The Australian fisheries management experience: *State fisheries*

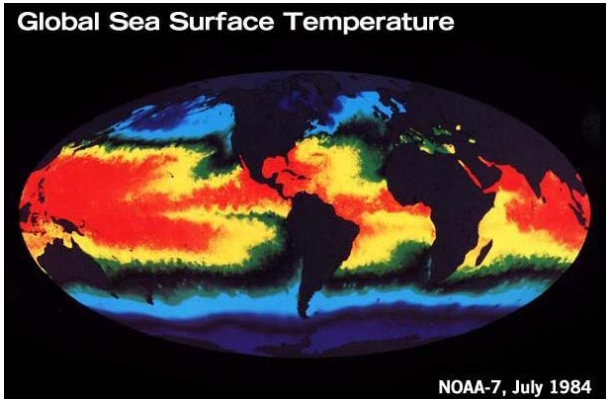
Stewart Frusher

Outline

1. Fisheries management system in Tasmania
2. Example of ITQ management in Tasmania
3. Role of MPAs in Tasmania

Global

- UN Convention on the Law of the Sea
- UN Convention on Biological Diversity



Federal

- Australia's National Ocean Policy
- National Strategy for Ecological Sustainable Development
- National Strategy for Conservation of Australia's Biological Diversity (contains the Environmental Protection and Biological Conservation Act)

State

- Living Marine Resources Management Act 1995
- National Parks and Reserves Management Act 2002
- Marine Farm Planning Act 1995

Separating State from National?

Offshore Constitutional Settlement (OCS) agreement

State management

- Marine resources within 3 nm of the coast

and

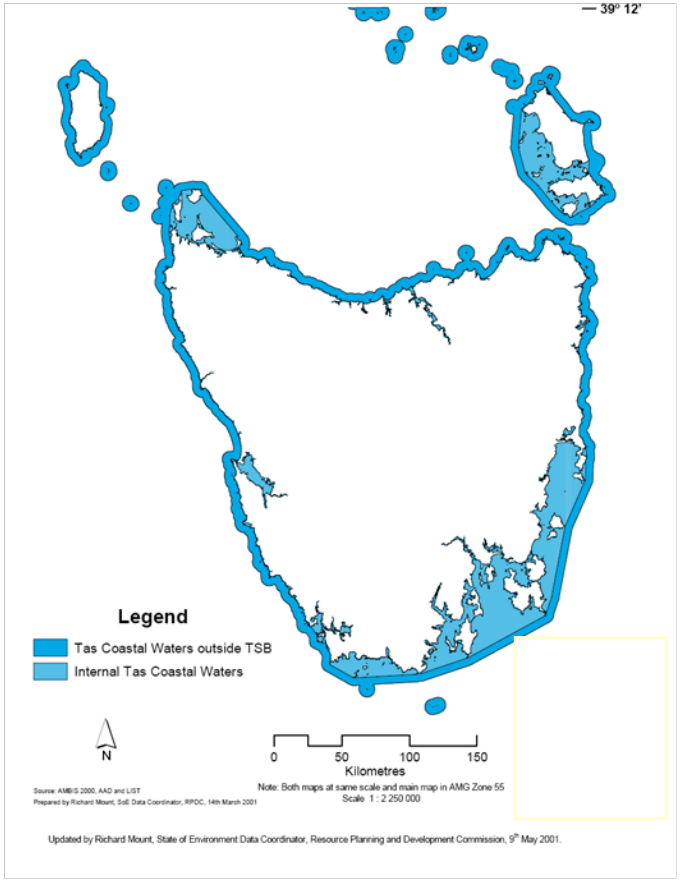
- Where the fishery is located in waters adjacent to one state, an agreement can be formalised to manage the fishery under state law (e.g. rock lobster fishery).

Federal

- Fisheries between state boundaries (3nm) and the edge of the Australian fishing zone

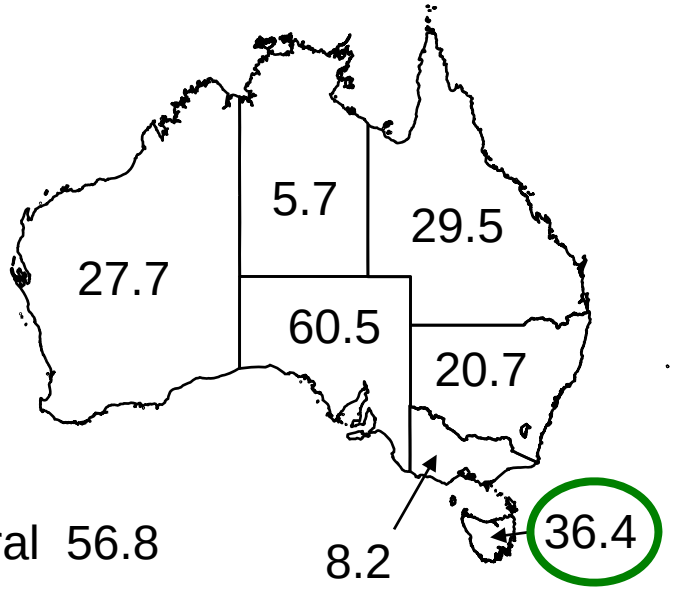
and

- Where a fishery is conducted in waters adjacent to more than one state, subject to the agreement of all parties (e.g. south- east trawl)

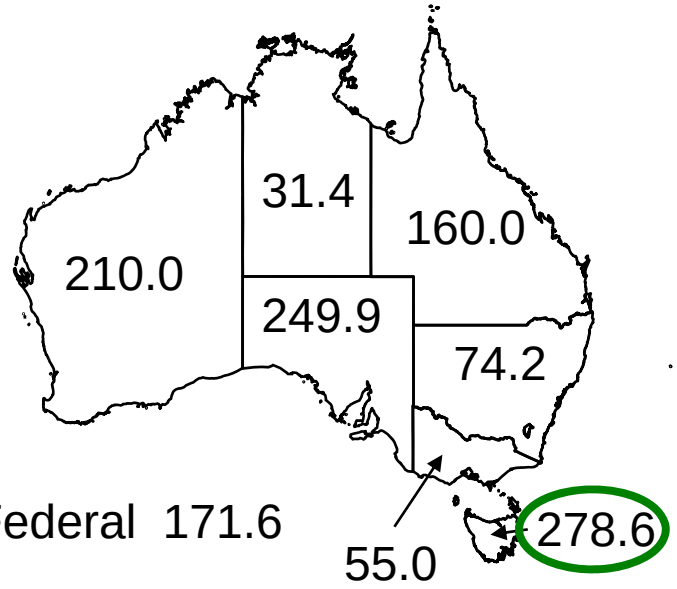


Production and value of Australian Fisheries

Tonnes (,000)



€ 000,000



Tasmania = medium to high production and high value

Wild Capture

Abalone = 2,491 tonnes; €62,125; €/kg = 24.9

Rock lobster = 1,509 tonnes; €34,707; €/kg = 23.0

Aquaculture

Atlantic salmon = 23,637 tonnes; €159,347; €/kg = 7.6

ABARE Fisheries Statistics 2007

Living Marine Resources Management Act 1995 (LMRMA)

The purpose of this Act is to achieve sustainable development of living marine resources having regard to the need to –

(a) increase the **community's understanding** of the integrity of the ecosystem upon which fisheries depend; and

(b) provide and maintain sustainability of living marine resources; and

(c) take account of the **community's needs** in respect of living marine resources;

(d) take account of the **community's interests** in living marine resources.

