Node 4
Leaders Overview

Rick Fletcher

Ecologically Sustainable Development
Catching Sustainability
FRDC – Subprogram

MURDOCH UNIVERSITY
PERTH, WESTERN AUSTRALIA

ECU EDITH COWAN UNIVERSITY

western australian marine science institution

THE UNIVERSITY OF WESTERN AUSTRALIA

CSIRO MARINE RESEARCH

Australian Government
Fisheries Research and Development Corporation

AUSTRALIAN INSTITUTE OF MARINE SCIENCE

Government of Western Australia
Department of Fisheries

PURPOSE OF NODE 4

- Develop the methods and approaches to trial the implementation of Ecosystem-Based Fisheries Management (EBFM) in Western Australia

- Research in this Node has a very high management focus – specific management generated questions were the basis of all projects and subprojects

Background

- EBFM - deals with the combined ecological impacts of all fishing activities in a region, not just the target species, and not just the individual fishery.
- PLUS it deals with the social & economic implications of these activities.
- And recognises the impacts of external drivers and governance systems on the outcomes.
- It adapted an internationally endorsed, comprehensive framework based on RISK MANAGEMENT principles

Critical Questions

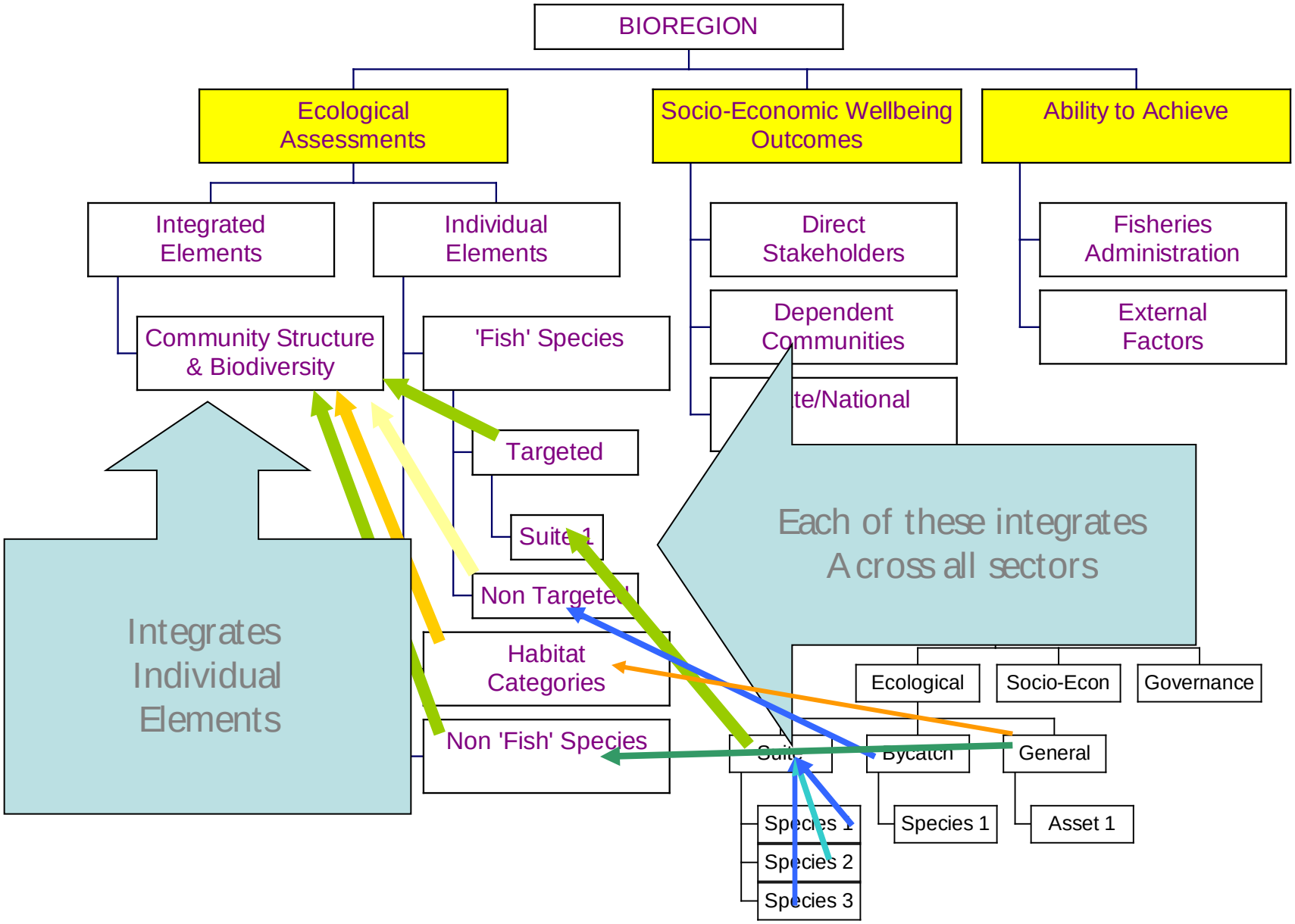
- How well can the process be applied at a bioregional level?
- What elements will be useful for ongoing management and what will not?
- Finding out what is not likely to be useful in the longer term is also a very useful outcome.

