

Excellence in marine science  
inspired through collaboration

# MISA

## overview

Marine Innovation SA has significantly boosted South Australia's capability in marine research and its research programs are contributing to the development and sustainability of the State's seafood industry.

MISA is now broadening its horizons to include two new marine ecosystem based programs exploring Gulf St Vincent and Spencer Gulf, and the Great Australian Bight and Bonney Coast systems. These programs will strengthen the State's capacity to optimise and share the use of SA's marine resources while safeguarding its biodiversity and environment.



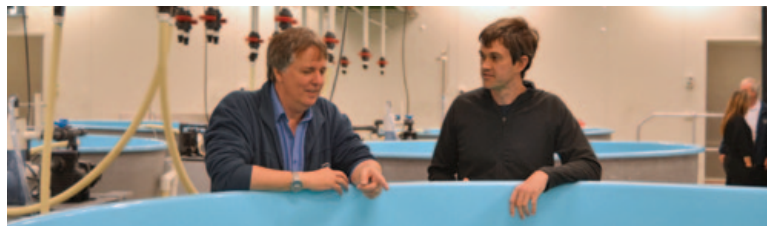
Marine Innovation South Australia (MISA) was established in September 2005 to support the seafood industry's South Australian Seafood Plan 2005-2015 which aims to significantly increase the State's \$800 million (gross food revenue) seafood industry.

MISA, an initiative of the South Australian Government, has drawn together the State's top marine research and development institutions, universities, training centres and the SA seafood industries to help make this happen. Other marine resource users, such as the mining, shipping and tourism industries, will be engaged in the next stage.

MISA's vision is to establish South Australia as an internationally recognised and vibrant centre for marine science, education and ecologically sustainable aquatic industries.

### Major Achievements

MISA has already addressed a number of resource gaps, and expanded current key capabilities and infrastructure to facilitate the industry's growth and sustainability.



### New Expertise

MISA has provided the capacity to support over 30 high level scientists working collaboratively within SARDI Aquatic Sciences, the University of Adelaide, Flinders University, the SA Museum and the Department of Environment and Natural Resources on nearly 80 new or expanded projects. These scientists bring more core capabilities to South Australia in the areas of: \* market science \* product development \* fish health \* biosecurity research \* oceanography \* plankton research \* ecosystem modelling \* nutrition \* genetics \* feed technology \* ecology of large marine vertebrates \* spatial risk analysis.

### New Infrastructure

**South Australian Aquatic Biosecurity Centre (SAABC)** – The management of aquatic pests and fish diseases which threaten our ecosystems, fishing industries, exports and even our lifestyle, is a relatively new area of aquatic research. The SAABC is the only facility in Australia providing aquatic animal health researchers biosecure conditions for the study of aquatic pathogens and pests at a scale that supports meaningful applied research. The \$2.4m facility, funded by the South Australian Government through MISA, is located with the University of Adelaide's new Veterinary Health Centre at Roseworthy Campus, north of Adelaide. The SAABC has immediate access to the adjacent Veterinary Diagnostic laboratories for research projects, and to the expertise of veterinary specialists, while the co-location presents exceptional opportunities to veterinary students in studying aquatic animal health.

**Lincoln Marine Science Centre** – A \$6.59m expansion of the Lincoln Marine Science Centre at Port Lincoln, commissioned in March 2009, delivers significant new research and education capability in regional South Australia through staff based at and visiting the facility.

Research includes understanding key farmed species growing requirements, breeding, rearing, nutrition and health, as well as assessing the feasibility of farming novel species. Research is also

undertaken on aspects to ensure the sustainability of aquaculture and wild fisheries.

The expansion was funded through MISA by the South Australian Government and Flinders University through the Federal Government's Capital Development Pool scheme.

**Southern Australia Integrated Marine Observing System (SAIMOS)** – MISA provided the critical collaborative platform required to secure national funding in 2008 to establish the Southern Australia Integrated Marine Observing System that covers the SA and west Victoria regions. SAIMOS is one of the larger nodes of the national Integrated Marine Observing System (IMOS) which is globally regarded as one of the best marine observing systems in the world.

SAIMOS has established critical data capturing capability using: \* shelf/slope moorings \* automated ocean gliders \* HF ocean RADAR networks \* apex predators capturing physical data \* passive acoustic networks \* biological sampling stations.

SAIMOS infrastructure is now providing unprecedented insights into the role of South Australia's oceans and gulfs on ocean circulation, ecosystems, aquaculture and ultimately seafood production. The information is helping to guide fisheries management, the selection of aquaculture sites and stocking rates, inform the establishment of marine parks, and quantify the impacts of desalination plants, oil and gas exploration, sewage outfalls and potential biosecurity risks.

