

# Proceedings of the Workshop on Reallocation Mechanisms, February 2011



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**Proceedings of Workshop  
On Reallocation Mechanisms,  
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# INTEGRATED FISHERIES MANAGEMENT

## REALLOCATION WORKSHOP

Wednesday 2<sup>nd</sup> February 2010

Department of Fisheries, Hillarys – Meeting Rooms 1, 2 & 3

### Workshop Report

#### 1. Introduction

The integrated fisheries management (IFM) initiative and associated processes are part of an important reform agenda which is being pursued by the Department of Fisheries WA (the Department), in close consultation with the commercial and recreational sectors and other stakeholders. An Integrated Fisheries Allocation Advisory Committee (IFAAC) has been established under s42 of the Fish Resources Management Act 1994 (the Act) to investigate resource allocation issues and make recommendations on optimal resource use, within a sustainable harvest framework, to the Minister for Fisheries, including allocation and reallocation issues within, and between, sectors.

The workshop was informed by a range of papers on or relevant to the topic, including a recent discussion paper by Chris Reid (*FMP 238: Potential reallocation mechanisms for the transfer and/or adjustment of catch shares between sectors with application to the Western and South Australian rock lobster fisheries*).

#### 2. Opening remarks

The workshop was opened by the CEO of the Department Mr Stuart Smith. He noted that the key role of the Department is to manage fisheries in a sustainable way such that the dynamic nature of fisheries resources and the groups that utilise them is recognised and managed. As community priorities for resource use change over time, it is necessary to ensure that effective reallocation mechanisms are developed and implemented, as part of the IFM strategy.

Processes for establishing an initial proportional allocation of the sustainable catch to each of the harvest sectors (resource or harvest share) in policy based on the single-genera (or species) managed rock lobster and abalone fisheries have been completed. The process for determining an initial allocation in the more complex multi-species resource characterised as 'west coast demersal scalefish' is underway. In order to fully implement IFM it is now timely to consider creating a conceptual model for how resource allocations might be given force in law and how the reallocation of resource shares between sectors might best occur.

This workshop was called to focus the sectors' efforts on progressing this important part of the reform agenda.

The Department is examining fishing access rights, the manner in which these express security of access, and their operation in a market environment for the commercial and recreational sectors. A commercial fishing access rights working group has almost completed its work, and the Department expects to advance the development of recreational fisheries rights in the near future.

A wide range of stakeholders attended the workshop and a list of attendees and the makeup of working groups is provided as **Attachment 1**.

### 3. Agenda

The facilitator, Mr Ian Cartwright outlined the draft agenda and suggested order of proceedings for the day. Both were agreed without change and the order of proceedings is provided as **Attachment 2**.

### 4. Information sessions/briefings

Four information sessions were provided as background to the workshop.

#### ***4.1 Integrated Fisheries Management – where are we up to?***

**Dr Lindsay Joll** provided an update on the IFM process which was adopted by the WA Government in 2004. He noted that IFM consisted of five major steps:

- determination by Government of the Fishery resources to undergo the IFM process;
- setting a sustainable harvest level;
- allocating explicit catch shares to the sectors;
- monitoring/managing each sector's catch; and
- developing reallocation mechanisms

A brief description of fisheries that have undergone allocation (West Coast Rock Lobster and Metropolitan Abalone) and one that is close to completing the process (West Coast Demersal Scalefish - WCDSF) was given as background to the workshop (noting that this allocation has no expression in law except where the commercial fishery management plan sets a TACC). It was noted that the WCDSF was complex and that a number of submissions on the draft allocation were now being worked through by IFAAC. While there are resource sharing pressures on other fisheries including the Peel Harvey Crab/Finfish, South Coast Estuaries and Barramundi and Threadfin (Kimberley) fisheries, Dr Joll requested that participants focus their efforts on the three commercial fisheries and the marine resources that they harvest as the basis for the workshop.

#### ***4.2 Economic considerations for reallocation issues***

**Dr Daryl McPhee** noted that WA is at the forefront of attempting to formally make allocations between sectors and is the first to systematically consider both the initial and ongoing (reallocation) aspects of allocation. In considering allocation there are three key questions: i) What is to be allocated? ii) Why is the allocation being undertaken? and iii) How to determine if the reallocation has worked?

While the economic theory of allocation (and reallocation) is driven by marginal economic analysis, there is a shortage of comprehensive and coordinated information. However, some information is available and in most cases conclusions can be drawn to support, rather than explicitly decide on, allocation and reallocation.

Deriving economic functions for the recreational fishing sector is more complex than that for the commercial sector as it requires valuing a diverse non-market activity. The use of the charter fishing price data may be a useful surrogate for the value of a recreational 'fishing day'.

Allocation based on historical effort is relatively straight forward for the commercial sector and for the recreational sector simple models based on projected catches using national survey and census data can be developed. The situation is similar with effort, noting that for the recreational fishery effort may be a key component of the desired outcome (satisfaction).

With an increasing population which is aging and more highly concentrated in coastal areas there are potential changes to the demand for and impacts from recreational fishing, which may well require differing forms of management intervention.

Pitfalls for allocation and reallocation include legal threats or challenges to fishing rights and interactions with other resource partitioning policy agendas such as marine park legislation. There is a need to allow for 'special circumstances' in allocating an ITQ for a commercial fisher, including the reduced number of operators and impacts on the 'small family operator'.

Thinking broadly, options for the future include:

- Control of the recreational catch of key species through a 'tag system'.
- Seasonal closures to individual sectors.
- Using charter fishing estimates as a surrogate to place a 'value' on a day's fishing experience.
- Mechanisms for recreational and conservation sectors to participate 'in the quota market' e.g. by using licence fees to buy quota.
- Allowing recreational anglers to purchase a small amount of individual catch/effort for a nominal amount through a licensing system, and then additional larger fees for additional units.
- A tiered non-transferable licensing system.
- An allocation regime that mixes effort and catch.

#### ***4.3 Social considerations for reallocation issues***

Dr Jacki Schirmer provided a presentation on the social aspects of reallocation in three parts:

- **principles for reallocation** including elements of equity and justice/fairness, the relative advantages and disadvantages of administrative vs. market-based approaches and the difficulties of operationalising social principles without adequate definitions or objectives in fisheries legislation;
- **the social benefits and costs of reallocation**, and the challenges of their measurement in terms of social and human/individual wellbeing, and comparison between economic, social and environmental benefits and associated 'trade offs'; and
- **the reallocation decision process**, with an emphasis on options for public consultation, ways to achieve 'buy-in' and options for alternative (to public workshop) approaches.

Dr Schirmer concluded that:

- Both market and administrative approaches to reallocation have social implications.
- Principles enshrined in various Fisheries Acts often specify social outcomes – but are hard to measure.
- Social benefits/costs are not easily measured or traded off – but can be substituted, with some measurement possible.
- There is a need for clear guidance on practical application of principles to support decision making.
- Good public consultation can help the process of reallocation but may be costly to do well.
- Even improved consultative processes may not achieve public buy-in given skills of some groups at media 'scare' campaigns.

#### ***4.4 Potential Reallocation Mechanisms – discussion on re-allocation mechanism options***

Dr Lindsay Joll outlined some key aspects of reallocation theory, referring to the papers by Chris Reid on possible reallocation mechanisms in WA and SA rock lobster fisheries, and the work by Alistair McIlgorm on reallocation in NSW. It was observed that reallocation is largely an uncharted area.

The socio economic circumstances which surrounded the original allocation forces under IFM may change over time and drive reallocation. Certain prerequisites are required for reallocation to proceed – these are:

- a functional IFM allocation has already occurred;
- mechanisms to successfully manage (or at least measure) the catch of each sector are in place;
- the sectors are physically capable of catching any reallocated share, noting that there are frequently spatial and temporal differences between the access rights of commercial and recreational fishers;
- spatial compatibility in the areas of the fishery where shares are re-allocated;
- entities exist which are capable of engaging in the re-allocation process; and
- the ‘currencies’ that are being traded are the same OR that there are agreed conversions - Commercial sector catches may be in weight (output [quota] fisheries) units or in input (time/gear) units while recreational sector catches usually in numbers of fish.

Two primary models for reallocation exist – an administrative based approach, which involves greater government involvement than the alternative –a market based approach. To date, there are no examples of a conscious or deliberate reallocation from the recreational sector to the commercial sector (however, arguably, the growth of the commercial sector between the 1960s and 1990s constituted an initial allocation that has since been reinforced by the establishment of fishery management plans securing these expanded rights - ac). For market based approaches to function adequately there is a need for the establishment of an entity which will operate on behalf of recreational fishers.

In considering a preferred system it will be important to consider:

- Spatial and physical character of the reallocated share.
- Compensation or trading process used.
- How best to manage the new allocation.

Copies of the workshop presentation slides are provided at **Attachment 3**.

## **5. Sector perspectives**

Two sector perspectives were provided. Mr Guy Leyland of WAFIC spoke of commercial sector interests, with Mr Kane Moyle of Recfishwest presenting on behalf of the recreational sector.

