

Gulfview allows users to access spatially-explicit socio-ecological information about Spencer Gulf. It brings together regional information on environmental characteristics, ecological assets, human activities, management arrangements and socio-economic values to better guide policy, decision-making and management in the region.

Research Project:
Socio-ecological assessment of the ecosystems, industries and communities of Spencer Gulf

Project partners:



Flinders UNIVERSITY
ADELAIDE • AUSTRALIA



University of South Australia



THE UNIVERSITY of ADELAIDE



Co-funded by:



Critical information that would inform new developments in the Spencer Gulf is held across multiple databases and organisations and is often difficult to find and navigate. New developments have been delayed and new policies have not been implemented because of these challenges.

Gulfview is designed to overcome these challenges, bringing all the available social, economic and environmental information for the Spencer Gulf together in one place. It allows users to generate maps of individual ecological and economic variables and set selection criteria for multiple variable to identify locations that may be suitable for a range of activities.

Gulfview has helped fill a decision-making capability gap estimated to cost the state hundreds of millions of dollars in missed economic opportunities every year.

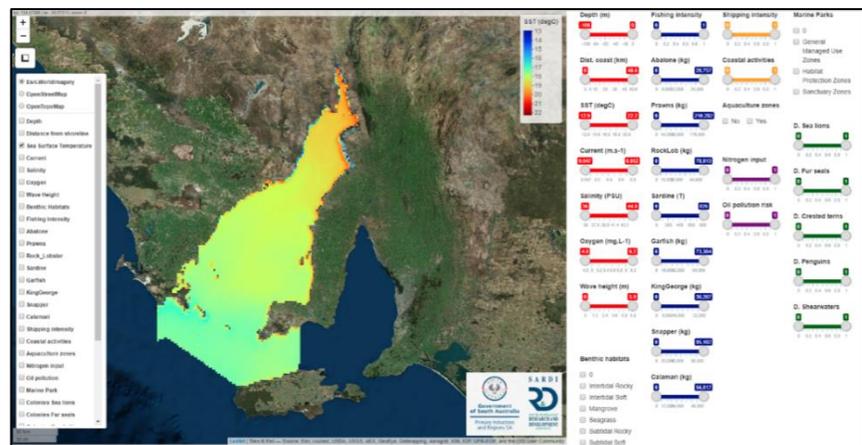
SPENCER GULF

Spencer Gulf is home to many important marine ecosystems, a thriving ecotourism sector, and is the gateway for South Australia's (SA) agriculture, mining and energy sectors. It also produces about half of SA's seafood. Marine activities in the gulf are managed on a sector-by-sector basis and there is often conflict between sectors with little or no consideration to how different activities or users will interact or their cumulative impacts.

ENVIRONMENTAL CHARACTERISTICS

Gulfview integrates information on a range of environmental variables including:

- Depth
- Distance from shoreline
- Sea surface temperature
- Salinity
- Current speed
- Dissolved oxygen
- Wave height
- Benthic habitats



Example: Sea Surface Temperature

ECOLOGY

Gulfview identifies the waters within the South Australian Marine Parks Network Zoning which is dedicated to conservation the Marine Parks Act 2007. It also highlights internal zones within the park including general managed use zones, habitat protection zones and sanctuary zones.

It also includes the spatial distribution of five marine predators:

- Australian sea lions *Neophoca cinerea*
- Long-nosed fur seals *Arctocephalus forsteri*
- Little penguins *Eudyptula minor*
- Crested terns *Thalasseus bergii*
- Short-tailed shearwaters *Puffinus tenuirostris*

COMMERCIAL FISHING AND HUMAN ACTIVITIES

Commercial fishing data (average total catch) is included for:

Abalone Prawns Rock lobster Sardine Garfish King George whiting Snapper Calamari

Fishing intensity is also included. This was calculated by summing the total fishing effort per spatial block and re-scaling the values between 0 (no fishing activity) and 1 (high fishing activity). Similarly, shipping intensity was included by summing the number of voyages of commercial vessels (excluding fishing vessels) per year per grid cell. This data was re-scaled to give values between 0 (no shipping activity) and 1 (high shipping activity).

Coastal activities were mapped based on land-use and coastal population and rescaled between 0 and 1, where 1 is high coastal activity. *Gulfview* also includes the location of approved aquaculture zones issued under the Aquaculture Act 2001.

POLLUTION

Nitrogen input is the main pollution data within *Gulfview*, with three point-sources in the region:

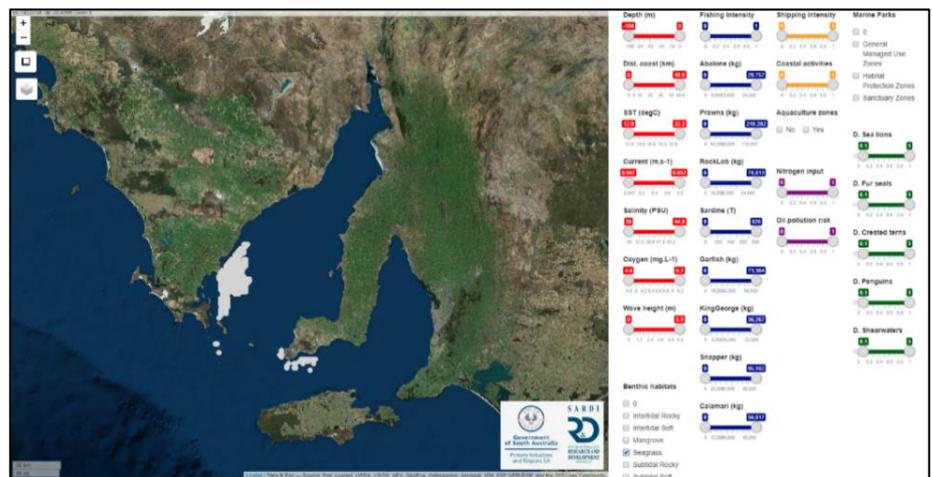
- Wastewater treatment plants at Port Lincoln, Port Augusta (east) and Port Pirie, the power station at Port Augusta and the steelworks at Whyalla.
- Onshore aquaculture operations with licenses that allow discharge into the environment.
- Inputs from stormwater and run-off into rivers.

These were mapped separately and scaled between 0 and 1 before being combined to represent relative threat from point source inputs across the Gulf. *Gulfview* also includes oil pollution risk data, which is based on commercial shipping data and modelled recreational boat use and port locations.

PUTTING IT ALL TOGETHER

Gulfview users can see individual maps of each of the variables we've listed, but its power comes when spatial information is needed on a combination of variables. If users select a combination of variables, *Gulfview* presents a map that only highlights areas that satisfy the selected criteria. In this way developers can look for best place for a new port or mining venture, community groups can evaluate the impact of a proposed development or dredging site, and the aquaculture industry can input specific criteria to find their next production venue.

Example: Delineation of areas of ecological significance in SG based on the overlay of distribution at sea of five species of marine predators and seagrass benthic habitats



NEXT STEPS

Gulfview is already being used by several aquaculture sectors and we expect its adoption to increase as it is more widely promoted. The software, similar to *AgInsight* South Australia, has helped fill a decision-making capability gap estimated to cost the state hundreds of millions of dollars in missed economic opportunities every year, including delays in major projects such as mines, ports, and dredging. It has already been used by the finfish and algal aquaculture sectors to help identify suitable locations for new production sites in the gulf and we think it should be made available to other marine stakeholders. We recommend establishing a new platform “Oceanview South Australia” to cover all State and Commonwealth waters off South Australia. This would complement *AgInsight* South Australia and help drive sustainable investment within the State.

MORE INFORMATION

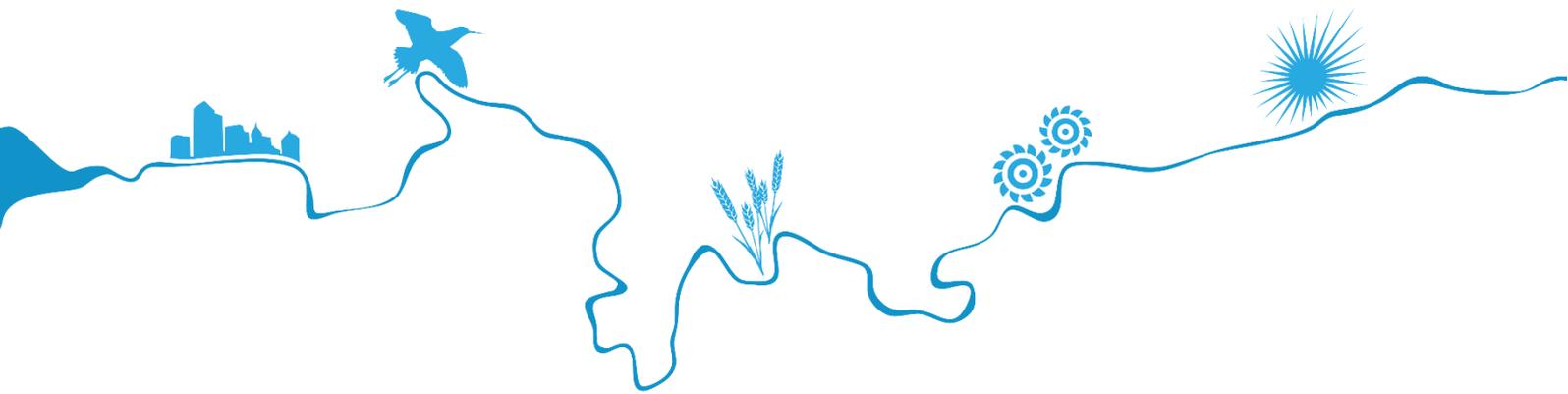
Further information about *Gulfview* can be found in the following technical report located at www.goyderinstitute.org/publications/technical-reports/:

- Bailleul, F. and Ward, T.M. (2019) [Socio-ecological assessment of the ecosystems, industries and communities of Spencer Gulf: ‘Gulfview’ interactive platform](#). Goyder Institute for Water Research Technical Report Series No. 19/02, Adelaide, South Australia. ISSN: 1839-2725



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