



WESTERN AUSTRALIAN
MARINE SCIENCE
INSTITUTION

SHARK BAY (GATHAAGUDU)

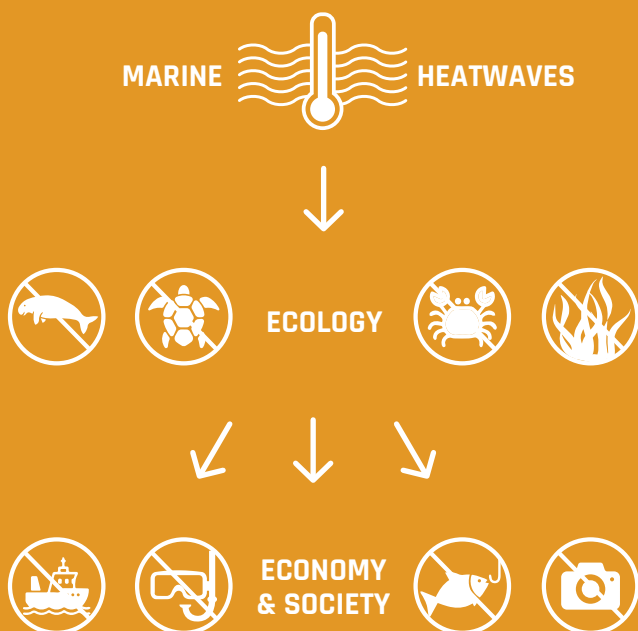
A Science Focus for a Better Future



SHARK BAY UNDER THREAT

Scientists throughout Western Australia and the world have been rallying to raise the alarm about the demise of Shark Bay (Gathaagudu), which has been experiencing rapid negative environmental changes since an extreme marine heatwave in 2011.

The frequency and duration of marine heatwaves is increasing, and this has subsequent impacts to the base of the food web, the health of the ecosystem and, in turn, the economy, Indigenous culture and livelihoods. While climate change is impacting the rest of the WA coastline, the impacts to Shark Bay are distinctive.



A schematic showing the risks of losing the ecological, economic and social values of Shark Bay from marine heatwaves.



AT A GLANCE

Shark Bay is unique on a global scale with an abundance of remarkable natural values. It is home to one of the largest and most diverse seagrass meadows in the world, the largest dugong population globally, and is one of only two marine locations in the world where you can find Earth's oldest living lifeforms – stromatolites.

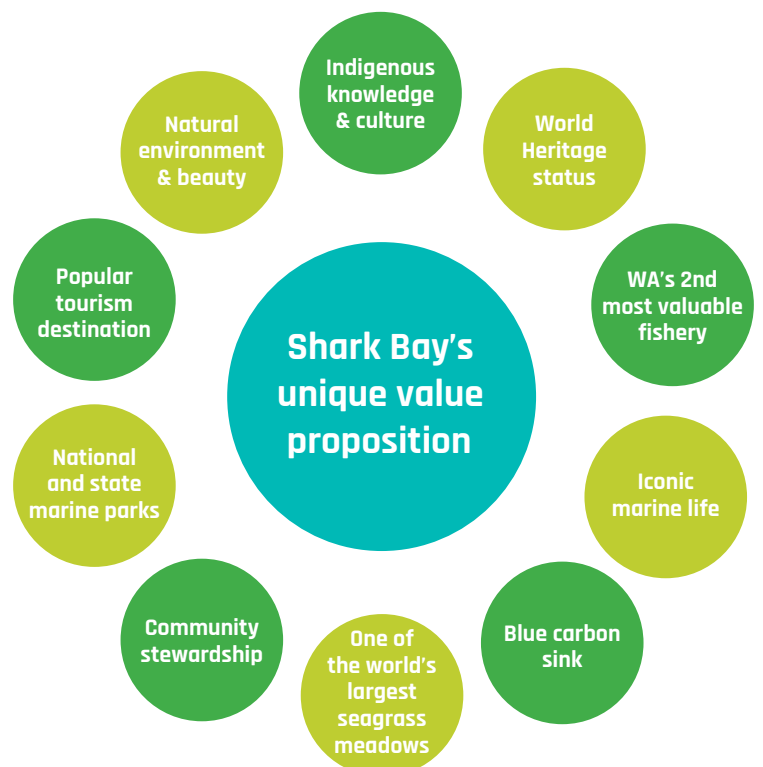
The region is vitally important to the WA community. It is home to the 2nd most valuable commercial fishery in WA (Shark Bay Prawns, Scallops, Blue Swimmer Crabs). It is a tourism hotspot with natural wilderness values and a popular recreational fishing destination. It is home to terrestrial and marine parks, a culturally rich sea country and a globally important blue carbon sink.