ALL FISHERIES REQUIRE A FISHERIES MANAGEMENT PLAN





LMRMA provides the Minister with the head of power to

(a) recognise industry representative bodies

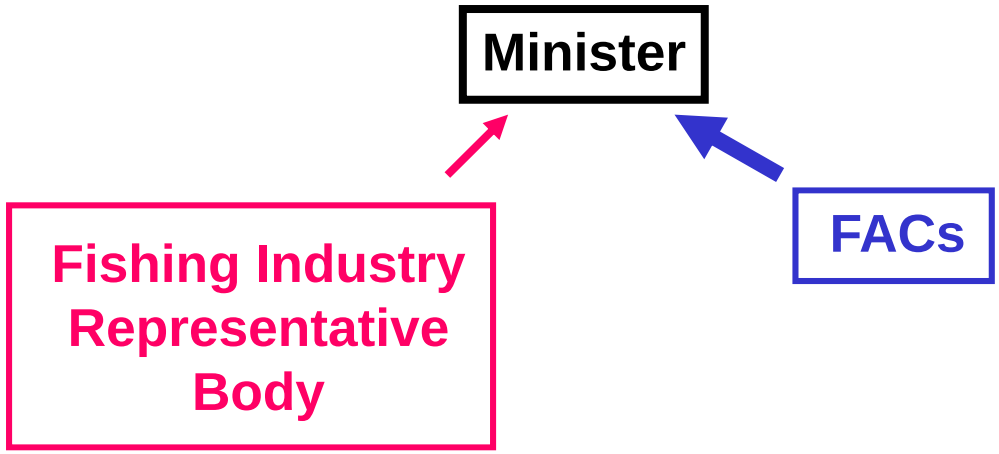
Tasmanian Rock Lobster Fishermen's Association

Tasmanian Abalone Council

and

(b) to establish a fishery advisory committee (FAC) for a fishery.

Advisory committee members are appointed by the Minister and the Minister may abolish an advisory committee at any time.



Fishery Advisory Committees (FACs)

Function

to provide advice to the Minister on aspects related to the management of fisheries

Sector specific (e.g. abalone FAC, crustacean FAC etc)

Example of Fishery Advisory Committee

Independent Chair

3 Fishermen from Industry Sector Association

2 Fishermen independent of Industry Sector Board

Executive Officer of Industry Sector Association

Representative of Seafood Industry Council

2 Processor Representatives

9 Industry Reps

Community or Conservation Representative — **1 Conservation Rep**

1 Government Fisheries Manager

1 Government Quota Audit Representative

1 Marine Police

3 Government Reps

1 Fisheries Scientist — **1 Scientist (Gov?)**

Fishery Advisory Committees (FACs)

Function

to provide advice to the Minister on aspects related to the management of fisheries

Sector specific (e.g. abalone FAC, crustacean FAC etc)

- Scientific Advice provided by Scientist appointed to the fishery or the FAC can request advice form any other source.

- Scientific information is gained form annual fishery assessments

Assessment reviewed by Fishery Assessment Working Group

- Chair – Senior Research Scientist
- Scientists responsible for the fishery
- Resource modeller responsible for assessment model
- Fishery manager responsible for specific fishery
- 2 X Commercial Fishery specific Industry representatives
- Tasmanian Seafood Industry Council representative
- 2 X Recreational Fisheries representatives



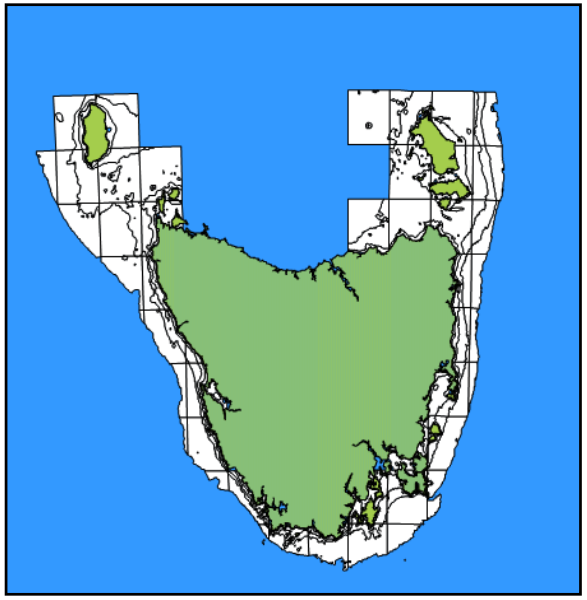

Fishery Assessment Working Groups (FAWGs)

Purpose:

To provide key stakeholders (Government and Industry), with an opportunity to comment on the draft assessment and identify areas that require clarification or further analysis.

Aims:

- To inform the assessment process,
- To seek input on evaluation of performance indicators and,
- To educate and inform stakeholders.



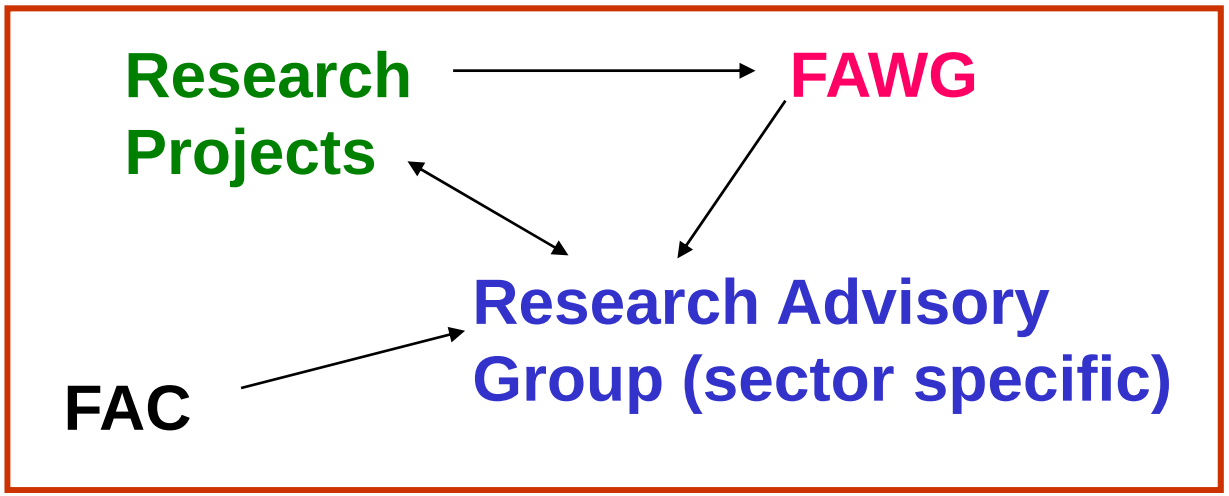
Assessment underpinned by appropriate research