### **5.1 Recreational sector**

Mr Moyle indicated that Recfishwest has been a strong supporter of IFM as the model for basing future management and allocation decisions for WA fisheries, although some frustration has been expressed by the sector at management decisions that it considers have operated outside the operating guidelines of IFM.

In general, there is a poor understanding amongst recreational fishers of what IFM actually is and most recreational fishers just want to fish. Adopting IFM and reallocation principles in an applied sense is much more difficult than initial allocation but will be integral to the future success of the IFM process.

The Recreational sector is seeking equity in any mechanism and that allocations must be easily transferable. It is acknowledged that it will be challenging to accurately define recreational catch, place a value on a recreational share (social vs. economic), decide who should hold the recreational share and devise suitable funding avenues.



The process is impeded by no clear definition of recreational property rights although it is acknowledged that a loose access right already exists within the recreational fishing licence.

To move forward with reallocation from a recreational perspective there is a need to:

- Agree on what reallocation mechanism would be most suitable.
- Identify the likely scenarios, both short and long-term.
- Ensure the Department has adequate legislation or make the required changes.
- Communicate/educate commercial and recreational fishers about what IFM means and how reallocation works.
- Ensure research and management has resources to cope with a dynamic system that comes with reallocation mechanisms.

## **5.2 Commercial sector**

Mr Leyland observed that the commercial sector and WA fisheries in general is fully occupied with a wide range of fisheries reform processes, which, coupled with discussions on Commonwealth MPAs and other imperatives will determine the speed at which the commercial sector can proceed with IFM implementation. A staged approach to the implementation of IFM and reallocation was called for.

Mr Leyland, quoting from a submission sent by WAFIC in 2005, requested that particular attention be given to the principles developed under the broader IFM process, including “adherence by Government to the policies and principles including use of its coercive powers in support, creating the right incentives for the sector groups to participate, devolution of decision making so as to empower direct users, assistance to sector groups to organise themselves into effective bodies capable of fully participating and, encouragement for creative research to identify practical application of market based systems for reallocation of shares.”

## **6 Working groups**

The workshop divided into a series of working groups (see Attachment 2) and discussed the key fisheries, using a uniform set of questions. Two groups considered rock lobster and abalone reallocation issues while, in acknowledgement of the complexity of the fishery and resources, four groups discussed the WCDSF. There was a good deal of overlap/agreement between the groups. The full results of the discussions are provided as Attachment 4, while a summary is provided in section 7 below.

## **7 Summary outcomes of working groups**

### **7.1 Group 1 and 6 – Rock Lobster**

#### **a) Key allocation mechanism**

- Full agreement on the application of a market approach.
- Since there is already an established market – it will be relatively easy to determine market prices.
- The fisheries management framework is well established for both sectors and the fishery is based on a single species fishery with both sectors licenced.
- Catch levels for each season are known with some precision.

#### **b) Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?**

- Initial discussions considered weight in Kgs. to be appropriate, with later agreement that proportions, expressed in Kgs, was the best unit.

- Recreational sector catch calculated in numbers which can be converted to weight (Kgs).
- Reallocate against existing management zones in proportion to recreational catches by zone.
- Govt. administrative role to set minimum recreational entitlement holding level – i.e. it should not be possible for either sector to sell/lease units above a certain level.
- Importance of inshore area to recreational fishers.

**c) How would the tradable units be valued?**

- Market value.

**d) How would reallocation transactions be funded, including consideration of the role of Government and self-funded approaches?**

- Wide range of options suggested including:
  - Recreational sector transactions funded from revenue from leasing unutilised allocation.
  - Loan from Government repaid from licence revenue.
  - Commercial sector purchases funded by individuals.

**e) How would the traded units be distributed, and what entities would be involved in the transfers?**

- Pre-requisite legal right for the recreational sector to ‘own’ units, managed through a trust body or similar, or through government, or another body.
- Individual MFL holders could trade.
- Recreational reallocation available to all recreational licence holders.

**f) How would the outcomes of the reallocation be measured/monitored?**

- Recreational sector surveys, which need to be effective and will improve over time.
- Commercial outcomes will be monitored through the usual Total Allowable Commercial Catch (TACC) reconciliation process.

**g) Other issues**

- Consider a ‘floor’ for recreational sector allocation.
- Need to consider the timeframe for duration between reviews, e.g. 5 years. Could be quicker but is reliant on the recreational catch information being available.
- Pre-requisite is property right (enduring) for both sectors.
- Temporary (lease) or permanent transfers (purchases of units) should be permitted.
- Consider a system of dealing with potential undercatches/overcatches in the recreational sector and their impact on the temporary/lease market and associated revenue.

**7.2 Group 3 and 8 - Abalone**

**a) Key reallocation mechanism**

- General support for a market based approach noting some administrative/legislative actions by government required, especially due to the on-reef/off-reef issue.
- Similar views expressed to rock lobster.

**b) What principles/data will be used to convince government that an administrative reallocation is required, and how will the extent of the reallocation be determined?**

- When sector groups believe they are ready, they should discuss and agree on direction that reallocation should take.

**c) Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?**

- Significant issue surrounding reef top and off reef top stocks and reallocation between sectors (recreational sector fish on reef-top whereas commercial sector fish in deeper waters off the reef).
- Need to convert equivalent recreational bag/time limit to Kgs for reallocation to commercial sector and vice versa.
- Need to consider possibility of local depletion if both sectors continue to fish in the same areas.

**d) How will the funds be obtained to cover costs/compensation under reallocation?**

- Each sector needs to fund its reallocation.
- Recreational license levy/increases with the possibility of matching government funding.
- Single entity that holds all recreational allocations in trust (statutory body).
- Recreational under-catch due to bad weather in a season may offer the opportunity for quota to be traded to the commercial sector during same season, again noting the on/off reef top issue.

**e) Which units would be traded – reasons for choice?**

- Commercial units from the relevant zones purchased in the market in proportion to the recreational catch ratio.

**f) How would the units to be reallocated be valued?**

- Market price.

**g) How would the reallocated units be distributed, and what entities would be involved in the transfers?**

- Recreational/commercial reallocation units administered by Government.
- Possible 'premium' licence with a 70mm size limit permitting use of scuba (deals with on/off reef top issue).
- Need body constituted specifically designed for the purpose of holding reallocated units for the recreational sector.

**h) How would the outcomes of the reallocation be measured/monitored?**

- Using existing research monitoring tools, or manage using bag tags/days on a licence as an alternative.

**i) Other issues**

- Majority view that personal holding by recreational fishers is not a viable option due to the risk involved in individual recreational personal tradable rights (hence the suggested need to create a body constituted specifically designed for the purpose of holding reallocated units for the recreational sector).
- Give consideration to temporary and more permanent transfers.
- May need separate license for metro area (WC Zone) and for specific species.
- Note- conservation purchase possible.

### **7.3 Groups 2, 4, 5 and 7 - WCDSF**

#### **a) Key allocation mechanism**

Preference for Administrative approach with strong market signals.

Noted complexity of fishery i.e. – multi species/number and alignment of zones etc; current sustainability issues; high social value/political pressures; and readily identifiable trading unit.

- Young fishery – not ready for market approach – could be considered in the longer-term.
- Some support for a Market approach based on Reid's Option 6.

#### **b) What principles/data will be used to convince government that an administrative reallocation is required, and the how will the extent of the reallocation be determined?**

- Case for reallocation would be driven by sectoral interests, and would include consideration of improved socio-economic outcomes.
- Possible for the commercial sector to trade allocations between Zones to increase the overall benefits for all sectors.

#### **c) How will the funds be obtained to cover costs/compensation under reallocation?**

- Wide range of alternatives considered including: recreational and commercial licence fees/levies; government funding and lease of entitlements by recreational sector.

#### **d) Which units will be traded between sectors – reasons for choice?**

- Need for 'common currency'
  - Different commercial arrangements based on effort to achieve target catch.
  - Recreational effort controls to achieve target catch.
  - Need conversion factors for units to catch for each fishery.

#### **e) Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?**

- Trading in proportions of TAC (normally assessed in tonnes).
- Based on current management arrangements.

#### **f) How would the units to be reallocated be valued?**

- Market value, including signals from existing intra-sectoral market.
- Potential for Government involvement (may make decisions based on existing models or past practice, such as method for determining Fisheries Adjustment Scheme (FAS) or Act of Grace values).

#### **g) How would the reallocated units be distributed, and what entities would be involved in the transfers?**

- Must account for harvest strategy/management plan, noting need for the management plan to encompass recreational fishing.
- Commercial – held on individual licensees.
- Recreational – government established entity to hold/manage recreational entitlements.
- Distributed to all recreational fishers by increasing the notional catch for that sector.
- Temporary or permanent transfers, noting conditions may be required to regulate frequency and size of transfers.

#### **h) How would the outcomes of the reallocation be measured/monitored?**

- Commercial:
  - Statutory returns.
- Recreational:
  - Surveys.
- Social and economic surveys to measure changes in net benefits between the sectors and utilisation (degree to which each sector takes up its share).

