



Information needs for marine resource management: status and gaps

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PARKSAND WILDLIFE

Department of Parks and Wildlife

Who we are

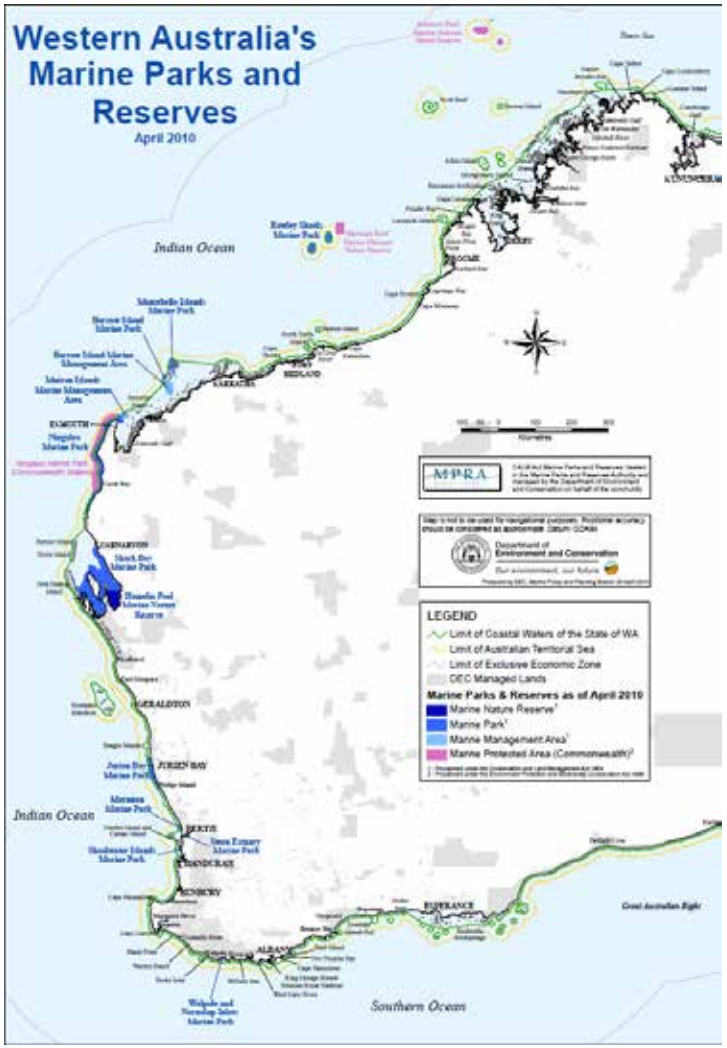
Department of Parks and Wildlife

- Legislatively responsible for the management of conservation estate (including marine reserves) and key flora/fauna

- Focal goal of biodiversity conservation

- Responsibilities
  - > visitor services
  - > forest management
  - > fire
  - > science and conservation

- 100 terrestrial and 13 marine parks



What we do

Marine Science and Management

- Directed at marine parks and key marine fauna
- Management, research and monitoring objectives
- Research
    > key management and ecological questions
- Monitoring
    > directed at key biological ‘assets’
    > e.g. fish, coral, seagrass, marine mammals, turtles, mangroves, coastal vegetation, seabirds, water quality

