITY
PATHWEST
UNIVERSITY OF QUEENSLAND
UNIVERSITY OF MELBOURNE
COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION
STELLENBOSCH UNIVERSITY
UNIVERSITY OF ADELAIDE

Research Centres

Our broad scope of research impacts many areas of sustainability.

Assoc Prof John Ruprecht
DIRECTOR, CENTRE FOR
WATER, ENERGY AND WASTE

Prof Trish Fleming
DIRECTOR, CENTRE FOR
TERRESTRIAL ECOSYSTEM SCIENCE AND SUSTAINABILITY

Prof Alan Lymbery
DIRECTOR, CENTRE FOR
SUSTAINABLE AQUATIC ECOSYSTEMS

Prof Sam Abraham
DIRECTOR, CENTRE FOR
BIOSECURITY AND ONE HEALTH

The Harry Butler Institute's four research centres each encapsulate a different aspect of environmental conservation or sustainable development.

Under the Harry Butler Institute, our research centres continue to build their reputations for expertise and research excellence in their respective fields. In 2022, our researchers collaborated with funders and project partners across the globe to research and develop sustainable solutions. Through these collaborations, a number of new projects were initiated, with Institute researchers the recipients of more than $14 million in new funding awards from grant schemes, partnerships and initiatives.

Our research and development of geopolymer concrete products took a giant leap forward, moving from the testing stage to the commercialisation stage with a launch event at Murdoch University attended by Regional Development Minister Hon. Alannah MacTiernan. The transition was supported by BHP Billiton Innovation with funding for the *Geopolymer concrete from Iron Ore Tailings with Yurra and BHP* project with Murdoch University's Colliecrete team.

MINISTER HON. ALANNAH MACTIERNAN, MURDOCH UNIVERSITY VICE CHANCELLOR ANDREW DEEKS, JODIE HANNS MLA, AND PROFESSOR MARTIN ANDA DEMONSTRATING COLLIECRETE PRODUCTS.

In the clean energy space, HBI's research is at the forefront of future batteries technology with the initiation of two new projects funded by the Future Battery Industries Cooperative Research Centre (FBICRC). These projects seek to (1) secure the supply of lithium as a critical metal for application in electric cars and other clean energy storage systems, and (2) develop and optimise vanadium battery electrolytes production processes as well as vanadium redox flow battery performance — one of the best options for large scale clean energy storage systems.

Our State-of-the-art AMRID Laboratory, run by newly-appointed Director of the Centre For Biosecurity and One Health Professor Sam Abraham, has been gaining international acclaim for its unique robotics-assisted services. A new project funded by the Food Standards Australia New Zealand for National Surveillance investigated antimicrobial bacteria in retail food.

In a major boost for local species of threatened black cockatoos, Lotterywest have put significant funding toward the project *Keep Carnaby's Flying – Ngoolarks Forever.* The collaborative, science-powered, citizen science project aims to help save endangered Carnaby's Black Cockatoos. This project is a collaboration between both the Harry Butler Institute and Ngangk Yira Institute for Change, with the Murdoch University School of Veterinary Medicine and as well as government, industry and community partners.

Lotterywest boosted efforts to save another species through their support of the Saving Our Snake-Necked Turtle project. The collaborative project trains citizen scientists to help monitor and protect the snake-necked turtle (*Chelodina oblonga*), an understudied species impacted by numerous threats.

In the south-west of WA, The Ian Potter Foundation has funded a collaborative new project seeking to assess the biodiversity conservation and fire-fighting value of artificial water points in freshwater ecosystems. In the northern part of the state, more than $800,000 in funding from the Department of Jobs, Tourism, Science and Innovation will help marine researchers, traditional landowners and the Department of Biodiversity, Conservation and Attractions to effectively and cross-culturally co-manage marine resources in Yawuru Nagulagun (Roeback Bay) Marine Park.

A team of researchers from the Centre for Biosecurity and One Health continued their work with Chevron Australia, surveying biodiversity and biosecurity threats on Barrow Island, Western Australia. The exemplary efforts of some members of the research team were recognised by Chevron through Certificates of Appreciation.

Australia's leading arachnid taxonomists, Dr Volker Framenau and Dr Pedro Castanheira, continue their taxonomic studies into orb-weaving spiders from Australia and New Zealand, discovering several new spider genus and species which they have had the honour of naming. The scientists have drawn inspiration from their favourite sport, soccer, as well as other interests when choosing names.

PROF KRIS WARREN WITH MINISTER REECE WHITBY RECEIVING FUNDING ACKNOWLEDGEMENT.
PHOTO HBI

ANTHONY SANTORO WITH A SNAKE-NECKED TURTLE.
PHOTO HBI

Still on arachnids, Dr Charlotte Oskam and her team commenced a new project with funding from the Department of Industries and Regional Development's Cattle Industry Funding Scheme to investigate tick species found on or near cattle farms.

In the ecological restoration sector, Dr Rachel Standish commenced research into Mining Sector Ecosystem Accounting: Alcoa Case Study with funding from the Cooperative Research Centre for Transitions in Mining Economies (CRC TiME).

Through ingenuity and innovation, we're solving real-world problems with translational, collaborative research.

Post-doctoral fellows

HBI Challenge Inaugural Research Fellows

The Harry Butler Institute Challenge has provided an opportunity to employ four exceptional post-doctoral fellows to take on some of our most pressing large-scale environmental challenges through research that syntheses and transforms existing data and knowledge with novel findings. From a swathe of high-quality applicants, four were chosen to lead this challenge over the next 12 months. These are our four HBI Challenge research fellows:

Restoration ecologist **Dr Tina Parkhurst**, who recently completed her PhD at Murdoch University, is leading research into the economic benefits of ecological restoration. She is developing a natural capital accounting system tailored to ecosystem restoration and identifying mechanisms that can help improve restoration outcomes using this mode.

Marine Biologist **Dr Salvador Zarco-Perello**, joining us from UWA, is building a sustainable management framework for marine ecosystems, linking the system's trophic functioning with ecosystem services. His research focuses on three key systems: coral reefs, seagrass meadows, and kelp forests.

Zoologist and behavioural ecologist **Dr Callum Dononhue** completed his PhD at UWA. His current research is focused on trying to understand the impacts of changing environmental conditions on freshwater and riparian species through bioenergetic modelling — a model that examines how species partition their energy intake for growth, maintenance, and reproduction.

Animal physiologist **Dr Daniel Gomez Isaza** recently completed his PhD at the University of Queensland. Daniel is investigating the physiological and behavioural traits used by ectothermic species to cope with thermal variability and heatwaves.

TINA PARKHURST
SALVADOR ZARCO-PERELLO
CALLUM DONOHUE
DANIEL GOMEZ ISAZA

Our research

Centre for
Water, Energy and Waste

Turning food waste into future fuels

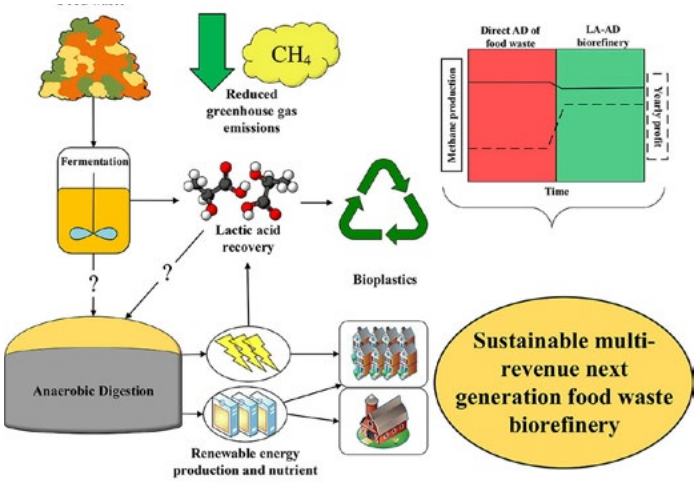
One third of the world's food is wasted each year, with around 7.6 million tonnes wasted in Australia alone. Harnessing this food waste is a major challenge that Murdoch University research is working to address.

If food waste was a country, it would be the third largest greenhouse gas emitter behind the USA and China, according to the Department of Agriculture, Water and the Environment.

Developing interventions to arrest waste is a priority in achieving United Nation's Sustainable Development Goals on climate action and responsible consumption. One promising area of progress is biorefining.

Second generation biorefineries can use food waste as feedstock to sustainably produce biobased products. Current estimates indicate that between 1.3 and 1.6 billion tonnes of food waste is produced each year. Recycling and recovery of value from food waste is of global importance.

Chris Bühlmann is a PhD candidate who has been conducting research into harnessing food waste for energy production in collaboration with Dr Bede Mickan, Dr Stephan Tait, Professor Parisa Bahri, and Richgro Garden Products.



FOR SUSTAINABLE MULTI-REVENUE NEXT GENERATION BIOREFINERY PROCESS FOR FOOD WASTE

"We see tremendous opportunity in anaerobic digestion – a biological process which breaks down food wastes into biogas, a mixture of methane and carbon dioxide – which can use food waste to generate renewable energy."

Bühlmann's research into developing a food waste biorefinery looked specifically at how to improve the yield of food waste processing by capturing lactic acid.

Lactic acid is used in the pharmaceutical, food and textile industries, as well as in the production of biodegradable plastics – potentially using one environmental problem to solve another.

While recent research has shown converting food waste into lactic acid and biogas is economically feasible, the overall impact of generating lactic acid on downstream biogas formation has not been investigated until now.

"We have explored the technical feasibility for lactic acid recovery following the fermentation of food waste, prior to biogas formation," explained Professor Bahri.

"What we discovered was that lactic acid recovery from fermentation is both technically feasible and commercially attractive, with the residues that remain after the lactic acid recovery process able to be used to make biogas."

The research looked at three scenarios; lactic acid fermentation; biogas production; and sequential lactic acid fermentation and biogas production from fermentation residues.

The research has demonstrated is that an integrated biorefinery process – one that produces both lactic acid and biogas – presents an optimal use of energy and materials than producing just one of these products.

This research supports the United Nations
Sustainable Development Goal 11: Sustainable Cities and Communities; 12: Responsible Consumption and Production; and 13: Climate Action

ALEKS NIKOLOSKI (RIGHT) WITH ENGINEERING STUDENTS ON A SITE VISIT.
PHOTO MURDOCH UNIVERSITY

Battery boom for Western Australia

Professor Aleksandar Nikoloski explains the tremendous opportunity in front of WA and how plugging into the battery boom can underpin a clean, sustainable, intelligent way of life.

We rely on batteries every day. The phones in our pockets, cars on our streets and power to our homes increasingly rely on our ability to efficiently store and release energy.

Battery production is rapidly expanding to meet these demands and a full transition to renewable energy depends on it. But meeting that demand is not simple, nor easy.

The materials used to produce batteries are primarily metals and, in just one century, we have exhausted almost all easily accessible and high-grade deposits on earth.

This makes supplying enough minerals and metals to meet the world's ever-increasing demand for batteries a global environmental challenge. Western Australia is at the heart of that supply.

Our state produces more than half the world's lithium, an essential component in rechargeable batteries, and has globally significant stores of vanadium, a metal central to long-duration batteries.

This presents a tremendous economic opportunity. The global demand for lithium-ion batteries is forecast to increase elevenfold between 2020 and 2030, to a market value of $92 billion.

While we can only mine new resources for so long, the good news is that metals are essentially indestructible and thus infinitely recyclable. This opens up the possibility of developing effective technologies to solve both supply and disposal issues.

If we can establish a circular economy for metals that also enables renewable energy to be efficiently stored and distributed, we can deliver a sustainable economy for batteries, technology and society at large.

However, this will take a great collective effort.

It is important for industry, government and research institutions to collaborate, share ideas and create facilities to help identify opportunities for improvement, develop new process solutions and learn the skills to implement these changes.

We have already made great progress in developing technology to extract metals from batteries that have reached the end of their life, and recycling has the added benefit of reducing the dumping of old batteries to landfill.

However, there is still much to be done and science and engineering have a large role to play in establishing a thriving battery industry in Western Australia that is fed by both metal mining and recycling the metal in old batteries.

Our vision is for technology to improve life today without degrading the earth for future generations - for a world where metals are reused indefinitely to deliver a clean, sustainable, intelligent way of life.

This research supports the United Nations **Sustainable Development Goal 7: Affordable and Clean Energy; 9: Industry, Innovation and Infrastructure; and 11: Sustainable Cities and Communities**


Building a sustainable
future with you.

Centre for Terrestrial Ecosystem Science and Sustainability

Investigations into quenda mange

Researchers commenced a study in winter of 2022 to understand how the disease sarcoptic mange is manifesting in quenda in urban and bushland sites in Perth's hills.

Concern among Roleystone community and wildlife rehabilitation centres had been growing in recent years over increasing observations of sarcoptic mange in southwestern brown bandicoot (*Isoodon obeselus*). Bandicoots, or quenda, with the severe skin disease had been seen in local reserves and backyards. Additionally, a recent cluster of cases detected in the Jandakot area suggested the disease may be establishing in new areas.

Sarcoptic mange is caused by a skin mite *Sarcoptes scabiei.* It is a significant and debilitating disease threat to several Australian mammal species, including wombats and koalas. The parasite was likely introduced to Australia at the time of European settlement, carried by settlers and their domestic animals.

Sarcoptic mange occurs when mites bury into and feed on the skin of a mammal. Although it is not common for the mite to be transmitted to people from wildlife, it can cause disease in pets and people. Further research is needed to understand how quenda become infected and what risk this poses to other species and to humans. Infected quenda develop crusting of the skin, intense itchiness, and secondary complications that may lead to death.

Murdoch University Lecturer in Wildlife Health and Epidemiology, Dr Bethany Jackson said it was a matter of considerable concern to members of the Roleystone and wildlife health community.

To address these concerns and find out the extent and impact of the disease, Wildlife Epidemiologist Dr Jackson and her team began a project to investigate populations of quenda in Roleystone. "We are working closely with the wildlife care facilities and local council to understand why this disease is being seen more commonly in quenda, and what the impact is on their populations," Dr Jackson said.

"We suspect, as sarcoptic mange has only been seen occasionally in this species prior to the last five years, it could be coming from another reservoir animal, potentially European foxes."

Research aimed to capture quenda in urban and bush areas of Roleystone, collect samples, and determine how the mite impacts the skin and host, the best method for detecting the mite in this species, and how the mite found on quenda is related to other sarcoptid mites collected from hosts such as local foxes, and species in the east of Australia.

Field studies conducted in June/July 2022 yielded little evidence of mange-infected quenda. Further studies as part of the project will asses data captured from wildlife care facilities.

Based on the findings of this pilot study, the group of stakeholders hope to establish guidance on best management practices for individual quenda, as well as expanding surveillance through local councils and citizen-science programs. Overall, the study aims to improve on-ground decision-making for wildlife departments and care facilities, when working with affected quenda.

QUENDA FORAGING IN SUBURBAN BUSHLAND.
PHOTO NARELLE DYBING

Sick or injured quenda should be reported a local wildlife care centre such as the Darling Range Wildlife Shelter, WA Wildlife, Kanyana Wildlife Rehabilitation Centre, or Native Animal Rescue for care and treatment. Alternatively, the Wildcare Helpline can be contacted on **(08) 9474 9055**, to be directed to the nearest wildlife care service.

This research supports the United Nations **Sustainable Development Goal 11: Sustainable Cities and Communities; and 15: Life on Land**

WILD DOG CAPTURED ON CAMERA.
PHOTO TRISH FLEMING

Can dingoes help suppress feral cat and fox numbers?

A new study led by Professor Trish Fleming has queried whether dingoes, one of Australia's apex predators, can help suppress introduced cats and foxes.

With 33 mammals, nine birds and three reptile species listed as extinct since the arrival of Europeans in Australia in 1788, the continent has the highest rate of extinction anywhere on the globe.

This devastating figure is largely due to habitat loss from land clearing, grazing and altered fire regime, coupled with the introduction of predators including the domestic cat and red fox.

A new study has reviewed 157 Australian cat, fox and dingo diet studies to help inform the question of meso-predator (feral cat and fox) suppression by dingoes.

The national team of co-authors investigated key differences and overlap in diets of these three predator species to understand the current diets of these predators, and how they have changed over time, and across the country.

The findings, published Royal Society Open Science, provide a comparative analysis of the diets of all three predators and identifies environmental factors that influence dietary overlap.

The results, based on almost 70 years' worth of data and almost 100,000 samples, show distinctive diets for dingoes and feral cats. They showed that cats consume mostly birds, reptiles and small mammals and are also reasonably flexible about what they eat, while dingoes consume more medium-sized and large mammals, including livestock.

"Foxes show substantial dietary overlap with both cats and dingoes. Their diverse and opportunistic diet means they will simply switch food sources to mitigate food competition with dingoes," said Professor Fleming.

The results have conservation implications, especially for 're-wilding programs' that propose reintroducing dingoes to help control feral cat and fox abundance, and therefore decrease predation pressure on native prey species.

"These results suggest that all three species would rarely compete for the same food items. It is therefore unlikely that dietary competition with dingoes would suppress cat or fox numbers."

The study further reinforced concerns about the consequences of predation by feral cats and foxes on threatened species.

"We know that cats and foxes are both a serious conservation threat to Australian native fauna. Our findings further prove the need to control cats and foxes to protect vulnerable native species."

Professor Fleming was joined by leading mammal ecologists from Charles Darwin University, University of Sydney, NSW Department of Primary Industries, WA Department of Biodiversity, Conservation and Attractions, and Queensland Museum Network.

» **Read the original research published in Royal Society Open Science** https://doi.org/10.1098/rsos.220792

This research supports the United Nations **Sustainable Development Goal 15: Life on Land**

Centre for Sustainable Aquatic Ecosystems

Bottlenose dolphin alliances are helping secure a mate

In the first recorded evidence outside Western Australia's shark Bay, Marine biologist Dr Delphine Chabanne, observed male alliance behaviour in a small population of Indo-Pacific bottlenose dolphins in Perth's Swan-Canning Riverpark.

The Swan Canning Riverpark, or Derbal Yerrigan and Djarlgarra, is home to a year-round community of 12 adult, six juvenile, and six calf Indo-Pacific bottlenose dolphins (*Tursiops aduncus*).

Dr Chabanne has been studying Perth's dolphins for more than a decade. She conducted 187 surveys and tallied 250 useable dolphin group sightings between June 2011 to March 2017. She used long-term photo-identification records and social analyses to assess whether male alliances also occur in smaller and more isolated settings, such as the Swan Canning RiverPark. Behaviours were documented that showed the male alliances occur in the context of reproduction.

Male alliance behaviours in Indo-Pacific bottlenose dolphins, such as helping each other find females or guarding their potential mates, had only been observed in the within the Shark Bay population prior to this study. This most recent discovery suggests male alliances are not unique to the Shark Bay dolphin population and extends our understanding of the evolutionary and ecological processes that drive alliance formation.

A male dolphin named Bottomslice was observed performing a 'rooster strut', a sexual display in the presence of oestrus females, during which the male bobs his head up and down at the water surface while moving forward.