#### **i) Other issues**

- Each sector funds the assessment of its own social and economic needs and changes.
- Poor recreational data.

#### **8 Key workshop outcomes**

- There was general support for the concept of reallocation using both administrative and market approaches. In most cases it was considered that a combination of the two would be most effective, and it was difficult to consider either in isolation.
- Where fisheries, quota and other markets were mature and well developed there was a preference for a market approach. In all cases, there was agreement that the market be used to set values and prices to encourage trading/provide compensation.
- Even where market mechanisms were considered to be effective, there was a need to utilise government to implement/facilitate the implementation of reallocation.
- In general, a case for reallocation needs to be driven by the sectors, under clearly defined fisheries objectives (social and economic). It was acknowledged that some fisheries required more detailed and measurable objectives covering both commercial and recreational fisheries, especially in the area of economics and social objectives.
- In some instances government may drive reallocation through processes such as the establishment of marine parks, coastal development or to address ecosystem impacts of fishing.
- It was considered that a broad conceptual framework which includes the basis for allocation and reallocation should be developed. This should include the following parameters :
  - Define what is being allocated i.e. the biological resource or suite of resources.
  - Define the nature of allocation. How is the allocation to be described and in what terms; under IFM this is described as a proportional allocation of the sustainable harvest between sectors. This should incorporate the concept of total fishing mortality.
  - Define the tradeable unit or units ('currency') being allocated or reallocated, and the duration of the units i.e. are the tradeable units tonnes (catch), tonnes per year/season, units in space (area) or time/gear (effort), or some other surrogate for the proportional use of the resource. A key question is whether this should be consistent across resources, or tailored to specific circumstances, or a mix.
  - Define who 'owns' and may trade in the allocation, and what restrictions on trade may apply.
  - Value the units/entitlements using markets, modified by social and other considerations.

- Create the sustainable harvest level and the allocation, its units and the processes associated with it in legislation i.e. give legal effect to the policy decisions by creating suitable legislative tools, including penalty regimes.
  - Describe the accounting mechanisms for tracking allocations and the trade in allocations.
  - Establish/determine the bodies (legal entities) to administer reallocation and subsequent transfers (e.g. purchase, trading, recording, holding).
  - Rights allocated through administrative or market processes, or a combination of both.
  - Agree period/process for review.
- The market for allocations may be created at a sector or individual level. For cross-sectoral trading of allocations this should operate at sector level initially i.e. collective rights are purchased and distributed through sector level bodies.
  - Government may exercise the right to intervene in market based systems.

## **9 Where to from here?**

1. Need for clarity of terminology of language associated with reallocation, e.g. nature of the rights/resource to be allocated, market-based system, administrative system.
2. Need to reaffirm Integrated Fisheries Management principles at the Government level (by June 2011).
3. Develop principles for reallocation, within context of broader IFM principles.
4. Ensure appropriate head powers in the new Act to enable reallocation/flexibility for both approaches (market/administrative approaches) and the role of bodies (sectoral level/government) holding and administering rights (by May 2011).
5. Settle commercial fisheries access rights – subject to final report of Access Rights Working Group and Government consideration (well advanced).
6. Advance the development of recreational fisheries rights. Need appropriate input for proposed new Act by June 2011.
7. Assess the pressure, desire and capacity for reallocation within and between sectors (fishery by fishery issue) in the context of other current management changes and realistic time frames.
8. Learning's from workshop to inform the operations of IFAAC, particularly in relation to West Coast Demersal Scalefish Fishery.
9. Develop processes, where appropriate, building on existing surveys etc, to obtain information to inform reallocation decisions.

## **10 Other issues**

A range of important issues, not directly related to the issue of reallocation were brought up by workshop participants. These included:

- Need clarity/to lay out framework/process for other 'pressure point' fisheries (i.e. not just IFM fisheries).
- Reallocation forms part of a major reform of fisheries in WA; industry (and the Department) have a number of significant issues in hand and prioritisation/realistic time frames are an important consideration.

- The complexity of reallocation across all WA fisheries is considerable; pragmatism and affordability will dictate the final form of reallocation.

#### **11. Closing remarks**

Ms Heather Brayford, Director Aquatic Management closed the meeting, thanking the speakers, Department Staff, participants and the facilitator. The meeting concluded at 16.55.

**INVITEES FOR REALLOCATION MECHANISMS WORKSHOP**

**IFAAC MEMBERS**

Ian Longson  
Libby Woods  
Norm Halse  
Steve Lodge

**RECFISHWEST**

Kane Moyle  
Andrew Rowland  
Ian Stagles  
Ian Sewell

**WAFIC**

Guy Leyland  
Ian Taylor  
Nick Sofilos  
Neil McGuffe

**OTHERS**

Daryl McPhee- Bond University  
Jacki Schirmer- ANU  
Tim Nicholas, Minister's Office  
Paul McLeod - UWA  
Bob Lindner - UWA

**DEPARTMENT**

Stuart Smith (for welcome/introduction)  
Heather Brayford  
Rick Fletcher  
Nathan Harrison  
Kevin Donohue  
Shane O'Donoghue  
Jo Kennedy  
Clinton Syers  
Martin Holtz



Andrew Cribb  
 Nikki Sarginson  
 Natalie Moore  
 Lindsay Joll

### HELPERS

Ian Cartwright, Facilitator  
 Laura Dimmer, Admin  
 Fiona Crowe

### BREAK OUT GROUPS

11.15 am – 12.15 pm			
Group 1 ITQs (Rock Lobster)	Group 2 ITEs (WCDSF)	Group 3 ITQs (Abalone)	Group 4 ITEs (WCDSF)
<b>Ian Longson</b>	<b>Norm Halse</b>	<b>Libby Woods/ Lindsay Joll</b>	<b>Steve Lodge</b>
Ian Sewell Nick Sofilos Daryl McPhee (Bond University) Nathan Harrison <b>Jo Kennedy</b> Kevin Donohue	Andrew Rowlands (Exec Officer, Recfishwest) Guy Leyland (Exec. Officer WAFIC) Paul McLeod (UWA)  Rick Fletcher <b>Clinton Syers</b> Shane O'Donoghue	Ian Stagles  Ian Taylor  Bob Lindner (UWA)  Heather Brayford <b>Martin Holtz</b> Tim Nicholas	Kane Moyle (A/CEO Recfishwest) Neil McGuffe  Jacki Schirmer (ANU)  Andrew Cribb <b>Nikki Sarginson</b> <b>Natalie Moore</b>

1.15 pm – 2.30 pm			
Group 5 ITEs (WCDSF)	Group 6 ITQs (Rock Lobster)	Group 7 ITEs (WCDSF)	Group 8 ITQs (Abalone)
<b>Ian Longson</b>	<b>Norm Halse</b>	<b>Libby Woods</b>	<b>Steve Lodge</b>
Ian Sewell Nick Sofilos Daryl McPhee Nathan Harrison <b>Clinton Syers</b> Kevin Donohue	Andrew Rowlands Guy Leyland Paul McLeod Rick Fletcher <b>Jo Kennedy</b> Shane O'Donoghue	Ian Stagles Ian Taylor Bob Lindner Heather Brayford <b>Nikki Sarginson</b> <b>Natalie Moore</b> Tim Nicholas	Kane Moyle Neil McGuffe Jacki Schirmer Andrew Cribb <b>Martin Holtz</b> Lindsay Joll

**Note:** Each group is led by an Integrated Fisheries Allocation Advisory Committee member  
 Group members listed in bold print are the fishery managers, and group reporters.

## ORDER OF PROCEEDINGS

Wednesday 2<sup>nd</sup> February 2010

## Department of Fisheries Hillarys – Meeting Rooms 1, 2 &amp; 3

No.	Agenda Item	Time
1.	<b>Introduction and Welcome</b> Stuart Smith, Chief Executive Officer, Department of Fisheries	9.00 am
2.	<b>Integrated Fisheries Management – where are we up to?</b> Dr Lindsay Joll, General Manager, Aquatic Management	9.05 am
3.	<i>Economic considerations for reallocation issues</i> Dr Daryl McPhee, Bond University and member of FRDC Board	9.15 am
4.	<b>Social considerations for reallocation issues</b> Dr Jacki Schirmer, Australian National University	9.35 am
5.	<b>Potential Reallocation Mechanisms – discussion on re-allocation mechanisms options</b> Dr Lindsay Joll, Department of Fisheries	9.55 am
6.	<b>Morning Tea</b>	<b>10.15 am</b>
7.	<b>Sectoral Presentation</b> Kane Moyle, A/Chief Executive Officer, Recfishwest	10.30 am
9.	<b>Sectoral Presentation</b> Guy Leyland, Executive Officer, WAFIC	10.40 am
10.	<b>Summing up</b> Facilitator	10.50 am
11.	<b>Workshops</b> (2 groups ITQ, 2 groups ITE/ Input Controls)	11.15 am
12.	<b>Lunch</b>	12.15 pm
13.	<b>Workshops</b> (2 groups ITQ, 2 groups ITE/ Input Controls)	1.15 pm
14.	<b>Report Back and Discussion</b> Facilitator	2.30 pm
15.	Afternoon Tea	3.30 pm
16.	<b>Summing up on best options for reallocation mechanisms</b> Facilitator	3.45 pm
17.	<b>Where to from here</b> Heather Brayford, Director, Aquatic Management	4.15 pm
18.	<b>Close</b>	