As a World Heritage Area, Shark Bay has exceptional natural significance and is one of only a handful of World Heritage sites that meets all four natural criteria required for listing.

Climate change is the biggest threat facing Shark Bay, and a lack of focus on the science required for better management will do little to alleviate the threats from climate change and other anthropogenic activities.

We need to build community resilience and foster regional prosperity in Shark Bay. The local community's way of life revolves around key activities that rely on the natural values and ecological function of Shark Bay. It is vital that we address these challenges with well-informed research-based decision making in order to retain the values that afforded Shark Bay its World Heritage status in the first place.

The WAMSI Shark Bay Science Plan is a groundbreaking, end-user driven plan that sets the benchmark for collaborative science.



WAMSI SHARK BAY SCIENCE PLAN

THE STORY SO FAR

Stakeholders, including Traditional Owners, government, industry, community, managers and researchers, have approached WAMSI to coordinate the development of this science plan.

WAMSI and stakeholders already understand the present status, key threats and the science needed to improve knowledge and management of Shark Bay.

There is a strong call for collaboration among disciplines and institutions to identify and address priority research areas that can support integrated management decisions.

The WAMSI Shark Bay Science Plan links to state, national and global priorities:

- WA State Government Priorities: a strong economy, a bright future, a liveable environment, Aboriginal wellbeing and regional prosperity.
- As a World Heritage Listed area, Australia has an obligation under the World Heritage Convention, to protect and conserve Shark Bay for future generations. If necessary, Australia is also required to rehabilitate its World Heritage values.
- Blueprint for Marine Science 2050: ocean and climate change, blue economy, regional cumulative impacts, Traditional Owner participation, social engagement, education and capacity, and data analytics.
- National Environmental Science Programme (NESP) Marine and Coastal Hub: threatened and migratory species and ecological communities, protected places and climate adaptation achieved with Indigenous partnerships.
- United Nations Decade of Ocean Science for Sustainable Development (2021–2030) goals: protect and restore ecosystems and biodiversity, develop a sustainable and equitable ocean economy, unlock ocean-based solutions to climate change, increase community resilience to ocean hazards, skills, knowledge and technology for all, change humanity's relationship with the ocean.

2011

A workshop resulting in a special journal issue on 'Science for the management of subtropical embayments: examples from Shark Bay and Florida Bay'

2018

A workshop on 'Adapting to ecosystem change in the Shark Bay World Heritage Site' with 70 science and industry experts
– Climate Vulnerability Index (CVI) workshops carrying out rapid assessments of the Shark Bay World Heritage Area

2019

A WAMSI Malgana workshop with Rangers, Elders and Malgana Aboriginal Corporation representatives
– Community interviews to better understand the views and values of the Shark Bay community

2020

An extensive literature review on the environmental, social and economic values
– Malgana Voices Survey to capture and prioritise knowledge gaps
– Survey of 219 stakeholders to identify scientific knowledge gaps of most importance

2022

Development of the WAMSI Shark Bay Science Plan

WHAT ARE THE **BENEFITS** OF FUNDING A SCIENCE PLAN FOR SHARK BAY?

The opportunities afforded by investing in Shark Bay's future are significant to the broader WA community. By undertaking science that will help sustain the Outstanding Universal Values for future generations, we will build capacity and sustainable livelihoods through partnerships with Traditional Owners, improve predictions and management responses for fisheries to ensure economic survival during extreme climatic events, generate new opportunities for economic growth that can help sustain a healthy marine ecosystem, and increase community driven environmental stewardship.