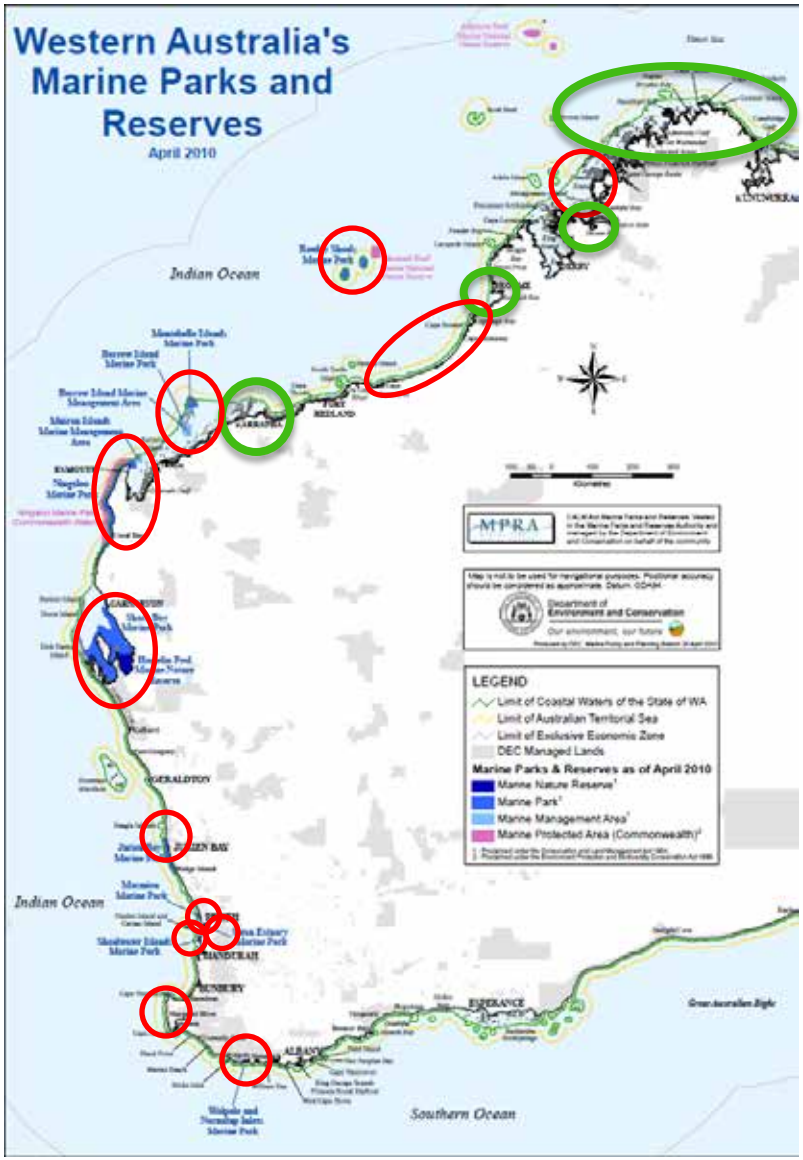
Challenges we face

Diminishing funding and capacity

Reliant on collaborations

Large geographical scale

Expanding marine park network



How do we use Oceanography

‘Hindcasts’

Develop time-series for monitoring (condition and pressure) and to answer ecological questions

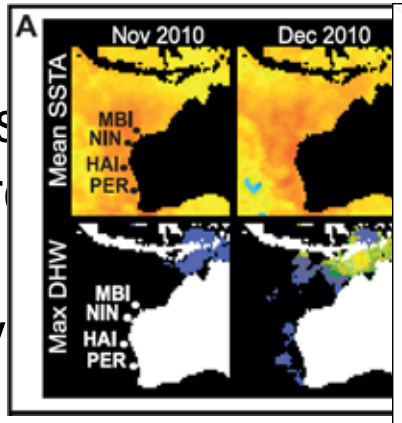
‘Nowcasts’ and ‘Forecasts’