"Often, as we observe a group with a female and a male alliance, the female will be in front while the males will follow behind or on each other side of the female. Our work revealed strong social bonds and long-term, non-random associations among individual males".

» RESEARCHER DELPHINE CHABANNE CONDUCTING OBSERVATIONS OF INDO-PACIFIC BOTTLENOSE DOLPHINS IN THE SWAN CANNING RIVERPARK.

Behavioural observations of alliances interacting with potentially receptive adult females, and exhibiting sexual display behaviours near females, suggest that these alliances occur in a reproductive context.

The findings of this study are exciting and significant as the first formal analysis indicating the occurrence of male alliances outside Shark Bay along the vast western coastline of Australia.

» Read the original research published in Mammalian Biology
https://doi.org/10.1007/s42991-022-00295-7

This research supports the United Nations **Sustainable Development Goal 14: Life Below Water**

STEPHEN BEATTY HOLDING A FRESHWATER MUSSEL.
PHOTO DANNON WU

Freshwater mussels – the rivers' livers – are under threat

Freshwater mussels are one of the most endangered groups of animals on the planet, with 47% either extinct or threatened with extinction. Despite suffering from mass death events and facing an extinction crisis, these heavy-lifters of the aquatic world are rarely in the headlines.

Often called the 'livers of our rivers', freshwater mussels play a vital role in maintaining the health of freshwater ecosystems; filtering and removing suspended sediments, nutrients bacteria and algae. Yet, mass death events are bringing species of mussels closer to extinction.

In March 2021, seawater was introduced into the lower Vasse River in south-western Australia to control harmful algal blooms. This influx of seawater in this section of the river killed an entire population of Carter's freshwater mussel (*Westralunio carteri*) — a species vulnerable to extinction.

Among the 3,000-4,000 mussels killed were 160 Carter's freshwater mussel that had previously been collected from the river by Murdoch researchers, kept alive in cages for nine months, then re-introduced so they would survive the construction of a new bridge.

Mass death events like the one in the Vasse River are not uncommon for freshwater mussels. In addition to virus outbreaks, prolonged droughts have killed mussels en masse throughout the USA and Australia. Severe between 2017 and 2020 drought killed around 2.9 million freshwater mussels in the Murray Darling Basin.

The fact that only two of Australia's 18 freshwater mussel species are listed as threatened is indicative of the fact that our freshwater mussels are very poorly studied. Most Australian freshwater mussels have had no ecological assessments of their conservation status.

Climate change is one of the most serious threats to freshwater mussel populations in Australia. Reduced rainfall has resulted in a dramatic reduction of water flow. In south-western Australia, for example, water flow has decreased by around 70% since the 1970s. Climate change models predict at least a further 25% reduction by 2030.

This loss of flow means more of our rivers go without water over the dry season, and these drought conditions are lasting longer. Mussels can live for a short time without water by burrowing into the sediment but are killed by longer and more severe dry spells.

A big reason freshwater mussels are so vulnerable is because of their unique life cycle. Female freshwater mussels fertilise their eggs internally, creating embryos which grow in special pouches of the gills until they're released as tiny larvae that parasitise fish. After several months, the juvenile mussels and drop off their host into the sediment. Most mussel species are slow growing and take five to ten years to reach sexual maturity, living for 100 years or more. This combination of characteristics means mussel populations often cannot recover from large death events.

Freshwater environments are very poorly protected by conservation reserves and up to 71% of the world's wetlands have been lost since 1900. One urgent priority for Australia is to invest in freshwater protected areas, the same way as we invest in marine protected areas and terrestrial conservation reserves.

Those who live near a stream, river or freshwater lake, are encouraged to go and visit it soon and appreciate the myriad of lifeforms live below the surface. Chances are they won't be there in the decades to come unless we develop policies and practices that protect our freshwater ecosystems.

» Adapted from an article by Professor Alan Lymbery originally published in The Conversation. Read the original research here:
https://doi.org/10.1002/aqc.3511
https://doi.org/10.1007/s10750-020-04268-0

This research supports the United Nations
Sustainable Development Goal 14:
Life Below Water

Centre for Biosecurity and One Health

Spider taxonomy kicking goals

Dr Volker Framenau and Dr Pedro Castanheira, with Dr Cor Vink from Lincoln University, established the new genus, *Socca* (Latinised form of 'soccer'), following a comprehensive study of orb-weaving spiders found in Australia and New Zealand.

Within the genus are 12 species, of which nine are new to science including *Socca johnnywarreni* named after Australian soccer player and commentator Johnny Warren MBE, OAM (1943–2004).

The arachnologists also discovered and named the species' *Socca pleia*, *Socca arena*, and *Socca levyashini*, the latter named after 1960s Soviet goalkeeper Lev Yashin who was known as 'The Black Spider' and regarded by many as the greatest goalkeeper in the history of the sport.

Not all of the new species have a football-related name, the *Socca* genus has unique abdominal tubercles and genitalia and *Socca elvispresleyi* was coined for the male spider's 'terminal apopphyis' of the pedipalp (its genitalic organ) that resemble its namesake's quaffed hairstyle.

Over their careers, Dr Framenau and Dr Castanheira, who are originally from Germany and Brazil respectively, have named many spiders, including two after their wives.

But this time, when tasked with naming a genus and several new species, they looked to the sport at the forefront of everyone's minds this year, the game they had grown up with and, in Dr Framenau's case, still play.

"Spiders are intriguing, they are predators but they can also be very beautiful' said Dr Castanheira.

"Naming spiders can also be fascinating, like with *Socca elvispresleyi*, when we saw that part of the male genitalia looked just like Elvis' hair, there was only one thing we could name it.

Recognising football or soccer is special for Dr Framenau and Dr Castanheira. Both scientists are very proud and grateful to have recognised the sport in this way.

» **Read the original research at**
https://doi.org/10.1080/03014223.2021.2014899

This research supports the United Nations
Sustainable Development Goal 15: Life on Land

» PEDRO CASTANHEIRA IN THE LAB.
PHOTO MURDOCH UNIVERSITY

Marketing

Our communications and marketing efforts are central to our ability to engage the public, potential collaborators and funders in our research. Tools such as YouTube, LinkedIn and our website have used to effectively build upon our digital presence.

The Harry Butler Institute LinkedIn page has served as primary public communications portal for the Institute with regard to dynamic content. Posts were shared on the page 1.75 times per week on average, utilising links, articles, videos, photos, jobs and event content types. Participating researchers, collaborators and funders were acknowledged and tagged where possible, increasing the effectiveness and visibility of posts. Efforts were vindicated with the addition of 638 followers to the page, a 65% increase on the previous year.

The HBI website **www.murdoch.edu.au/research/hbi** continued to perform in 2022. Minor updates were made to the home page and subpages while it continued to display and link the latest HBI News (media releases).

In the digital media age, it is prudent that HBI have the ability to engage through resources such as videos. We increased our capacity in this space resulting in a swathe of valuable video resources being produced, for both online and offline use and distribution. Where appropriate, videos were published on YouTube and shared in HBI LinkedIn posts. These videos have served as an important stakeholder engagement and education tool, informing about our projects and research. They have also been a significant addition to our event tool-box, forming an engaging part of HBI displays.

in

PAGE FOLLOWERS

985

followers of the HBI LinkedIn page

March to December 2022

65%

increase margin of page followers

91

LinkedIn posts in 2022

→

earned an average score of

747

impressions

The top

10

scoring posts

→

earned between

1656–3743

impressions

HBI YOUTUBE METRICS

3

Number of YouTube videos

721

average number of views

379–1405

number of views (all videos)

HBI WEBSITE METRICS

8307

unique visitors in the 2022 calendar year to HBI and its associated pages

10,568

total visitors to HBI site

(includes all pages)

121 seconds

average duration on site

BEACH CLEAN UP.
PHOTO ANDRE DESOUZA

Events

The Harry Butler Institute supported and hosted a range of events for our partners and community during 2022, achieving our goals for communicating our scientific research and being a good global citizen. Highlights include:

HBI Seminar Series (Jun-Dec)

The institute commenced a weekly Friday lunchtime seminar series. Murdoch University researchers and external collaborators were invited to deliver a one-hour lecture in-person and online via Microsoft TEAMS. The seminars serve multiple purposes, helping to connect researchers, sharing knowledge on particular topics, and providing a launching pad for new projects and collaborations. A range of interesting topics were shared by presenters throughout the year.

Murdoch University Community Beach Clean-Up (Jul)

The HBI collaborated with Murdoch University Sustainability, Murdoch Student Guild and Murdoch University Divers to hold a community beach clean-up day and Woodman Point, marking Plastic Free July. The event, held at the end of July, was attended by more than 40 volunteers who helped remove more than 90kg of rubbish from the beach and dunes.

Murdoch University Open Day (Sep)

Taking part in Murdoch University's 2022 Open Day, HBI researchers and volunteers put together an engaging display on Bush Court which sought to connect future students and their families with environmental and sustainable careers within research. Visitors of all ages were enthralled with hands-on displays and launched at the opportunity to ask questions of researchers.

HBI Research Showcase at RAC Arena (Nov)

Research projects from all four research centres were spotlighted at the HBI's 2022 Research Showcase. In a half-day event at RAC Arena, HBI's research partners, collaborators and potential collaborators were invited to network and hear presentations on a range of research projects. More than 120 people attended the showcase, which achieved its aims of cementing and expanding our networks, and sharing research insights.


Sustainability from
the ground up.

Awards

HBI leadership and researchers honoured at Murdoch Staff Awards

We were honoured to see our talented and hardworking people recognised at the 2022 Murdoch University Staff Awards on 10 November.

Our Director Professor Simon McKirdy, aquatic ecologists Dr Jane Chambers and Dr Stephen Beatty, applied phycologist Professor Navid Moheimani, Information technologist Dr Hamid Laga and veterinary epidemiologist Dr Mieghan Bruce were recognised for their achievements in leadership, published research, community and industry impact and engagement, distinguished achievement, and achievements at an early career stage.

Chevron awards recognise outstanding work

In July, both Farhan Bokhari and Zohara Scott were recognised for their outstanding work on a survey recently undertaken for Chevron Australia on Barrow Island.

They went beyond normal expectations in their roles by providing positive, flexible behaviour to support and protect the conservation values of Barrow Island. Chevron's recognition of Farhan and Zohara endorses the excellent reputation that HBI has with Chevron and other industry partners.

PhD-candidate wins industry award

PhD candidate Jo Buckee was awarded the Australian Coral Reef Society (ACRS) Danielle Simmons Award for fieldwork.

The award provided $4000 toward the costs of her research on coral emersion mortality events on the coasts of several Australian islands. Jo hopes to inspire other mature-age and early-career researchers with her win.

Charlotte Oskam Young Tall Poppy

Dr Charlotte Oskam — Parasitologist, Senior Lecturer, science communicator, and Women in STEMM-advocate, and now, 2022 WA Young Tall Poppy!

The Australian Institute of Policy and Science (AIPS) Young Tall Poppy Science Awards recognise excellence in research as well as enthusiasm for communicating science beyond the walls of the laboratory. Dr Oskam was recognised for her work researching ticks and tick-borne diseases, and her commitment to sharing this knowledge with the wider community.

HBI Honours Scholarship students awarded

The winners of the 2022 HBI Honours Scholarship were:

Honours students Hayley Winter, Madeline Wallington and Christopher O'Brien, for their research projects into the red-cheeked dunnart, estuarine fish, and loggerhead turtles respectively. Congratulations to our three winners!

Dr Paola Magni WA Women's Hall of Fame

The WA Women's Hall of Fame recognises and celebrates women who have made a significant impact on Western Australia's past, present, and future.

It is a well-deserved honour that has been awarded to Murdoch University HBI researcher Dr Paola A. Magni for her amazing work in forensic science research, lecturing, and advocating for women in STEM.

FULBRIGHT

Fulbright scholars lighting the way

Three of HBI's brightest and best were awarded appointments under the coveted Fulbright Australia scholarship program.

Biosecurity expert and HBI Director, Professor Simon McKirdy was awarded the prestigious Fulbright Distinguished Chair in Life Sciences scholarship. Associate Professor of Ecology, Dr Rachel Standish, was awarded as a Senior Scholar for her work in restoration ecology. PhD-candidate Maninder Kaur was awarded a Fulbright Future Scholarship to pursue her research into the use of cold plasma technology to treat fungal pathogens. Fulbright scholars spend some of their year in the United States of America on cultural exchange.

Publications

A BARROW ISLAND SPIDER ON LEAVES.
PHOTO ZOHARA SCOTT

Researchers across the Institute have published their original research, analytical reviews and novel species descriptions in some of the highest rated scientific journals including *Nature*, *Science of the Total Environment*, *Scientific Reports*, and *Plos One*.

1. ABD EL-ATY, M.S., KATTA, Y.S., EL-ABD, A.E.M.B., MAHMOUD, S.M., IBRAHIM, O.M., EWEDA, M.A., EL-SAADONY, M.T., ABUQAMAR, S.F., EL-TARABILY, K.A., EL-TAHAN, A.M. (2022) The combining ability for grain yield and some related characteristics in rice (*Oryza sativa* L.) under normal and water stress conditions. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.866742

2. ABD EL-HACK, M.E., ALQHTANI, A.H., SWELUM, A.A., EL-SAADONY, M.T., SALEM, H.M., BABALGHITH, A.O., TAHA, A.E., AHMED, O., ABDO, M., EL-TARABILY, K.A. (2022a) Pharmacological, nutritional and antimicrobial uses of *Moringa oleifera* Lam. leaves in poultry nutrition: an updated knowledge. Poultry Science, **101**. 10.1016/j.psj.2022.102031

3. ABD EL-HACK, M.E., EL-SAADONY, M.T., ALQHTANI, A.H., SWELUM, A.A., SALEM, H.M., ELBESTAWY, A.R., NORELDIN, A.E., BABALGHITH, A.O., KHAFAGA, A.F., HASSAN, M.I., EL-TARABILY, K.A. (2022b) The relationship among avian influenza, gut microbiota and chicken immunity: an updated overview. Poultry Science, **101**. 10.1016/j.psj.2022.102021

4. ABD EL-HACK, M.E., EL-SAADONY, M.T., ELBESTAWY, A.R., EL-SHALL, N.A., SAAD, A.M., SALEM, H.M., EL-TAHAN, A.M., KHAFAGA, A.F., TAHA, A.E., ABUQAMAR, S.F., EL-TARABILY, K.A. (2022c) Necrotic enteritis in broiler chickens: disease characteristics and prevention using organic antibiotic alternatives – a comprehensive review. Poultry Science, **101**. 10.1016/j.psj.2021.101590

5. ABD EL-HACK, M.E., EL-SAADONY, M.T., ELBESTAWY, A.R., ELLAKANY, H.F., ABAZA, S.S., GENEEDY, A.M., SALEM, H.M., TAHA, A.E., SWELUM, A.A., OMER, F.A., ABUQAMAR, S.F., EL-TARABILY, K.A. (2022d) Undesirable odour substances (geosmin and 2-methylisoborneol) in water environment: Sources, impacts and removal strategies. Marine Pollution Bulletin, **178**. 10.1016/j.marpolbul.2022.113579

6. ABD EL-HACK, M.E., EL-SAADONY, M.T., ELBESTAWY, A.R., GADO, A.R., NADER, M.M., SAAD, A.M., EL-TAHAN, A.M., TAHA, A.E., SALEM, H.M., EL-TARABILY, K.A. (2022e) Hot red pepper powder as a safe alternative to antibiotics in organic poultry feed: an updated review. Poultry Science, **101**. 10.1016/j.psj.2021.101684

7. ABD EL-HACK, M.E., EL-SAADONY, M.T., ELLAKANY, H.F., ELBESTAWY, A.R., ABAZA, S.S., GENEEDY, A.M., KHAFAGA, A.F., SALEM, H.M., ABD EL-AZIZ, A.H., SELIM, S., BABALGHITH, A.O., ABUQAMAR, S.F., EL-TARABILY, K.A. (2022f) Inhibition of microbial pathogens in farmed fish. Marine Pollution Bulletin, **183**. 10.1016/j.marpolbul.2022.114003

8. ABD EL-HACK, M.E., EL-SAADONY, M.T., SAAD, A.M., SALEM, H.M., ASHRY, N.M., ABO GHANIMA, M.M., SHUKRY, M., SWELUM, A.A., TAHA, A.E., EL-TAHAN, A.M., ABUQAMAR, S.F., EL-TARABILY, K.A. (2022g) Essential oils and their nanoemulsions as green alternatives to antibiotics in poultry nutrition: a comprehensive review. Poultry Science, **101**. 10.1016/j.psj.2021.101584

9. ABD EL-HACK, M.E., EL-SHALL, N.A., EL-KASRAWY, N.I., EL-SAADONY, M.T., SHAFI, M.E., ZABERMAWI, N.M., ALSHILAWI, M.S., ALAGAWANY, M., KHAFAGA, A.F., BILAL, R.M., ELNESR, S.S., ALEYA, L., ABUQAMAR, S.F., EL-TARABILY, K.A. (2022h) The use of black pepper (*Piper guineense*) as an ecofriendly antimicrobial agent to fight foodborne microorganisms. Environmental Science and Pollution Research, **29,** 10894-10907. 10.1007/s11356-021-17806-7

10. ABD EL-HADY, M.A., ABD-ELKREM, Y.M., RADY, M.O.A., MANSOUR, E., EL-TARABILY, K.A., ABUQAMAR, S.F., EL-TEMSAH, M.E. (2022) Impact on plant productivity under low-fertility sandy soil in arid environment by revitalization of lentil roots. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.937073

11. ABD EL-MAGEED, T.A., GYUSHI, M.A.H., HEMIDA, K.A., EL-SAADONY, M.T., ABD EL-MAGEED, S.A., ABDALLA, H., ABUQAMAR, S.F., EL-TARABILY, K.A., ABDELKHALIK, A. (2022) Coapplication of effective microorganisms and nanomagnesium boosts the agronomic, physio-biochemical, osmolytes, and antioxidants defenses against salt stress in *Ipomoea batatas*. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.883274

12. ABRAHAM, R., SAHIBZADA, S., JORDAN, D., O'DEA, M., HAMPSON, D.J., MCMILLAN, K., DUFFY, L., MELLOR, G., BARLOW, R., ABRAHAM, S. (2022) Antimicrobial resistance and genomic relationships of *Salmonella enterica* from Australian cattle. International Journal of Food Microbiology, **371**. 10.1016/j.ijfoodmicro.2022.109672

13. ADEGOKE, I.A., XIA, F., DEDITIUS, A.P., PEARCE, M.A., ROBERTS, M.P., BRUGGER, J. (2022) A new mode of mineral replacement reactions involving the synergy between fluid-induced solid-state diffusion and dissolution-reprecipitation: A case study of the replacement of bornite by copper sulfides. Geochimica et Cosmochimica Acta, **330,** 165-190. 10.1016/j.gca.2021.04.017