## Reallocation Mechanisms and Processes for IFM Fisheries

- Focus is on **Intersectoral** reallocation
- Not considering **Intrasectoral** reallocation
  - Although some mechanisms may apply to intrasectoral reallocation



## Reallocation Theory

- Paper by Chris Reid on possible reallocation mechanisms in WA Rock Lobster and SA Rock Lobster
  - Identified Administrative and Market mechanisms
- Paper by Alistair McIlgorm on reallocation in NSW
- 2002 DoF IFM paper
- Largely an uncharted area



## Reallocation Mechanisms What is it about?

- Reallocation is the process to change allocations in formal IFM fisheries
- Why should there be a reallocation?
  - The circumstances which surrounded the original allocation change
  - Socio-economic forces drive a reallocation



## Pre-Requisites for Re-Allocation

1. A functional IFM allocation has already occurred.
2. Mechanisms to successfully manage (or at least measure) the catch of each sector are in place.
3. The sectors are physically capable of catching any reallocated share.
4. There is spatial compatibility in the areas of the fishery where shares are re-allocated.
5. Entities exist which are capable of engaging in the re-allocation process.
6. The “currencies” that are being traded are the same **OR** that there are agreed conversions.



## Two primary options

- **Administrative**
  - Government decision-making process
  - Government buys commercial shares at market rates for commercial to recreational reallocations
  - Recreational to commercial?
- **Market**
  - The recreational and commercial sectors trade shares directly at a rate determined by the market



## Administrative mechanisms

- Government determines the degree of reallocation
- For adjustments from commercial to recreational Government acts for the recreational sector using a source of funds to buy commercial sector entitlement
  - Adjustment can be by CFAS, VFAS or Act of Grace payments
- Recreational to commercial?



## Market Mechanisms

- Requires that competent entities exist that can engage in the market
- For the recreational sector, this will require an entity which operates on behalf of recreational fishers
- The commercial sector can operate at the licensee (or higher) level using transferable authorisations/entitlement



## Key Issues

1. That the catch of the sector can be managed at a target or total allowable catch level
  - if it can't be managed, at least it can be measured
  - Where the share is measured but not managed, administrative reallocations may be done when set catch levels are exceeded



## Key Issues

2. The sectors are physically capable of catching the re-allocated share
  - Catch share taken in an area which is inaccessible to the other sector cannot be effectively reallocated
3. Catch share to be reallocated needs to come from an area relevant to the operations of the other sector
  - e.g. Catch taken in Zone A or B of the commercial lobster fishery of little use in a reallocation to recs because most catch is in the Zone C area



## Key Issues

- That the “currency” being traded is the same OR that there are agreed conversions
  - Commercial sector catches may be in weight (output [quota] fisheries) units OR in input (time/gear) units
  - Recreational sector catches usually in numbers of fish
- Weight is probably the common currency
  - Input measures can have weight equivalents
    - But often with significant individual or regional variation
    - Numbers of fish can be given weight equivalents – but also often with regional and other variation (e.g. species)



## Fishery resources that we will look at today?

- West Coast Rock Lobster
- “Metropolitan” Roes Abalone
- West Coast Demersal Scalefish



## Rock Lobster

### Commercial

- Managed fishery, individual unit entitlement - quota in weight (currently as catch limits; not ITQ [yet]) + pot limits, 3 zones, 95% share (fishery wide)

### Recreational

- No zones, bag limits (numbers), pot limits, 5% share (fishery wide), recreational licence (applies statewide)



## West Coast Rock Lobster Commercial Fishery Zones



## “Metropolitan” Roes Abalone

### Commercial

- Managed fishery, ITQ, “Metro Zone” (Moore R to Cape Bouvard – Area 7), 36t share; off-reeftop

### Recreational

- Bag limits (numbers), “Metro Zone” (Greenough River mouth to Busselton jetty), 40t share, primarily reef-top; recreational licence (applies statewide)



## “Metropolitan” Roes Abalone Fishery



## Demersal Scalefish

### Commercial

- Line fishery: Managed fishery, ITE (time), 3 fishing zones (+offshore), different species and CPUEs in different zones
- Demersal Gillnet: Two managed fisheries, ITE (time x gear), focussed on shark but with an associated scalefish catch
  - N of 31°S - State jurisdiction
  - S of 33°S to 116°E - JA jurisdiction (Zone 1)

### Recreational

- No zones, bag limits (number) and species limits, licence for boat fishing, preferred species



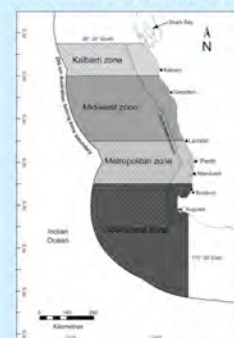
## Demersal Scalefish

Temperate Demersal Gillnet and Longline Fisheries



## Demersal Scalefish

West Coast Demersal Scalefish



# RESOURCE ALLOCATION

Associate Professor Daryl McPhee



## Background

- WA is at the forefront of attempting to formally and systematically make allocations between sectors.
- Other states have generally declared recreational only fishing areas as a de-facto form of allocation.
- Allocations within commercial sectors commonly undertaken in other states.
- Two components to allocation:
  - Initial allocation
  - Mechanisms to adaptively manage allocations through time
    - Need to balance flexibility and certainty.

## Overarching View of Allocation

- It is not only about economics!
- Need to consider social issues as well:
  - Employment objectives can be lost for the commercial sector when moving towards economic efficiency.
  - There is often a "lifestyle" component to commercial fishing as well.
  - Recreational fishing is about achieving a leisure objective – "satisfaction" or "well being".
- What are you actually trying to allocate and why, how will you know if what you do has worked?
- How can you adjust allocations to meet changing circumstances.
- Is there a commitment to have a viable commercial fishery and a vibrant recreational/charter fishery?

## Economic Analysis

- Economic analysis is conducted "at the margin", what is the value of:
  - consuming the next can of coke,
  - applying the next ton of fertiliser,
  - catching the next fish.
- The reasoning is that it is only a good idea to undertake an activity if the marginal benefit of doing so exceeds the marginal cost ( $MB \geq MC$ ).
- As an individual consumes increasing amounts of a given good per time period, the marginal benefit that they derive declines.

## Commercial Fishing Economic Data

- Activity occurs in a market.
- Various sources but mostly collected from dedicated surveys.
- Focus is generally on GVP and the cost of fishing, and the multiplier through the supply chain
- Consumers revealed preferences are important
  - Surprisingly, comprehensive and coordinated information is fairly limited, but some information is available and in most cases conclusions can be drawn.
- Some price to volume data is available, and demand functions can at least be put together in a rudimentary fashion
  - Often overlooked for allocation purposes but potentially important.

## Recreational Fishing Economic Data

- More complex as it requires valuing a diverse non-market activity.
  - An experience.
- No well established market where recreational fishers revealed preferences can be observed.
  - An exception is potentially charter fishing.
    - Potential for use a surrogate for the value of a "fishing day".
- Recreational fisheries are data poor.

## Recreational Fishing Economic Data

- Surrogates are used to estimate non-market values through various methods
- For allocation purposes, the value of recreational fishing IS NOT the amount spent on the activity.
  - See paper provided.
- Recreational fishing does have backward linkages in the economy, but generally not forward linkages.
  - Compare with the commercial fishery.

## Allocating Effort vs Catch

- Catch generally in the form of a TAC, often divisible into an ITQ.
- Allocations generally based on individual history of participation/catch.
  - Need to determine the relevant dates.
- Effort can be in the form of a time unit (days), a gear unit (e.g. pot), or a combination of both.
- For the recreational sector can model (very simply) projected catches based on national survey and census data (at the SD)
- Both effort and catch have relevance and can be considered in terms of allocation.
- Timeframes are important to both to reduce business uncertainty.

## Allocating Effort vs Catch

- In theory, a constant effort should lead to a catch more or less proportional to the standing stock.
  - Makes an annual or biannual stock assessment less important.
- Effort creep however critical if you are allocating effort, but not if you are allocating catch.
- Need a system so effort can be managed more or less in real time.
- For the recreational sector can model (very simply) projected catches based on national survey and census data (at the SD).
- For the commercial sector need ensure that "an effort allocation" is meaningful to the financial sector.
  - A role for targeted education.