Direct management response and threat mitigation

Monitoring

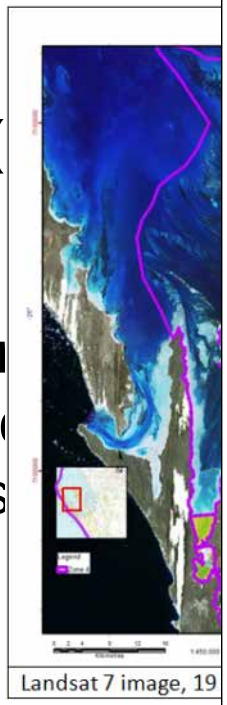
Condition

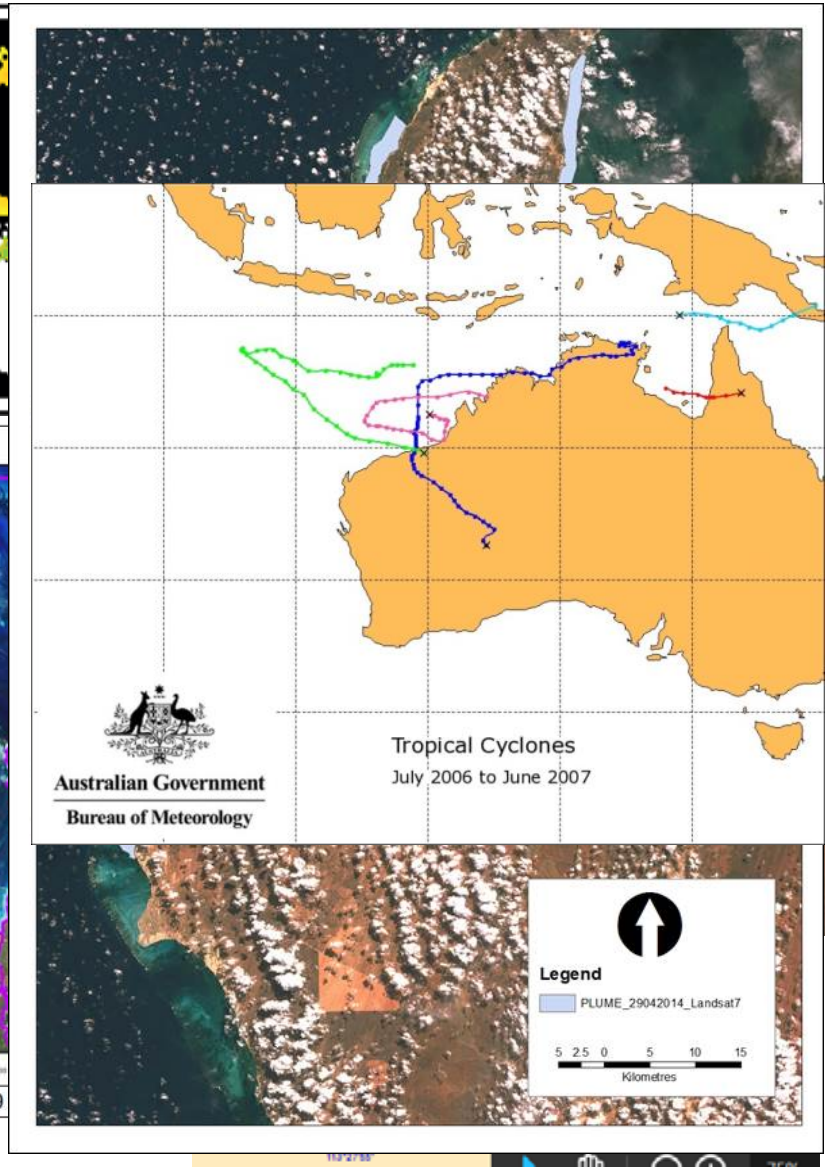
- mostly remote sens
- habitat (e.g. mangr
  seagrass)
- vessel sonar (bathy



Pressures/Drivers

- Sea Surface Temperature (
  corals, fish, seagrass)
- Salinity (e.g. fish)
- Turbidity (e.g. corals, seagr
- Storm tracks (e.g. corals, s
- Wave energy (e.g. corals, s


Landsat 7 image, 19



Research Applications

Turtles

Currents, chlorophyll A, SST, bathymetry, drifter validation

Marine Mammals

SST, bathymetry, currents, chlorophyll A

Ecological connectivity

Currents/internal wives, tides

Seasonal habitat variation

SST, depth, wave energy

Nutrient flow/uptake

Chlorophyll A

Kimberley (WAMSI II)