14. AFROZ, Z., SHAFIULLAH, G.M., URMEE, T., SHOEB, M.A., HIGGINS, G. (2022) Predictive modelling and optimization of HVAC systems using neural network and particle swarm optimization algorithm. Building and Environment, **209**. 10.1016/j.buildenv.2021.108681

15. AHANGARZADEH, M., NAJAFABADI, M.G., PEYGHAN, R., HOUSHMAND, H., ROHANI, M.S., SOLTANI, M. (2022) Detection and distribution of virulence genes in *Aeromonas hydrophila* isolates causing infection in cultured carps. Veterinary Research Forum, **13,** 55-60. 10.30466/vrf.2020.115998.2761

16. AL-ELWANY, O.A.A.I., HEMIDA, K.A., ABDEL-RAZEK, M.A., EL-MAGEED, T.A.A., EL-SAADONY, M.T., ABUQAMAR, S.F., EL-TARABILY, K.A., TAHA, R.S. (2022) Impact of folic acid in modulating antioxidant activity, osmoprotectants, anatomical responses, and photosynthetic efficiency of *Plectranthus amboinicus* under salinity conditions. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.887091

17. ALBLOOSHI, A.A., PURAYIL, G.P., SAEED, E.E., RAMADAN, G.A., TARIQ, S., ALTAEE, A.S., EL-TARABILY, K.A., ABUQAMAR, S.F. (2022) Biocontrol potential of endophytic actinobacteria against *Fusarium solani*, the causal agent of sudden decline syndrome on date palm in the UAE. Journal of Fungi, **8**. 10.3390/jof8010008

18. ALBORNOZ, F.E., RYAN, M.H., BENDING, G.D., HILTON, S., DICKIE, I.A., GLEESON, D.B., STANDISH, R.J. (2022) Agricultural land-use favours Mucoromycotinian, but not Glomeromycotinian, arbuscular mycorrhizal fungi across ten biomes. New Phytologist, **233,** 1369-1382. 10.1111/nph.17780

19. ALEAMOTUA, M., BAKER, J.K., MCCURDY, D.W., COLLINGS, D.A. (2022) Phi thickenings in *Brassica oleracea* roots are induced by osmotic stress and mechanical effects, both involving jasmonic acid. Journal of Experimental Botany, **73,** 756-769. 10.1093/jxb/erab468

20. ALEJANDRO, A.L., LEO, W.W.C., BRUCE, M. (2022) Opportunities to Improve Awareness of Antimicrobial Resistance Through Social Marketing: A Systematic Review of Interventions Targeting Parents and Children. Health Communication. 10.1080/10410236.2022.2149132

21. ALERI, J.W., SAHIBZADA, S., HARB, A., FISHER, A.D., WAICHIGO, F.K., LEE, T., ROBERTSON, I.D., ABRAHAM, S. (2022) Molecular epidemiology and antimicrobial resistance profiles of *Salmonella* isolates from dairy heifer calves and adult lactating cows in a Mediterranean pasture-based system of Australia. Journal of Dairy Science, **105,** 1493-1503. 10.3168/jds.2021-21084

22. ALKAABI, A.K., RAMADAN, G.A., ELDDIN, A.M.T., EL-TARABILY, K.A., ABUQAMAR, S.F. (2022) The multifarious endophytic actinobacterial isolate, Streptomyces tubercidicus UAE1, combined with the seaweed biostimulant further promotes growth of *Avicennia marina*. Frontiers in Marine Science, **9**. 10.3389/fmars.2022.896461

23. ALWAHSHI, K.J., PURAYIL, G.P., SAEED, E.E., ABUFARAJALLAH, H.A., ALDHAHERI, S.J., ABUQAMAR, S.F., EL-TARABILY, K.A. (2022) The 1-aminocyclopropane-1-carboxylic acid deaminase-producing *Streptomyces violaceoruber* UAE1 can provide protection from sudden decline syndrome on date palm. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.904166

24. AMRULLAH, A., FAROBIE, O., BAYU, A., SYAFTIKA, N., HARTULISTIYOSO, E., MOHEIMANI, N.R., KARNJANAKOM, S., MATSUMURA, Y. (2022) Slow pyrolysis of *Ulva lactuca* (Chlorophyta) for sustainable production of bio-oil and biochar. Sustainability (Switzerland), **14**. 10.3390/su14063233

MISTLETOE BIRD EATING PALM FRUIT.
PHOTO TRISH FLEMING

Publications *(cont.)*

25. ANDRZEJACZEK, S., LUCAS, T.C.D., GOODMAN, M.C., HUSSEY, N.E., ARMSTRONG, A.J., CARLISLE, A., COFFEY, D.M., GLEISS, A.C., HUVENEERS, C., JACOBY, D.M.P., MEEKAN, M.G., MOURIER, J., PEEL, L.R., ABRANTES, K., AFONSO, A.S., AJEMIAN, M.J., ANDERSON, B.N., ANDERSON, S.D., ARAUJO, G., ARMSTRONG, A.O., BACH, P., BARNETT, A., BENNETT, M.B., BEZERRA, N.A., BONFIL, R., BOUSTANY, A.M., BOWLBY, H.D., BRANCO, I., BRAUN, C.D., BROOKS, E.J., BROWN, J., BURKE, P.J., BUTCHER, P., CASTLETON, M., CHAPPLE, T.K., CHATEAU, O., CLARKE, M., COELHO, R., CORTES, E., COUTURIER, L.I.E., COWLEY, P.D., CROLL, D.A., CUEVAS, J.M., CURTIS, T.H., DAGORN, L., DALE, J.J., DALY, R., DEWAR, H., DOHERTY, P.D., DOMINGO, A., DOVE, A.D.M., DREW, M., DUDGEON, C.L., DUFFY, C.A.J., ELLIOTT, R.G., ELLIS, J.R., ERDMANN, M.V., FARRUGIA, T.J., FERREIRA, L.C., FERRETTI, F., FILMALTER, J.D., FINUCCI, B., FISCHER, C., FITZPATRICK, R., FORGET, F., FORSBERG, K., FRANCIS, M.P., FRANKS, B.R., GALLAGHER, A.J., GALVAN-MAGANA, F., GARCÍA, M.L., GASTON, T.F., GILLANDERS, B.M., GOLLOCK, M.J., GREEN, J.R., GREEN, S., GRIFFITHS, C.A., HAMMERSCHLAG, N., HASAN, A., HAWKES, L.A., HAZIN, F., HEARD, M., HEARN, A., HEDGES, K.J., HENDERSON, S.M., HOLDSWORTH, J., HOLLAND, K.N., HOWEY, L.A., HUETER, R.E., HUMPHRIES, N.E., HUTCHINSON, M., JAINE, F.R.A., JORGENSEN, S.J., KANIVE, P.E., LABAJA, J., LANA, F.O., LASSAUCE, H., LIPSCOMBE, R.S., LLEWELLYN, F., MACENA, B.C.L., et al. (2022) Diving into the vertical dimension of elasmobranch movement ecology. Science Advances, **8**. 10.1126/sciadv.abo1754

26. ARAUJO, G., AGUSTINES, A., BACH, S.S., COCHRAN, J.E.M., PARRA-GALVÁN, E.D.L., PARRA-VENEGAS, R.D.L., DIAMANT, S., DOVE, A., FOX, S., GRAHAM, R.T., GREEN, S.M., GREEN, J.R., HARDENSTINE, R.S., HEARN, A., HIMAWAN, M.R., HOBBS, R., HOLMBERG, J., SHAMEEL, I., JAIDAH, M.Y., LABAJA, J., LEBLOND, S., LEGASPI, C.G., MAGUIÑO, R., MAGSON, K., MARCOUX, S.D., MARCOUX, T.M., MARLEY, S.A., MATALOBOS, M., MENDOZA, A., MIRANDA, J.A., NORMAN, B.M., PERRY, C.T., PIERCE, S.J., PONZO, A., PREBBLE, C.E.M., RAMÍREZ-MACÍAS, D., REES, R., REEVE-ARNOLD, K.E., REYNOLDS, S.D., ROBINSON, D.P., ROHNER, C.A., ROWAT, D., SNOW, S., VÁZQUEZ-HAIKIN, A., WATTS, A.M. (2022) Improving sightings-derived residency estimation for whale shark aggregations: A novel metric applied to a global data set. Frontiers in Marine Science, **9**. 10.3389/fmars.2022.775691

27. ASUMING-BEDIAKO, N., KUNADU, A.P.H., JORDAN, D., ABRAHAM, S., HABIB, I. (2022) Prevalence and antimicrobial susceptibility pattern of *Campylobacter jejuni* in raw retail chicken meat in Metropolitan Accra, Ghana. International Journal of Food Microbiology, **376**. 10.1016/j.ijfoodmicro.2022.109760

28. BAGHERI, Z.M., DONOHUE, C.G., PARTRIDGE, J.C., HEMMI, J.M. (2022) Behavioural and neural responses of crabs show evidence for selective attention in predator avoidance. Scientific Reports, **12**. 10.1038/s41598-022-14113-0

29. BARBOSA, A.D., LONG, M., LEE, W., AUSTEN, J.M., CUNNEEN, M., RATCHFORD, A., BURNS, B., KUMARASINGHE, P., BEN-OTHMAN, R., KOLLMANN, T.R., STEWART, C.R., BEAMAN, M., PARRY, R., HALL, R., TABOR, A., O'DONOVAN, J., FADDY, H.M., COLLINS, M., CHENG, A.C., STENOS, J., GRAVES, S., OSKAM, C.L., RYAN, U.M., IRWIN, P.J. (2022) The troublesome ticks research protocol: developing a comprehensive, multidiscipline research plan for investigating human tick-associated disease in Australia. Pathogens, **11**. 10.3390/pathogens11111290

30. BARLOW, R., MCMILLAN, K., MELLOR, G., DUFFY, L., JORDAN, D., ABRAHAM, R., O'DEA, M., SAHIBZADA, S., ABRAHAM, S. (2022) Phenotypic and genotypic assessment of antimicrobial resistance in *Escherichia coli* from Australian cattle populations at Slaughter. Journal of Food Protection, **85,** 563-570. 10.4315/JFP-21-430

31. BARR, J., BOYD, V., TODD, S., SMITH, I., PRADA, D., O'DEA, M., JACKSON, B., PEARCE, L., ADAMS, T.E., VANDERDUYS, E., WESTCOTT, D., MCKEOWN, A., BAKER, M.L., MARSH, G.A. (2022) Detection of filovirus-reactive antibodies in Australian bat species. Journal of General Virology, **103**. 10.1099/jgv.0.001785

32. BARTHA, S., SZABÓ, G., CSETE, S., PURGER, D., HÁZI, J., CSATHÓ, A.I., CAMPETELLA, G., CANULLO, R., CHELLI, S., TSAKALOS, J.L., ÓNODI, G., KRÖEL-DULAY, G., ZIMMERMANN, Z. (2022) High-Resolution transect sampling and multiple scale diversity analyses for evaluating grassland resilience to climatic extremes. Land, **11**. 10.3390/land11030378

33. BEATTY, S.J., LEAR, K.O., ALLEN, M.G., LYMBERY, A.J., TWEEDLEY, J.R., MORGAN, D.L. (2022) What factors influence fin-nipping damage by the invasive *Gambusia holbrooki* (Poeciliidae) on native fishes in riverine systems? Freshwater Biology, **67,** 325-337. 10.1111/fwb.13843

34. BENSON, J., STEWART, B., CLOSE, P., LYMBERY, A. (2022) Evidence for multiple refugia and hotspots of genetic diversity for *Westralunio carteri*, a threatened freshwater mussel in south-western Australia. Aquatic Conservation: Marine and Freshwater Ecosystems, **32,** 559-575. 10.1002/aqc.3780

35. BERTO, B.P., BRICE, B., THOMAS, G., ELLOIT, A., ZAHEDI, A., YANG, R. (2022) *Eimeria* spp. and *Tyzzeria perniciosa* Allen, 1936 (Apicomplexa: Eimeriidae) from a Pacific black duck, *Anas superciliosa* Gmelin (Aves: Anseriformes), in Western Australia. Current Research in Parasitology and Vector-Borne Diseases, **2**. 10.1016/j.crpvbd.2022.100075

36. BIGAL, E., GALILI, O., VAN RIJN, I., ROSSO, M., CLEGUER, C., HODGSON, A., SCHEININ, A., TCHERNOV, D. (2022) Reduction of species identification errors in surveys of marine wildlife abundance Utilising Unoccupied Aerial Vehicles (UAVs). Remote Sensing, **14**. 10.3390/rs14164118

37. BOTTEN, L., ASH, A., JACKSON, B. (2022) Characterising a sarcoptic mange epizootic in quenda (*Isoodon fusciventer*). International Journal for Parasitology: Parasites and Wildlife, **18,** 172-179. 10.1016/j.ijppaw.2022.04.010

38. BOUCHERABINE, S., NASSAR, R., MOHAMED, L., OLSEN, M., ALQUTAMI, F., ZAHER, S., HACHIM, M., ALKHAJEH, A., MCKIRDY, S., ALGHAFRI, R., TAJOURI, L., SENOK, A. (2022a) Healthcare derived smart watches and mobile phones are contaminated niches to multidrug resistant and highly virulent microbes. Infection and Drug Resistance, **15,** 5289-5299. 10.2147/IDR.S378524

39. BOUCHERABINE, S., NASSAR, R., ZAHER, S., MOHAMED, L., OLSEN, M., ALQUTAMI, F., HACHIM, M., ALKHAJA, A., CAMPOS, M., JONES, P., MCKIRDY, S., ALGHAFRI, R., TAJOURI, L., SENOK, A. (2022b) Metagenomic sequencing and reverse transcriptase pcr reveal that mobile phones and environmental surfaces are reservoirs of multidrug-resistant superbugs and SARS-CoV-2. Frontiers in Cellular and Infection Microbiology, **12**. 10.3389/fcimb.2022.806077

40. BOYD, C.J., RAISIS, A.L., SHARP, C.R., CLAUS, M.A., HOSGOOD, G., SMART, L. (2022) Biomarkers of coagulation and inflammation in dogs after randomized administration of 6% hydroxyethyl starch 130/0.4 or hartmann's solution. Animals, **12**. 10.3390/ani12192691

41. BRAIMA, K., HARVIE, S., TREW, I., TAN, H., GORE, C., ZAHEDI, A., OSKAM, C., LAWLER, S., REID, S., RYAN, U. (2022) Knowledge, attitude and practices towards *Cryptosporidium* among public swimming pool patrons and staff in Western Australia. Acta Parasitologica, **67,** 460-467. 10.1007/s11686-021-00482-5

42. BRASSARD, C., BXLXSESCU, A., ARBOGAST, A., FOREST, V., BEMILLI, C., BORONEANT, A., CONVERTINI, F., GANDELIN, M., RADU, V., FLEMING, P.A., GUINTARD, C., KREPLINS, T.L., CALLOU, C., FILIPPO, A., TRESSET, A., CORNETTE, R., HERREL, A., BRÉHARD, S. (2022a) Unexpected morphological diversity in ancient dogs compared to modern relatives. Proceedings of the Royal Society B: Biological Sciences, **289**. 10.1098/rspb.2022.0147

43. BRASSARD, C., FORBES-HARPER, J.L., CRAWFORD, H.M., STUART, J.M., WARBURTON, N.M., CALVER, M.C., ADAMS, P., MONCHÂTRE-LEROY, E., BARRAT, J., LESELLIER, S., GUINTARD, C., GARÈS, H., LARRALLE, A., TRIQUET, R., MERLIN, M., CORNETTE, R., HERREL, A., FLEMING, P.A. (2022b) Morphological and functional divergence of the lower jaw between native and invasive red foxes. Journal of Mammalian Evolution, **29,** 335-352. 10.1007/s10914-021-09593-2

44. BROWN, C., BYRNES, E.E. (2022) Small-scale movement and migration cues of Australian bass (*Percalates novemaculeata*) in an urbanised river. Marine and Freshwater Research, **73,** 742-753. 10.1071/MF21238

45. BUCKEE, J., HETZEL, Y., EDGE, W., VERDUIN, J., PATTIARATCHI, C. (2022) Daily timing of low tide drives seasonality in intertidal emersion mortality risk. Frontiers in Marine Science, **9**. 10.3389/fmars.2022.904191

46. BURGESS, T.I., OLIVA, J., SAPSFORD, S.J., SAKALIDIS, M.L., BALOCCHI, F., PAAP, T. (2022a) Anthropogenic disturbances and the emergence of native diseases: a threat to forest health. Current Forestry Reports, **8,** 111-123. 10.1007/s40725-022-00163-0

47. BURGESS, T.I., WHITE, D., SAPSFORD, S.J. (2022b) Comparison of primers for the detection of *Phytophthora* (and other oomycetes) from environmental samples. Journal of Fungi, **8,** 980. 10.3390/jof8090980

48. CAI, X., LYMBERY, A.J., ARMSTRONG, N.J., GAO, C., MA, L., LI, C. (2022) Systematic identification and characterization of lncRNAs and lncRNA-miRNA-mRNA networks in the liver of turbot (*Scophthalmus maximus* L.) induced with *Vibrio anguillarum*. Fish and Shellfish Immunology, **131,** 21-29. 10.1016/j.fsi.2022.09.058

49. CALVER, M.C., CRAWFORD, H.M., SCARFF, F.R., BRADLEY, J.S., DORMON, P., BOSTON, S., FLEMING, P.A. (2022) Intensive adoption as a management strategy for unowned, urban cats: a case study of 25 years of Trap–Assess–Resolve (TAR) in Auckland, New Zealand. Animals, **12**. 10.3390/ani12172301

50. CAO, Y., XIONG, Z., XIA, F., FRANKS, G.V., ZU, L., WANG, X., HORA, Y., MUDIE, S., HE, Z., QU, L., XING, Y., LI, D. (2022) New structural insights into densely assembled reduced graphene oxide membranes. Advanced Functional Materials, **32**. 10.1002/adfm.202201535

51. CASTAÑEDA, I., DOHERTY, T.S., FLEMING, P.A., STOBO-WILSON, A.M., WOINARSKI, J.C.Z., NEWSOME, T.M. (2022) Variation in red fox *Vulpes vulpes* diet in five continents. Mammal Review, **52,** 328-342. 10.1111/mam.12292

MARRI FLOWERS.
PHOTO KAT SAMBROOKS

52. CASTANHEIRA, P.D.S., BAPTISTA, R.L.C., OLIVEIRA, F.S.M. (2022) Five new species of the long-jawed orb-weaving spider genus *Tetragnatha* (Araneae, Tetragnathidae) in South America, with a key to the species from Argentina and Brazil. Evolutionary Systematics, **6,** 175-210. 10.3897/EVOLSYST.6.91418

53. CHABANNE, D.B.H., KRÜTZEN, M., FINN, H., ALLEN, S.J. (2022) Evidence of male alliance formation in a small dolphin community. Mammalian Biology, **102,** 1285-1298. 10.1007/s42991-022-00295-7