Research Strategy

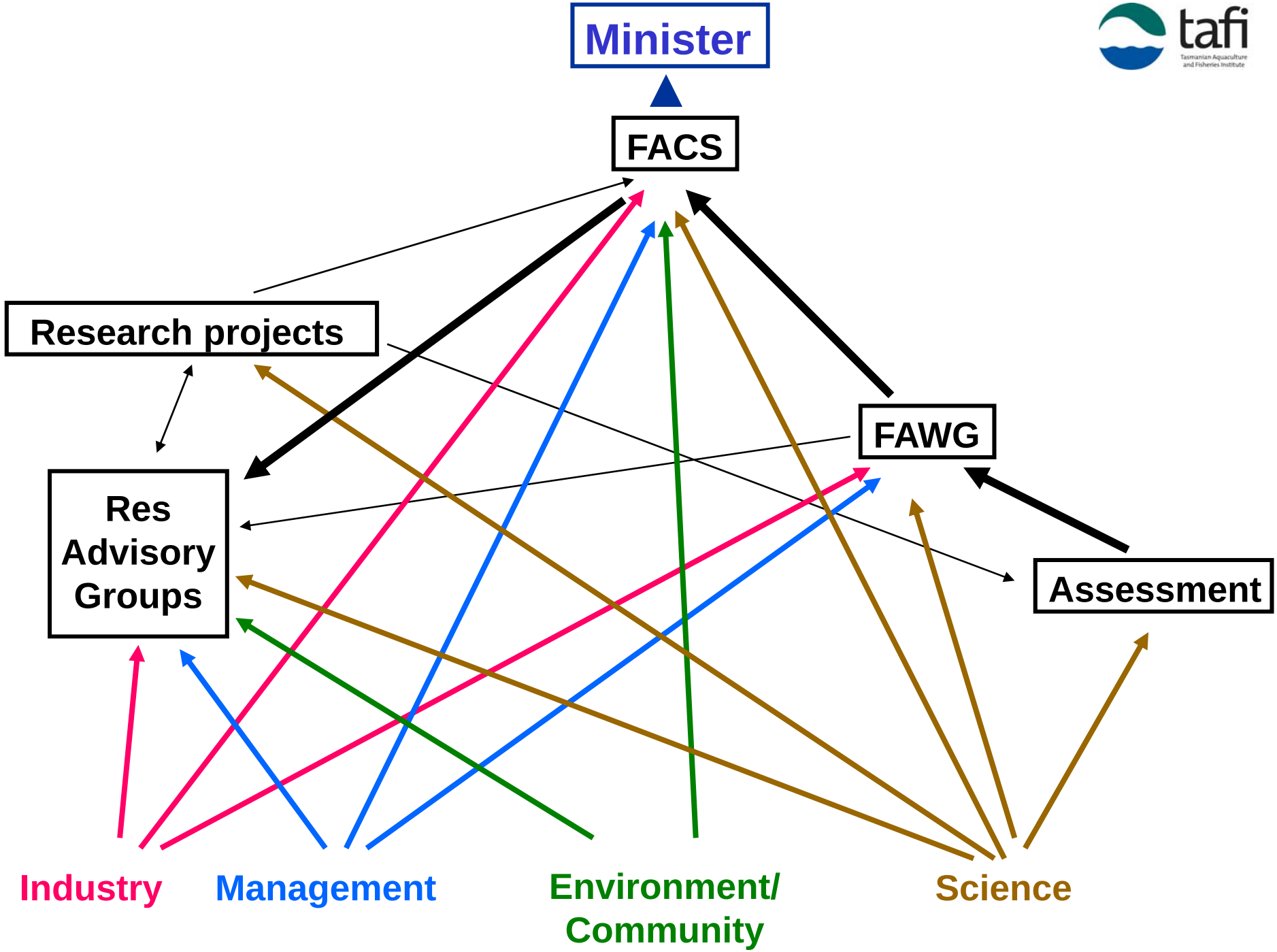
Research Advisory Groups

Purpose

- Develop and update Strategic Research Plans
- Identify and prioritise research issues.



Research advisory groups have scientific, **government** and **industry** representation.


Minister
FACS
Research projects
Res Advisory Groups
FAWG
Assessment
Industry
Management
Environment/ Community
Science

Tasmanian rock lobster fishery

Catch: 1500 tonnes

Value: A$70M ~ €40M

Licences: Commercial = 220

Recreational = 18000

History of rock lobster fishery

1885: Size limits introduced & protection of egg bearing females

1926: Closed seasons

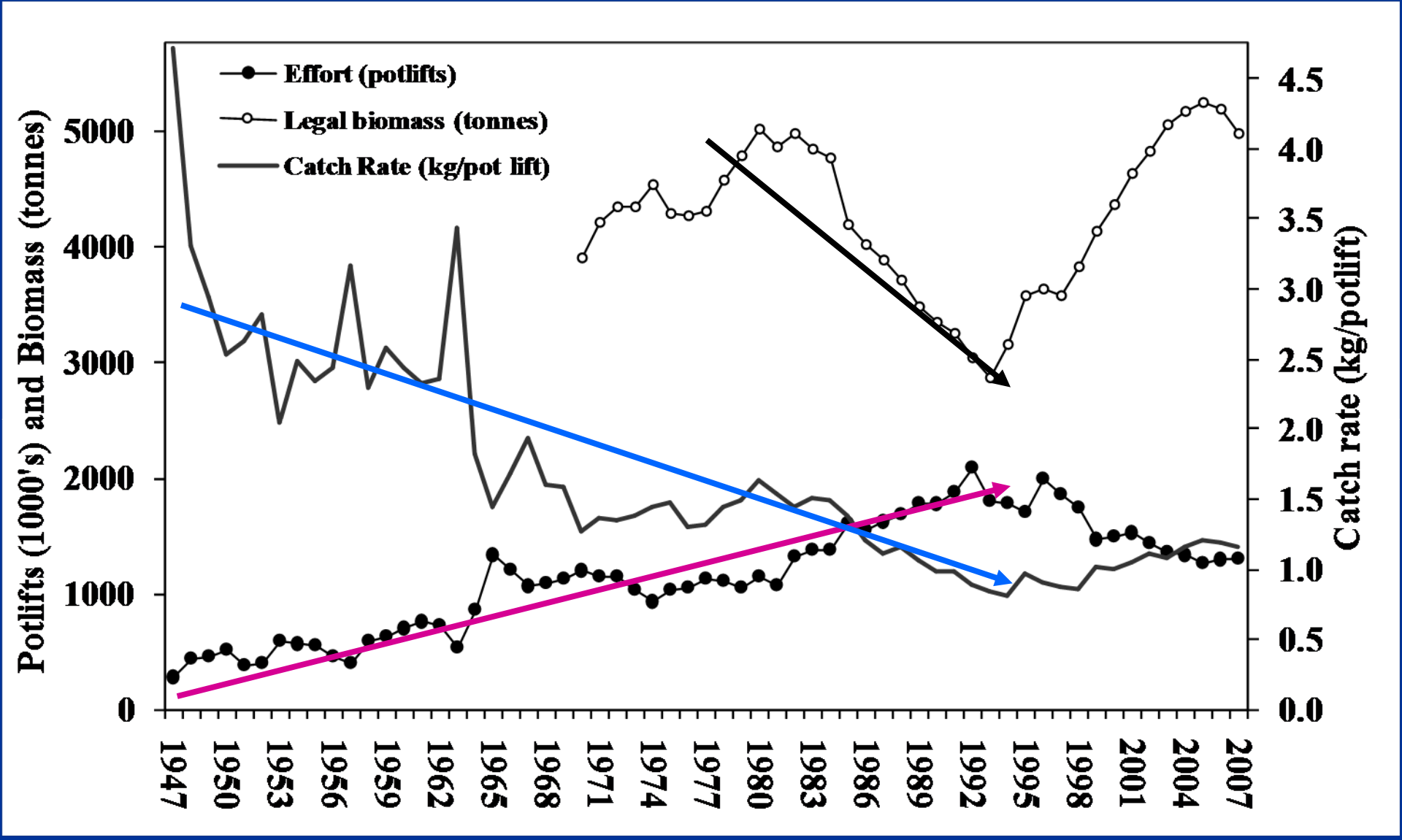
1927: Licences introduced

1966: Licences capped at 442 and total number of traps in fishery fixed.