Structure of Node

- Five interrelated projects were designed to answer a set of specific management questions based on the development and use of a regional level EBFM framework.
- Project Leaders came from Universities and the Department with collaborators from a wide variety of institutions.

BASIS OF NATURAL RESOURCES MANAGEMENT

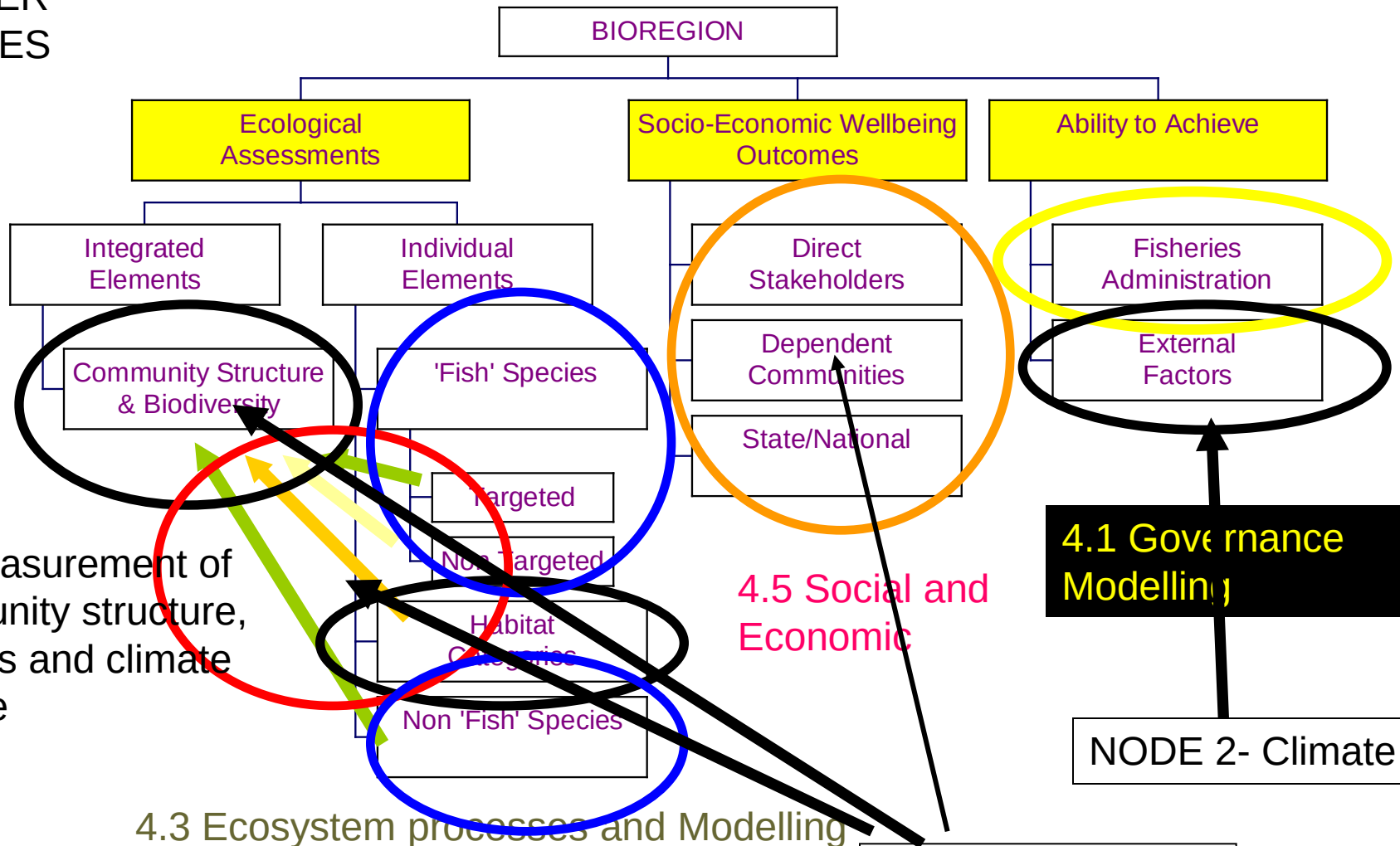
- We manage the community’s ecological assets to generate economic and social benefits for the community.