54. CHABOT, D., HODGSON, A.J., HODGSON, J.C., ANDERSON, K. (2022) 'Drone': technically correct, popularly accepted, socially acceptable. Drone Systems and Applications, **10,** 399-405. 10.1139/dsa-2022-0041

55. CHAUDHARI, A., BRUGGER, J., RAM, R., CHOWDHURY, P., ETSCHMANN, B., GUAGLIARDO, P., XIA, F., PRING, A., GERVINSKAS, G., LIU, A., FRIERDICH, A. (2022) Synchronous solid-state diffusion, dissolution-reprecipitation, and recrystallization leading to isotopic resetting: insights from chalcopyrite replacement by copper sulfides. Geochimica et Cosmochimica Acta, **331,** 48-68. 10.1016/j.gca.2022.06.005

56. CHERRIMAN, S.C., FLEMING, P.A., SHEPHARD, J.M., OLSEN, P.D. (2022) Climate influences productivity but not breeding density of wedge-tailed eagles *Aquila audax* in arid and mesic Western Australia. Austral Ecology, **47,** 261-277. 10.1111/aec.13106

57. CHRISTIANSEN, F., BEJDER, L., BURNELL, S., WARD, R., CHARLTON, C. (2022) Estimating the cost of growth in southern right whales from drone photogrammetry data and long-term sighting histories. Marine Ecology Progress Series, **687,** 173-194. 10.3354/meps14009

58. CHUKA-OGWUDE, D., MICKAN, B.S., OGBONNA, J.C., MOHEIMANI, N.R. (2022a) Developing food waste biorefinery: using optimized inclined thin layer pond to overcome constraints of microalgal biomass production on food waste digestate. Journal of Applied Phycology, **34,** 2917-2928. 10.1007/s10811-022-02829-5

59. CHUKA-OGWUDE, D., NAFISI, M., TAHER, H., OGBONNA, J.C., MOHEIMANI, N.R. (2022b) Food waste digestate as a source of nitrogen for the cultivation of *Dunaliella salina*: influence on growth and carotenogenesis under hyper osmotic stress. Journal of Applied Phycology, **34,** 101-112. 10.1007/s10811-021-02663-1

60. CLUNE, T., BRUCE, M., GLANVILLE, E., CAMPBELL, A.J.D., LOCKWOOD, A., HANCOCK, S., THOMPSON, A.N., BEETSON, S., BROOKES, D., TRENGOVE, C., O'HANDLEY, R., JACOBSON, C. (2022a) Seropositivity to *Campylobacter* and association with abortion and lamb mortality in maiden ewes from Western Australia, South Australia and Victoria. Australian Veterinary Journal, **100,** 397-406. 10.1111/avj.13173

61. CLUNE, T., LOCKWOOD, A., HANCOCK, S., THOMPSON, A.N., BEETSON, S., BRUCE, M., CAMPBELL, A.J., GLANVILLE, E., BROOKES, D., TRENGOVE, C., O'HANDLEY, R., JACOBSON, C. (2022b) Seropositivity to *Coxiella burnetii* in primiparous and multiparous ewes from southern Australia: A cross-sectional study. Comparative Immunology, Microbiology and Infectious Diseases, **80**. 10.1016/j.cimid.2021.101727

62. COWLEY, P.D., TWEEDLEY, J.R., WHITFIELD, A.K. 2022. Conservation of estuarine fishes. *Fish and Fisheries in Estuaries: A Global Perspective.*

Publications *(cont.)*

63. CROESER, L., ADMIRAAL, R., BARBER, P., BURGESS, T.I., HARDY, G.E.S.J. (2022) Reflectance spectroscopy to characterize the response of *Corymbia calophylla* to *Phytophthora* root rot and waterlogging stress. Forestry, **95,** 312-330. 10.1093/forestry/cpab045

64. CRONIN-O'REILLY, S., WELLS, N.S., MCCALLUM, R., HALLETT, C.S., TWEEDLEY, J.R., VALESINI, F.J., EYRE, B.D. (2022a) Chronically stressed benthic macroinvertebrate communities exhibit limited effects on ecosystem function in a microtidal estuary. Marine Ecology Progress Series, **701,** 1-16. 10.3354/meps14175

65. CRONIN-O'REILLY, S., WELLS, N.S., MCCALLUM, R., HALLETT, C.S., TWEEDLEY, J.R., VALESINI, F.J., EYRE, B.D. (2022b) Defaunation by deoxygenation: efficacy and divergent responses of estuarine macroinvertebrates. Marine Ecology Progress Series, **701,** 17-24. 10.3354/meps14199

66. D'CRUZ, A., SALGADO KENT, C., WAPLES, K., BROWN, A.M., MARLEY, S.A., THIELE, D., RAUDINO, H.C. (2022) Ranging patterns and site fidelity of Snubfin Dolphins in Yawuru Nagulagun/Roebuck Bay, Western Australia. Frontiers in Marine Science, **8**. 10.3389/fmars.2021.758435

67. DANG, Q.N., BURGESS, T.I., MCCOMB, J., PHAM, T.Q., LE, B., NGUYEN, T.H., LE, X.T., HARDY, G.E.S. (2022) Root rot pathogens of *Cinnamomum cassia* in Vietnam. Plant Pathology, **71,** 1969-1979. 10.1111/ppa.13617

68. DAVISON, J., VASAR, M., SEPP, S.K., OJA, J., AL-QURAISHY, S., BUENO, C.G., CANTERO, J.J., CHIMBIOPUTO FABIANO, E., DECOCQ, G., FRASER, L., HIIESALU, I., HOZZEIN, W.N., KOOREM, K., MOORA, M., MUCINA, L., ONIPCHENKO, V., ÖPIK, M., PÄRTEL, M., PHOSRI, C., SEMCHENKO, M., VAHTER, T., TEDERSOO, L., ZOBEL, M. (2022) Dominance, diversity, and niche breadth in arbuscular mycorrhizal fungal communities. Ecology, **103**. 10.1002/ecy.3761

69. DE PRATO, L., ANSARI, O., HARDY, G.E.S.J., HOWIESON, J., O'HARA, G., RUTHROF, K.X. (2022) Morpho-physiology and cannabinoid concentrations of hemp (*Cannabis sativa* L.) are affected by potassium fertilisers and microbes under tropical conditions. Industrial Crops and Products, **182**. 10.1016/j.indcrop.2022.114907

70. DEEPIKA, C., WOLF, J., MOHEIMANI, N., HANKAMER, B., VON HERZEN, B., RANGA RAO, A. 2022. Utilisation of seaweeds in the australian market - commercialisation strategies: Current trends and future prospects. *Sustainable Global Resources Of Seaweeds Volume 1: Bioresources , cultivation, trade and multifarious applications.*

71. DEERE, D., RYAN, U. (2022) Current assumptions for quantitative microbial risk assessment (QMRA) of Norovirus contamination of drinking water catchments due to recreational activities: an update. Journal of Water and Health, **20,** 1543-1557. 10.2166/wh.2022.114

72. DERVILLE, S., CLEGUER, C., GARRIGUE, C. (2022) Ecoregional and temporal dynamics of dugong habitat use in a complex coral reef lagoon ecosystem. Scientific Reports, **12**. 10.1038/s41598-021-04412-3

73. DESOKY, E.S.M., RADY, M.M., NADER, M.M., MOSTAFA, N.G., ELRYS, A.S., MATHAI, A., ABUQAMAR, S.F., EL-TARABILY, K.A., EL-SAADONY, M.T. (2022) Integrated application of bacterial carbonate precipitation and silicon nanoparticles enhances productivity, physiological attributes, and antioxidant defenses of wheat (Triticum aestivum L.) under semi-arid conditions. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.947949

74. DI BARI, C., VENKATESWARAN, N., BRUCE, M., FASTL, C., HUNTINGTON, B., PATTERSON, G.T., RUSHTON, J., TORGERSON, P., PIGOTT, D.M., DEVLEESSCHAUWER, B. (2022) Methodological choices in brucellosis burden of disease assessments: A systematic review. PLoS Neglected Tropical Diseases, **16**. 10.1371/journal.pntd.0010468

75. DOGAN, M., POUCH, M., MANDÁKOVÁ, T., HLOUŠKOVÁ, P., GUO, X., WINTER, P., CHUMOVÁ, Z., VAN NIEKERK, A., MUMMENHOFF, K., AL-SHEHBAZ, I.A., MUCINA, L., LYSAK, M.A. (2022) Corrigendum: Evolution of tandem repeats is mirroring post-polyploid cladogenesis in *Heliophila* (Brassicaceae)(Front. Plant Sci., (2021), 10.3389/fpls.2020.607893). Frontiers in Plant Science, **13**. 10.3389/fpls.2022.1054800

76. DUDNEY, J., D'ANTONIO, C., HOBBS, R.J., SHACKELFORD, N., STANDISH, R.J., SUDING, K.N. (2022) Capacity for change: three core attributes of adaptive capacity that bolster restoration efficacy. Restoration Ecology. 10.1111/rec.13647

77. DUNCAN, T.A., FLEMING, P.A., DAWSON, S.J. (2022) Diet of dingoes in the West Kimberley, and the impact of linear clearing. Australian Mammalogy, **44,** 338-346. 10.1071/AM21016

78. DUNDAS, S.J., OSBORNE, L., HOPKINS, A.J.M., RUTHROF, K.X., FLEMING, P.A. (2022) Bioturbation by echidna (*Tachyglossus aculeatus*) in a forest habitat, south-western Australia. Australian Journal of Zoology, **69,** 197-204. 10.1071/ZO22019

79. DUNLOP, J.N., GREENWELL, C.N. (2022) A long tern view: Distribution of small terns (*Sternula*) in Western Australia and implications for their conservation. Pacific Conservation Biology. 10.1071/PC22016

80. DUONG, H.T., PEGG, G.S., MAZANEC, R., MCCOMB, J.A., BURGESS, T., HARDY, G.E.S.J. (2022a) Resistance to quambalaria shoot blight and myrtle rust in *Corymbia calophylla* seedlings. Forest Pathology, **52**. 10.1111/efp.12775

81. DUONG, H.T., WILLIAMS, B., WHITE, D., BURGESS, T.I., HARDY, G.E.S.J. (2022b) qPCR assays for sensitive and rapid detection of quambalaria species from plant tissues. Plant Disease, **106**. 10.1094/PDIS-04-21-0816-RE

82. DUONG, T.H., MAZANEC, R., MCCOMB, J.A., BURGESS, T.I., HARDY, G.E.S. (2022c) Quambalaria shoot blight resistance in marri (*Corymbia calophylla*): genetic parameters and correlations between growth rate and blight resistance. Tree Genetics and Genomes, **18,** 8. 10.1007/s11295-022-01540-3

83. DUONG, T.H., PEGG, G.S., MCCOMB, J., BURGESS, T.I., HARDY, G.E.S.J. (2022d) Resistance to Quambalaria shoot blight and myrtle rust disease in *Corymbia calophylla*. Forest Pathology, e12775. 10.1111/efp.12775

84. EARDLY, B., MEOR OSMAN, W.A., ARDLEY, J., ZANDBERG, J., GOLLAGHER, M., VAN BERKUM, P., ELIA, P., MARINOVA, D., SESHADRI, R., REDDY, T.B.K., IVANOVA, N., PATI, A., WOYKE, T., KYRPIDES, N., LOEDOLFF, M., LAIRD, D.W., REEVE, W. (2022) The Genome of the acid soil-adapted strain *Rhizobium favelukesii* OR191 encodes determinants for effective symbiotic interaction with both an inverted repeat lacking clade and a phaseoloid legume host. Frontiers in Microbiology, **13**. 10.3389/fmicb.2022.735911

85. EGAN, S.L., LETTOOF, D.C., OSKAM, C.L. (2022) First record of the stump-tailed lizard tick, *Amblyomma albolimbatum* (Ixodida, Ixodidae) parasitising a human. Ticks and Tick-borne Diseases, **13**. 10.1016/j.ttbdis.2021.101873

86. EJRNÆS, D.D., SPROGIS, K.R. (2022) Ontogenetic changes in energy expenditure and resting behaviour of humpback whale mother-calf pairs examined using unmanned aerial vehicles. Wildlife Research, **49,** 34-45. 10.1071/WR20186

87. EL SHERBINY, H.A., EL-HASHASH, E.F., ABOU EL-ENIN, M.M., NOFAL, R.S., ABD EL-MAGEED, T.A., BLEIH, E.M., EL-SAADONY, M.T., EL-TARABILY, K.A., SHAABAN, A. (2022) Exogenously applied salicylic acid boosts morpho-physiological traits, yield, and water productivity of lowland rice under normal and deficit irrigation. Agronomy, **12**. 10.3390/agronomy12081860

88. EL-HASHASH, E.F., EL-ENIN, M.M.A., EL-MAGEED, T.A.A., ATTIA, M.A.E.H., EL-SAADONY, M.T., EL-TARABILY, K.A., SHAABAN, A. (2022) Bread wheat productivity in response to humic acid supply and supplementary irrigation mode in three northwestern coastal sites of Egypt. Agronomy, **12**. 10.3390/agronomy12071499

89. EL-OKKIAH, S.A.F., EL-AFRY, M.M., SHEHAB ELDEEN, S.A., EL-TAHAN, A.M., IBRAHIM, O.M., NEGM, M.M., ALNAFISSA, M., EL-SAADONY, M.T., ALMAZROUEI, H.M.R.S., ABUQAMAR, S.F., EL-TARABILY, K.A., SELIM, D.A. (2022) Foliar spray of silica improved water stress tolerance in rice (*Oryza sativa* L.) cultivars. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.935090

90. EL-SAADONY, M.T., SAAD, A.M., SOLIMAN, S.M., SALEM, H.M., AHMED, A.I., MAHMOOD, M., EL-TAHAN, A.M., EBRAHIM, A.A.M., ABD EL-MAGEED, T.A., NEGM, S.H., SELIM, S., BABALGHITH, A.O., ELRYS, A.S., EL-TARABILY, K.A., ABUQAMAR, S.F. (2022a) Plant growth-promoting microorganisms as biocontrol agents of plant diseases: Mechanisms, challenges and future perspectives. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.923880

91. EL-SAADONY, M.T., SAAD, A.M., SOLIMAN, S.M., SALEM, H.M., DESOKY, E.S.M., BABALGHITH, A.O., EL-TAHAN, A.M., IBRAHIM, O.M., EBRAHIM, A.A.M., ABD EL-MAGEED, T.A., ELRYS, A.S., ELBADAWI, A.A., EL-TARABILY, K.A., ABUQAMAR, S.F. (2022b) Role of nanoparticles in enhancing crop tolerance to abiotic stress: a comprehensive review. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.946717

92. EL-SAADONY, M.T., SHEHATA, A.M., ALAGAWANY, M., ABDEL-MONEIM, A.M.E., SELIM, D.A., ABDO, M., KHAFAGA, A.F., EL-TARABILY, K.A., EL-SHALL, N.A., ABD EL-HACK, M.E. (2022c) A review of shrimp aquaculture and factors affecting the gut microbiome. Aquaculture International, **30,** 2847-2869. 10.1007/s10499-022-00936-1

93. EL-SAADONY, M.T., SWELUM, A.A., ABO GHANIMA, M.M., SHUKRY, M., OMAR, A.A., TAHA, A.E., SALEM, H.M., EL-TAHAN, A.M., EL-TARABILY, K.A., ABD EL-HACK, M.E. (2022d) Shrimp production, the most important diseases that threaten it, and the role of probiotics in confronting these diseases: A review. Research in Veterinary Science, **144,** 126-140. 10.1016/j.rvsc.2022.01.009

94. EL-SAADONY, M.T., UMAR, M., HASSAN, F.U., ALAGAWANY, M., ARIF, M., TAHA, A.E., ELNESR, S.S., EL-TARABILY, K.A., ABD EL-HACK, M.E. (2022e) Applications of butyric acid in poultry production: the dynamics of gut health, performance, nutrient utilization, egg quality, and osteoporosis. Animal Health Research Reviews, **23,** 136-146. 10.1017/S1466252321000220

95. EL-SAPPAH, A.H., RATHER, S.A., WANI, S.H., ELRYS, A.S., BILAL, M., HUANG, Q., DAR, Z.A., ELASHTOKHY, M.M.A., SOAUD, N., KOUL, M., MIR, R.R., YAN, K., LI, J., EL-TARABILY, K.A., ABBAS, M. (2022) Heat stress-mediated constraints in maize (*Zea mays*) production: Challenges and solutions. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.879366

96. EL-SHALL, N.A., ABD EL-HACK, M.E., ALBAQAMI, N.M., KHAFAGA, A.F., TAHA, A.E., SWELUM, A.A., EL-SAADONY, M.T., SALEM, H.M., EL-TAHAN, A.M., ABUQAMAR, S.F., EL-TARABILY, K.A., ELBESTAWY, A.R. (2022a) Phytochemical control of poultry coccidiosis: a review. Poultry Science, **101**. 10.1016/j.psj.2021.101542

97. EL-SHALL, N.A., EL-HAMID, H.S.A., ELKADY, M.F., ELLAKANY, H.F., ELBESTAWY, A.R., GADO, A.R., GENEEDY, A.M., HASAN, M.E., JAREMKO, M., SELIM, S., EL-TARABILY, K.A., EL-HACK, M.E.A. (2022b) Corrigendum: Epidemiology, pathology, prevention, and control strategies of inclusion body hepatitis and hepatitis-hydropericardium syndrome in poultry: A comprehensive review(Front. Vet. Sci., (2022), 9, (963199), 10.3389/fvets.2022.963199). Frontiers in Veterinary Science, **9**. 10.3389/fvets.2022.1075948

98. EL-SHALL, N.A., EL-HAMID, H.S.A., ELKADY, M.F., ELLAKANY, H.F., ELBESTAWY, A.R., GADO, A.R., GENEEDY, A.M., HASAN, M.E., JAREMKO, M., SELIM, S., EL-TARABILY, K.A., EL-HACK, M.E.A. (2022c) Epidemiology, pathology, prevention, and control strategies of inclusion body hepatitis and hepatitis-hydropericardium syndrome in poultry: A comprehensive review. Frontiers in Veterinary Science, **9**. 10.3389/fvets.2022.963199

99. ELLIOTT, M., HOUDE, E.D., LAMBERTH, S.J., LONSDALE, J.A., TWEEDLEY, J.R. 2022a. Management of fishes and fisheries in Estuaries. *Fish and Fisheries in Estuaries*: *A Global Perspective.*

100. ELLIOTT, T.F., TRAVOUILLON, K.J., WARBURTON, N.M., DANKS, M.A., VERNES, K. (2022b) New Guinean bandicoots: new insights into diet, dentition and digestive tract morphology and a dietary review of all extant non-Australian Peramelemorphia. Australian Mammalogy, **44,** 266-279. 10.1071/AM21015

101. ENNACERI, H., FISCHER, K., SCHULZE, A., MOHEIMANI, N.R. (2022) Membrane fouling control for sustainable microalgal biodiesel production: A review. Renewable and Sustainable Energy Reviews, **161**. 10.1016/j.rser.2022.112335

