

# WAMSI Node 3 - Managing and conserving the marine state: *best practice management and underpinning science*



western australian  
marine science institution

**Dr Chris Simpson**  
**WAMSI Node 3 Leader**  
**Program Leader**  
**Marine Science Program, DEC**

**Dr Kelly Waples**  
**Science Coordinator, Node 3**  
**Marine Science Program, DEC**



Department of  
Environment  
and Conservation

## WAMSI Node 3

### *Managing and Conserving the Marine State: best practice management and underpinning science*

- *Marine Biodiversity assessment and conservation*
- *Develop and apply multiple-use planning tools*
- *Ecosystem-based management for sustainable multiple-use conservation*
- *Bioregional marine planning*

*Kimberley, South Coast, Southwest Coast*

Motivated by current marine conservation framework:

### Multiple use MPA's in WA

# Research – knowledge of values, natural variability, effect of pressures on them and cause-effect models



one metre of the line. Samples of some plants and animals were collected for later identification back on the MV *Sea Lion*, and some were also preserved to form a reference collection.

The percentage cover of different species of seaweed was also recorded at a number of set points along the line. In seagrass meadows, once a census had been taken of large fish swimming across the top of the meadow, a diver swam along the length of the survey line filming a one-metre-wide strip of the meadow using an underwater video camera. This footage will be used to determine the percentage cover of the different species of seagrass. Seagrass samples were also collected from each site to investigate the productivity, or 'health', of the meadow. This information will provide useful comparisons with data from meadows across the south coast, such as those in Two Peoples Bay and around Albany. At each site photographs and video footage were taken of the most visually striking plants and animals. One site, on the western side of Dillon Bay, provided excellent diving and spectacular video footage, including shots of a giant cuttlefish (*Sepia opima*), a huge school of snappers (*Centroberyx lineatus*) and several western blue devils (*Parastichus melanogaris*), a striking fish covered in iridescent blue spots.

#### SWELL AND SURGE

Strong south-easterly winds and heavy swells during the first week of the expedition prevented the team from investigating the limestone reef area along the exposed stretch of coastline east of Hopetoun. It is hoped that this part of the coast can be visited during a future survey. Heavy bottom surge at some of the shallow sites occasionally made working conditions difficult—sometimes it was necessary to hang on to help or rocks to



Top: The CALM-led marine research team preparing to survey a site.

Centre: (left) Reeling up the survey line on completion of sampling. (right) Collecting seagrass samples to estimate productivity.

Left: The survey line crossing a patch of 'cabbage' coral (*Thalassaria* sp.). Photos – Iva Boogard

- Inventories
  - Nature and distributions of the values
- Baselines
  - Natural variability (space and time) of characteristics of the value
- Processes (cause-effect links)
  - Biological, Physical, Chemical
  - Threats
- Prediction
  - E.g. Models: response of natural systems to natural and human-induced pressure (helps to plan management and to develop monitoring parameters)

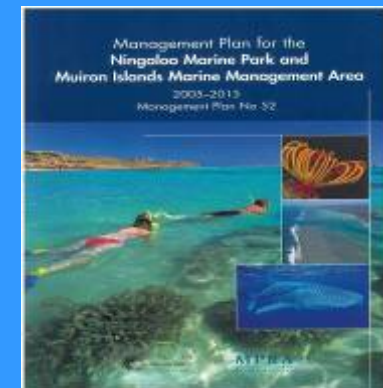
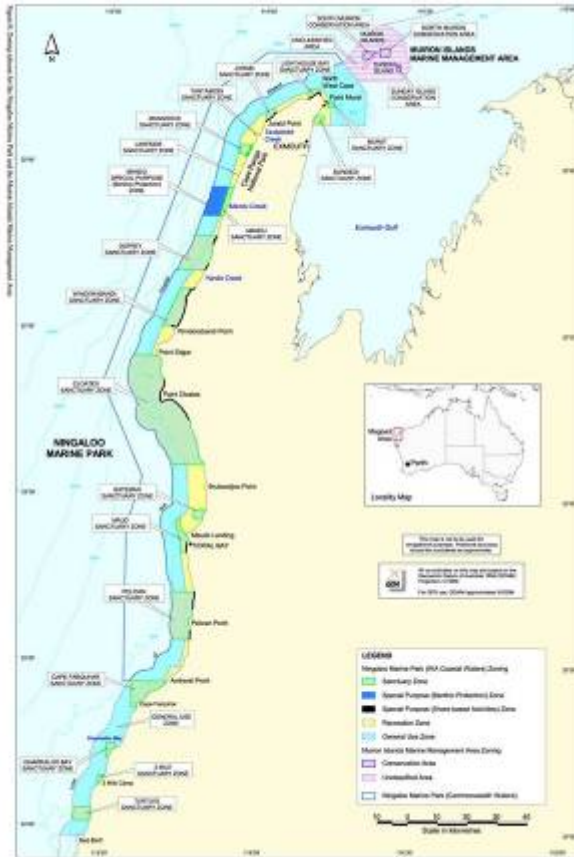
# Node 3 Science Plan derives from:

Premier - 2004 - \$5 million

Improve the scientific underpinning for management of Ningaloo Marine Park

Priority strategies in the Park's management plan

## Ningaloo Research Program



# NODE 3 SCIENCE PLAN

Deep water biodiversity and monitoring protocols

*AIMS*

Biodiversity, human use and management strategy evaluation

*CSIRO*

Water and sediment quality

*Murdoch*

Geomorphology

*Curtin*

Oceanographic processes

*UWA*

Northwest marine research inventory

*DEC*

Groundwater and subterranean fauna

*Curtin*

Large marine fauna

*DEC*



## Deep water biodiversity and monitoring protocols

*Andrew Heyward, AIMS*

- Deep water and coral communities and habitats
- Whale shark use of the NMP
- Stock take of target invertebrates
- Interaction with dominant oceanic processes
- Long term monitoring of reef health

## Biodiversity, human use, MSE

*Russ Babcock, CSIRO*

- Diversity, abundance and distribution of sharks and rays
- Are sanctuary zones effective in protecting target fish and invertebrates?
- Can we model ecological, social and economic processes and improve management



## Water and Sediment Quality

*Eric Paling, Murdoch*

- What contaminants should be monitored?
- What are their background and current levels in areas that are or may be developed?

## Geomorphology

*Lindsay Collins, Curtin*

- Describe the bathymetry of NMP
- Describe the morphology and growth history of the reef

## Groundwater

*Lindsay Collins, Curtin*

- What are the key factors about the groundwater system and its linkages to the NMP?



## Oceanographic processes

*Chari Pattiaratchi, UWA*

- How does water flow around the reef?
- How does this affect biodiversity distribution, ecosystem health and threatening processes?

## Large marine fauna monitoring programs

- Are current monitoring programs providing information required to properly manage the species

## Northwest marine research inventory

*Chris Simpson, DEC; Tim Skewes, CSIRO*

- Produce a searchable meta-data database of current, planned and completed marine research in the Northwest Bioregion



# Post Graduate Funding

- Ben Fitzpatrick (UWA)– Fish Communities and biodiversity conservation
- Emily Twiggs (Curtin)– Geomorphology and Sediments
- Cecile Rousseax (UWA) – Biogeochemistry
- Kristel Wenziker (Murdoch) – Marine Mammals
- Janja Ceh (Murdoch) – Microbiology
- Soheila Taebi (UWA) – Oceanography
- Abbie McCartney (UWA) – Tourism



# Science Coordination and integration

- *Interface between science and management*
- *Developing Linkages between research programs*
- *Communication*
- *Data management*



# Summary

- Better understanding of NMP, its biodiversity and ecological processes
- Integrate this knowledge into management
- Focus on making a difference!



# Marine Science Program

## Role

- Conducting/coordinating scientific research and monitoring necessary to manage MPAs and threatened and exploited species
- Leading WAMSI Node 3
- Providing scientific input and advice into marine policy and planning for the WA government

## Delivery

*Internal : Collaborative: Commission*

- Research: (50:40:10)
- Monitoring: (80:20:0)
- Science Communication: (95:5:0)



Marine Science Strategy: [www.naturebase.net](http://www.naturebase.net)