Between 1966 and 1996 a number of effort and licence reduction packages were introduced.

1996: 321 licences remained in the fishery and 10,507 traps.

1998: ITQ management system introduced



1947 – 1994: Catch rates decline

Effort increases

Number of legal lobsters in population decreases

Evolution of ITQ management system

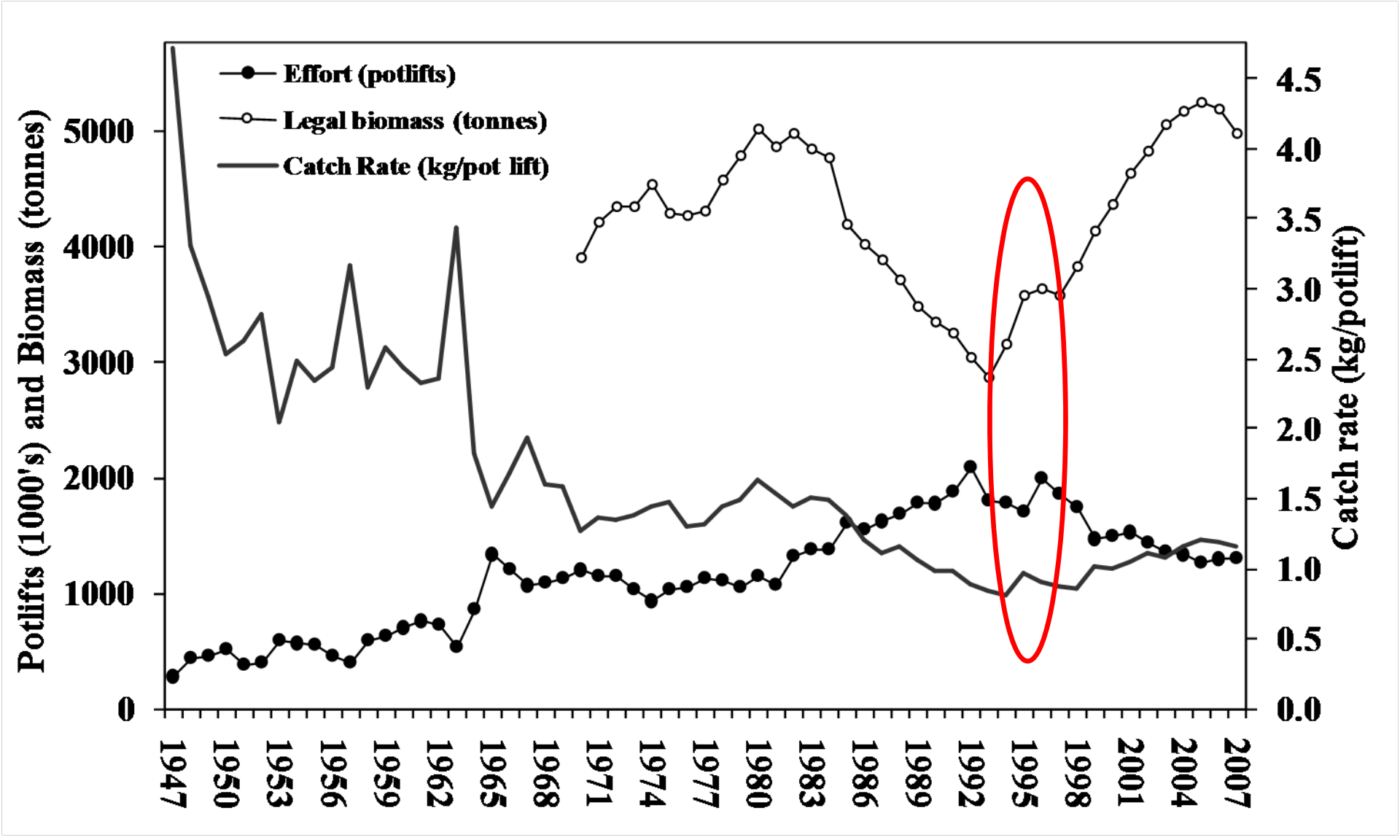
1980 – 1994:

Mid 1980's: Fishers and managers concerned about state of the fishery

1992: Industry & Government working group to explore management options

: Effort too high and increasing → must be reversed
: Too many participants for too little resource.

Co-management committee lists options for *Industry to vote* on: increased seasonal closures
increased gear restrictions
quota management system



Co-management committee introduces interim measures of additional seasonal closures to stop decline while Industry voted on long term management measure.

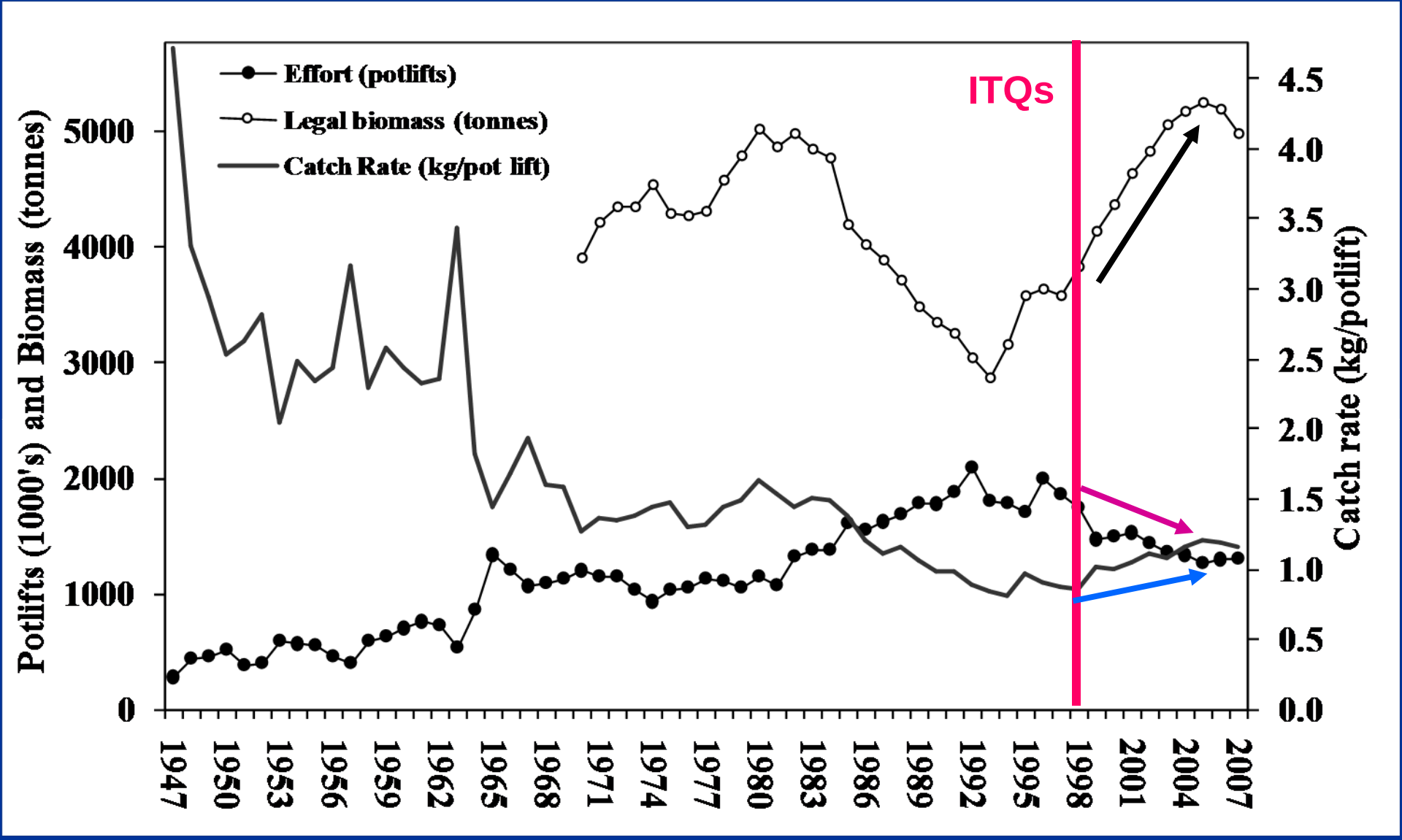
Evolution of ITQ management system

1996: Fishermen voted for an individual transferable quota management system (ITQ)

1998: Government implemented ITQs in 1998 (*and maintained many effort controls*).