BIOREGION
Ecological Assessments
Socio-Economic Wellbeing Outcomes
Ability to Achieve
Integrated Elements
Individual Elements
Direct Stakeholders
Fisheries Administration
Dependent Communities
External Factors
Community Structure & Biodiversity
'Fish' Species
te/National
Targeted
Suite 1
Non Targeted
Habitat Categories
Non 'Fish' Species
Integrates Individual Elements
Each of these integrates Across all sectors
Ecological
Socio-Econ
Governance
Bycatch
General
Species 1
Species 2
Species 3
Species 1
Asset 1

THE OTHER PROJECTS FILL IN THE DETAIL OF THE COMPONENTS

EBFM FRAMEWORK – 4.1

LINKS TO OTHER NODES



Purpose of Talk

- Provide an overview of what each project was meant to deliver and what outcomes government (who funded it) received.
- The subsequent sections will go into more detail about each project.
- The project leader and presenters ideas on the relative benefits may, in some cases, differ from mine. That's fine – different perspectives.

Main Questions

- Did the project change the Risk Ratings or Values for the Assets and Outcomes?
  - Ecological Assets
  - Economic & Social Outcomes
- Did it change what management activities or processes the DEPARTMENT needed to take, or confirm the right approach was already in place?
- Did it provide a better and/or more cost effective means of monitoring or assessment (i.e. not just add to what is already there) or show what wouldn't by useful?
- Pure science interest/outcomes not relevant in assessing value here.

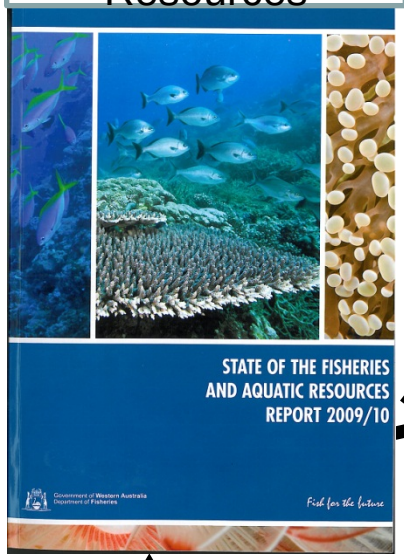
4.1 - Applying the EBFM framework

DoF, Murdoch University CSIRO

Management Question

- How can the EBFM framework assist in providing a Natural Resource Management planning structure for the optimal use of marine resources at the bioregional level?