Productivity, drivers of biodiversity, Biogeochemistry/Productivity

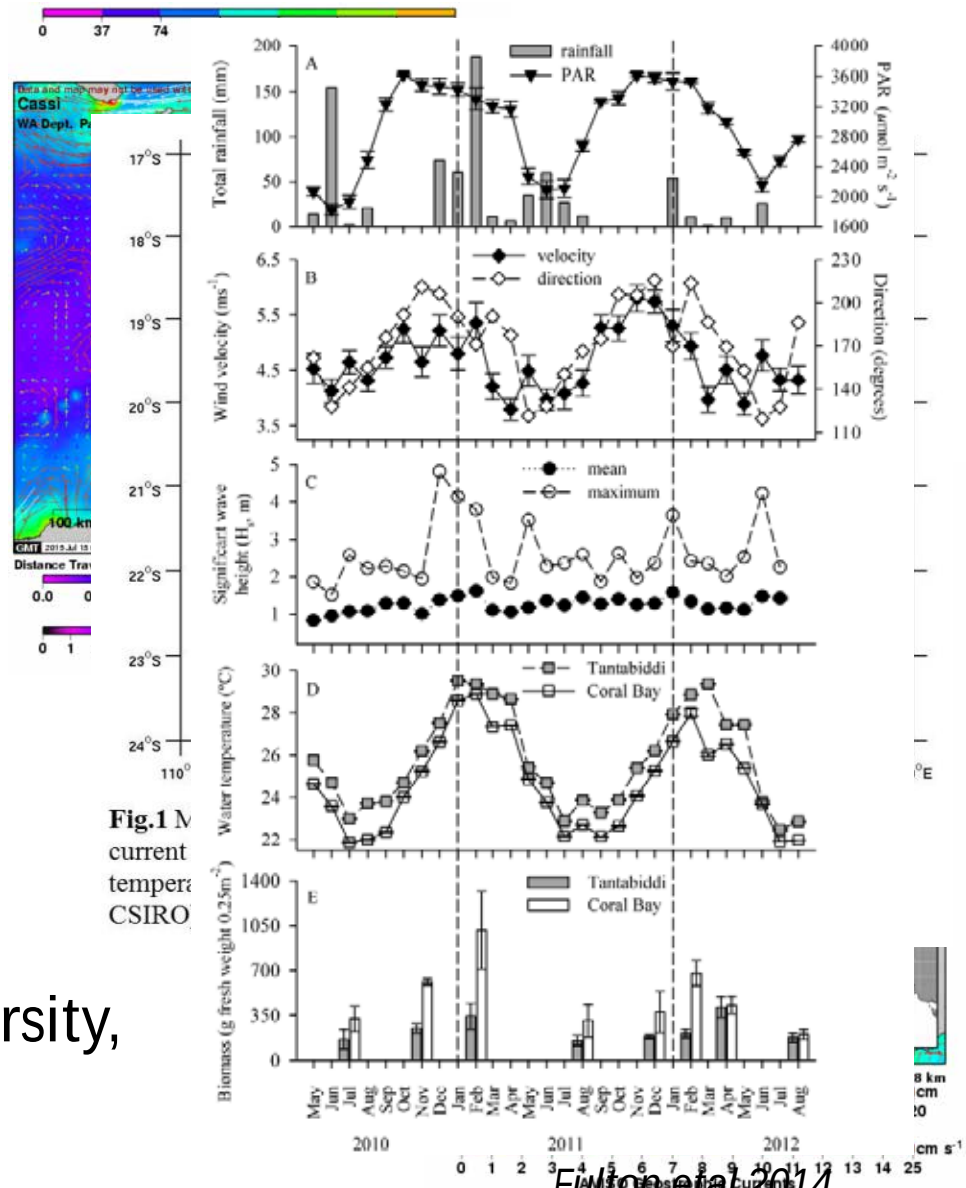


Fig.1 M
current
tempera
CSIRO

Fulton et al 2014

Management Response

Reactive monitoring effort

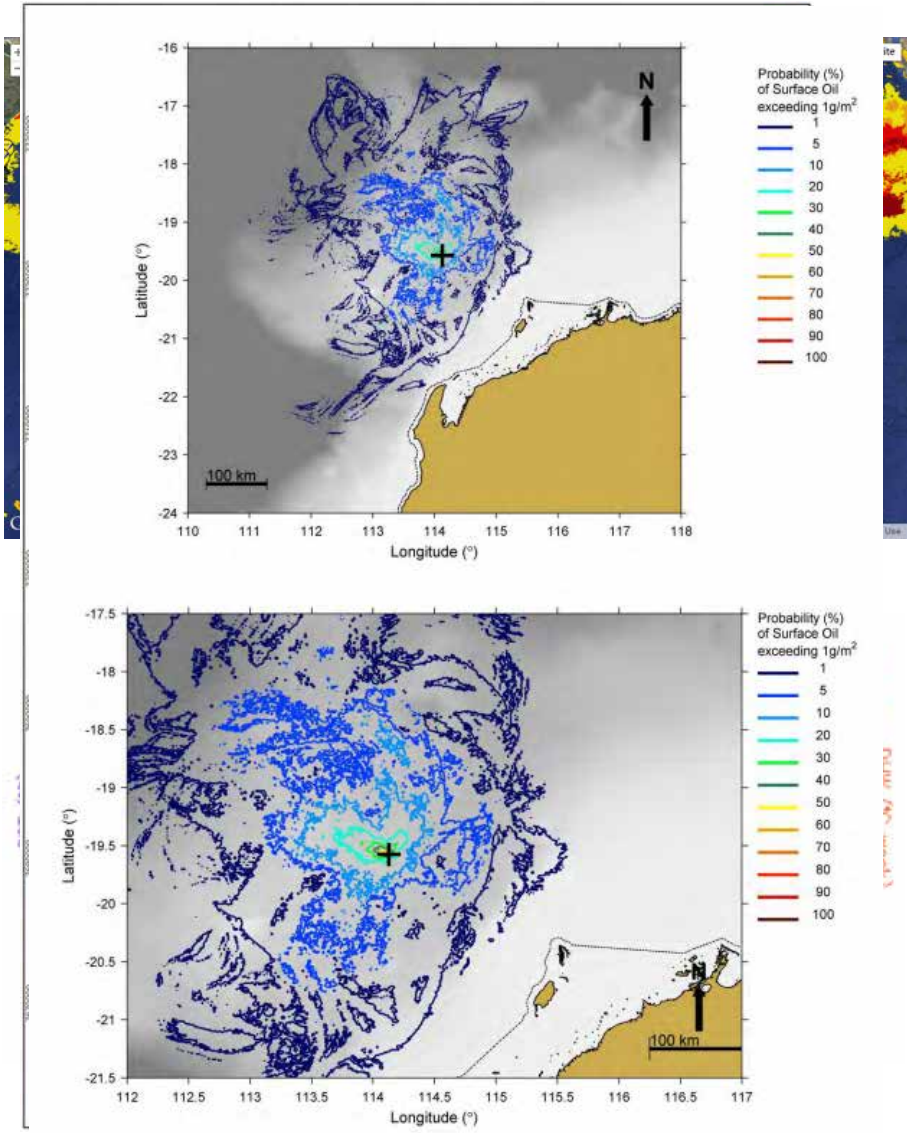
Real time Sea Surface Temperature

Sampling design

Modelled particle flow

Threat mitigation

Modelled particle flow

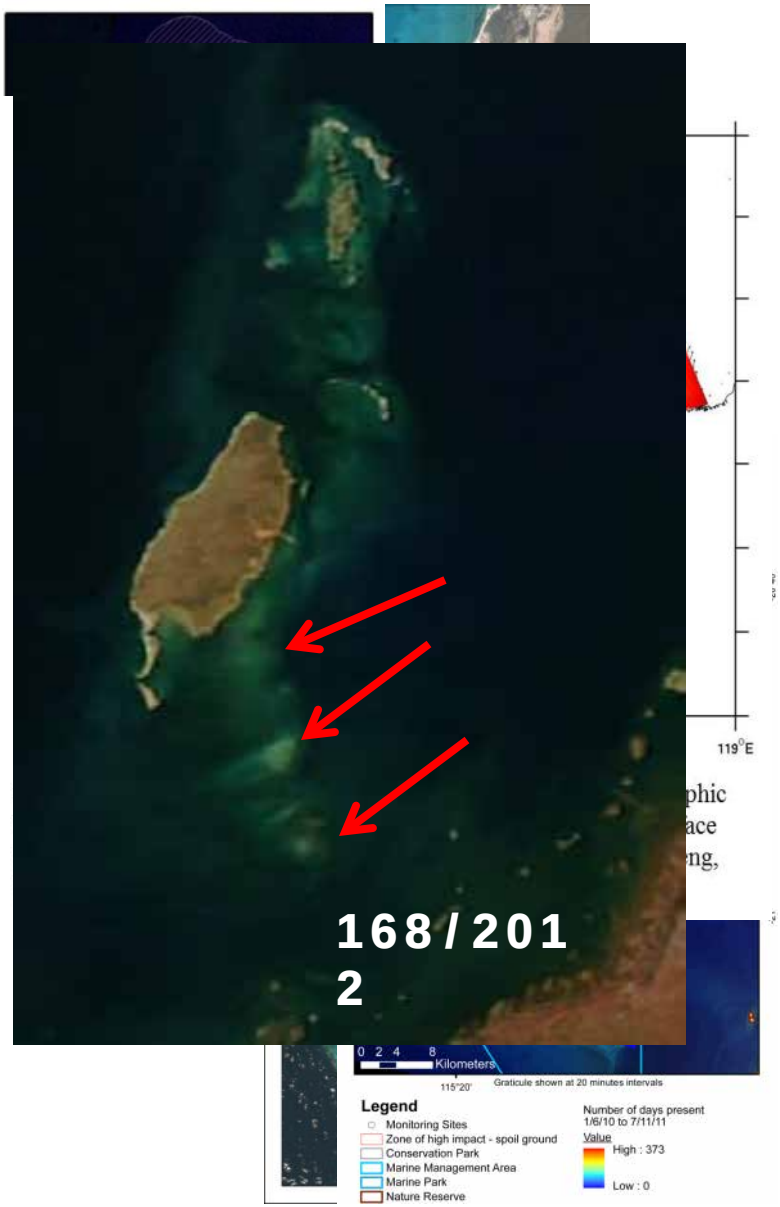


Courtesy Chevron Australia 2010

Courtesy Chevron Australia

Where are the gaps?

- Availability of more historical information
- Higher resolution SST and TSS
- Digital Elevation Models/bathymetry/LIDAR
- Multi scenario modelling
- Fine-scale current modelling incorporating internal waves and tides over larger areas
- Cost effective ways for assessing chlorophyll A, Hydrocarbons, Turbidity over large spatial scales



Collaborations

- UWA
- Murdoch University
- Curtin University
- CSIRO
- AIMS
- DoF
- DoT
- DPI
- Landgate
- BOM
- NOAA
- WALIS Marine Group
- IMOS
- Geoscience Australia
- Chevron
- Woodside
- Apache
- INPEX