## Allocating Effort vs Catch

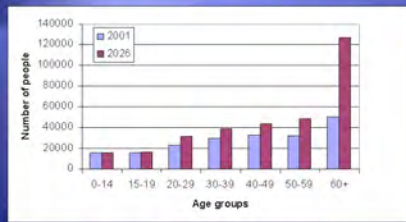
- For the commercial fishery – effort equates to a cost.
  - Minimise effort per unit catch to maximise profitability
- For the recreational fishery – effort is a key component of the desired outcome (satisfaction)

## Australia's Demographics

- Increasing population
- Ageing and more highly concentrated in coastal areas
- Has impacts on:
  - Demand for and impacts from recreational fishing
  - Infrastructure support, monitoring & compliance, crowding
- Recreational catch and effort data available for statistical divisions
- Combine to forecast future impacts



## Demographic changes in the Wide-Bay/Burnett 2001 to 2026



Overall increase from ~ 236,000 to 358,000 people

Modified from Wilson and Bell (2004)

## Recreational Fishing Data

- Effort information
  - Number of participants and average days fished per age group (people older than 15 years)
- Catch information for key species
  - Harvest estimates
  - Number of released fish
- Assumption - no change in participation levels for each age group between 2001 and 2026

## Wide Bay Burnett in 2026

- Number of participants increased by 50%.
- Number of days fished increased by 54%.
- Whiting (*Sillago spp.*)
  - In 2001, 2.2 million fish retained.
  - In 2026, 3.4 million fish retained.
  - Significant increase in the number of discards as well.

## Avoiding pitfalls

- There will almost certainly be legal threats or challenges to any system.
  - Significant body of case law related to Commonwealth Fisheries (see hard copy examples)
- As best as possible, ensure that catch/effort data for the commercial sector reflects what is real.
- Interactions with marine park legislation.
- Need to allow for "special circumstances" in allocating an ITQ for a commercial fisher.
  - Unplanned events (injuries, boat sinking), not planned events (e.g. vessel refits, overseas holiday).

## Results of implementing ITQ/ITE

- Reduced number of operators.
  - Often need specific mechanisms to consider "the small family operator".
  - However defined!
- Can address latent effort where provisions for a "minimum holding" apply.
- Brokerage businesses increase and/or expand.
- "Better quality product" and better marketing opportunities do not always ensue.
- The fishery survives, but evolves.
- There are always a diversity of views.....

## Thinking Broadly.....

- Control recreational catch of key species through a "tag system".
  - For example, a retained dhufish, pink snapper must have a tag attached.
- Seasonal closures to individual sectors
  - Negatives can include continuity of seafood supply and recreational support businesses in a region.
- Use charter fishing estimates as a surrogate to place a "value" on a day's fishing experience.
- Mechanisms for rec and conservation sectors to participate "in the quota market"
  - Use of licence fees to buy quota.
  - Other third parties may also buy quota as a specific project offset.
  - Can have additional individual contract requirements between rec/cons and a fisher if the quota is leased.



## Thinking Broadly.....

- Allow rec anglers to purchase a small amount of individual catch/effort for a nominal amount through a licensing system, and then additional larger fees for additional units.
  - A tiered non-transferable licensing system
- May be necessary to have an allocation regime that mixes effort and catch
  - Practical considerations could make this a necessity across sectors.

THANK YOU.....

## Social considerations for reallocation issues

February 2<sup>nd</sup>, 2011

Dr Jacki Schirmer

## Social considerations

- Principles for reallocation
  - Equity
  - Justice/fairness
- Social benefits/costs of reallocation
  - What are social benefits? How can they be measured? Can they be compared or 'traded off'?
- Reallocation decision process
  - Public consultation and public 'buy-in'

## Social principles by which reallocation decisions can be made

- Reallocation can be made based on:
    - Historical context
    - Relative social and economic values (many approaches)
    - Equity and justice principles
    - Livelihood needs
    - Likelihood of achieving sustainable catch
    - Monitoring & enforcement costs
    - Market mechanisms
- Most of these are enacted through an administrative, rather than market, system (or by setting limits on markets)

## Social principles by which reallocation decisions can be made

- Market vs administrative methods:
  - Market methods
    - Ideally establish a market that operates autonomously
    - Can set market rules that aim to provide social outcomes eg equity
    - Market forces can act to 'reveal' social preferences
    - However - can limit ability to ensure social outcomes, and market decisions do have social consequences
  - Administrative methods
    - More transaction costs
    - Can more directly ensure social outcomes

## Principles for reallocation – social aspects

- Beyond achieving ecological sustainability many Fisheries Acts refer to
  - Ensuring equitable allocation (and reallocation)
  - Maximising social & economic benefit
- What do these things mean?
- How can they be operationalised?
  - Getting from principle to practice requires specific definition of what is meant by equitable reallocation, social benefit

## Operationalising 'equity' or 'maximising benefits'

Does equity/maximising benefits mean:

- Defining minimum rights to benefits for different groups?
- Maximising benefits across all society irrespective of their distribution?
- Some mix of the two – ensure some benefits guaranteed, maximise total benefit beyond this?
- How will benefits be compared/traded off between sectors?
  - When are different benefits comparable/ able to be traded?
  - When is a benefit compensable and how (eg by cash buy out)
- How is benefit defined?
- Which benefits are included?
- Is benefit based person's claims or revealed preferences?

## Defining 'social benefit'

- Benefit = 'social wellbeing', 'benefits to society', 'human/individual wellbeing'
- Wellbeing influenced by:
  - Being able to meet cultural and lifestyle goals (which change over time)
  - Physical health
  - Financial wellbeing/stress (economic benefit is a social benefit – enables achievement of key social goals)
  - Individual psychology
- When considering influence of fishing on wellbeing, need to consider:
  - Change: How are social (cultural, lifestyle) goals changing over time?
  - Substitutability: Can wellbeing be achieved through activities other than fishing?
  - Significance: of fishing's influence relative to others factors influencing wellbeing

## Social benefits: key issues

- Values – and hence experience of benefits – change over time
- Fishing is one of many contributors to lifestyle, social wellbeing – how to identify its role vs other factors?
- Reallocation decision will change value
  - Impact assessment can examine
    - Change in social, economic, cultural values
    - Accounting for people's ability to respond and adapt to change
    - Avoid 'zero sum' simplistic analyses
- People can and do adapt to change
  - Perceptions of impact often more negative than actual impact
  - Impacts will depend on the individual person's ability to adapt – equity issues

## Commercial fishing – often cited social benefits

- Cultural/lifestyle benefit to fisher
- Health benefit/cost to fisher
- Cultural/lifestyle benefit to consumer
- Cultural/lifestyle benefit to fishing community/town
- Social benefits accruing to upstream & downstream businesses associated with commercial fishing

## Recreational fishing – often cited social benefits

- Cultural/lifestyle benefit to fisher
- Health benefit to fisher
- Consumption benefit to fisher (linked to health, also economic benefit)
- Cultural/lifestyle benefit to fishing community/town
- Social benefits accruing to upstream & recreational fishing

## Indigenous fishing – often cited social benefits

- Cultural/lifestyle benefit to fisher/community
- Consumption benefit to fisher/community

## Seafood consumption – often cited social benefits

- Cultural/lifestyle benefit to consumer
- Consumption benefit to consumer
- Health benefit to consumer

## Comparing/trading off benefits

- Can benefits be reduced to single comparable measure (\$/index, revealed preferences)?
- Single index provides attractive solution to decision makers but:
  - Methodology challenging
  - Requires regular measurement – preferences change over time
  - Social scientists question whether different benefits really can be reduced meaningfully to a single numeric measure
  - More pragmatically, stakeholder acceptance often very low

## Can benefits be compared without reducing to single measure?

- Yes – but requires more complex decision making process
- In this approach, good information is used as input to decision making – not to make decision in and of itself
- Examples of types of information that may inform allocation decisions...

## Commercial fishers

- Include questions about value of lifestyle/culture in regular economic surveys
- Understanding if lifestyle and cultural importance change over time can identify how social benefit changing

### Aspects of quality of life that may be examined in a social assessment

Quality of life categories	Topics on which survey questions might be asked (see Schmeer and Pickworth 2005a for example survey questions)
Life satisfaction	Satisfaction with: <ul style="list-style-type: none"> <li>life in general</li> <li>present financial situation (income, debt)</li> <li>health</li> <li>health of members of family</li> <li>social area/region the person lives/works in</li> </ul>
Work satisfaction (for those employed in fishing)	<ul style="list-style-type: none"> <li>income from fishing</li> <li>amount of challenge and variety in work</li> <li>autonomy in work</li> <li>balance between work and home/personal life</li> <li>management/regulation of fishing activities</li> <li>security of future in fishing</li> <li>stability of industry and cost of entering industry</li> <li>work hours</li> <li>physical conditions of work, including health and safety at work</li> </ul> It is a good idea to ask questions about the level of satisfaction with these elements, and also to ask how important each of these elements is to different people.
Satisfaction with fishing activities (for those not employed in, but partaking in, fishing activities, eg recreational fishers)	<ul style="list-style-type: none"> <li>management/regulation of fishing activities</li> <li>accessions for fishing</li> <li>rating of sense of wellbeing gained from fishing activities</li> </ul>
Physical and mental health	<ul style="list-style-type: none"> <li>survey of health impacts (mental and physical) experienced by those involved in fish-dependent activities, or those dependent on fishing-related activities. Includes measures related to physical health, stress levels, mental health.</li> </ul>

## Recreational fishers

- Regular survey that not only asks about catch but asks questions that identify:
  - How much fishing needed to provide benefit
  - Substitutability of other activities for recreational fishing
- Enables more targeted idea of allocation needs of sector – may need to be matched with consideration of differential allocation within sector

## Consumers

- To what extent do they value Australian caught seafood?
- Is this reflected in their consumption choices?
- How is consumption changing?