State of Fisheries & Aquatic Resources



Parliament

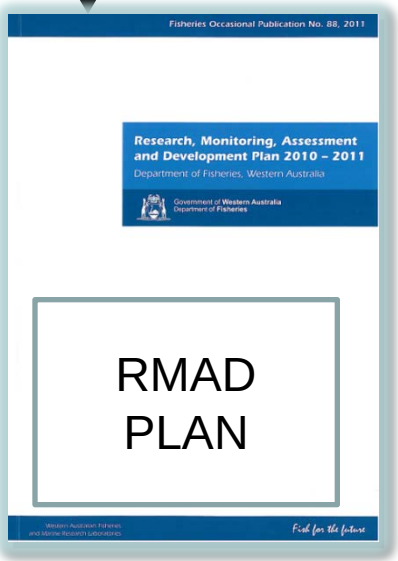
Annual Report KPIs

Risk Register

Management

Stakeholder Input

FISH PLAN



RMAD PLAN

Assessments & Advice

Research Projects

Ongoing Monitoring – catch, effort, observers, surveys, sampling etc.

Highlights 4.1

Outcome for Government - Developed a world class, risk based management framework, that has been adopted by the Department.

Key Outputs

- Improved priority setting and budget allocation – efficient use of government resources.
- Framework was being adopted nationally by MACC for EBM, strong international interest.
- Changing the way management and research understand and utilize risk
- Used qualitative models to integrate across ecological, social and economic issues and allow effective stakeholder input.

Conclusion

- Successfully answered the management question and has resulted in significant changes to the Departments operations

4.2 Assessment of Community Structure, Biodiversity, Habitat and the impact of anthropogenic influences

UWA, DoF, Murdoch University, CSIRO

Management Question- What changes, if any, are occurring in the biodiversity, community structure or habitats within each priority bioregion?

- To what extent can the data that are available from commercial fishing be used to monitor the status of the community structure in each of the bioregions?
- Is it possible to generate a cost effective fishery independent monitoring program of the fish community for areas where commercial fishing supplies insufficient information?

Years of High and Low Puerulus Settlements

	Negative IOD	Neutral	Positive IOD
El Niño		**1969** 1977 1983 1987 1991 1992 2002 2004	1994 **1982** 1997 **2006**
Neutral	**1996** 1998	1968 **1970** 1971 1973 1976 **1978** 1979 1980 1981 **1984** 1986 1988 1990 1993 **1995** **2001** 2003 **2005**	**1972** **2007**
La Niña		**1974** 1975 **1985** **1989** **1999** **2000**	**2008**

Highlights - 4.2

Outcomes for Government

- Developed and validated what cost effective methods can be used to monitor climate change in habitats and fish community structure for WA marine ecosystems. Fisheries dependent data are highly valuable
- Identified benchmark (indicator) locations along the West Coast.
- Estuaries in the south west are in decline and monitoring alone is insufficient to improve their status. (see also Peel Harvey Governance Issues 4.3)

