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

Benefits of a more integrated approach to management

Tim Ward April 2019 Potential social, economic and ecological indicators for integrated ecosystem assessment of Spencer Gulf

> Jason E. Tanner, Fred Bailleul, Simon Bryars, Mark Doubell, Nicole Foster, Sam Gaylard, Bronwyn M. Gillanders, Simon Goldsworthy, Charlie Huveneers, Charles James, Alice R. Jones, Jacob Maher, Meliss Nursey-Bray, Paul van Ruth and Tim M. Ward

Goyder Institute for Water Research Technical Report Series No. 19/32

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Socio-ecological assessment of the ecosystems, industries and communities of Spencer Gulf: 'Gulfview' interactive platform

Frédéric Bailleul, Tim M. Ward

Goyder Institute for Water Research Technical Report Series No. 19/02



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The primary organisations that undertook the socio-ecological assessment of the ecosystems, industries and communities of Spencer Gulf were:



Government of South Australia

Primary Industries and Regions SA









Government of South Australia

Department for Environment and Water





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.

Tanner, J.E., Bailleul, F., Bryars, S., Doubell, M., Foster, N., Gaylard, S., Gillanders, B.M., Goldsworthy, S., Huveneers, C., James, C., Jones, A.R., Maher, J., Nursey-Bray, M., van Ruth, P. and Ward, T.M. (2019) Potential social, economic and ecological indicators for integrated ecosystem assessment of Spencer Gulf. Goyder Institute for Water Research Technical Report Series No. 19/32, Adelaide, South Australia.

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Why Spencer Gulf?

- increasingly crowded marine space
- gateway for SA's agriculture, mining and energy sectors
- produces approximately half of SA's seafood
- recreational hotspot and growing ecotourism
- important conservation values
- nationally recognised case-study for integrated management
- process needed to resolve conflict among user groups (fishers, conservation, miners, desalination plants)
- need a more efficient and transparent decision-making process





What conflicts?

Study backs prawn fishermen fears over proposed BHP Billiton desal plant

SCIENCE REPORTER CLARE PEDDIE ADELAIDENOW JULY 06, 2011 1:54PM

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Barry Evans and review team spokesman Dr Gary Morgan addressing the media. Picture: Simon Cross

SCIENCE has backed the fears of prawn fishermen over the proposed desalination plant at Point Lowly.



What decisions?

MABC Science

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News in Science In Depth

What delays?

Latest News in Science News Ana

News in Science.

Big cuttlefish 'at risk' from desalination

Anna Salleh ABC

AND THINK THE MARINE

LIFE WON'T SUFFER

The largest species of cuttlefish in the world is at risk from a huge desalination plant being proposed in South Australia, say researchers.

Scientists turn on BHP tidal plan for Upper Spencer Gulf



SCIENTISTS are powerless to prevent the pollution of the Spencer Gulf by tox waste from Point Lowly.

The case for BHP Billiton's desalination plant is made in hefty documents such as the origina Environmental Impact Statement and recent Supplementary EIS. The company trawled through existing literature and commissioned new work to fill the gaps.

Battle for SA's fishbowl

This story was published: 5 YEARS AGO APRIL 28, 2010 12:32AM

FISHING industry leaders have threatened legal action over the proposed Spencer Gulf desalination plant amid warnings the project will ruin the state's international reputation for quality fresh food.

Celebrity cooking identities Simon Bryant, Maggie Beer and Michael Angelakis yesterday threw their support behind a growing campaign against BHP Billiton's planned Point Lowly plant.

The plant is intended to supply water for the multi-billion-dollar Olympic Dam mine expansion, but critics argue high-salt wastewater will devastate fragile Gulf marine life including lucrative fishing stocks.

Wildcatch Fisheries SA chairman Gary Morgan said the region's \$500 million per year industry as well as South Australia's

"Keep the Gulf Clean" campaign spokesman Greg Palmer

(left) with celebrity ambassadors, Michael Angelakis, Maggie Beer and Simon Bryant at a cooking demonstration in Rundle Mall today Picture: Naomi Jellicoe Source: AdelaideNov

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Updated: 23 October, 2013

BHP Desalination Plant: A Threat of Olympic Proportions

One of the world's most spectacular natural phenomena is at risk of being wiped out, with BHP Billiton planning to build a desalination plant at Point Lowly in South Australia's Upper Spencer Gulf.



ONE DOES NOT SIMPLY BUILD A DESAL PLANT

SAVE THIS STORY

Management of SA's marine resources, industries and ecological assets is sector-based





Legislative framework for Spencer Gulf

ACTS	Fishe	ries a	nd Parl	٢S	Environment Protection				Resource Management		Transpor t	Culture				
OBJECTIVES	Fisheries	Aquaculture	Marine Parks	National Parks	Environment Protection	Coast Protection	Prevention of pollution from Ships	Sea dumping	Climate Change & Greenhouse Emissions Reduction	Natural Resources Management	Petroleum and Geothermal Energy	Offshore Minerals	Harbors and Navigation	Native Title	Historic Shipwrecks	KEY ✓ ✓✓ ✓✓
Conservation	4 4	~			~				√ √	~ ~~						
Conservation - biodiversity	44		111	✓	4				4 4	~ ~~		1 1				
Conservation - habitat	11		111	11	~	~ ~~	✓	~		~ ~~	~	11	44			
Economic	√ √√	✓			√√√				$\checkmark\checkmark$	√√√ .	$\checkmark\checkmark$		$\checkmark \checkmark \checkmark$			
Social & cultural	~ ~~	44	~ ~~	~ ~	√ √√	~ ~ ~				~ ~	~ ~ ~		~	~ ~	~ ~	
Institutional governance	~ ~~	~	~ ~~		~ ~~	44		~	~	~ ~~	~ ~~		~ ~~			2
Research & education	44	4 4	1			11			111	1						Begg



Begg et al. (2015)



Changing landscape of management nationally and internationally





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Expanding list of objectives ecosystem services/values)

Common framework for consideration of activities or scenarios

		Fisheries	Aquaculture	Transport	Energy	Other				
	Ecological - -									
	- Economic							Scenario A	Scenario B	Scenario C
	- Social - -					Ecole - - -	ogical			
All • •	 Allows: Consideration of multiple objectives Comparison of scenarios Examination of trade-offs 						nomic al			
 Evaluation of cumulative impacts 									Begg	et al. (2015)



Structured decision-making framework

Scenario A Scenario B Scenario C Ecological Imagenie Coptions Imagenie Coptions Economic Imagenie Coptions Imagenie Coptions Social Imagenie Coptions Imagenie Coptions

Management options

Stephenson et al. (2017)



Practical framework for more integrated approach to management



Stephenson et al. (2019)



What could it look like in SA?

NSW Marine Estate Management Authority?



US and European approach: Integrated Ecosystem Assessments





Socio-ecological ecosystem of the California Current







CALIFORNIA CURRENT ECOSYSTEM STATUS REPORT, 2020

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Demand Driven Research – Research Informing Policy

2020 CCIEA Ecosystem Status Report Highlights



SPENCER GULF ECOSYSTEM STATUS REPORT, 2019



Discussion and Conclusions

- Numerous examples in SA and Spencer Gulf of conflicts among users (Olympic Dam desalination plant, marine parks)
- Similar problems nationally (NSW) and internationally (USA, Europe)
- Structured decision-making processes allow trade-offs between sectors and/or social, economic and ecological benefits to be evaluated
- NSW Marine Estate Management Authority example of structural reform to deliver community well being (5 step iterative process to measure success)
- Integrated Ecosystem Assessments international best practice to inform integrated management of marine systems