Improving community resilience and regional prosperity is one of the priorities of the WA Government, and protecting and promoting Shark Bay's World Heritage status nationally and worldwide is a priority of the Australian Government.

The pressures facing Shark Bay are significant and real, and the science plan provides opportunities to create a more resilient, sustainable region – a model for fighting back against climate change globally.

WHAT ARE THE **RISKS** OF NOT FUNDING A SCIENCE PLAN FOR SHARK BAY?

By not investing in priority research on Shark Bay, there is a risk of widespread loss of key ecological values, such as fishes, seagrass, megafauna and stromatolites, which will have flow on effects throughout the community and the state economy.

First and foremost, if key ecological values are lost in Shark Bay, then the World Heritage listing could become threatened. Economic sustainability is at risk through loss of tourism and fisheries, particularly WA's second most valuable commercial fishery which relies on healthy seagrass meadows and water quality. Lack of support for a science plan in Shark Bay will result in a critical blow to all the scientific and stakeholder efforts that have so far been done without significant investment.

Much of the groundwork has been done. Now we need to act fast to invest in better science to make better decisions.

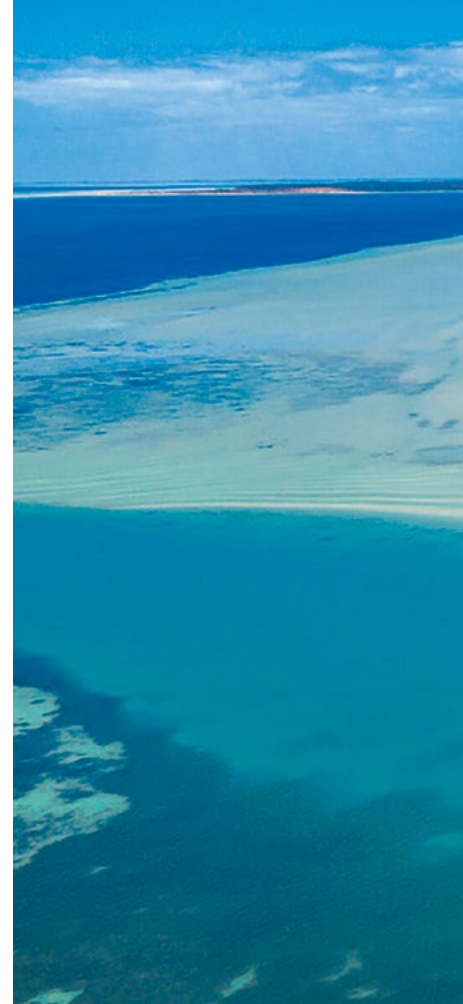
SUPPORT A BETTER FUTURE FOR SHARK BAY

WAMSI seeks your attention to address the serious pressures and challenges threatening Shark Bay's World Heritage status.

To tackle the most important end-user driven knowledge gaps, and build resilience in Shark Bay, it will require a large-scale strategic research program over the next five years.

Funding a science plan in Shark Bay will allow leveraging of further funding through national programs such as Marine and Coastal NESP, from industry and NGOs, international scientific research funding and our own ARC funding sources. Every dollar spent has the potential to grow 2–3-fold across the life of the science plan.

Bold action must be taken now to counteract the threats that could ultimately jeopardise Shark Bay's status as a World Heritage Area. The WAMSI Shark Bay Science Plan will help to create a brighter, more sustainable future for this world-class destination.



Images

Front cover (top–bottom): Australia’s Coral Coast; *Posidonia australis* – credit Rachel Austin; Welcome sign – credit Alicia Sutton; Fishing vessels – credit Matt Watson SMC.

Back cover (top–bottom): Stromatolites – credit WA Department of Biodiversity, Conservation and Attractions; Zuytdorp cliffs – credit DBCA; Australia’s Coral Coast; Tourists.

Inside: Big Lagoon – credit Shark Bay World Heritage Trust.

Contact Details

T (61 8) 6488 4570

E info@wamsi.org.au

Western Australian Marine Science Institution

The University of Western Australia

Fairway Entrance 4, Crawley WA 6009

www.wamsi.org.au