Conclusions

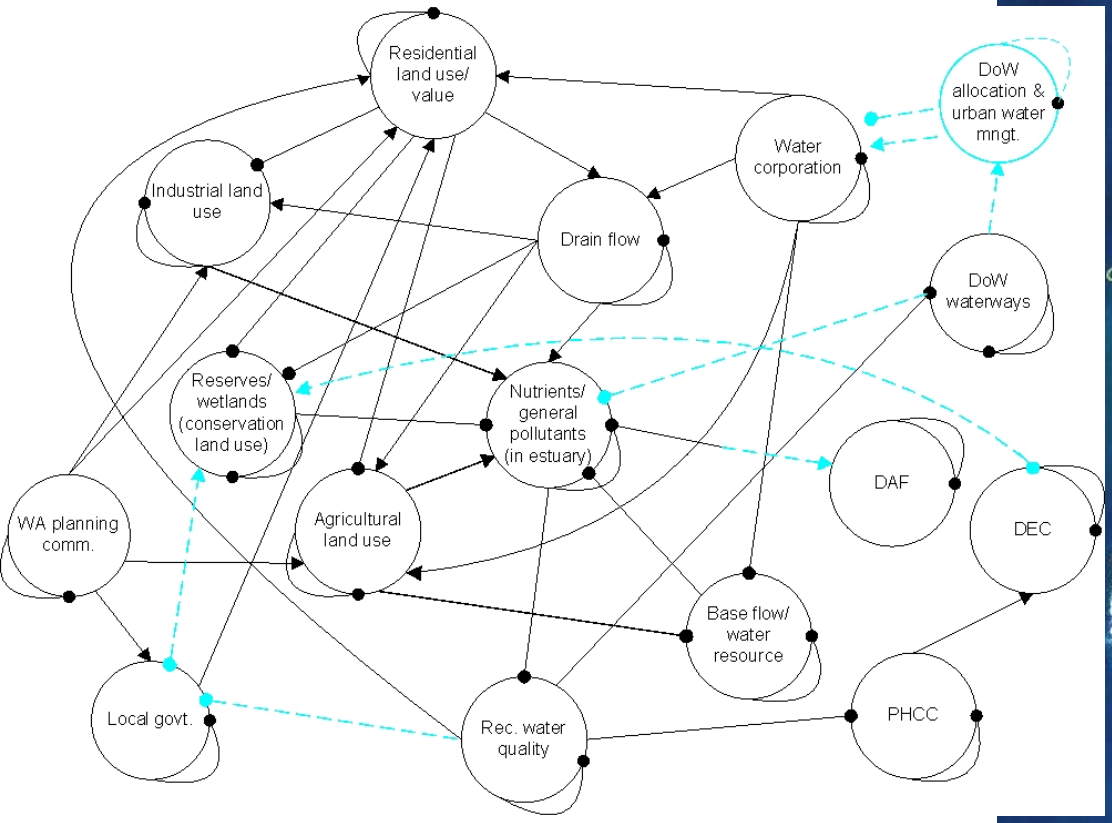
- Our long term data monitoring is extremely valuable but they must link to new initiatives and methods.
- There is a need to coordinate, at a whole of Government level, any increased large scale marine monitoring program.
- A new governance approach is needed to deal with the management of estuaries.