The SAIMOS infrastructure, funded through the \$180m National Collaborative Infrastructure Strategy, has been established by scientists from SARDI Aquatic Sciences and Flinders University.

**Experimental Pool Farm** – An experimental pool farm located at SARDI Aquatic Sciences, South Australian Aquatic Sciences Centre, West Beach, provides advanced facilities for aquaculture research focussed on feed development, nutrition, product quality and fish husbandry.

# Moving forward

Since 2005, infrastructure and capability has been built to support research across four priority areas:

## Seafood quality and value-adding

Increasing the unit value of South Australian seafood opens significant opportunities for growth in the value of the seafood industry.

This involves the creation of new products and processes, understanding both the domestic and export seafood markets, providing the best quality healthy seafood and responding to consumer needs. These research activities are coordinated across a number of agencies including SARDI, Flinders University's School of Biological Sciences, PIRSA's Shellfish Quality Assurance program and Food SA, and the University of South Australia's Marketing Science Centre, as well as seafood producers and processors.

## Aquaculture Innovation

MISA Aquaculture Innovation is developing new ways to increase South Australia's seafood production by creating new opportunities and improving the operations of existing aquaculture industry sectors.

The research involves: \* nutrition and feed technology \* aquatic animal health and welfare \* genetics, reproduction and biotechnology \* propagation, systems design and animal husbandry \* algal production, biofuels and carbon sequestration.

The main species being researched are: abalone, southern bluefin tuna and yellowtail kingfish, with research also on cockles, mussels, oysters and a range of novel finfish species.

## Ecosystem Services

SA's estuarine and marine waters of interest span southern Australia with many diverse ecosystems including the Lower Lakes and Murray Mouth, SA's unique gulfs, numerous off-shore islands and the Great Australian Bight, which are recognised for their high proportion of endemic fauna and flora. MISA's Ecosystem Services is expanding our understanding of the nature of marine ecosystems and the way they support SA's important fisheries, aquaculture and tourism industries, as well as furthering the conservation and management of South Australia's protected marine mammals, seabirds and fish, and the marine environment in general.



Research areas include: \* ecosystem modelling \* biological and physical oceanography \* marine chemistry \* biogeochemistry \* seagrass ecology \* plankton biology \* ecology of large vertebrates \* ecological monitoring.

## Biosecurity

The management of invasive marine species and fish diseases is of growing importance to safeguard South Australia's often valuable and unique marine species and environment.

MISA biosecurity research covers: \* methods to prevent entry of marine pests and diseases \* management and risk assessment for established pests and diseases \* DNA-based molecular diagnostics to identify pathogens, parasites and marine pests in ballast water \* study of harmful and toxic microalgae \* invertebrate and algal physiology and biology \* fish veterinary science and genetics.

## New Horizons

South Australia's aquatic capability now forms a solid foundation on which to undertake large multi-disciplinary ecosystem research programs, which with appropriate modelling will integrate and analyse a range of current and potential future human impacts on our coastal and offshore regions.

MISA is presently developing two such programs, one focused on Gulf St Vincent and Spencer Gulf, and the other on the Great Australian Bight and Bonney Coast. These programs will capture the data to establish sophisticated tools to help decision makers optimise the use and sharing of the available aquatic resources and safeguard the future of our precious marine ecosystems.

Science, education and innovation  
underpinning our  
communities and industries.

## Collaborations

### Australian Seafood

#### Cooperative Research Centre (CRC)

MISA was instrumental in the establishment of the national Australian Seafood CRC in Adelaide, which has created many opportunities for innovative new research, particularly in the areas of product quality and value-adding, but also aquaculture production in abalone and yellowtail kingfish nutrition and feed development, the breeding and rearing of hatchery produced southern bluefin tuna.

### Food SA

MISA's involvement with Food SA provides valuable insight into manufacturer and consumer demands. Work with Food SA and with the former SA Food Centre has led to valuable new Seafood CRC funded research for industry in responding to consumer demands, understanding the national and international markets, helping industry deliver safe, high quality seafood to premium markets, and developing new seafood products.



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2008 South Australian Science Excellence Awards winner of the  
Constellation SA Excellence in Collaborative Research Award.



Government  
of South Australia



Marine Innovation SA (MISA), an initiative of the South Australian Government, is a partnership between the South Australian Research and Development Institute (SARDI), Flinders University, the University of Adelaide, the South Australian Museum and the SA seafood industry.

Last updated November 2011