

## Profile

# A view to the future of Australia's fisheries

According to the Australian winner of 2003's prestigious Japan Prize, the path forward for our national fisheries is in improved data, ecosystem research, cutting-edge management policies, and a scheme that rewards sustainable practice. Dr Keith Sainsbury spoke to Wendy Pyper about his optimistic vision.

In the days before underwater cameras, CSIRO Marine Research fisheries ecologist, Dr Keith Sainsbury, spent hours diving on trawl nets to assess their impact on marine habitats. It was an exciting time for the young scientist, with hundreds of marine species to discover and a vast array of habitats to explore.

In the late 1970s, exploration cruises across northern Australia, Western Australia's North West Shelf, the Kimberley Coast, and the Timor Sea, led to Sainsbury's first book, *Continental Shelf Fishes of Northern and North-Western Australia*. The book described some 800 fish species, many new to science, and one, the shovel-nosed ray (*Rhinobatos sainsburyi*), bears his moniker.

Sainsbury and his colleagues went on to show that trawling had a real impact on seabed habitats,

causing changes to the productivity of key fish species and species composition. The team subsequently identified

and tested management approaches that would allow fisheries to operate while the supporting ecosystem was protected. Some of these still play a key role in fisheries management, and have evolved into an approach known as 'Management Strategy Evaluation', or MSE.

In December 2003, Sainsbury was recognised by the Science and Technology Foundation of Japan for his contribution to the creation of 'sustainable food production systems that are harmonious with the natural environment' and that 'promote ecosystem conservation and management'. Sainsbury acknowledges the support of his colleagues and CSIRO, which allowed him

to investigate questions that, at the time, were not 'at the forefront of fisheries regulators' minds'. He is also thrilled that the award has raised the international profile of marine and fisheries sustainability issues and given him an opportunity to highlight the work that has been done and that needs to be done.

'The awarding of a Japan Prize in the category 'food production based on ecosystem concepts' is testament to the rapidly increasing importance of ecologically sustainable development of the oceans,' Sainsbury says.

'The global wild fish catch has stabilised or decreased, despite the fact we're fishing in more places, and fishing further down the food chain. Yet demand for fish and fish products will increase as the population grows and consumer wealth increases.

'To meet this demand, we need to recover overfished stocks, reduce the ecological impacts of fishing, manage

sustainable fisheries so that they remain that way, and ensure that fisheries on new target species are developed sustainably.'

## Optimism in the face of overfishing

It's a big ask given the dramatic decline in major fish populations reported in the journal *Nature* in May 2003. The study showed that in the past half-century, 90% of some species of large predatory fishes – tuna, swordfish, marlin, cod, halibut, skates and flounder – have disappeared, while 52% of commercial fish populations are fully exploited and 24% are overfished.

In Australia, the Bureau of Rural Sciences (BRS) Department of Agriculture



Fisheries and Forestry's *Fishery Status Report*, for 2002–03, showed that of 70 principal fished species, 16 (23%) were 'overfished' in Commonwealth-managed waters, including orange roughy, southern bluefin tuna, eastern gemfish and school sharks. Threats to coastal and marine ecosystems from development and pollution are also increasing.

However, Sainsbury says the Japan Prize reflects well on Australia's commitment to recovering from past mistakes and preventing a repetition of them in the future. This commitment is supported by a strong marine science base, management arrangements, and policy, which will help guide both national and international fisheries management efforts.

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Dr Keith Sainsbury's determined and respected work has contributed to invaluable international understanding of fisheries management practice, and brought him the 2003 Japan Prize.

**'While our slate is by no means clean, we do have one of the best reputations for fisheries management worldwide.'**

Overfished stocks, such as those of orange roughy, have borne out the truth of early, stark warnings from fisheries scientists.



eries management worldwide. This is thanks to a combination of our science, to the limited entry arrangements initiated in the 1960s and 1970s, and to the management model we have adopted', Sainsbury says.

**Improving marine science**

Australian marine scientists have contributed to the development of many fishery management strategies, which specify a total allowable catch (TAC) and the circumstances under which this catch can be taken. The strategies are guided by assessments of fish stocks based on data from fishing vessel logbooks, independent observers on fishing vessels, and scientific surveys.

Sainsbury says improving the quality and reliability of information that goes into stock-assessment models is one of the chal-

lenges facing Australian fisheries. According to the BRS *Fishery Status Report*: 'Most Commonwealth-managed fisheries have a good, but not ubiquitously well-validated time series of fishery dependent data, and few have fishery independent data.'