102. FAROBIE, O., SYAFTIKA, N., MASFURI, I., RINI, T.P., LANANK ES, D.P.A., BAYU, A., AMRULLAH, A., HARTULISTIYOSO, E., MOHEIMANI, N.R., KARNJANAKOM, S., MATSUMURA, Y. (2022) Green algae to green fuels: Syngas and hydrochar production from *Ulva lactuca* via sub-critical water gasification. Algal Research, **67**. 10.1016/j.algal.2022.102834

103. FAROOQ, Q.U.A., HARDY, G.E.S.J., MCCOMB, J.A., THOMSON, P.C., BURGESS, T.I. (2022) Changes to the bacterial microbiome in the rhizosphere and root endosphere of *Persea americana* (Avocado) treated with organic mulch and a silicate-based mulch or phosphite, and infested with *Phytophthora cinnamomi*. Frontiers in Microbiology, **13**. 10.3389/fmicb.2022.870900

104. FILIPE, J.C., RYMER, P.D., BYRNE, M., HARDY, G., MAZANEC, R., AHRENS, C.W. (2022) Signatures of natural selection in a foundation tree along Mediterranean climatic gradients. Molecular Ecology, **31,** 1735-1752. 10.1111/mec.16351

105. FLEMING, P.A., STOBO-WILSON, A.M., CRAWFORD, H.M., DAWSON, S.J., DICKMAN, C.R., DOHERTY, T.S., FLEMING, P.J.S., NEWSOME, T.M., PALMER, R., THOMPSON, J.A., WOINARSKI, J.C.Z. (2022) Distinctive diets of eutherian predators in Australia. Royal Society Open Science, **9**. 10.1098/rsos.220792

106. FOSTER, Z.S.L., ALBORNOZ, F.E., FIELAND, V.J., LARSEN, M.M., JONES, F.A., TYLER, B.M., NGUYEN, H.D.T., BURGESS, T.I., RIDDELL, C., VOGLMAYR, H., MARTIN, F.N., GRÜNWALD, N.J. (2022) A new oomycete metabarcoding method using the rps10 gene. Phytobiomes Journal, **6,** 214-226. 10.1094/PBIOMES-02-22-0009-R

107. FRAMENAU, V.W., CASTANHEIRA, P.D.E.S. (2022a) Two new species in the orb-weaving spider genus *Larinia Simon*, 1874 (Araneae, Araneidae) from Western Australia. Zootaxa, **5092,** 350-360. 10.11646/zootaxa.5092.3.6

108. FRAMENAU, V.W., CASTANHEIRA, P.S. (2022b) Revision of the new Australasian orb-weaving spider genus *Salsa* (Araneae, Araneidae). ZooKeys, **2022,** 107-148. 10.3897/zookeys.1102.82388

109. FRAMENAU, V.W., DE S. CASTANHEIRA, P. (2022) A new genus of Australian orb-weaving spider with extreme sexual size dimorphism (Araneae, Araneidae). Zoosystematics and Evolution, **98,** 137-149. 10.3897/zse.98.82649

110. FRAMENAU, V.W., DE S. CASTANHEIRA, P., VINK, C.J. (2022a) Taxonomy and systematics of the new Australo-Pacific orb-weaving spider genus *Socca* (Araneae: Araneidae). New Zealand Journal of Zoology, **49,** 263-334. 10.1080/03014223.2021.2014899

111. FRAMENAU, V.W., KUNTNER, M. (2022) The new Australian leaf-curling orb-weaving spider genus *Leviana* (Araneae, Araneidae). Evolutionary Systematics, **6,** 103-133. 10.3897/EVOLSYST.6.83573

112. FRAMENAU, V.W., VINK, C.J., MCQUILLAN, B.N., SIMPSON, A.H. (2022b) A new genus for a large, endemic orb-weaving spider (Araneae, Araneidae) from New Zealand. New Zealand Journal of Zoology, **49,** 129-142. 10.1080/03014223.2021.1951309

Publications *(cont.)*

113. FRANIĆ, I., PROSPERO, S., ADAMSON, K., ALLAN, E., ATTORRE, F., AUGER-ROZENBERG, M.A., AUGUSTIN, S., AVTZIS, D., BAERT, W., BARTA, M., BAUTERS, K., BELLAHIRECH, A., BOROŃ, P., BRAGANÇA, H., BRESTOVANSKÁ, T., BRURBERG, M.B., BURGESS, T., BUROKIENĖ, D., CLEARY, M., CORLEY, J., COYLE, D.R., CSÓKA, G., ČERNÝ, K., DAVYDENKO, K., DE GROOT, M., DIEZ, J.J., DOĞMUŞ LEHTIJÄRVI, H.T., DRENKHAN, R., EDWARDS, J., ELSAFY, M., EÖTVÖS, C.B., FALKO, R., FAN, J., FEDDERN, N., FÜRJES-MIKÓ, Á., GOSSNER, M.M., GRAD, B., HARTMANN, M., HAVRDOVA, L., HORÁKOVÁ, M.K., HRABĚTOVÁ, M., JUSTESEN, M.J., KACPRZYK, M., KENIS, M., KIRICHENKO, N., KOVAČ, M., KRAMARETS, V., LACKOVIĆ, N., LANTSCHNER, M.V., LAZAREVIĆ, J., LESKIV, M., LI, H., MADSEN, C.L., MALUMPHY, C., MATOŠEVIĆ, D., MATSIAKH, I., MAY, T.W., MEFFERT, J., MIGLIORINI, D., NIKOLOV, C., O'HANLON, R., OSKAY, F., PAAP, T., PARPAN, T., PIŠKUR, B., RAVN, H.P., RICHARD, J., RONSE, A., ROQUES, A., RUFFNER, B., SIVICKIS, K., SOLIANI, C., TALGØ, V., TOMOSHEVICH, M., UIMARI, A., ULYSHEN, M., VETTRAINO, A.M., VILLARI, C., WANG, Y., WITZELL, J., ZLATKOVIĆ, M., ESCHEN, R. (2022) Worldwide diversity of endophytic fungi and insects associated with dormant tree twigs. Scientific Data, **9**. 10.1038/s41597-022-01162-3

114. GAO, C., CAI, X., MA, L., LI, C. (2022) Identification of mRNA-miRNA-lncRNA regulatory network associated with the immune response to *Aeromonas salmonicides* infection in the black rockfish (Sebastes schlegelii). Developmental and Comparative Immunology, **130**. 10.1016/j.dci.2022.104357

115. GE, Q., HAO, M., DING, F., JIANG, D., SCHEFFRAN, J., HELMAN, D., IDE, T. (2022) Modelling armed conflict risk under climate change with machine learning and time-series data. Nature Communications, **13**. 10.1038/s41467-022-30356-x

116. GERMANOV, E.S., PIERCE, S.J., MARSHALL, A.D., HENDRAWAN, I.G., KEFI, A., BEJDER, L., LONERAGAN, N. (2022) Residency, movement patterns, behavior and demographics of reef manta rays in Komodo National Park. PeerJ, **10**. 10.7717/peerj.13302

117. GOMEZ ISAZA, D.F., RODGERS, E.M. (2022) Exercise training does not affect heat tolerance in Chinook salmon (Oncorhynchus tshawytscha). Comparative biochemistry and physiology -Part A : Molecular and integrative physiology, **270**. 10.1016/j.cbpa.2022.111229

118. GUO, Y., RYAN, U., FENG, Y., XIAO, L. (2022a) Association of common zoonotic pathogens with concentrated animal feeding operations. Frontiers in Microbiology, **12**. 10.3389/fmicb.2021.810142

119. GUO, Y., RYAN, U., FENG, Y., XIAO, L. (2022b) Emergence of zoonotic *Cryptosporidium parvum* in China. Trends in Parasitology, **38,** 335-343. 10.1016/j.pt.2021.12.002

120. GUPTA, N., PARTRIDGE, G.J., BULLER, N.B., PILMER, L., CURRIE, A., LYMBERY, A.J. (2022) Corrigendum to "Genetic diversity of Australian isolates of *Photobacterium damselae* subsp. damselae is associated with virulence to yellowtail kingfish (*Seriola lalandi*)" [Aquaculture 538 (2021) 736552] (Aquaculture (2021) 538, (S0044848621002143), (10.1016/j.aquaculture.2021.736552)). Aquaculture, **552**. 10.1016/j.aquaculture.2022.737986

121. HAIN-SAUNDERS, N.M.R., KNIGHT, D.R., BRUCE, M., RILEY, T.V. (2022) Clostridioides difficile infection and One Health: an equine perspective. Environmental Microbiology, **24,** 985-997. 10.1111/1462-2920.15898

122. HAMPTON, J.O., BENGSEN, A.J., FLESCH, J.S., TOOP, S.D., DAVIES, C., FORSYTH, D.M., KANSTRUP, N., STOKKE, S., ARNEMO, J.M. (2022a) A comparison of lead-based and lead-free bullets for shooting sambar deer (*Cervus unicolor*) in Australia. Wildlife Research. 10.1071/WR22099

123. HAMPTON, J.O., BENGSEN, A.J., POPLE, A., BRENNAN, M., LEESON, M., FORSYTH, D.M. (2022b) Animal welfare outcomes of helicopter-based shooting of deer in Australia. Wildlife Research, **49,** 264-273. 10.1071/WR21069

124. HAMPTON, J.O., DUNSTAN, H., TOOP, S.D., FLESCH, J.S., ANDREOTTI, A., PAIN, D.J. (2022c) Lead ammunition residues in a hunted Australian grassland bird, the stubble quail (*Coturnix pectoralis*): Implications for human and wildlife health. PLoS ONE, **17**. 10.1371/journal.pone.0267401

125. HAMPTON, J.O., MACKENZIE, D.I., FORSYTH, D.M. (2022d) Animal welfare outcomes of professional vehicle-based shooting of peri-urban rusa deer in Australia. Wildlife Research. 10.1071/WR21131

126. HANF, D., HODGSON, A.J., KOBRYN, H., BEJDER, L., SMITH, J.N. (2022) Dolphin distribution and habitat suitability in north Western Australia: Applications and implications of a broad-scale, non-targeted dataset. Frontiers in Marine Science, **8**. 10.3389/fmars.2021.733841

127. HAO, M., DING, F., XIE, X., FU, J., QIAN, Y., IDE, T., MAYSTADT, J.F., CHEN, S., GE, Q., JIANG, D. (2022) Varying climatic-social-geographical patterns shape the conflict risk at regional and global scales. Humanities and Social Sciences Communications, **9**. 10.1057/s41599-022-01294-2

128. HARIKRISHNAN, R., DEVI, G., VAN DOAN, H., GATPHAYAK, K., BALASUNDARAM, C., EL-HAROUN, E., SOLTANI, M. (2022) Immunomulation effect of alginic acid and chitooligosaccharides in silver carp (*Hypophthalmichthys molitrix*). Fish and Shellfish Immunology, **128,** 592-603. 10.1016/j.fsi.2022.08.009

129. HE, Y., WANG, R., ZHAO, H., REN, Y., AGARWAL, M., ZHENG, D., GAO, S., MCKIRDY, S.J., CHU, D. (2022) Predicting potential global distribution and risk regions for potato cyst nematodes (*Globodera rostochiensis* and *Globodera pallida*). Scientific Reports, **12**. 10.1038/s41598-022-26443-0

130. HERNE, R., SHIRATUDDIN, M.F., RAI, S., BLACKER, D., LAGA, H. (2022) Improving engagement of stroke survivors using desktop virtual reality-based serious games for upper limb rehabilitation: A multiple case study. IEEE Access, **10,** 46354-46371. 10.1109/ACCESS.2022.3169286

131. HIJJAWI, N., ZAHEDI, A., AL-FALAH, M., RYAN, U. (2022) A review of the molecular epidemiology of *Cryptosporidium* spp. and *Giardia duodenalis* in the Middle East and North Africa (MENA) region. Infection, Genetics and Evolution, **98**. 10.1016/j.meegid.2022.105212

132. HOSSAIN, M., VENEKLAAS, E., HARDY, G., POOT, P. (2022) Climatic origin of provenances of *Corymbia calophylla* affects canker disease susceptibility, caused by *Quambalaria coyrecup*, and interactions with drought stress. Forest Pathology, **52**. 10.1111/efp.12780

133. HOSSEINABADI, N., MOHEIMANI, N.R. (2022) The third-generation biodiesel blends corrosion susceptibility of oxide particle-reinforced Si-rich aluminum alloy matrix composites. Corrosion Reviews, **40,** 475-490. 10.1515/corrrev-2021-0081

134. HOSSEINABADI, N., MOHEIMANI, N.R., JAVAHERDASHTI, R. (2022) Biofuels-related materials deterioration in biorefineries, transportation and internal combustion engines: a technical review. Corrosion Engineering Science and Technology, **57,** 178-194. 10.1080/1478422X.2021.2010873

135. HOUNSLOW, J.L., FOSSETTE, S., BYRNES, E.E., WHITING, S.D., LAMBOURNE, R.N., ARMSTRONG, N.J., TUCKER, A.D., RICHARDSON, A.R., GLEISS, A.C. (2022) Multivariate analysis of biologging data reveals the environmental determinants of diving behaviour in a marine reptile. Royal Society Open Science, **9**. 10.1098/rsos.211860

136. IBRAHIM, A.E.A., ABD EL MAGEED, T., ABOHAMID, Y., ABDALLAH, H., EL-SAADONY, M., ABUQAMAR, S., EL-TARABILY, K., ABDOU, N. (2022) Exogenously applied proline enhances morph-physiological responses and yield of drought-stressed maize plants grown under different irrigation systems. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.897027

137. IDE, T. (2022) Globalising the 'war on terror'? An analysis of 36 countries. International Relations. 10.1177/00471178221105576

138. IDE, T., JOHNSON, M.F., BARNETT, J., KRAMPE, F., LE BILLON, P., MAERTENS, L., VON UEXKULL, N., VÉLEZ-TORRES, I. (2022) The future of environmental peace and conflict research. Environmental Politics. 10.1080/09644016.2022.2156174

139. IDENYI, J.N., EYA, J.C., NWANKWEGU, A.S., NWOBA, E.G. (2022) Aquaculture sustainability through alternative dietary ingredients: Microalgal value-added products. Engineering Microbiology, **2**. 10.1016/j.engmic.2022.100049

140. INDRAYANI, I., EGELAND, E.S., MOHEIMANI, N.R., BOROWITZKA, M.A. (2022) Carotenoid production of *Botryococcus braunii* CCAP 807/2 under different growth conditions. Journal of Applied Phycology, **34,** 1177-1188. 10.1007/s10811-022-02682-6

141. INGELBRECHT, J., MORGAN, D.L., LEAR, K.O., FAZELDEAN, T., LYMBERY, A.J., NORMAN, B.M., MARTIN, S.B. (2022) A new microbothriid monogenean *Dermopristis pterophilus* n. sp. from the skin of the Critically Endangered green sawfish *Pristis zijsron* Bleeker, 1851 (Batoidea: Pristidae) in Western Australia. International Journal for Parasitology: Parasites and Wildlife, **17,** 185-193. 10.1016/j.ijppaw.2022.01.006

142. IRSCHICK, D.J., CHRISTIANSEN, F., HAMMERSCHLAG, N., MARTIN, J., MADSEN, P.T., WYNEKEN, J., BROOKS, A., GLEISS, A., FOSSETTE, S., SILER, C., GAMBLE, T., FISH, F., SIEBERT, U., PATEL, J., XU, Z., KALOGERAKIS, E., MEDINA, J., MUKHERJI, A., MANDICA, M., ZOTOS, S., DETWILER, J., PEROT, B., LAUDER, G. (2022) 3D visualization processes for recreating and studying organismal form. iScience, **25**. 10.1016/j.isci.2022.104867

143. ISIRAMEN, O.E., BAHRI, P.A., MOHEIMANI, N.R., VADIVELOO, A., SHAYESTEH, H., PARLEVLIET, D.A. (2022a) Improving pH control and carbon dioxide utilisation efficiency in microalgae cultivation systems with the use of a Proportional-integral + dead-zone control strategy. Bioresource Technology Reports, **17**. 10.1016/j.biteb.2021.100917

144. ISIRAMEN, O.E., BAHRI, P.A., MOHEIMANI, N.R., VADIVELOO, A., SHAYESTEH, H., PARLEVLIET, D.A. (2022b) Temperature regulation schemes for improving biomass productivity and nutrient removal rate in outdoor raceway ponds. Bioresource Technology Reports, **19**. 10.1016/j.biteb.2022.101147

145. JABEEN, S., GAO, X., HAYASHI, J.I., ALTARAWNEH, M., DLUGOGORSKI, B.Z. (2022) Systematic characterization of biocrude and aqueous phase from hydrothermal carbonization of algal biomass. Journal of Environmental Chemical Engineering, **10**. 10.1016/j.jece.2022.107953

146. JAKOET, A., BOATWRIGHT, J.S., MUCINA, L., MAGEE, A.R. (2022) A taxonomic revision of the *Cotula barbata* group (Anthemideae, Cotulinae, Asteraceae). South African Journal of Botany, **151,** 495-513. 10.1016/j.sajb.2022.10.032

147. JAUREGUIZAR, A.J., CORTÉS, F., BRACCINI, J.M., WIFF, R., MILESSI, A.C. (2022) Growth estimates of young-of-the-year broadnose sevengill shark, *Notorynchus cepedianus*, a top predator with poorly calcified vertebrae. Journal of Fish Biology, **100,** 625-631. 10.1111/jfb.14976

148. KACHIGUNDA, B., MENGERSEN, K., PERERA, D.I., COUPLAND, G.T., VAN DER MERWE, J., MCKIRDY, S. (2022) Use of mixed-type data clustering algorithm for characterizing temporal and spatial distribution of biosecurity border detections of terrestrial non-indigenous species. PLoS ONE, **17**. 10.1371/journal.pone.0272413

149. KALA, J., HIRSCH, A.L., ZIEHN, T., PERKINS-KIRKPATRICK, S.E., DE KAUWE, M.G., PITMAN, A. (2022a) Assessing the potential for crop albedo enhancement in reducing heatwave frequency, duration, and intensity under future climate change. Weather and Climate Extremes, **35**. 10.1016/j.wace.2022.100415

150. KALA, J., HIRSCH, A.L., ZIEHN, T., PERKINS-KIRKPATRICK, S.E., DE KAUWE, M.G., PITMAN, A. (2022b) Corrigendum to "Assessing the potential for crop albedo enhancement in reducing heatwave frequency, duration, and intensity under future climate change" [Weather Clim. Extrem. 35 (2022) 100415] (Weather and Climate Extremes (2022) 35, (S2212094722000081), (10.1016/j.wace.2022.100415)). Weather and Climate Extremes, **36**. 10.1016/j.wace.2022.100428