Fishermen were allocated a fixed amount of lobsters for each trap (143 kg).

Co-management committee decided to increase licence fees to cover costs of research, quota management system and policing.



1998 – 2006: Catch rates increase

Effort decreases

Number of legal lobsters in population increases

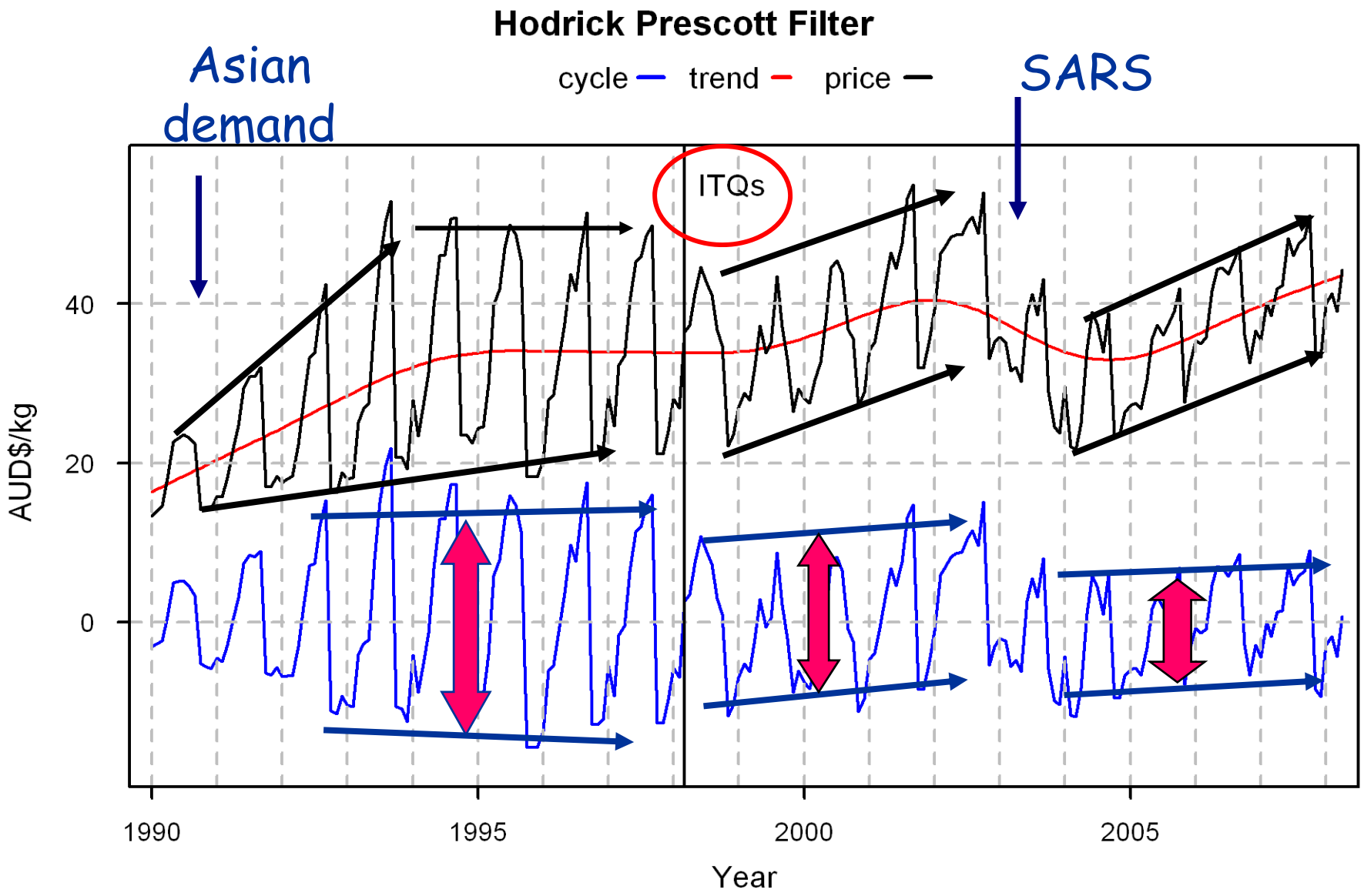
Outcomes of ITQ management system

- Industry recognised that the sustainability of the stocks has improved
- Industry concerns over the social and economic benefits

- Co-management committee a success
  - fishers, managers and scientists more willing to work together.
  - Increased confidence in the co-management process

- Industry is now supportive of further adjustments to the management scheme including zoning, matching catches to markets, translocation of lobsters from low to high productive regions of the fishery.