The Patagonian toothfish fishery around Macquarie Island, 1500 km south of Tasmania, illustrates a way forward. Here, comprehensive information on fish stocks was available when the fishery opened, thanks to detailed records and samples provided by the fishing industry, verification and additional sampling by observers, and a fish tagging and recapture program initiated by the Australian Antarctic Division (AAD).

Continued collaboration between the

AAD, CSIRO and industry provided quality data for the stock assessment modelling, enabling reliable TACs to be established from the outset, rather than after the fishery had become established. Using MSE, other issues were also accounted for, such as the impacts of trawling on the seabed, other food-chain species and by-catch, and interactions with seabirds and seals. Importantly, research and monitoring of Macquarie Island stocks and ecosystem impacts is targeted and ongoing.

'Successful management strategies use targeted observation or monitoring of the marine ecosystem, and then use that monitoring information to change or adapt

# Profile

management measures or industry activities accordingly,' Sainsbury says.

'Relatively simple feedback strategies of this type, when properly designed and implemented, can reliably give sustainable outcomes, even if there is considerable uncertainty about how the ecosystem works. Strategies can be designed that contain enough of a safety margin, and that allow early correction of mistakes, so that a sustainable outcome is still achieved.'

Sainsbury says the move towards considering other ecosystem components – rather than just the target-species – when developing management strategies is an important step towards a more sustainable future.

'As we explore other parts of the marine ecosystem to cope with the expected increase in demand for fish and fish products, continued research into broader ecosystem interactions will ensure the sustainability of our actions. Research results must then be linked to effective management responses,' he says.

### Solid management policies

To support the sustainable development of fisheries and other marine ecosystem uses, the Australian Government has introduced cutting-edge policies: the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Australia's Oceans Policy.

The EPBC Act seeks to protect the environment and promote ecologically-sustainable development and the conservation of biodiversity. It introduces an

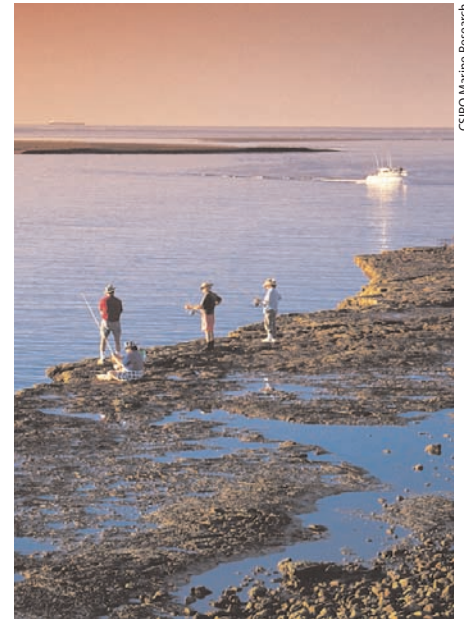
**'We need to look at our fisheries as just one element of the marine environment, and to sustainably manage the combination of all the human uses of the environment'**

assessment and approval process for activities that are likely to have a significant impact on Commonwealth marine areas, nationally threatened species and ecological communities, the marine environment, and internationally protected migratory species. It also requires Australian fish exports and Commonwealth fisheries to be assessed against ecologically-sustainable development guidelines, in order to receive an export permit.

Australia's Oceans Policy takes a broader approach to marine sustainability. Launched in December 1998, the policy will eventually manage 16 million square kilometres of oceans between three and 200 nautical miles from the coast – Australia's 'Exclusive Economic Zone' or EEZ. The policy is being implemented in a series of stages, which will see management plans set up for different regions of the EEZ.

'The Oceans Policy will ensure that the range of marine activities that are being managed individually are sustainable as a whole,' Sainsbury says.

'This will mean that negative interactions or cumulative impacts arising from



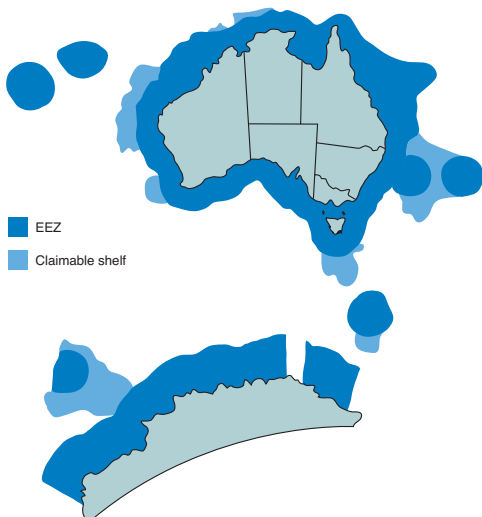
CSIRO Marine Research

According to Sainsbury, multiple uses of key fisheries areas such as those of the North West Shelf will demand a more wholistic management approach if they are to remain sustainable.

different uses of the marine environment, will be accounted for.'