## Reallocation decision processes – role of public consultation

Consultation 'default' – submissions, public meetings

- **Positives:**
  - Capture key ideas about values – but not in ways enabling comparison, trade-off
  - People who respond often have good knowledge of the resource (but not always)
- **Negatives:**
  - Attract extreme views, value the 'loudest voice', miss 'average punter'
  - Polarise debate, may widen differences
  - Provide little opportunity for deliberation, dialogue to assist people to shift views
  - Not accessible to all (depends on how designed)
  - Assumes that representatives of groups are representative of all stakeholders – in reality, often not the case

## Other participatory methods?

- Some participatory methods less 'polarising' – but typically take longer
- Deliberative stakeholder committees (similar to some MACs)
  - Representatives of stakeholder groups
  - Long-term discussions
  - Given time to go back and 'bring their group along'
  - Can provide advice to group such as IFAAC
  - Can be undertaken alongside submissions
- Use smaller meetings rather than public meetings – consider meeting each group separately first at their regular meetings
- Citizen's juries

## Other methods?

- Gather independent social data via research (qualitative, quantitative)
- **Qualitative research**
  - Produces in-depth information, but not comparable
  - Many approaches - interviews, focus groups, deliberative processes, document analysis
  - Advantage: In-depth, explanatory information – why do people think a particular way or hold a particular value
  - Helps design strategies to maintain values in face of change
  - Doesn't tell you 'how many' people think something
- **Quantitative research**
  - Surveys, statistical data from ABS
  - Produces numbers, not always comparable across values

## Conclusions

- Either market or administrative approaches to reallocation have social implications
- Principles enshrined in Fisheries Act often specify social outcomes – but hard to measure
- Social benefits/costs not easily measured or traded off – but can be substituted, some measurement possible
- Need clear guidance on practical application of principles to support decision making
- Good public consultation can help but costly
- Will this achieve public buy-in? Still challenging given skills of some groups at media 'scare' campaigns

## How useful are surveys?

- **Positives:**
  - More representative of whole community than some consultation methods
  - Can gather data transformable into numeric indices
  - Can ask for information about trade-offs, and which aspects valued more/less by different stakeholders
- **Negatives**
  - Potential for bias in sample, response
  - Interpretation of meaning
  - Answers often based on little/limited knowledge
  - No chance for dialogue, debate that may result in shifts in views

## Approaches to integrating social, economic, ecological data to make decisions

- Delphi surveys
- Panel evaluation
- Multi-criteria decision analysis
- Analytic hierarchy process
- Bayesian Belief Networks
- Citizen's jury, deliberative approaches

## Delphi surveys

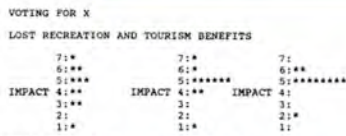
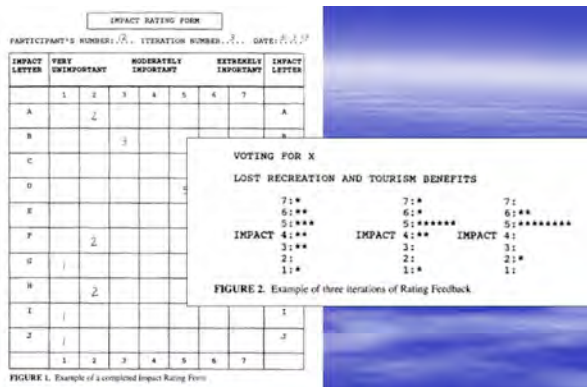
- Principle that consensus views of a group more likely to be accurate than individual
- Iterative survey process
  - Often done by email
  - Can be done as more rapid face-to-face process (mini-Delphi)
- Experts asked to give their ranking/preferences (eg regarding how to trade-off values)
- After each round, facilitator provides anonymous summary of expert's views and reasoning
- Experts then do another round, taking on board these views
- Stop at either consensus or pre-defined number of rounds and mean/median scores of final round determine results
- Key challenges
  - Ensuring appropriate experts involved
  - Consider whether experts require payment (can be quicker)
  - Will stakeholders trust outcomes or feel they address their concerns

## Panel Evaluation Method

Can be used by a committee such as IFAAC

- Select individuals to sit on panel
- Define potential socio-economic costs and benefits of proposal
- Rate importance to society of these costs and benefits
- Have iterative process of reconsidering ratings in light of feedback (statistical, from stakeholders, etc)
- Rank-order costs on one lists, benefits on another, and estimate relative 'weight' of each item based on (a) impacts, (b) efficiency, equity, sustainability
- Evaluate options that maximise benefit, minimise cost

Challenges: Distributional efficiency – may look for overall net gain without considering who gains, loses and equity implications



Source: Stauch, R., Sownman, M. and Grindley, S. 1993. The panel evaluation method: an approach to evaluating controversial resource allocation proposals. Environmental Impact Assessment Review 13: 13-35

## Multicriteria Decision Analysis

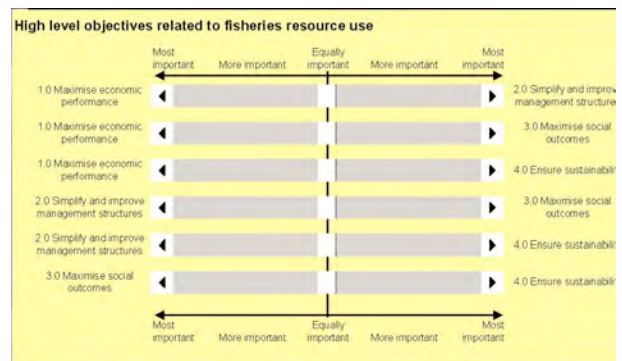
- Aims to formalise & address competing objectives to find 'optimal' solution
- Determine criteria for decision (eg benefits & costs)
- Determine weights for criteria (many methods used – see AHP for example)
- Score different options (eg resource allocation options) using weighted average decision algorithm

Challenges:

- Only as good as the data that goes in it
- Stakeholders may not agree with weightings or outcomes – best used to support stakeholder discussions, not to make final decisions
- Has worsened conflict over allocation in some instances in forestry sector

## Analytic Hierarchy Process

- Form of MCDA
- Priorities (tradeoffs between values) determined using pairwise comparisons
- Multiple stakeholders involved in priority setting
  - Develop decision elements (design survey)
  - Do pairwise comparison – mail, face to face
  - Compute the relative weights given by different people, using eigenvalue method (or other method)
  - Derive 'group weights' for each interest group
- Could be used iteratively to encourage stakeholders to reach consensus about weights
- Output then used as part of decision making model



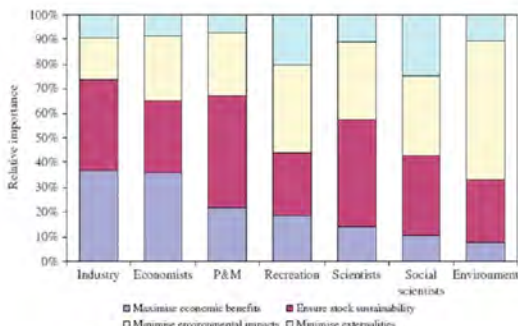
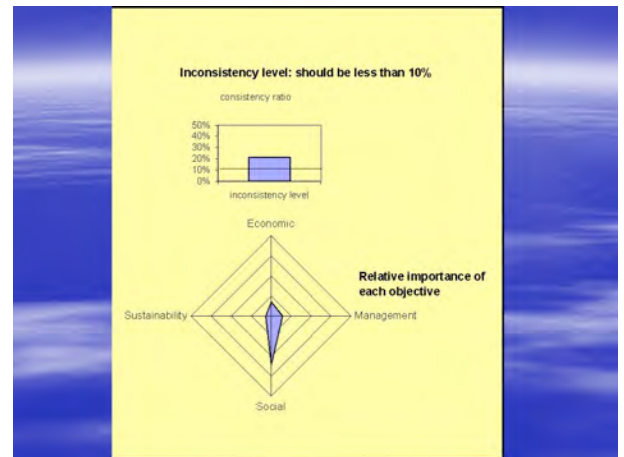
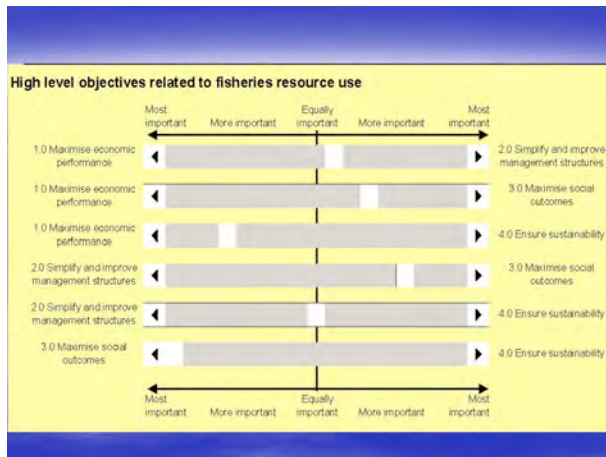


Fig. 4. Higher level objective weights sorted in order of highest to lowest weight for economic objectives.