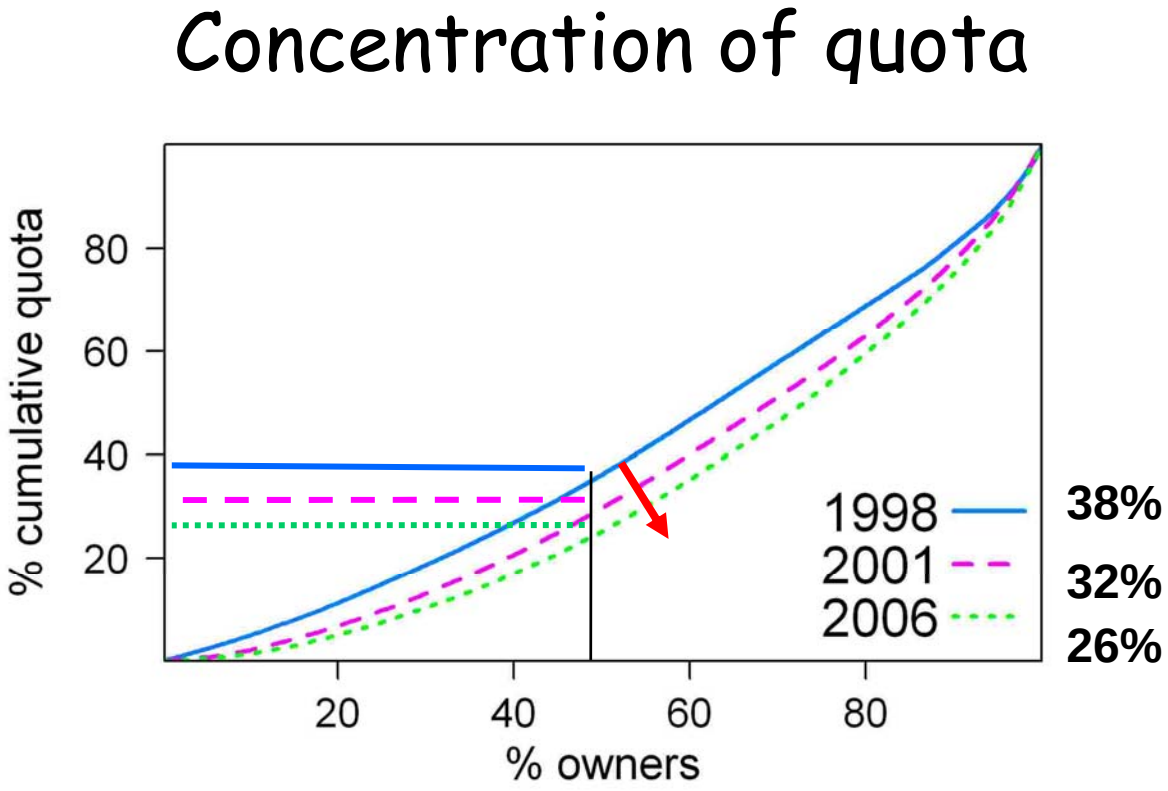
Outcomes of ITQ management system



Average price changes

Hamon et al, 2009

Outcomes of ITQ management system



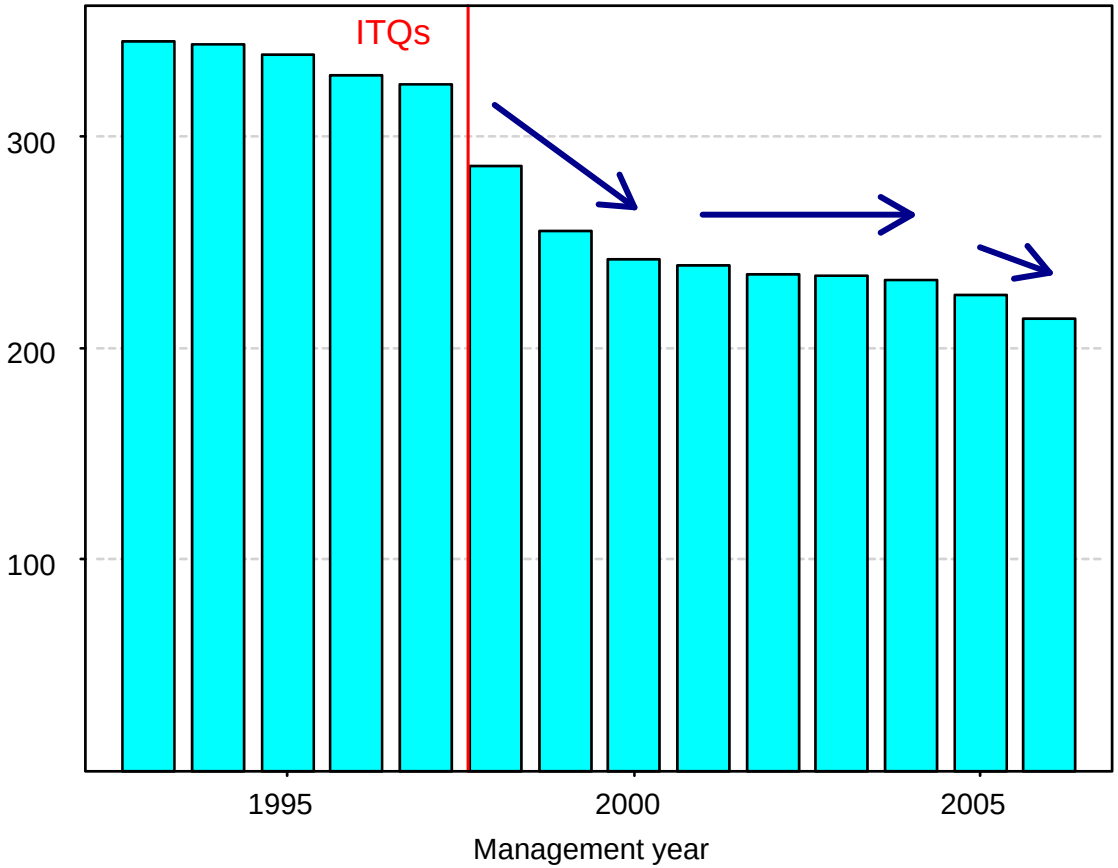
- Initial allocation equitable (low Gini index)
- Concentration of ownership over the period
- Relatively low concentration

Hamon et al, 2009

Outcomes of ITQ management system

Fleet rationalization

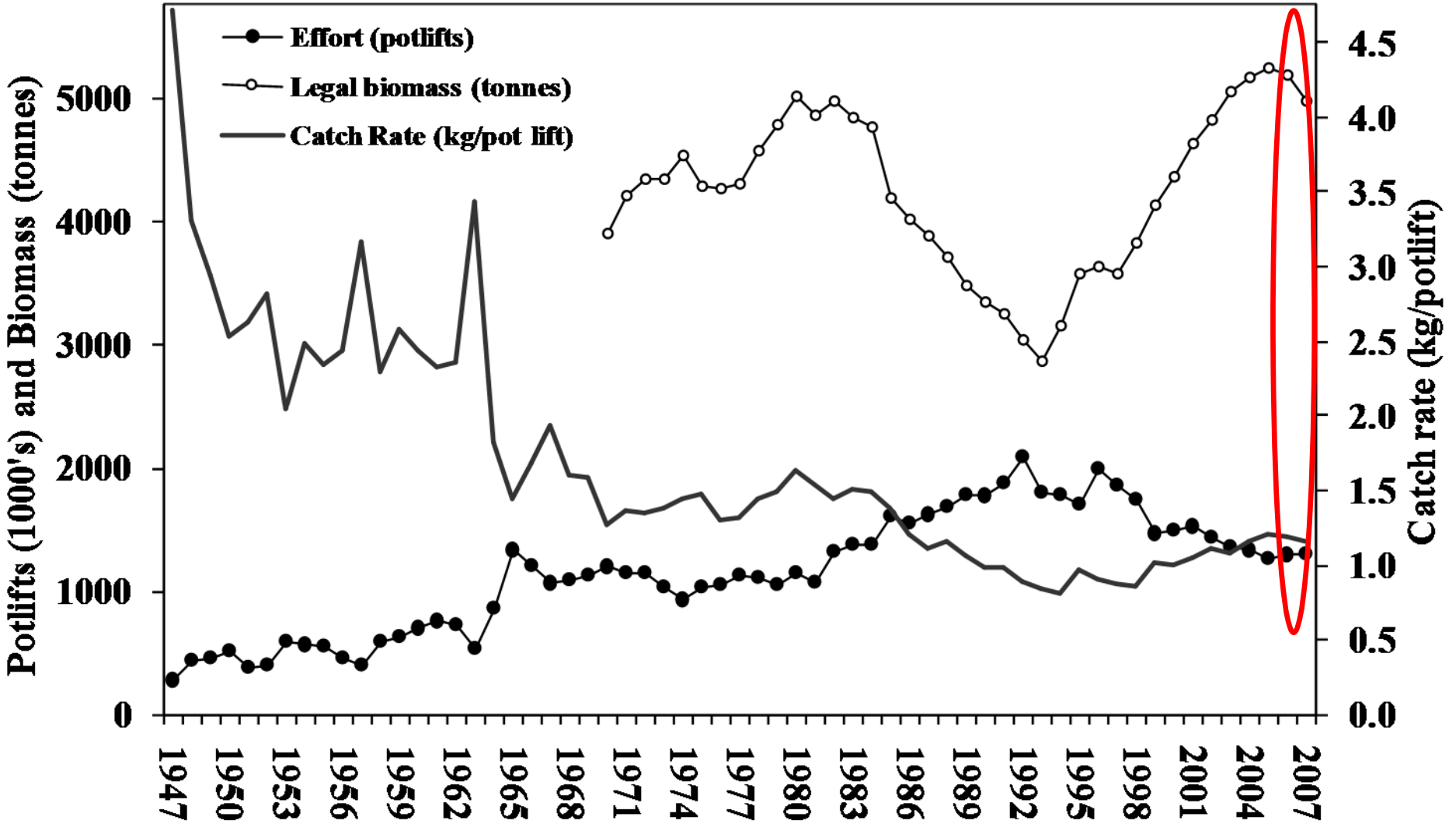
Number of vessels operating in the Tasmanian rock lobster fishery