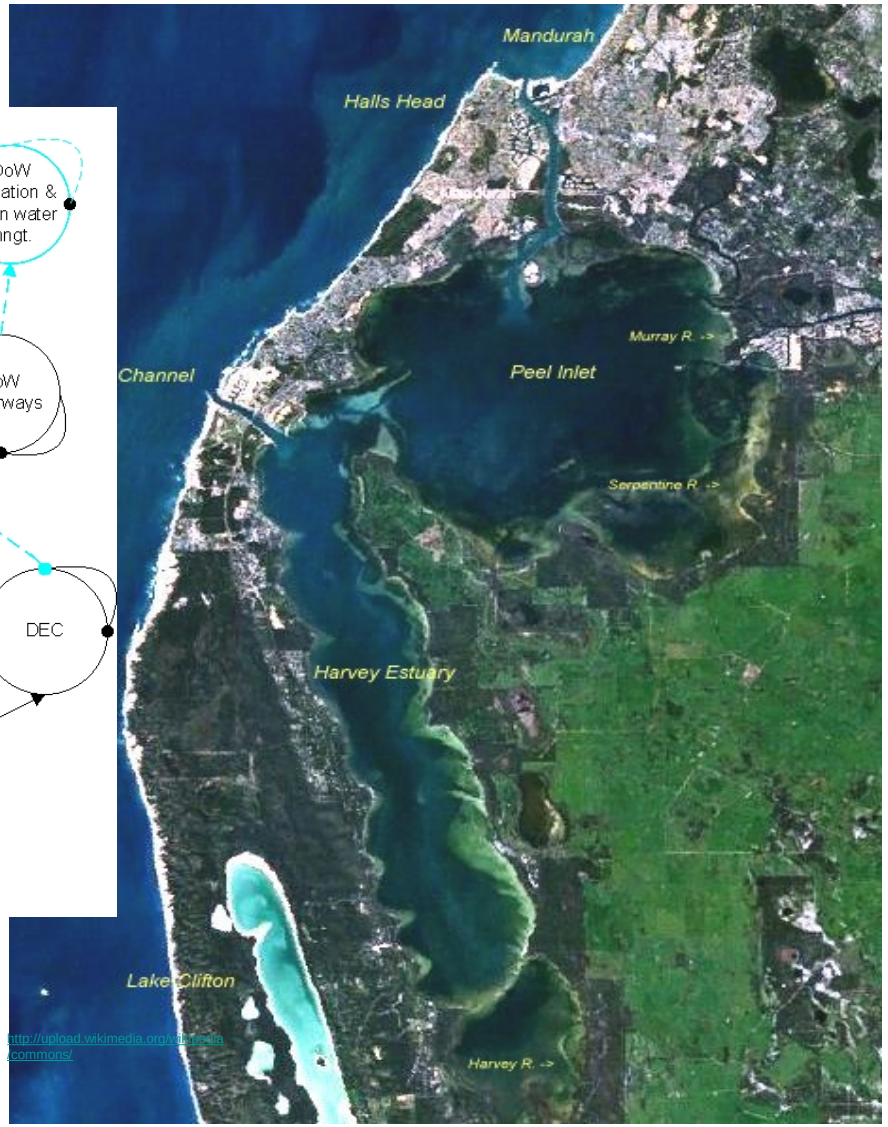
4.3 Ecosystem Modelling and Trophic Interactions

Management question - Where significant changes to ecosystems have been identified, how can modelling exercises provide increased understanding of wider impacts and be used to assess benefits of management options?

- How can risk assessment processes improve understanding within each of the bioregions of the possible indirect impacts of trophic interactions (e.g. removal of keystone species) resulting from fishing or other impacts?
- When a risk has been identified or there is evidence that fishing activities are having a strong impact from trophic interactions, what types of experimental studies would be needed to examine these processes?

Multi-jurisdictional governance





4.3 Highlights

Outcomes for Government:

- Confirming that lobster fishing does not have significant effects on the ecosystem in shallow water (ie low risk to ecosystem)
- Assisted meeting the obligations for ongoing certification by MSC of the lobster fishery through establishing deep-water closure and experiment
- Qualitative modelling showed a lack of feedback between the status of estuarine systems and management actions, a more holistic approach to catchment management assessment and planning is required.

Conclusion

- Experimental analysis can be useful for examining risks but hard to prove a negative
- Quantitative models were not that useful to management – qualitative models, however were very useful.

4.4 – **Captured species assessments**

Management Question - What additional tools are needed to monitor and understand the impact of fishing on target species and bycatch species?

- What are the current levels of bycatch of listed and non listed species by all fisheries in WA and at what level do these require ongoing monitoring to facilitate management advice on risks to biodiversity and meeting EPBC Act reporting needs for PETS
- How does the stock structure of the key indicator species in each bioregion interact with the current spatial management arrangements?
- How can the catch levels taken by non-commercial sectors be monitored cost effectively to a level of precision that will be sufficient to allow the data to be used reliably to enable the sustainability of the resource and the management of sectoral allocations?