151. KAYED, F., SALIM, S., VERDUIN, J.J., MOHEIMANI, N.R. (2022) The role of turbulent coherent structures on microalgal mixing for nutrient removal in jet and paddlewheel raceway ponds. Water (Switzerland), **14**. 10.3390/w14182824

BANKSIA ATTENUATA.
PHOTO NARELLE DYBING

Publications *(cont.)*

152. KEITH, D.A., FERRER-PARIS, J.R., NICHOLSON, E., BISHOP, M.J., POLIDORO, B.A., RAMIREZ-LLODRA, E., TOZER, M.G., NEL, J.L., MAC NALLY, R., GREGR, E.J., WATERMEYER, K.E., ESSL, F., FABER-LANGENDOEN, D., FRANKLIN, J., LEHMANN, C.E.R., ETTER, A., ROUX, D.J., STARK, J.S., ROWLAND, J.A., BRUMMITT, N.A., FERNANDEZ-ARCAYA, U.C., SUTHERS, I.M., WISER, S.K., DONOHUE, I., JACKSON, L.J., PENNINGTON, R.T., ILIFFE, T.M., GEROVASILEIOU, V., GILLER, P., ROBSON, B.J., PETTORELLI, N., ANDRADE, A., LINDGAARD, A., TAHVANAINEN, T., TERAUDS, A., CHADWICK, M.A., MURRAY, N.J., MOAT, J., PLISCOFF, P., ZAGER, I., KINGSFORD, R.T. (2022) A function-based typology for Earth's ecosystems. Nature, **610,** 513-518. 10.1038/s41586-022-05318-4

153. KHAN, C., BLOUNT, D., PARHAM, J., HOLMBERG, J., HAMILTON, P., CHARLTON, C., CHRISTIANSEN, F., JOHNSTON, D., RAYMENT, W., DAWSON, S., VERMEULEN, E., ROWNTREE, V., GROCH, K., LEVENSON, J.J., BOGUCKI, R. (2022) Artificial intelligence for right whale photo identification: from data science competition to worldwide collaboration. Mammalian Biology, **102,** 1025-1042. 10.1007/s42991-022-00253-3

154. KHEIRABADI, E.P., SHEKARABI, P.H., YADOLLAHI, F., SOLTANI, M., NAJAFI, E., VON HELLENS, J., FLORES, C.L., SALEHI, K., FAGGIO, C. (2022) Red yeast (*Phaffia rhodozyma*) and its effect on growth, antioxidant activity and color pigmentation of rainbow trout (*Oncorhynchus mykiss*). Aquaculture Reports, **23**. 10.1016/j.aqrep.2022.101082

155. KREPLINS, T.L., ADAMS, P.J., BATEMAN, P.W., DUNDAS, S.J., KENNEDY, M.S., FLEMING, P.A. (2022) A self-training device to teach conservation-working dogs to avoid poison baits. Wildlife Research, **49,** 274-282. 10.1071/WR21030

156. KRISTANCIC, A.R., KUEHS, J., BEAL RICHARDSON, B., BAUDAINS, C., STJ. HARDY, G.E., FLEMING, P.A. (2022) Biodiversity conservation in urban gardens – Pets and garden design influence activity of a vulnerable digging mammal. Landscape and Urban Planning, **225**. 10.1016/j.landurbplan.2022.104464

157. LAIRD, T., ABRAHAM, R., SAHIBZADA, S., ABRAHAM, S., O'DEA, M. (2022) In Vitro demonstration of targeted phage therapy and competitive exclusion as a novel strategy for decolonization of Extended-Spectrum-Cephalosporin-Resistant Escherichia coli. Applied and Environmental Microbiology, **88**. 10.1128/aem.02276-21

158. LARKINS, A., BRUCE, M., DI BARI, C., DEVLEESSCHAUWER, B., PIGOTT, D.M., ASH, A. (2022) A scoping review of burden of disease studies estimating disability-adjusted life years due to *Taenia solium*. PLoS Neglected Tropical Diseases, **16**. 10.1371/JOURNAL.PNTD.0010567

159. LEBDAH, M., ALSHAYA, D.S., JALAL, A.S., MOUSA, M.R., RADWAN, M.M., SAMIR, M., ADEL, A., ALBAQAMI, N.M., EL-SAADONY, M.T., EL-TARABILY, K.A., EL BASREY, Y.F.H. (2022) Molecular characterization of aviadenovirus serotypes and pathogenicity of the identified adenovirus in broiler chickens. Poultry Science, **101**. 10.1016/j.psj.2022.101918

160. LETTOOF, D.C., CORNELIUS, J., JOLLY, C.J., AUBRET, F., GAGNON, M.M., HYNDMAN, T.H., BARTON, D.P., BATEMAN, P.W. (2022) Metal(loid) pollution, not urbanisation nor parasites predicts low body condition in a wetland bioindicator snake. Environmental Pollution, **295**. 10.1016/j.envpol.2021.118674

161. LI, X., EMERY, R.N., COUPLAND, G.T., REN, Y., MCKIRDY, S.J. (2022a) Evaluation of the likelihood of establishing False Codling Moth (*Thaumatotibia leucotreta*) in Australia via the international cut flower market. Insects, **13**. 10.3390/insects13100883

162. LI, Z., GUAN, B., XIA, F., NIE, J., LI, W., MA, L., LI, W., ZHOU, L., WANG, Y., TIAN, H., LUO, J., CHEN, Y., FROST, M., AN, K., LIU, X. (2022b) High-Entropy Perovskite as a high-performing chromium-tolerant cathode for solid oxide fuel cells. ACS Applied Materials and Interfaces, **14,** 24363-24373. 10.1021/acsami.2c03657

163. LIDDICOAT, C., KRAUSS, S.L., BISSETT, A., BORRETT, R.J., DUCKI, L.C., PEDDLE, S.D., BULLOCK, P., DOBROWOLSKI, M.P., GRIGG, A., TIBBETT, M., BREED, M.F. (2022) Next generation restoration metrics: Using soil eDNA bacterial community data to measure trajectories towards rehabilitation targets. Journal of Environmental Management, **310**. 10.1016/j.jenvman.2022.114748

164. LIM, S.C., COLLINS, D.A., IMWATTANA, K., KNIGHT, D., PERUMALSAMY, S., HAIN-SAUNDERS, N.M.R., PUTSATHIT, P., SPEERS, D., RILEY, T.V. (2022) Whole-genome sequencing links *Clostridium* (Clostridioides) *difficile* in a single hospital to diverse environmental sources in the community. Journal of Applied Microbiology, **133,** 1156-1168. 10.1111/jam.15408

165. MA, L., BEATTY, S.J., MORGAN, D.L., LYMBERY, A.J. (2022) Population structure and microhabitat preference of a threatened freshwater mussel, *Westralunio carteri*, in south-western Australia. Hydrobiologia, **849,** 3227-3244. 10.1007/s10750-022-04929-2

166. MACINTYRE, P.D., MUCINA, L. (2022) The biomes of Western Australia: a vegetation-based approach using the zonality/ azonality conceptual framework. New Zealand Journal of Botany, **60,** 354-376. 10.1080/0028825X.2021.1890154

167. MALEKI, S., MAHMOUDI, A., YAZDANI, A. (2022) Knowledge transfer-oriented deep neural network framework for estimation and forecasting the state of health of the Lithium-ion batteries. Journal of Energy Storage, **53**. 10.1016/j.est.2022.105183

168. MANLIK, O., LACY, R.C., SHERWIN, W.B., FINN, H., LONERAGAN, N.R., ALLEN, S.J. (2022) A stochastic model for estimating sustainable limits to wildlife mortality in a changing world. Conservation Biology, **36**. 10.1111/cobi.13897

169. MAROUF, S., IBRAHIM, H.M., EL-NAGGAR, M.S., SWELUM, A.A., ALQHTANI, A.H., EL-SAADONY, M.T., EL-TARABILY, K.A., SALEM, H.M. (2022) Inactivated pentavalent vaccine against mycoplasmosis and salmonellosis for chickens. Poultry Science, **101**. 10.1016/j.psj.2022.102139

170. MARSH, J.R., BAL, P., FRASER, H., UMBERS, K., LATTY, T., GREENVILLE, A., RUMPFF, L., WOINARSKI, J.C.Z. (2022a) Accounting for the neglected: Invertebrate species and the 2019–2020 Australian megafires. Global Ecology and Biogeography, **31,** 2120-2130. 10.1111/geb.13550

171. MARSH, J.R., GLATZ, R.V. (2022) Assessing the impact of the black summer fires on Kangaroo Island threatened invertebrates: towards rapid habitat assessments for informing targeted post-fire surveys. Australian Zoologist, **42,** 479-501. 10.7882/AZ.2022.029

172. MARSH, J.R., STEVENS, M.I., FRAMENAU, V.W. (2022b) A taxonomic revision of the tube-web spiders of the genus *Ariadna* (Araneae: Segestriidae) in Tasmania. Zootaxa, **5105,** 151-201. 10.11646/zootaxa.5105.2.1

173. MARTIN, S.B., CUTMORE, S.C. (2022) *Siphoderina hustoni* n. sp. (Platyhelminthes: Trematoda: Cryptogonimidae) from the Maori snapper *Lutjanus rivulatus* (Cuvier) on the Great Barrier Reef. Systematic Parasitology, **99,** 403-417. 10.1007/s11230-022-10031-x

174. MAYAUD, R., CASTRILLON, J., WILSON, C., PEEL, D., SMITH, J.N., LUCHE, G.D., ALLEN, J., NASH, S.B. (2022) Traffic in a nursery: Ship strike risk from commercial vessels to migrating humpback whales (*Megaptera novaeangliae*) in a rapidly developing Australian urban embayment. Marine Policy, **146**. 10.1016/j.marpol.2022.105332

175. MAYFOSH, A.J., DAY, Z.I., UNSWORTH, N.B., LIU, C.Q., GUPTA, R., HAYNES, S., ABRAHAM, R., ABRAHAM, S., SHAW, Z.L., WALIA, S., ELBOURNE, A., HULETT, M.D., RAU, T.F. (2022) GS-2: A novel broad-spectrum agent for environmental microbial control. Biomolecules, **12**. 10.3390/biom12091293

176. MCHURON, E.A., ADAMCZAK, S., ARNOULD, J.P.Y., ASHE, E., BOOTH, C., DON BOWEN, W., CHRISTIANSEN, F., CHUDZINSKA, M., COSTA, D.P., FAHLMAN, A., FARMER, N.A., FORTUNE, S.M.E., GALLAGHER, C.A., KEEN, K.A., MADSEN, P.T., MCMAHON, C.R., NABE-NIELSEN, J., NOREN, D.P., NOREN, S.R., PIROTTA, E., ROSEN, D.A.S., SPEAKMAN, C.N., VILLEGAS-AMTMANN, S., WILLIAMS, R. (2022) Key questions in marine mammal bioenergetics. Conservation Physiology, **10**. 10.1093/conphys/coac055

177. MCLEAN, D.L., FERREIRA, L.C., BENTHUYSEN, J.A., MILLER, K.J., SCHLÄPPY, M.L., AJEMIAN, M.J., BERRY, O., BIRCHENOUGH, S.N.R., BOND, T., BOSCHETTI, F., BULL, A.S., CLAISSE, J.T., CONDIE, S.A., CONSOLI, P., COOLEN, J.W.P., ELLIOTT, M., FORTUNE, I.S., FOWLER, A.M., GILLANDERS, B.M., HARRISON, H.B., HART, K.M., HENRY, L.A., HEWITT, C.L., HICKS, N., HOCK, K., HYDER, K., LOVE, M., MACREADIE, P.I., MILLER, R.J., MONTEVECCHI, W.A., NISHIMOTO, M.M., PAGE, H.M., PATERSON, D.M., PATTIARATCHI, C.B., PECL, G.T., PORTER, J.S., REEVES, D.B., RIGINOS, C., ROUSE, S., RUSSELL, D.J.F., SHERMAN, C.D.H., TEILMANN, J., TODD, V.L.G., TREML, E.A., WILLIAMSON, D.H., THUMS, M. (2022) Influence of offshore oil and gas structures on seascape ecological connectivity. Global Change Biology, **28,** 3515-3536. 10.1111/gcb.16134

178. MKPUMA, V.O., MOHEIMANI, N.R., ENNACERI, H. (2022a) Microalgal dewatering with focus on filtration and antifouling strategies: A review. Algal Research, **61**. 10.1016/j.algal.2021.102588

179. MKPUMA, V.O., MOHEIMANI, N.R., FISCHER, K., SCHULZE, A., ENNACERI, H. (2022b) Membrane surface zwitterionization for an efficient microalgal harvesting: A review. Algal Research, **66**. 10.1016/j.algal.2022.102797

180. MOFRAD, A.Z., GAO, X., OLUWOYE, I., HAYASHI, J.I., ALTARAWNEH, M., WU, H. (2022) Treatment of wastewater from biomass pyrolysis and recovery of its organic compounds with char-assisted drying. Fuel, **312**. 10.1016/j.fuel.2021.122825

181. MOHAMMADI, S., MAHMOUDI, A., KAHOURZADE, S., YAZDANI, A., SHAFIULLAH, G.M. (2022) Decaying DC offset current mitigation in phasor estimation applications: A Review. Energies, **15**. 10.3390/en15145260

182. MOLONEY, P.D., GORMLEY, A.M., TOOP, S.D., FLESCH, J.S., FORSYTH, D.M., RAMSEY, D.S.L., HAMPTON, J.O. (2022) Bayesian modelling reveals differences in long-term trends in the harvest of native and introduced species by recreational hunters in Australia. Wildlife Research. 10.1071/WR21138

183. MONKS, L., COATES, D., MCARTHUR, S., STANDISH, R.J. (2022) Evaluating conservation strategies for the endangered daisy *Schoenia filifolia* subsp. *subulifolia* (Asteraceae): Fitness consequences of genetic rescue and hybridisation with a widespread subspecies. Australian Journal of Botany, **70,** 344-357. 10.1071/BT22006

184. MULL, C.G., PACOUREAU, N., PARDO, S.A., RUIZ, L.S., GARCÍA-RODRÍGUEZ, E., FINUCCI, B., HAACK, M., HARRY, A., JUDAH, A.B., VANDERWRIGHT, W., YIN, J.S., KINDSVATER, H.K., DULVY, N.K. (2022) Sharkipedia: a curated open access database of shark and ray life history traits and abundance time-series. Scientific Data, **9**. 10.1038/s41597-022-01655-1

185. NAZLOO, E.K., MOHEIMANI, N.R., ENNACERI, H. (2022) Biodiesel production from wet microalgae: Progress and challenges. Algal Research, **68**. 10.1016/j.algal.2022.102902

186. NGUYEN, T.T., ESLICK, H., BARBER, P., HARPER, R., DELL, B. (2022) Cooling effects of urban vegetation: The role of golf courses. Remote Sensing, **14**. 10.3390/rs14174351

187. NORMAN, B.M., REYNOLDS, S.D., MORGAN, D.L. (2022) Three-way symbiotic relationships in whale sharks. Pacific Conservation Biology, **28,** 80-83. 10.1071/PC20043

188. NWOBA, E.G., CHUKA-OGWUDE, D., VADIVELOO, A., OGBONNA, J.C. 2022. Process control strategies applied to microalgae-based biofuel production. *3rd Generation Biofuels: Disruptive Technologies to Enable Commercial Production.*

189. NWOBA, E.G., MOHEIMANI, N.R. (2022) Microalgae-based circular economy approach to upcycle fire extinguisher powder waste. Resources, Conservation and Recycling, **180**. 10.1016/j.resconrec.2022.106210

190. OBREGÓN, C., CHRISTENSEN, J., ZELLER, D., HUGHES, M., TWEEDLEY, J.R., GAYNOR, A., LONERAGAN, N.R. (2022) Local fisher knowledge reveals changes in size of blue swimmer crabs in small-scale fisheries. Marine Policy, **143**. 10.1016/j.marpol.2022.105144

191. OLSEN, M., NASSAR, R., SENOK, A., MOLONEY, S., LOHNING, A., JONES, P., GRANT, G., MORGAN, M., PALIPANA, D., MCKIRDY, S., ALGHAFRI, R., TAJOURI, L. (2022) Mobile phones are hazardous microbial platforms warranting robust public health and biosecurity protocols. Scientific Reports, **12**. 10.1038/s41598-022-14118-9

192. OVALLE, J.T., REICH, M., BARRA, F., SIMON, A.C., DEDITIUS, A.P., LE VAILLANT, M., NEILL, O.K., PALMA, G., ROMERO, R., ROMÁN, N., LA CRUZ, N.L., ROBERTS, M.P., MORATA, D. (2022) Magmatic-hydrothermal evolution of the El Laco iron deposit revealed by trace element geochemistry and high-resolution chemical mapping of magnetite assemblages. Geochimica et Cosmochimica Acta, **330,** 230-257. 10.1016/j.gca.2022.03.012

193. OWEN, B.M., HALLETT, C.S., COSGROVE, J.J., TWEEDLEY, J.R., MOHEIMANI, N.R. (2022) Reporting of methods for automated devices: A systematic review and recommendation for studies using FlowCam for phytoplankton. Limnology and Oceanography: Methods, **20,** 400-427. 10.1002/lom3.10496

194. PAAP, T., WINGFIELD, M.J., BURGESS, T.I., WILSON, J.R.U., RICHARDSON, D.M., SANTINI, A. (2022) Invasion frameworks: a forest pathogen perspective. Current Forestry Reports, **8,** 74-89. 10.1007/s40725-021-00157-4

195. PARKHURST, T., PROBER, S.M., FARRELL, M., STANDISH, R.J. (2022a) Abiotic and biotic responses to woody debris additions in restored old fields in a multi-site Before-After-Control-Impact experiment. Ecology and Evolution, **12**. 10.1002/ece3.9058

196. PARKHURST, T., STANDISH, R.J., ANDERSEN, A.N., PROBER, S.M. (2022b) Old-field restoration improves habitat for ants in a semi-arid landscape. Restoration Ecology, **30**. 10.1111/rec.13605

197. PARKHURST, T., STANDISH, R.J., PROBER, S.M. (2022c) P is for persistence: Soil phosphorus remains elevated for more than a decade after old field restoration. Ecological Applications, **32**. 10.1002/eap.2547

198. PATTERSON, M., WOLFE, A.K., FLEMING, P.A., BATEMAN, P.W., MARTIN, M.L., SHERRATT, E., WARBURTON, N.M. (2022) Ontogenetic shift in diet of a large elapid snake is facilitated by allometric change in skull morphology. Evolutionary Ecology, **36,** 489-509. 10.1007/s10682-022-10164-x

199. PENNEY, G., LAUNDER, D., CUTHBERTSON, J., THOMPSON, M.B. (2022) Threat assessment, sense making, and critical decision-making in police, military, ambulance, and fire services. Cognition, Technology and Work, **24,** 423-439. 10.1007/s10111-022-00694-3