→ First 3 years: rapid exit of vessels from the fishery (-25%)

→ Second round of vessel exits since 2005

Hamon et al, 2009



Recent declines due to impact of climate change on east coast (fastest warming region in southern hemisphere)

Lobster advisory committee able to react quickly to adjust quota to maintain profitability of fishery

Tasmanian abalone fishery

Catch: 1500 tonnes

Value: A$100M ~ € 55M

Licences: Commercial = 125

Recreational = 13000

History of abalone fishery

1962: Minimum size limit

1965: Commercial fishing licence introduced

1969: Licences capped at 125

From 1965 to 1985 catch increased 412 → 4500 tonnes

But fishery performance was declining

1985: Introduction of quota management (TAC = 3500)

Each diver allocated 28 units [1 unit = 1 tonne]

Each unit = IQ

Limited transferability – each diver could transfer 12 units on a seasonal basis to another diver.

1989: Quota reduced to 2076 tonnes (incrementally since 1986)

Due to increasing value of licences and barrier it posed to new entrants a review was initiated in 1990.

1991: Commercial abalone licence split into a dive licence and quota units (fishing and quota ownership could be separated). The number of abalone quota units that could be held on an individual licence was unrestricted.

2000: Zones introduced for management and assessment (eastern and western)

2003: Further subdivision of fishery into 2 more zones.

The Tasmanian abalone fishery is considered one of the best managed abalone fisheries in the world and provides over 25% of the global wild caught abalone.

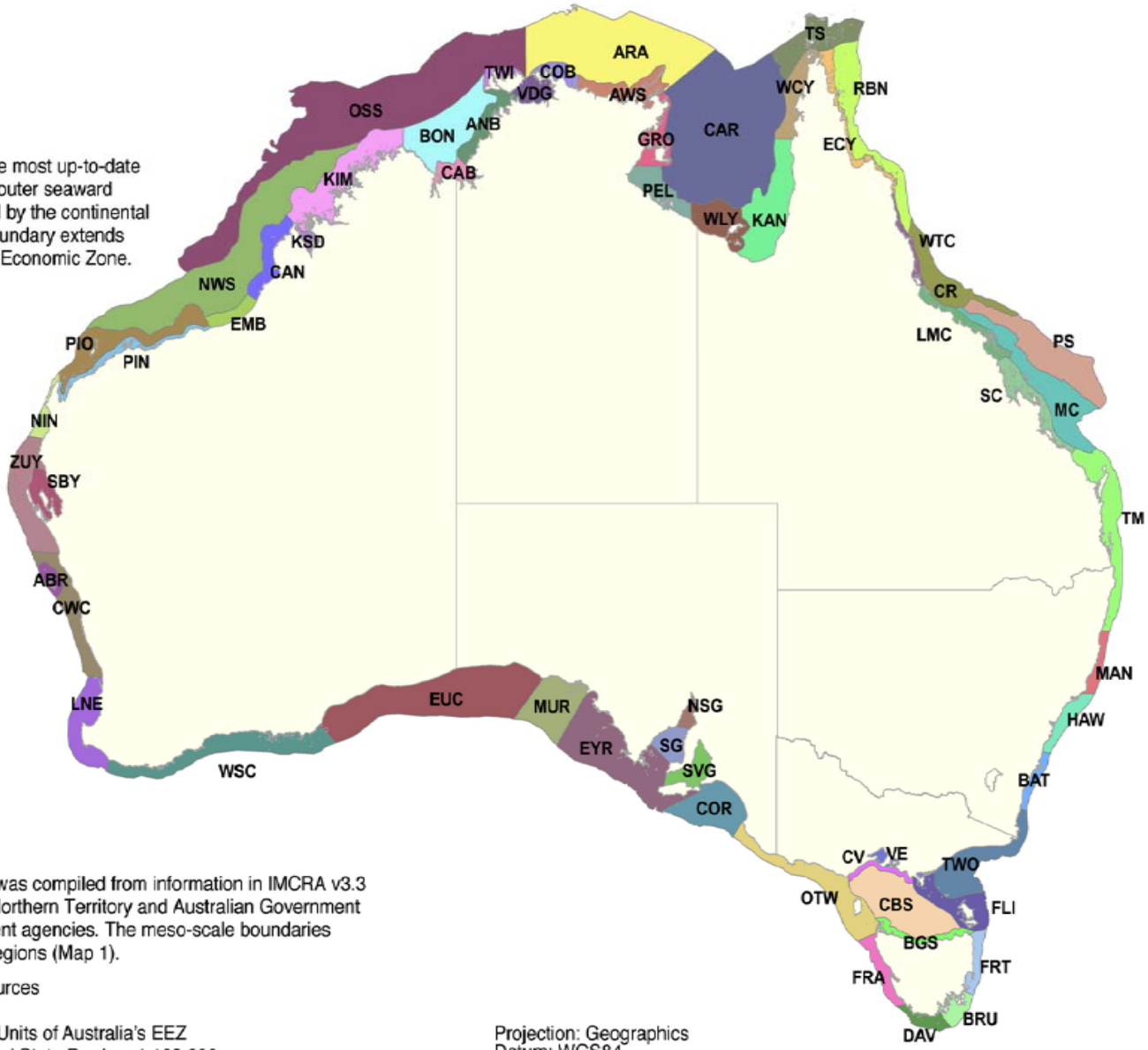
Biodiversity Conservation and Marine Protected Areas (MPAs) in Tasmania

- Australia's governments are working together to set up a National Representative System of Marine Protected Areas (NRSMPA) throughout our entire marine jurisdiction.

- The first step was to determine the different biological regions around Australia.

Map 2 IMCRA 4.0: Meso-scale Bioregions

BACKGROUND
This map was compiled using the most up-to-date data available as of 7/3/97. The outer seaward extent of the coverage is defined by the continental shelf break except where this boundary extends beyond the Australian Exclusive Economic Zone.