Isurvey Progress to date

Phone-logbook survey

– 3201 state-wide participants recording all their fishing activity over the year

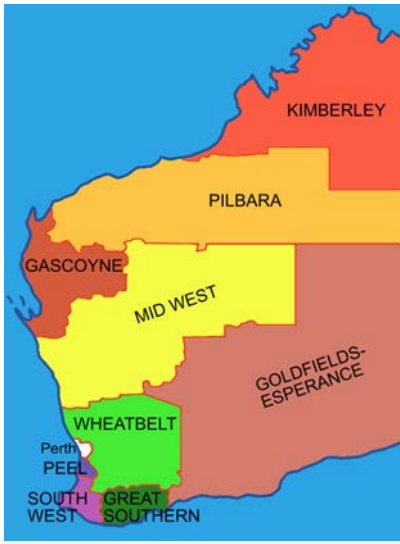
Boat-ramp biological and metro validation survey

– 1267 state-wide fishers interviewed

– 2221 fish measured

Remote video camera survey

– 12 cameras (6 metro; 6 regional) recording 24/7 launches and retrievals



Region of Residence	Metro	Peel	Wheatbelt	Kimberley	Pilbara	Gascoyne	Midwest	Goldfields Esperance	South West	Great Southern	Interstate	Total
RFBL Holders	56,631	11,517	4,465	3,007	6,287	2,151	6,428	2,024	15,801	4,443	2,103	114,857
Refusals	14	4	0	2	4	0	0	0	6	3	1	34
Accept Logbook	1,334	271	143	142	217	100	213	144	394	169	74	3,201

4.4 Highlights

Outcomes for Government

- Provided detailed and comprehensive biological information to determine that the spatial management of key demersal stocks was appropriate
- Developed the methods to undertake the most comprehensive survey of recreational fishing worldwide using national and international expertise.
- Completed cumulative risk assessments of by product and TEPS species

Conclusion

Has enabled a number of difficult areas to be tided up and for the recreational survey has led to be worlds best practice design

4.5 Socio- Economic Implications

Management Questions –

- Review the methods for completing social and economic assessments for use in EBFM.
- Improve our understanding of the drivers of recreational fishing behaviours.
- Provide predictions for the types of responses that will occur by recreational fishers to any proposed revisions in management arrangements
- Develop the specific methods needed to assessing the social and economic impact of policy changes on commercial and recreational fishers and the wider community within the West Coast region

FISHERIES RESEARCH CONTRACT REPORT

No. 21, 2009

Social and economic evaluation methods for fisheries: a review of the literature

Prepared for the Department of Fisheries, Government of Western Australia and the Western Australian Marine Science Institution (WAMSI)

Simon Vieira, Jacki Schirmer & Edwina Loxton

Government of Western Australia
Department of Fisheries

western australian marine science institution

Western Australian Fisheries and Marine Research Laboratories

Fish for the future

4.5 Highlights

Outcomes for Government

- A valuable summary of the most common social and economic assessment methods including analysis of when to use and not use
- Satisfaction with the overall fishing experience has increased since policy changes enacted
- Expenditure on recreational fishing was not affected by the changes in management arrangements

Conclusion

- A large difference between the rhetoric and the reality of public reactions to major policy changes.

NODAL MESSAGES

- Node 4 of WAMSI was a valuable investment by government that has assisted in delivering a major advance in how marine and estuarine ecosystems should be managed.
- There is a need to recognise that people are an intrinsic part of the ‘ecosystem’ and therefore the assessment and management processes.
- Taking an ‘ecosystem approach’ does not require a detailed understanding of the entire ecosystem or a complex model.
- It requires efficient consideration of all assets in the ecosystem and the associated stakeholders and which MOST require direct management to deliver the ‘best’ community outcomes.
- There is a need for an integrated and holistic approach to the management of coastal ecosystems.
- The lack of adoption of this type of holistic framework across all governments will limit the management outcomes that can be achieved