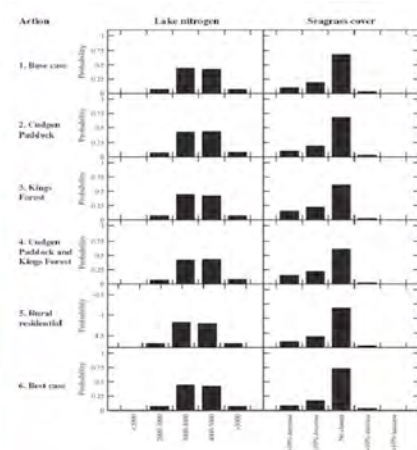
Source: Pascoe, S., Proctor, W., Wilcox, C., Innes, J., Rochester, W., and Dowling, N. 2009. Stakeholder objective preferences in Australian Commonwealth managed fisheries. *Marine Policy* 33: 750-758

## Bayesian Belief Networks

- Differs to MCDA in that
  - Builds a system model – how does everything affect everything else
  - Uses probabilistic analysis instead of absolutes
  - Can input qualitative and quantitative data into models
  - Use participatory process to build models and agree on probabilities (eg probability of negative impacts for rec fishers under an allocation scenario)
  - Then can use models to estimate changes



Source: Tioehurst, J.L., Newham, L.H., Rissik, D., Letcher, R.A., Jakeman, A.J., 2007. A Bayesian network approach for assessing the sustainability of coastal lakes in New South Wales, Australia. *Environmental Modelling & Software* 22: 1129-1139



## Citizen's juries

- Randomly selected members of community (may be stratified to be representative of demographics)
- Asked to deliberate on a 'charge' (eg what is the optimal resource allocation)
- Hear presentations from experts and question them
- Deliberate until reach consensus
- Charged to deliberate on behalf of community (not their personal interests)
- Usually paid for their time to ensure participation from representative sample



## IFM

### Where are we at?



## Formal IFM

- Government adopted IFM in 2004
- Fishery resources to be IFM'd are determined by Government
- IFM process involves
  - Setting a sustainable harvest level
  - Allocating explicit catch shares to the sectors
    - Draft recommendation / Final Recommendation
    - Ministerial signoff
  - Monitoring/managing each sector's catch
  - Developing reallocation mechanisms



## "IFM'd" Fishery Resources

### West Coast Rock Lobster

- 95% commercial; 5% recreational
- 2009/10 the first year

### Metropolitan Abalone

- Currently: 36t commercial; 40t recreational
- Future move to % shares (47% comm; 53% rec)
  - Once dynamics and management of reeftop and off-reeftop fisheries resolved
- 2010/11 the first year



## Current IFM Processes

### West Coast Demersal Scalefish

- In progress
- Draft allocation recommendation provided
- IFAAC working through submissions and issues raised from draft allocation
- Re-allocation raised as a significant issue

### Gascoyne Demersal Scalefish

- on hold



## Other IFM pressures

- Range of other fisheries in which there are IFM pressures, e.g.:
  - Peel Harvey Crab/finfish species
  - South Coast Estuaries
  - Barramundi and Threadfin (Kimberley)
- Currently these fisheries are managed for sustainability and approximate catch share maintenance (informal IFM)



## Today's challenge

- Focussed on dealing with formal IFM'd fishery resources
- Looking at **re-allocation** where an allocation has already been made
- Try not to distract with unallocated "pressure" fisheries



## Working group presentations

### Group 1 - Rock lobster

#### Key allocation mechanism

- Market approach
- Administrative decision process is problematic, shortcomings with consultation, subject to political processes/lobbying
- Timeliness, would take too long with an administrative mechanism

#### Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?

- Commercial sector in weight (kgs)
- Recreational sector in numbers which can be converted to weight (kgs)
- Common currency unit in kgs
- May need to split into finer spatial scale than the current zones

#### How would the tradable units be valued?

- Because shares are 95:5 use the value of a commercial unit (C zone 75 kgs/unit)

#### How would reallocation transactions be funded, including consideration of the role of Government and self-funded approaches?

- Recreational sector transactions funded from revenue from leasing unutilised allocation.  
Loan from Government
- Commercial sector funded from individuals

#### How would the traded units be distributed, and what entities would be involved in the transfers?

- Pre-requisite legal right for the recreational sector to 'own' units
- Recreational legal entity could take the form of a Trust or Department or outsourced to some other body
- Individual MFL holders trade
- Recreational allocation available to all recreational licence holders
- If purchased by commercial sector then unit held by purchaser
- If purchased by recreational sector then held by the recreational body and benefit goes to recreational rock lobster licence holders
- Commercial licence holders, recreational body, normal Government functions

#### How would the outcomes of the reallocation be measured/monitored?

- Recreational sector surveys, needs to be effective and will improve over time
- Commercial sector accept that the recreational sector's catch is estimated

#### Other issues

- Review and adjustment
- Temporary or permanent transfers?
- Recreational sector allocation has a floor i.e. cannot fall below a certain percentage

- Need to invest more in the recreational sector catch estimate and improve the timeframe for reporting
- Need to consider the timeframe for trading, i.e. 5 years for example. Could be quicker but is reliant on the recreational catch information being available
- Prerequisite is property right (enduring) for both sectors
- Inconsistencies in spatial access/use recreational effort limited to smaller area

### **Group 6 - Rock lobster**

#### **Key allocation mechanism**

- I. Market approach
  - Already an established market – easily determined market prices
  - Recreational sector – commodity fishery vs. social fishery
  - Fisheries management framework well established for both sectors - single species fishery, both sectors licenced
  - Catch levels for each season known with precision
  - Note that there could be some elements of a market (e.g. valuation) in an administrative approach

#### **Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?**

- Create recreational sector units equivalent to commercial ITQ units
- Allocate against existing management zones in proportion to recreational catches by zone (A/B & C)
- Needs to be a body established to hold and trade units for the recreational sector
- Government administrative role to set minimum recreational unit holding level – i.e. can't sell/lease it all

#### **How would the tradable units be valued**

- Market value – lease and/or purchase

#### **How would reallocation transactions be funded, including consideration of the role of Government and self-funded approaches?**

- Government should fund the set up of the recreational sector unit holding body (Ministerial Working Group?) and administrative framework
- Reallocation transactions funded by sectors. Recreational sector could generate unit lease returns and recreational licence could be increased to include funding to purchase/lease commercial sector units

#### **How would the traded units be distributed, and what entities would be involved in the transfers?**

- If purchased by commercial sector then unit held by purchaser
- If purchased by recreational sector then held by the recreational body and benefit goes to recreational rock lobster licence holders
- Commercial licence holders, recreational body, normal Government functions

### **How would the outcomes of the reallocation be measured/monitored?**

- Because units carry a catch limit, outcomes of transactions and resulting catch levels would be monitored by existing Department statutory catch monitoring functions

### **Other issues**

- Review and adjustment – 5 year rolling average to monitor recreational catch share, however, consistent under or over use of share could result in leasing/purchasing out or in of units on an annual basis
- Recreational sector can lease/purchase in to any level, but can only lease out what is not being caught. Can only sell to base 5%
- Temporary or permanent transfers – covered above

### **Group 3 - Abalone**

#### **Key reallocation mechanism**

- Administrative approach

#### **What principles/data will be used to convince government that an administrative reallocation is required, and the how will the extent of the reallocation be determined**

- Keep managing at catch share until it becomes marginal (one option)
- Preferred: When sector groups believe they are ready, they should discuss and agree on direction
- Government then taking advice from both sectors
- Government to provide tools to enable mechanism

#### **How will the funds be obtained to cover costs/ compensation under reallocation**

- Each sector needs to fund its reallocation
- Recreational - Additional fee on licence to pay cost (over time)
- Commercial self fund

#### **Which units would be traded – reasons for choice?**

- Commercial units purchased in the market
- %age from several commercial zones in recreational catch ratio
- Commercial sector tenders for extra entitlement – distributed in recreational catch ratio

#### **How would the units to be reallocated be valued?**

- By agreement – seller and buyer

#### **How would the reallocated units be distributed, and what entities would be involved in the transfers?**

- Recreational/Commercial reallocation units administered and distributed by Government
- Conservation purchase possible – to note
- Need body constituted specifically designed for that purpose

#### **How would the outcomes of the reallocation be measured/monitored?**

- Using existing research monitoring tools

- Bag tags/days - Graduated licence (recreational)