200. PILMER, L.W., WOOLLEY, L.D., LYMBERY, A.J., SALINI, M., PARTRIDGE, G.J. (2022) Using dietary additives to improve palatability of diets containing single-cell protein from methanotrophic bacteria in yellowtail kingfish (*Seriola lalandi*) diets. Aquaculture Research, **53,** 5006-5017. 10.1111/are.15986

Publications *(cont.)*

WEST AUSTRALIAN COAST.
PHOTO HBI

201. PLATELL, M.E., MASCHETTE, D., COULSON, P.G., TWEEDLEY, J.R., POTTER, I.C. (2022) Dietary characteristics of the ecologically-important fish species *Centroberyx gerrardi*, including discussion of resource partitioning among species of Berycidae in Australia. Estuarine, Coastal and Shelf Science, **275**. 10.1016/j.ecss.2022.107975

202. POTTER, I.C., KANANDJEMBO, A.R., COTTINGHAM, A., ROSE, T.H., LINKE, T.E., PLATELL, M.E. (2022) A long-lived, estuarine-resident fish species selects its macroinvertebrate food source based on certain prey and predator traits. Estuarine, Coastal and Shelf Science, **264**. 10.1016/j.ecss.2021.107691

203. POVH, L.F., WILLERS, N., FLEMING, P.A. (2022) Set free: An evaluation of two break-away mechanisms for tracking collars. Wildlife Research. 10.1071/WR21176

204. PREISLEROVÁ, Z., JIMÉNEZ-ALFARO, B., MUCINA, L., BERG, C., BONARI, G., KUZEMKO, A., LANDUCCI, F., MARCENÒ, C., MONTEIRO-HENRIQUES, T., NOVÁK, P., VYNOKUROV, D., BERGMEIER, E., DENGLER, J., APOSTOLOVA, I., BIORET, F., BIURRUN, I., CAMPOS, J.A., CAPELO, J., ČARNI, A., ÇOBAN, S., CSIKY, J., ĆUK, M., ĆUŠTEREVSKA, R., DANIËLS, F.J.A., DE SANCTIS, M., DIDUKH, Y., DÍTĚ, D., FANELLI, G., GOLOVANOV, Y., GOLUB, V., GUARINO, R., HÁJEK, M., IAKUSHENKO, D., INDREICA, A., JANSEN, F., JAŠKOVÁ, A., JIROUŠEK, M., KALNÍKOVÁ, V., KAVGACI, A., KUCHEROV, I., KÜZMIČ, F., LEBEDEVA, M., LOIDI, J., LOSOSOVÁ, Z., LYSENKO, T., MILANOVIĆ, Đ., ONYSHCHENKO, V., PERRIN, G., PETERKA, T., RAŠOMAVIČIUS, V., RODRÍGUEZ-ROJO, M.P., RODWELL, J.S., RŪSIŅA, S., SÁNCHEZ-MATA, D., SCHAMINÉE, J.H.J., SEMENISHCHENKOV, Y., SHEVCHENKO, N., ŠIBÍK, J., ŠKVORC, Ž., SMAGIN, V., STEŠEVIĆ, D., STUPAR, V., ŠUMBEROVÁ, K., THEURILLAT, J.P., TIKHONOVA, E., TZONEV, R., VALACHOVIČ, M., VASSILEV, K., WILLNER, W., YAMALOV, S., VEČEŘA, M., CHYTRÝ, M. (2022) Distribution maps of vegetation alliances in Europe. Applied Vegetation Science, **25**. 10.1111/avsc.12642

205. RANSOME, N., BEJDER, L., JENNER, M., PENFOLD, G., BROSIG, V.J., KITSON, C., SKJOTHAUG, R., NEILSON, E., LONERAGAN, N.R., SMITH, J.N. (2022a) Observations of parturition in humpback whales (*Megaptera novaeangliae*) and occurrence of escorting and competitive behavior around birthing females. Marine Mammal Science, **38,** 408-432. 10.1111/mms.12864

206. RANSOME, N., KEW, A., DUQUE, E., MORAIS, M., WRIGHT, W., SMITH, J.N. (2022b) Escorting of a mother humpback whale (*Megaptera novaeangliae*) and the death of her calf during aggressive mating behavior. Marine Mammal Science, **38,** 1643-1653. 10.1111/mms.12922

207. REYNOLDS, S.D., NORMAN, B.M., FRANKLIN, C.E., BACH, S.S., COMEZZI, F.G., DIAMANT, S., JAIDAH, M.Y., PIERCE, S.J., RICHARDSON, A.J., ROBINSON, D.P., ROHNER, C.A., DWYER, R.G. (2022) Regional variation in anthropogenic threats to Indian Ocean whale sharks. Global Ecology and Conservation, **33**. 10.1016/j.gecco.2021.e01961

208. REZVANI, S., SAADAOUI, I., AL JABRI, H., MOHEIMANI, N.R. (2022) Techno-economic modelling of high-value metabolites and secondary products from microalgae cultivated in closed photobioreactors with supplementary lighting. Algal Research, **65**. 10.1016/j.algal.2022.102733

209. RINGØ, E., HARIKRISHNAN, R., SOLTANI, M., GHOSH, K. (2022) The effect of gut microbiota and probiotics on metabolism in fish and shrimp. Animals, **12**. 10.3390/ani12213016

210. RIVA-ROSSI, C., RENAUD, C.B., NEIRA, F.J., BAIGÚN, C., BAKER, C.F., QUIROGA, P., POTTER, I. (2022) On the invalid resurrection of the lamprey genus *Exomegas Gill*, 1883. Journal of Fish Biology, **100,** 831-834. 10.1111/jfb.14975

211. RODDICK, S., KREPLINS, T.L., KOBRYN, H.T., FLEMING, P.A. (2022) Livestock guardian dog protection of free-range poultry from the red fox. Animal Production Science, **62,** 1290-1302. 10.1071/AN21229

212. RODGERS, E.M., GOMEZ ISAZA, D.F. (2022) Stress history affects heat tolerance in an aquatic ectotherm (Chinook salmon, *Oncorhynchus tshawytscha*). Journal of Thermal Biology, **106**. 10.1016/j.jtherbio.2022.103252

213. RYAN, L.A., ANDRZEJACZEK, S., GLEISS, A.C., MEEKAN, M.G., CHAPPLE, T.K., HART, N.S. (2022a) Prey interactions in tiger sharks: Accounting for visual perception in animal-borne cameras. Journal of Experimental Marine Biology and Ecology, **553**. 10.1016/j.jembe.2022.151764

214. RYAN, U., HILL, K., DEERE, D. (2022b) Review of generic screening level assumptions for quantitative microbial risk assessment (QMRA) for estimating public health risks from Australian drinking water sources contaminated with *Cryptosporidium* by recreational activities. Water Research, **220**. 10.1016/j.watres.2022.118659

215. RYCKEN, S.J.E., WARREN, K.S., YEAP, L., DONALDSON, R., MAWSON, P., DAWSON, R., SHEPHARD, J.M. (2022) Forest specialist species in the urban landscape: Do different levels of urbanization affect the movements of Forest Red-tailed Black Cockatoos (*Calyptorhynchus banksii naso*)? Avian Conservation and Ecology, **17**. 10.5751/ACE-02061-170111

216. SAAD, A.M., SITOHY, M.Z., SULTAN-ALOLAMA, M.I., EL-TARABILY, K.A., EL-SAADONY, M.T. (2022) Green nanotechnology for controlling bacterial load and heavy metal accumulation in Nile tilapia fish using biological selenium nanoparticles biosynthesized by *Bacillus subtilis* AS12. Frontiers in Microbiology, **13**. 10.3389/fmicb.2022.1015613

217. SALEM, H.M., ALQHTANI, A.H., SWELUM, A.A., BABALGHITH, A.O., MELEBARY, S.J., SOLIMAN, S.M., KHAFAGA, A.F., SELIM, S., EL-SAADONY, M.T., EL-TARABILY, K.A., ABD EL-HACK, M.E. (2022a) Heat stress in poultry with particular reference to the role of probiotics in its amelioration: An updated review. Journal of Thermal Biology, **108**. 10.1016/j.jtherbio.2022.103302

218. SALEM, H.M., EL-SAADONY, M.T., ABD EL-MAGEED, T.A., SOLIMAN, S.M., KHAFAGA, A.F., SAAD, A.M., SWELUM, A.A., KORMA, S.A., GONÇALVES LIMA, C.M., SELIM, S., BABALGHITH, A.O., ABD EL-HACK, M.E., OMER, F.A., ABUQAMAR, S.F., EL-TARABILY, K.A., CONTE-JUNIOR, C.A. (2022b) Promising prospective effects of *Withania somnifera* on broiler performance and carcass characteristics: A comprehensive review. Frontiers in Veterinary Science, **9**. 10.3389/fvets.2022.918961

219. SALVADOR, J.J., KYLE, S.V.H., SALVADOR, J.J., MICHELI, F., WHITE, T.D., ANDRZEJACZEK, S., ARNOLDI, N.S., BLOCK, B., BUTNER, C., MICHELI, F., WHITE, T.D., KYLE, S.V.H., ALFARO-SHIGUETO, J., MANGEL, J.C., ALFARO-SHIGUETO, J., BAUM, J.K., BRITTEN, G.L., CABALLERO, S., CARDEÑOSA, D., CHAPPLE, T.K., CLARKE, S., CORTÉS, E., DULVY, N.K., FOWLER, S., GALLAGHER, A.J., SHEA, B.D., GILMAN, E., GODLEY, B.J., GRAHAM, R.T., HAMMERSCHLAG, N., HARRY, A.V., HARRY, A.V., HEITHAUS, M.R., HUTCHINSON, M., HUVENEERS, C., LOWE, C.G., LUCIFORA, L.O., MACKERACHER, T., MARTINS, A.P.B., MULL, C., MANGEL, J.C., MCCAULEY, D.J., MCCAULEY, D.J., MCCLENACHAN, L., NATANSON, L.J., PAULY, D., PAZMIÑO, D.A., SIMPFENDORFER, C.A., PAZMIÑO, D.A., PISTEVOS, J.C.A., PISTEVOS, J.C.A., QUEIROZ, N., ROFF, G., SHEA, B.D., FERRETTI, F., SIMS, D.W., SIMS, D.W., SIMS, D.W., WARD-PAIGE, C., WORM, B., SALVADOR, J.J. (2022) Emergent research and priorities for shark and ray conservation. Endangered Species Research, **47,** 171-203. 10.3354/ESR01169

220. SEIDAVI, A., TAVAKOLI, M., ASROOSH, F., SCANES, C.G., ABD EL-HACK, M.E., NAIEL, M.A.E., TAHA, A.E., ALEYA, L., EL-TARABILY, K.A., SWELUM, A.A. (2022) Antioxidant and antimicrobial activities of phytonutrients as antibiotic substitutes in poultry feed. Environmental Science and Pollution Research, **29,** 5006-5031. 10.1007/s11356-021-17401-w

221. SEIDLITZ, A., BRYANT, K.A., ARMSTRONG, N.J., WAYNE, A.F. (2022) Animal detections increase by using a wide-Angle camera trap model but not by periodically repositioning camera traps within study sites. Pacific Conservation Biology, **28,** 25-35. 10.1071/PC20076

222. SELIM, D.A.F.H., ZAYED, M., ALI, M.M.E., ELDESOUKY, H.S., BONFILL, M., EL-TAHAN, A.M., IBRAHIM, O.M., EL-SAADONY, M.T., EL-TARABILY, K.A., ABUQAMAR, S.F., ELOKKIAH, S. (2022) Germination, physio-anatomical behavior, and productivity of wheat plants irrigated with magnetically treated seawater. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.923872

223. SENIGAGLIA, V., CHRISTIANSEN, F., BEJDER, L., SPROGIS, K.R., CANTOR, M. (2022) Human food provisioning impacts the social environment, home range and fitness of a marine top predator. Animal Behaviour, **187,** 291-304. 10.1016/j.anbehav.2022.02.005

224. SHAYESTEH, H., VADIVELOO, A., BAHRI, P.A., MOHEIMANI, N.R. (2022) Long term outdoor microalgal phycoremediation of anaerobically digested abattoir effluent. Journal of Environmental Management, **323**. 10.1016/j.jenvman.2022.116322

225. SHEIKHZADEH, N., AHMADIFAR, E., SOLTANI, M., TAYEFI-NASRABADI, H., MOUSAVI, S., NAIEL, M.A.E. (2022) Brown seaweed (*Padina australis*) extract can promote performance, innate immune responses, digestive enzyme activities, intestinal gene expression and resistance against *Aeromonas hydrophila* in Common carp (*Cyprinus carpio*). Animals, **12**. 10.3390/ani12233389

226. SHETEIWY, M.S., ULHASSAN, Z., QI, W., LU, H., ABDELGAWAD, H., MINKINA, T., SUSHKOVA, S., RAJPUT, V.D., EL-KEBLAWY, A., JOŚKO, I., SULIEMAN, S., EL-ESAWI, M.A., EL-TARABILY, K.A., ABUQAMAR, S.F., YANG, H., DAWOOD, M. (2022) Association of jasmonic acid priming with multiple defense mechanisms in wheat plants under high salt stress. Frontiers in Plant Science, **13**. 10.3389/fpls.2022.886862

227. SHIVAPERUMAL, N., KNIGHT, D.R., IMWATTANA, K., ANDROGA, G.O., CHANG, B.J., RILEY, T.V. (2022) Esculin hydrolysis negative and TcdA-only producing strains of *Clostridium* (Clostridioides) *difficile* from the environment in Western Australia. Journal of Applied Microbiology, **133,** 1183-1196. 10.1111/jam.15500

228. SIMMONS, L.W., LOVEGROVE, M., DU, X., REN, Y., THOMAS, M.L. (2022) Ontogeny can provide insight into the roles of natural and sexual selection in cricket cuticular hydrocarbon evolution. Journal of Experimental Biology, **225**. 10.1242/jeb.244375

229. SIMPSON, J., BRUCE, E., DAVIES, K.P., BARBER, P. (2022) A blueprint for the estimation of seagrass carbon stock using remote sensing-enabled proxies. Remote Sensing, **14**. 10.3390/rs14153572

230. SMALES, L., ELLIOT, A., KEATLEY, S., CHISHOLM, L., LYMBERY, A. (2022) Morphological and molecular characterisation of a new species of *Parastrongyloides* (Rhabditida: Strongyloididae) from the Short-Beaked echidna *Tachyglossus aculeatus* from Western Australia. Acta Parasitologica, **67,** 153-160. 10.1007/s11686-021-00443-y

231. SMITHIES, S., FLEMING, P.A., BATEMAN, P.W., HARDY, G.E.S.J., DUNDAS, S.J. (2022) Avian community changes following drought-induced canopy collapse in a Mediterranean-type forest. Pacific Conservation Biology. 10.1071/PC22005

232. SPENCER, W., IBANA, D., SINGH, P., NIKOLOSKI, A.N. (2022a) Biofuels as renewable reductants for the processing of ilmenite to produce synthetic rutile. Minerals Engineering, **187**. 10.1016/j.mineng.2022.107808

233. SPENCER, W., IBANA, D., SINGH, P., NIKOLOSKI, A.N. (2022b) Effect of ilmenite properties on synthetic rutile quality. Minerals Engineering, **177**. 10.1016/j.mineng.2021.107365

234. STANDISH, R.J., BORRETT, R., MORALD, T., HOBBS, R.J., PROBER, S.M. (2022a) Contribution of species and functional richness to carbon storage in eucalypt woodland restoration. Forest Ecology and Management, **523**. 10.1016/j.foreco.2022.120497

235. STANDISH, R.J., DAWS, M.I., MORALD, T.K., SPEIJERS, J., KOCH, J.M., HOBBS, R.J., TIBBETT, M. (2022b) Phosphorus supply affects seedling growth of mycorrhizal but not cluster-root forming jarrah-forest species. Plant and Soil, **472,** 577-594. 10.1007/s11104-021-05268-2

236. STEVENS, A.J., ABRAHAM, R., YOUNG, K.A., RUSSELL, C.C., MCCLUSKEY, S.N., BAKER, J.R., RUSDI, B., PAGE, S.W., O'HANDLEY, R., O'DEA, M., ABRAHAM, S., MCCLUSKEY, A. (2022) Antigiardial activity of novel guanidine compounds. ChemMedChem, **17**. 10.1002/cmdc.202200341

237. STOBO-WILSON, A.M., MURPHY, B.P., LEGGE, S.M., CACERES-ESCOBAR, H., CHAPPLE, D.G., CRAWFORD, H.M., DAWSON, S.J., DICKMAN, C.R., DOHERTY, T.S., FLEMING, P.A., GARNETT, S.T., GENTLE, M., NEWSOME, T.M., PALMER, R., REES, M.W., RITCHIE, E.G., SPEED, J., STUART, J.M., SUAREZ-CASTRO, A.F., THOMPSON, E., TULLOCH, A., TURPIN, J.M., WOINARSKI, J.C.Z. (2022) Counting the bodies: Estimating the numbers and spatial variation of Australian reptiles, birds and mammals killed by two invasive mesopredators. Diversity and Distributions, **28,** 976-991. 10.1111/ddi.13497

238. STOCKWELL, S., GREENWELL, C.N., DUNLOP, J.N., LONERAGAN, N.R. (2022) Distribution and foraging by non-breeding Caspian Terns on a large temperate estuary of south-western Australia-preliminary investigations. Pacific Conservation Biology, **28,** 48-56. 10.1071/PC20082

239. SULTAN-ALOLAMA, M.I., AMIN, A., EL-TARABILY, K.A., VIJAYAN, R. (2022) Characterization and genomic analysis of *Escherichia coli* O157:H7 Phage UAE_MI-01 isolated from birds. International Journal of Molecular Sciences, **23**. 10.3390/ijms232314846

240. TANG, E.K.Y., PARTRIDGE, G.J., WOOLLEY, L.D., PILMER, L., LIM, L.Y. (2022a) Effects of formulation on the palatability and efficacy of In-Feed Praziquantel medications for Marine Finfish Aquaculture. Marine Drugs, **20**. 10.3390/md20050323

241. TANG, H., FOURNIÉ, G., LI, J., ZOU, L., SHEN, C., WANG, Y., CAI, C., EDWARDS, J., ROBERTSON, I.D., HUANG, B., BRUCE, M. (2022b) Analysis of the movement of live broilers in Guangxi, China and implications for avian influenza control. Transboundary and Emerging Diseases, **69,** e775-e787. 10.1111/tbed.14351

242. TANG, H., KANG, J., SHEN, C., WANG, Y., ROBERTSON, I.D., CAI, C., EDWARDS, J., HUANG, B., BRUCE, M. (2022c) Benefit-cost analysis of a H7N9 vaccination program in poultry in Guangxi, China. Preventive Veterinary Medicine, **200**. 10.1016/j.prevetmed.2022.105580

243. TANG, H., SHEN, C., ZOU, L., CAI, C., WANG, Y., ROBERTSON, I.D., EDWARDS, J., HUANG, B., BRUCE, M. (2022d) A mixed methods study of stakeholders' practices and attitudes on avian influenza H7N9 vaccination for the yellow broiler industry in Guangxi, China. Transboundary and Emerging Diseases, **69,** e224-e235. 10.1111/tbed.14286