Another of Australia's strengths is the partnership between industry and government for fisheries management, which combines practical solutions with government requirements.

'The approach has more scope for finding win-win outcomes and delivering long-term sustainable development than any other model I've seen,' Sainsbury says.



Australia's diverse fisheries lie within the 'Exclusive Economic Zone' or EEZ, extending 200 nautical miles from the coast of our territories.



CSIRO Marine Research

The rich southern fisheries around Macquarie Island support a complex ecosystem and now ruthlessly sought-after commercial species such as Patagonian toothfish.

### Wholistic management needed

There is increasing realisation that managing individual uses of marine resources separately – such as shipping, tourism and fisheries – is not the way to achieve sustainable industries or ecosystems. There must also be a way to look at the whole picture, and the sustainability of the combination of uses.

The Oceans Policy is one way to tackle integrated management issues. On another scale, however, CSIRO Marine Research and the Western Australian government have applied MSE methods to support integrated and sustainable development of the North West Shelf marine ecosystem, where multiple interests interact.

The project has generated a range of models that look at how different components of the ecosystem work, and the effect of industry activities, the management regulations on each industry, and the ecological and economic results for the system as a whole. In this way, different approaches to industry development and regulation can be examined and compared.

‘We need to look at our fisheries as just one element of the marine environment, and to sustainably manage the combination of all the human uses of the environment – uses in the catchments, on the coasts and in the oceans,’ Sainsbury says.

‘We’ve demonstrated on the North West Shelf that the MSE approach provides the scientific evaluations and support to achieve this.’

### Rewarding sustainability

While Australia implements sustainable practices and policies, the benefits of these initiatives may be reduced or undermined if economic or other rewards are not aligned with sustainable practice. Poaching, polluting and habitat destruction will continue, as long as there is a market for products acquired in this way.

The Marine Stewardship Council (MSC) is one initiative aimed at supporting and rewarding sustainable fisheries. Initially focusing on the European market, the MSC sets sustainability standards by which fisheries can be voluntarily and independently assessed. Fisheries that achieve these standards receive an MSC ‘ecolabel’ – a blue fish – that enables consumers to identify their products as sustainable. Economic benefits can arise through price margins, increased market share, or market access.

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CSIRO Marine Research

**‘Fish is one of the most globally traded products, yet there’s no global standard for sustainability’ says Sainsbury**

**The Western Australian rock lobster, intensely fished for export and local markets, is the world’s first species to be covered by the Marine Stewardship Council’s sustainable fisheries certification and labelling scheme.**

sustainability,’ says Sainsbury, who chairs the Technical Advisory Board of the MSC.

‘Consumers care about fisheries sustainability, but when they buy fish in the shop, they don’t know which fish comes from a sustainable source. I believe if we clearly label things, people will use this information to make a choice.’

The Western Australian rock lobster fishery was one of the early MSC certified fisheries. In Australian supermarkets, the

ecolabel can also be found on New Zealand hoki and Alaskan salmon. Seven fisheries are now certified, 13 are under assessment and over 200 products carry the ecolabel. The MSC recently set up an office in Sydney to establish the initiative in the Asia-Pacific.

‘The MSC is one way of aligning environmental and economic objectives, but the more ways we can find, the easier it will be to have long-term sustainable fisheries that bring the benefits that the fishing industry, society and consumers want,’ Sainsbury says.

For a boy who grew up with a fascination for all things marine, it’s an issue Sainsbury is passionate about pursuing.

‘Fishing is an industry with a long history which, if done properly, is a sustainable source of food, economic and even cultural activity. I want to see it achieve that.’

*Note: Dr Keith Sainsbury is an Australian Fisheries Management Authority board member.*

#### More information:

Australia’s Oceans Policy fact sheet:

<http://www.deh.gov.au/commitments/wssd/resources/pubs/oceans.pdf>

Department of Agriculture, Fisheries and Forestry – Australia: <http://www.afma.gov.au>

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Contact: Dr Keith Sainsbury, 03 6232 5369, [keith.sainsbury@csiro.au](mailto:keith.sainsbury@csiro.au)