#### **Other issues**

- Generally permanent transfers with temporary transfers down the track
  - could be both but consistency between seasons important- stability in rules
- Majority view that personal holding by recreational sector is not an option
  - Recreational Management will need to change to accommodate shift

#### **Group 8 - Abalone**

##### **Key allocation mechanism**

- I. Market approach designed to match biology once biology is known. In meantime, ensure market mechanism genuinely transfers off-reef or reef-top e.g. through size limits etc, giving premium licences for recreational that reallocates commercial catch but requires minimum size and allows compressed air
- Commodity/consumption based fishery
  - Existing commercial ITQ system

##### **Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?**

- Commercial abalone unit (has a kg. value that may be adjusted annually)
- Convert equivalent recreational bag/time limit to kgs for reallocation to commercial sector or visa versa
- Significant issue surrounding reef top and off reef top stocks and allocation

##### **How would the tradable units be valued:**

- Market price
- There is the possibility of incorporating temporary and more permanent transfers

##### **How would reallocation transactions be funded, including consideration of the role of Government and self-funded approaches**

- Recreational licence levy/increases perhaps Government matching \$
- Single entity that holds all recreational allocations in trust (statutory body)

Under catch due to bad weather in recreational season may be tradable to commercial sector during same season

##### **How would the traded units be distributed, and what entities would be involved in the transfers?**

- See previous

##### **How would the outcomes of the reallocation be measured/monitored?**

- Licence fees
- Current monitoring and research programs
- Tag / bag system
- May need separate licence for metro area (WC Zone) and for specific species Roei

#### **Other issues**

- Need specific control for reef top stock

- May need separate on and off reef licences/management? At least until relationship between areas and optimum harvest strategies known
- Perhaps creating premium Licences i.e. to take animals over 7cm?
- Need separate licence for WC zone
- Risk involved in individual recreational personal tradable rights and needs to be kept at sectoral level

## **Group 2**

WCDSF

### **Key allocation mechanism**

Administrative approach with strong market signals

- Complexity of fishery – multi species/number and alignment of zones etc
- Management establishment phase
- Current sustainability issues
- High social value/political pressures

### **What principles/data will be used to convince government that an administrative reallocation is required, and the how will the extent of the reallocation be determined**

- Current catch levels met or exceeded by a sector on sustained basis (i.e. 5yrs)
- Proposed management action to deal with one or more sectors would create negative sectoral outcomes – social or economic
- Reallocation more positive overall outcome

### **How will the funds be obtained to cover costs/compensation under reallocation?**

- Recreational licence fees?
- Levy?
- Commercial access/licence fees?
- Trust funds?
- Government funding?

### **Which units will be traded between sectors – reasons for choice?**

- Need for 'common currency'
  - Different commercial arrangements based on effort to achieve target catch
  - Recreational effort controls to achieve target catch
  - Need conversion factors for units to catch for each fishery

### **How would the units to be reallocated be valued?**

- Signals from existing intra-sectoral market

### **How would the reallocated units be distributed, and what entities would be involved in the transfers**

- Commercial – individual licensees
- Recreational – government established entity to hold/management recreational

### **How would the outcomes of the reallocation be measured/monitored?**

- Government
- Sectoral/entities
- Independent 'watchdog'

#### **Other issues**

- Review and adjustment
- Temporary or permanent transfers

#### **Group 5 - WCDSF**

##### **Key allocation mechanism**

- I. Administrative approach
  - Complexity in managing/monitoring the number of species (200 species)
  - No readily identifiable trading unit

##### **What principles/data will be used to convince government that an administrative reallocation is required, and the how will the extent of the reallocation be determined?**

- Argue the case based on data from social and economic studies that demonstrate changes in net higher benefit e.g. recreational sector participation is increasing
- Decision rules around when changes are made according to the shift in the net benefits e.g. 5%

##### **How will the funds be obtained to cover costs/ compensation under reallocation?**

- Recreational allocation increases
  - Consolidated funds, recreational licence revenue, other? By tender
- Commercial allocation increases
  - Licensees
- Possible for commercial sector to trade allocations between Zones to increase the overall benefits for all sectors

##### **Which units will be traded between sectors – reasons for choice?**

- Shift from commercial to recreational
  - units need to consider the component of the unit that is demersal scalefish
- Shift from recreational to commercial
  - problematic

##### **How would the units to be reallocated be valued?**

- Commercial sector
  - Value of the unit, difficulty with DGNLL units

##### **How would the reallocated units be distributed, and what entities would be involved in the transfers?**

- Property right for recreational sector
- 'Units' held by legal entity on behalf of the recreational sector
- Individuals for the commercial sector

- Distributed to all recreational fishers by increasing the notional catch for that sector

**How would the outcomes of the reallocation be measured/monitored?**

- Commercial
  - Statutory returns
- Recreational
  - Surveys
- Social and economic surveys to measure changes in net benefits between the sectors.

**Other issues**

- Review and adjustment
- Temporary or permanent transfers
- Poor recreational data
- Reducing costs of data collection for recreational sector
- Marine Parks

**Group 7- WCDSF**

**Key allocation mechanism**

- Administrative approach
- Too complex: multi-species, multi-methods, multi-fishery, multiple zones, etc
- Critical sustainability issues
- Young fishery – not ready for market approach
- Market approach could be considered in the longer-term

**What principles/data will be used to convince government that an administrative reallocation is required, and the how will the extent of the reallocation be determined?**

***Principles***

- Sustainability of the fishery
- Socio-economic outcomes
- Utilisation of the resource (identified latent catch or effort)
- Optimisation of the resource (such as non-demersal scalefish in the WCDSIMF)

***Determining Extent***

- Current Government policy position with respect to resource exploitation
- Level of stakeholder aspirations
- Environmental factors (bycatch, habitat interaction)
- Socially unacceptable fishing practices by one sector
- Establishment of closed areas (i.e. marine parks)
- Outcomes of social surveys
- Size of the return
- Cost and funding

**How will the funds be obtained to cover costs/compensation under reallocation?**

- Government



- Community (public or corporate)
- through mechanisms such as FAS, Government loans, etc
- licence holders pay a levy for a specific purpose

#### **Which units will be traded between sectors – reasons for choice?**

- Proportion of the TAC (quantity = kg)

#### **Why?**

- Need to trade in units common to both sectors
- Everything comes back to quantity

#### **How would the units to be reallocated be valued?**

- Market value
- Potential for Government involvement (may make decisions based on existing models or past practice, such as method for determining FAS or Act of Grace values)

#### **How would the reallocated units be distributed, and what entities would be involved in the transfers?**

#### **How?**

- As per harvest strategy/management plan, noting need for the management plan to encompass recreational fishing
- Temporary or permanent transfers, noting conditions may be required to regulate frequency and size of transfers

#### **Entities**

- Recreational representative body
- Commercial entitlement holders

#### **How would the outcomes of the reallocation be measured/monitored?**

- Existing and additional monitoring tools, such as phone diaries, statutory returns, or social surveys
- Utilisation of the previous reallocation
- Determine if sustainability targets are met
- As per the Government's review cycle, or reviews initiated by the sectors

#### **Other issues**

- Review and adjustment
- Temporary or permanent transfers

#### **Group 4**

#### **Key allocation mechanism**

- Market approach – Option 6 - Reid paper
- Market based trading principles however unit trading is managed through a Government run administrative process and negotiation between sectors including conservation
- A system where trading is possible using the same currency
- Resource Management Strategy with both sectors having clear legislated harvest plans

- Complexity of fishery – multi-species, multi-gear, spatial differences, stock assessment only three species
- Trading of percentage share needs to occur at sector level, not individual fisher level

**Which units (including consideration of spatial considerations) would be traded between sectors – reasons for choice?**

- Trading in proportions of TAC (normally assessed in tonnes)
- Relates to stock assessment
- Based on current management
- Tonnage then converted into sector harvest plan
- Harvest plan operates within a catch range
- Any spatial considerations need to be converted to tonnages

**How would the tradable units be valued:**

- Commercial trading valuation

**How would reallocation transactions be funded, including consideration of the role of Government and self-funded approaches?**

- Recreational sector has an asset (fishing access rights) that it could use to raise its own funds
- Various ways to raise funds e.g. licence revenue, lease or sale of fishing rights
- Commercial sector through similar means and private financial arrangements
- Port Phillip Bay example (Government system buy back of licences through public tender – valuation using a market mechanism)

**How would the traded units be distributed, and what entities would be involved in the transfers?**

- Units distributed via the sector harvest plans (management plans)
- Temporary (leasing) or permanent transfers of fishing rights should occur
- Government is the record keeper
- Resource level entity (possibly sector bodies)

**How would the outcomes of the reallocation be measured/monitored?**

- Catch distribution between sectors
- Utilisation (degree to which each sector takes up its share)
- Sustainability targets are being met
- Assessment of social/economic benefits and needs – social circumstances may change
- Each sector funds the assessment of its own social and economic needs and changes
- Sustainability target assessed by Government

**Other issues**

- Review and adjustment
- Temporary or permanent transfers