244. THEURILLAT, J.P., WILLNER, W., FERNÁNDEZ-GONZÁLEZ, F., BÜLTMANN, H., ČARNI, A., GIGANTE, D., MUCINA, L., WEBER, H. (2022) International code of phytosociological nomenclature. 4th ED. Rastitel'nost' Rossii**,** 3-60. 10.31111/vegrus/2022.44.3

245. THOMAS, J., DIJKSTRA, S.M., HARRINGTON, J.J., COLLINGS, D.A. (2022) Induction of compression wood inhibits development of spiral grain in radiata pine. IAWA Journal, **68,** 1-27. 10.1163/22941932-bja10088

246. TREVENEN, E.J., VENEKLAAS, E.J., TESTE, F.P., DOBROWOLSKI, M., MUCINA, L., RENTON, M. (2022) Positive heterospecific interactions can increase long-term diversity of plant communities more than negative conspecific interactions alone. Functional Ecology, **36,** 159-173. 10.1111/1365-2435.13941

247. TRUONG, T.T.A., ANDREW, M.E., HARDY, G.E.S.J., DELL, B., HUGHES, M. (2022) Influence of institutional arrangements on invasive plant species management from multilevel perspectives: A case study in Vietnam's national parks. Invasive Plant Science and Management, **15,** 89-97. 10.1017/inp.2022.16

248. TSAKALOS, J.L., CHELLI, S., CAMPETELLA, G., CANULLO, R., SIMONETTI, E., BARTHA, S. (2022a) comspat: an R package to analyze within-community spatial organization using species combinations. Ecography, **2022**. 10.1111/ecog.06216

249. TSAKALOS, J.L., OTTAVIANI, G., CHELLI, S., REA, A., ELDER, S., DOBROWOLSKI, M.P., MUCINA, L. (2022b) Plant clonality in a soil-impoverished open ecosystem: insights from southwest Australian shrublands. Annals of Botany, **130,** 981-990. 10.1093/aob/mcac131

250. TSYKUN, T., PROSPERO, S., SCHOEBEL, C.N., REA, A., BURGESS, T.I. (2022) Global invasion history of the emerging plant pathogen *Phytophthora multivora*. BMC Genomics, **23,** 153. 10.1186/s12864-022-08363-5

251. TURNER, K., BOYD, C., ROSSI, G., SHARP, C.R., CLAUS, M.A., FRANCIS, A., SMART, L. (2022) Allergy, inflammation, hepatopathy and coagulation biomarkers in dogs with suspected anaphylaxis due to insect envenomation. Frontiers in Veterinary Science, **9**. 10.3389/fvets.2022.875339

252. UMAIR, M., JABBAR, S., ZHAOXIN, L., JIANHAO, Z., ABID, M., KHAN, K.U.R., KORMA, S.A., ALGHAMDI, M.A., EL-SAADONY, M.T., ABD EL-HACK, M.E., CACCIOTTI, I., ABUQAMAR, S.F., EL-TARABILY, K.A., ZHAO, L. (2022) Probiotic-Based bacteriocin: Immunity supplementation against viruses. An Updated Review. Frontiers in Microbiology, **13**. 10.3389/fmicb.2022.876058

253. VADIVELOO, A., SHAYESTEH, H., BAHRI, P.A., MOHEIMANI, N.R. (2022) Comparison between continuous and daytime mixing for the treatment of raw anaerobically digested abattoir effluent (ADAE) and microalgae production in open raceway ponds. Bioresource Technology Reports, **17**. 10.1016/j.biteb.2022.100981

254. VAN DOAN, H., SOLTANI, M., LEITÃO, A., SHAFIEI, S., ASADI, S., LYMBERY, A.J., RINGØ, E. (2022) Streptococcosis a re-emerging disease in aquaculture: Significance and phytotherapy. Animals, **12**. 10.3390/ani12182443

255. VASAR, M., DAVISON, J., SEPP, S.K., MUCINA, L., OJA, J., AL-QURAISHY, S., ANSLAN, S., BAHRAM, M., BUENO, C.G., CANTERO, J.J., DECOCQ, G., FRASER, L., HIIESALU, I., HOZZEIN, W., KOOREM, K., MENG, Y., MOORA, M., ONIPCHENKO, V., ÖPIK, M., PÄRTEL, M., VAHTER, T., TEDERSOO, L., ZOBEL, M. (2022a) Global soil microbiomes: A new frontline of biome-ecology research. Global Ecology and Biogeography, **31,** 1120-1132. 10.1111/geb.13487

256. VASAR, M., DAVISON, J., SEPP, S.K., OJA, J., AL-QURAISHY, S., BUENO, C.G., CANTERO, J.J., FABIANO, E.C., DECOCQ, G., FRASER, L., HIIESALU, I., HOZZEIN, W.N., KOOREM, K., MOORA, M., MUCINA, L., ONIPCHENKO, V., ÖPIK, M., PÄRTEL, M., PHOSRI, C., VAHTER, T., TEDERSOO, L., ZOBEL, M. (2022b) Global taxonomic and phylogenetic assembly of AM fungi. Mycorrhiza, **32,** 135-144. 10.1007/s00572-022-01072-7

257. VÁZQUEZ, E., SCHLEUSS, P.M., BORER, E.T., BUGALHO, M.N., CALDEIRA, M.C., EISENHAUER, N., ESKELINEN, A., FAY, P.A., HAIDER, S., JENTSCH, A., KIRKMAN, K.P., MCCULLEY, R.L., PERI, P.L., PRICE, J., RICHARDS, A.E., RISCH, A.C., ROSCHER, C., SCHÜTZ, M., SEABLOOM, E.W., STANDISH, R.J., STEVENS, C.J., TEDDER, M.J., VIRTANEN, R., SPOHN, M. (2022) Nitrogen but not phosphorus addition affects symbiotic N2 fixation by legumes in natural and semi-natural grasslands located on four continents. Plant and Soil, **478,** 689-707. 10.1007/s11104-022-05498-y

258. WANG, B., GAO, X., HUANG, J., MOFRAD, A.Z., WANG, Z., FENG, C., LI, C., HU, W., QIAO, Y. (2022a) Transformation of HCl during pyrolysis of biomass and its model compounds. Fuel, **309**. 10.1016/j.fuel.2021.122139

259. WANG, H., ZHENG, J., LU, Y., DING, S., CHAOUI, H. (2022b) Special issue on computational intelligence-based modeling, control and estimation in modern mechatronic systems. Neural Computing and Applications, **34,** 5011-5013. 10.1007/s00521-021-06818-6

260. WANG, Z., FENG, J., LOZANO-MONTES, H.M., LONERAGAN, N.R., ZHANG, X., TIAN, T., WU, Z. (2022c) Estimating ecological carrying capacity for stock enhancement in marine ranching ecosystems of Northern China. Frontiers in Marine Science, **9**. 10.3389/fmars.2022.936028

261. WARD, M., SOUTHWELL, D., GALLAGHER, R.V., RAADIK, T.A., WHITEROD, N.S., LINTERMANS, M., SHERIDAN, G., NYMAN, P., SUÁREZ-CASTRO, A.F., MARSH, J., WOINARSKI, J., LEGGE, S. (2022) Modelling the spatial extent of post-fire sedimentation threat to estimate the impacts of fire on waterways and aquatic species. Diversity and Distributions, **28,** 2429-2442. 10.1111/ddi.13640

262. WEI, X., HUANG, Y., NGUYEN, S.T.T., COLLINGS, D.A., MCCURDY, D.W. (2022) Asymmetric wall ingrowth deposition in Arabidopsis phloem parenchyma transfer cells is tightly associated with sieve elements. Journal of Experimental Botany, **73,** 5415-5427. 10.1093/jxb/erac234

263. WHITE, J.L., FLEMING, P.A. (2022) Potential for dietary competition between the threatened black-flanked rock-wallaby and sympatric western grey kangaroo. Australian Mammalogy, **44,** 243-255. 10.1071/AM20049

264. WHITFIELD, A.K., ABLE, K.W., BLABER, S.J.M., ELLIOTT, M., FRANCO, A., HARRISON, T.D., POTTER, I.C., TWEEDLEY, J.R. 2022. Fish assemblages and functional groups. *Fish and Fisheries in Estuaries: A Global Perspective.*

265. WIBAWA, A., ASHIK, U.P.M., KUDO, S., ASANO, S., GAO, X., HAYASHI, J.I. (2022) High-Strength formed coke from torrefied biomass and its blend with noncaking coal. Energy and Fuels, **36,** 9121-9132. 10.1021/acs.energyfuels.2c01722

266. WILSON, R.P., REYNOLDS, S.D., POTTS, J.R., REDCLIFFE, J., HOLTON, M., BUXTON, A., ROSE, K., NORMAN, B.M. (2022) Highlighting when animals expend excessive energy for travel using dynamic body acceleration. iScience, **25**. 10.1016/j.isci.2022.105008

UNDERSIDE OF AN ORB WEAVING SPIDER.
PHOTO KAT SAMBROOKS

267. WOINARSKI, J.C.Z., STOBO-WILSON, A.M., CRAWFORD, H.M., DAWSON, S.J., DICKMAN, C.R., DOHERTY, T.I.M.S., FLEMING, P.A., GARNETT, S.T., GENTLE, M.N., LEGGE, S.M., NEWSOME, T.M., PALMER, R., REES, M.W., RITCHIE, E.G., SPEED, J., STUART, J.M., THOMPSON, E., TURPIN, J., MURPHY, B.P. (2022) Compounding and complementary carnivores: Australian bird species eaten by the introduced European red fox *Vulpes vulpes* and domestic cat *Felis catus*. Bird Conservation International, **32,** 506-522. 10.1017/S0959270921000460

268. WOMERSLEY, F.C., HUMPHRIES, N.E., QUEIROZ, N., VEDOR, M., DA COSTA, I., FURTADO, M., TYMINSKI, J.P., ABRANTES, K., ARAUJO, G., BACH, S.S., BARNETT, A., BERUMEN, M.L., LION, S.B., BRAUN, C.D., CLINGHAM, E., COCHRAN, J.E.M., DE LA PARRA, R., DIAMANT, S., DOVE, A.D.M., DUDGEON, C.L., ERDMANN, M.V., ESPINOZA, E., FITZPATRICK, R., CANO, J.G., GREEN, J.R., GUZMAN, H.M., HARDENSTINE, R., HASAN, A., HAZIN, F.H.V., HEARN, A.R., HUETER, R.E., JAIDAH, M.Y., LABAJA, J., LADINO, F., MACENA, B.C.L., MORRIS, J.J., NORMAN, B.M., PEÑAHERRERA-PALMA, C., PIERCE, S.J., QUINTERO, L.M., RAMÍREZ-MACÍAS, D., REYNOLDS, S.D., RICHARDSON, A.J., ROBINSON, D.P., ROHNER, C.A., ROWAT, D.R.L., SHEAVES, M., SHIVJI, M.S., SIANIPAR, A.B., SKOMAL, G.B., SOLER, G., SYAKURACHMAN, I., THORROLD, S.R., WEBB, D.H., WETHERBEE, B.M., WHITE, T.D., CLAVELLE, T., KROODSMA, D.A., THUMS, M., FERREIRA, L.C., MEEKAN, M.G., ARROWSMITH, L.M., LESTER, E.K., MEYERS, M.M., PEEL, L.R., SEQUEIRA, A.M.M., EGUÍLUZ, V.M., DUARTE, C.M., SIMS, D.W. (2022) Global collision-risk hotspots of marine traffic and the world's largest fish, the whale shark. Proceedings of the National Academy of Sciences of the United States of America, **119**. 10.1073/pnas.2117440119

269. WOOLASTON, K., NAY, Z., BAKER, M.L., BROCKETT, C., BRUCE, M., DEGELING, C., GILBERT, J., JACKSON, B., JOHNSON, H., PEEL, A., SAHIBZADA, S., OSKAM, C., HEWITT, C.L. (2022) An argument for pandemic risk management using a multidisciplinary One Health approach to governance: an Australian case study. Globalization and Health, **18**. 10.1186/s12992-022-00850-4

270. WOOLLEY, L.D., PILMER, L.W., STEPHENS, F.J., LIM, Z.X., ARTHUR, P.G., GHOLIPOURKANANI, H., PARTRIDGE, G.J. (2022) The effect of hydrogen peroxide concentration and water temperature on yellowtail kingfish *Seriola lalandi* in a repeated bathing treatment. Aquaculture, **560**. 10.1016/j.aquaculture.2022.738545

271. XIE, D., CHEN, L., LIU, L., CHEN, L., WANG, H. (2022) Actuators and sensors for application in agricultural robots: A review. Machines, **10**. 10.3390/machines10100913

272. YANG, G., HU, D., XIA, F., YANG, C., LIU, Y., HE, X., SHPOTYUK, Y., CHEN, H., GAO, Y. (2022a) Doping sodium tungsten Bronze-Like (Na5W14O44) Near-Infrared shielding functional units in bulk borosilicate glasses for Energy-Saving window applications. ACS Applied Materials and Interfaces, **14,** 32206-32217. 10.1021/acsami.2c03640

273. YANG, G., HU, D., XIA, F., YANG, C., LIU, Y., HE, X., SHPOTYUK, Y., CHEN, H., GAO, Y. (2022b) Erratum: Doping sodium tungsten Bronze-Like (Na5W14O44) Near-Infrared shielding functional units in bulk borosilicate glasses for Energy-Saving window applications (ACS Appl. Mater. Interfaces (2022) 14: 28 (32206-32217) DOI: 10.1021/acsami.2c03640). ACS Applied Materials and Interfaces, **14,** 45078. 10.1021/acsami.2c16560

274. YANG, G., YANG, C., XIA, F., HU, D., BRUGGER, J., ETSCHMANN, B.E., HAMILTON, J., CHEN, H., GAO, Y. (2022c) Energy-saving glasses based on sodium tungsten bronze-like (Na5W14O44) functional units: Facile synthesis, NIR-shielding performance, and formation mechanism. Ceramics International, **48,** 21141-21150. 10.1016/j.ceramint.2022.04.005

275. YAO, L.Q., KWOK, S.W.H., TAN, J.Y.B., WANG, T., LIU, X.L., BRESSINGTON, D., CHEN, S.L., HUANG, H.Q. (2022) The effect of an evidence-based Tai chi intervention on the fatigue-sleep disturbance-depression symptom cluster in breast cancer patients: A preliminary randomised controlled trial. European Journal of Oncology Nursing, **61**. 10.1016/j.ejon.2022.102202

276. YEAP, L., WARREN, K.S., BOUTEN, W., VAUGHAN-HIGGINS, R., JACKSON, B., RILEY, K., RYCKEN, S., SHEPHARD, J.M. (2022) Application of tri-axial accelerometer data to the interpretation of movement and behaviour of threatened black cockatoos. Wildlife Research, **49,** 100-110. 10.1071/WR20073

277. YEHIA, N., ERFAN, A.M., ADEL, A., EL-TAYEB, A., HASSAN, W.M.M., SAMY, A., ABD EL-HACK, M.E., EL-SAADONY, M.T., EL-TARABILY, K.A., AHMED, K.A. (2022) Pathogenicity of three genetically distinct and highly pathogenic Egyptian H5N8 avian influenza viruses in chickens. Poultry Science, **101**. 10.1016/j.psj.2021.101662

278. ZABERMAWI, N.M., ALSULAIMANY, F.A.S., EL-SAADONY, M.T., EL-TARABILY, K.A. (2022) New eco-friendly trends to produce biofuel and bioenergy from microorganisms: An updated review. Saudi Journal of Biological Sciences. 10.1016/j.sjbs.2022.02.024

279. ZAHID, S., OSKIERSKI, H.C., OLUWOYE, I., BRAND, H.E.A., XIA, F., SENANAYAKE, G., ALTARAWNEH, M., DLUGOGORSKI, B.Z. (2022) Kinetics of antigorite dehydroxylation for CO2 sequestration. Minerals Engineering, **184**. 10.1016/j.mineng.2022.107630

280. ZARCO-PERELLO, S., FAIRCLOUGH, D., DOWLING, C., DIBATTISTA, J., AUSTIN, R., WERNBERG, T., TAYLOR, B. (2022) Maximization of fitness by phenological and phenotypic plasticity in range expanding rabbitfishes (*Siganidae*). Journal of Animal Ecology, **91,** 1666-1678. 10.1111/1365-2656.13739

281. ZHANG, L., DU, Y., XIA, H., XIA, F., YANG, G., GAO, Y. (2022a) HPC-PAA hydrogel smart windows with and without Cs0.32WO3: High solar modulation ability and luminous transmittance. Ceramics International, **48,** 37122-37131. 10.1016/j.ceramint.2022.08.288

282. ZHANG, X., WANG, H., SONG, J., HE, S., SUN, C. (2022b) Co-Design of adaptive event generator and asynchronous fault detection filter for Markov jump systems via genetic algorithm. IEEE Transactions on Cybernetics, 1-10. 10.1109/TCYB.2022.3170110

283. ZHU, Q., MAN, Z., CAO, Z., ZHENG, J., WANG, H. (2022) Parameter estimation for robotic manipulator systems. Machines, **10**. 10.3390/machines10050392

Get involved with the Harry Butler Institute

ANDRE DESOUZA AND NICKY BENNETT RUNNING THE BEACH CLEAN UP.
PHOTO HBI

The Harry Butler Institute conducts research proving that the needs of community, human development and biodiversity can co-exist. As an institute, we are always looking to further our research and expand our collaborations with business and communities in aid of best-practice translational research.

There are many ways you can get involved with the Harry Butler Institute, whether that's as a collaborator, research student or supporter.

Become a research student

Honours and PhD research projects provide the opportunity for students to further their careers while conducting their own research alongside world leading experts, that contributes to the continuation of Harry Butler's outstanding environmental outcomes.

Prospective honours students can find more information at **https://www.murdoch.edu.au/study/study-levels/honours**

Prospective PhD candidates can explore our projects and research leaders on the HBI website to find a suitable project and supervisor **https://www.murdoch.edu.au/research/hbi**

Partner with us

Contact the Harry Butler Institute to enquire about partnering or collaborating on a research or development project. Email us at **hbi@murdoch.edu.au**.

Contact us

The HBI can be contacted at **HBI@murdoch.edu.au**

Our office is located at:

Building 390, West Wing
Murdoch University
90 South St
Murdoch, Western Australia

Follow our updates on LinkedIn at **www.linkedin.com/company/harry-butler-institute**

Stay up to date with our news and events by joining our mailing list: **https://mailchi.mp/146ad54d63f5/sign-up-for-hbi-news-and-events**

murdoch.edu.au/research/hbi


Research that helps
the most vulnerable.

PHOTO BARROW ISLAND, ZOHARA SCOTT

Contact us

For more information:
e: hbi@murdoch.edu.au

murdoch.edu.au/research/hbi

CRICOS Provider Code: 00125J

Murdoch University | Harry Butler Institute