Bioregions
ABR, Abrolhos Islands
ANB, Anson Beagle
ARA, Arafura
AWS, Arnhem Wessel
BAT, Batemans Shelf
BGS, Boags
BON, Bonaparte Gulf
BRU, Bruny
CAB, Cambridge-Bonaparte
CAN, Canning
CAR, Carpentaria
CBS, Central Bass Strait
COB, Cobourg
COR, Coorong
CR, Central Reef
CV, Central Victoria
CWC, Central West Coast
DAV, Davey
ECY, East Cape York
EMB, Eighty Mile Beach
EUC, Eucla
EYR, Eyre
FLI, Flinders
FRA, Franklin
FRT, Freycinet
GRO, Groote
HAW, Hawkesbury Shelf
KAN, Karumba-Nassau
KIM, Kimberley
KSD, King Sound
LMC, Lucinda-Mackay Coast
LNE, Leeuwin-Naturaliste
MAN, Manning Shelf
MC, Mackay-Capricorn
MUR, Murat
NIN, Ningaloo
NSG, North Spencer Gulf
NWS, North West Shelf
OSS, Oceanic Shoals
OTW, Otway
PEL, Pellew
PIN, Pilbara (nearshore)
PIO, Pilbara (offshore)
PS, Pompey-Swains
RBN, Ribbons
SBY, Shark Bay
SC, Shoalwater Coast
SG, Spencer Gulf
SVG, St Vincent Gulf
TM, Tweed-Moreton
TS, Torres Strait
TWI, Tiwi
TWO, Twofold Shelf
VDG, Van Diemens Gulf
VE, Victorian Embayments
WCY, West Cape York
WLY, Wellesley
WSC, WA South Coast
WTC, Wet Tropic Coast
ZUY, Zuytdorp

The meso-scale regionalisation was compiled from information in IMCRA v3.3 supplied by the relevant State, Northern Territory and Australian Government marine research and management agencies. The meso-scale boundaries are nested within provincial bioregions (Map 1).

Australian Government Data Sources
DEH(1998): IMCRA v3.3
GA(2002): Primary Bathymetric Units of Australia's EEZ
GA(1990):Australia, Coastline and State Borders 1:100,000

Produced by: ERIN, Department of the Environment and Heritage, Australian Government.

Projection: Geographics
Datum: WGS84

0 200 400 800 1,200
Approx. Kilometres

Tasmania is associated with 8 bioregions and is committed to establishing MPA's in each of these bioregions.

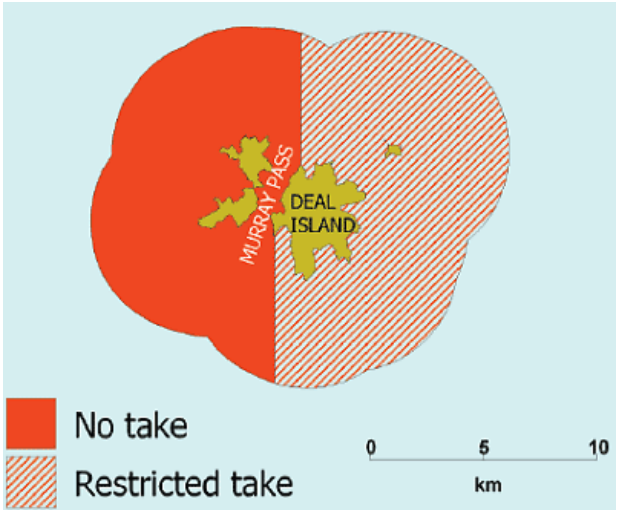
In Tasmania, the implementation of MPAs comes under the **Tasmanian Resource Management and Planning System (TRMPS)** through the **Resource Planning and Development Commission (RPDC).**

Membership of the Commission represents a range of community, industry, conservation and Local and State Government interests and comprises a full-time Executive Commissioner and five part-time Commissioners.

Tasmania has implemented several MPAs and has the longest monitoring system of temperate MPAs in the southern hemisphere.

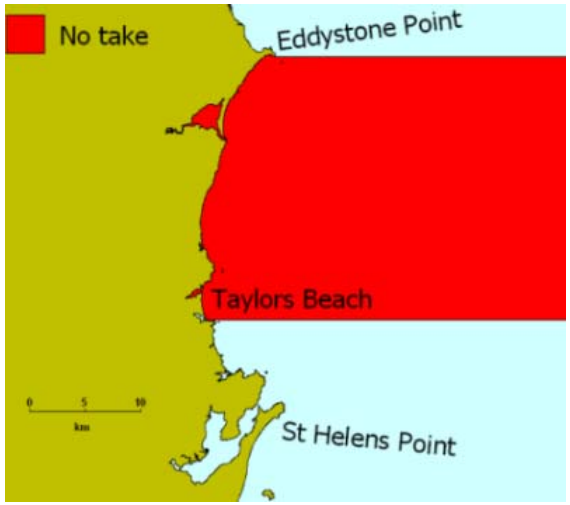
Multiple use Marine Reserves

No fishing or setting of fishing gear is allowed in the reserve between Cape Boullanger in the north and Return Point in the south. ***Recreational fishing*** of all types is permitted in the north-eastern section of the reserve.

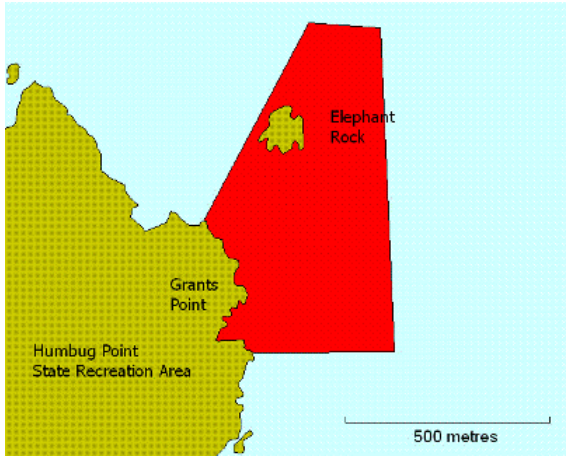


Restricted commercial fishing includes diving for abalone and rock lobster, using a rock lobster pot or ring, line fishing with no more than 5 hooks per line, and trolling. All netting, set lines, longlines and droplines, and the taking of marine plants and cast seaweed is prohibited.

Fishery specific reserves – primarily for research



Abalone - to investigate methods of rebuilding depleted population



Rock lobster - to investigate the impact of lobsters on invasive urchins

tafi
Tasmanian Aquaculture and Fisheries Institute

Talking point

It's not all overfishing

No-take areas may not be the answer to the conservation of our marine biodiversity, argues COLIN BUXTON*, as MICHAEL HANEK* puts forward the views of recreational fishers

LOBSTER V URCHIN: The number of lobsters, such as this right, in Tasmanian waters has increased over the past decade and so too has the number of long-spine urchins, above – a pest. Could lobsters be used to help keep down urchin numbers?

Don't leave fishers all at sea

QUESTIONS EMERGE OVER PROTECTION STRATEGY

Providing havens for marine life may be harmful, displacing fishing effort and slowing or reversing stock rebuilding, according to new research

New research has shown that marine protected areas – established to provide a haven for marine plant and animal life – do not always benefited from the closure. In some cases species became more abundant and grew to a larger size than those at similar fished sites. However, in the case of some other species, the marine protected areas in the hope of offsetting the threat.

"If fisheries are a key threat to biodiversity then we need to address the problem head-on through good

News (NSW paper)

Marine park study yields a bonanza

DEDICATED recreational divers came face to face with science, and some interesting fish, when the Jervis Bay

"The marine scientists recognised there was a wealth of dedicated recreational divers, with great local knowledge

the methods of the surveys.

"These budding ecologists could be let loose to gather data on temperate

Parks May Be Harmful

New research has shown that marine protected areas - established to provide a haven for marine plant and animal life - do not always result in more fish and may have a detrimental effect on fisheries. Australia has some of the largest marine protected areas in the world and conventional wisdom says these areas should be beneficial for fisheries

The Mercury 22/4/0

Allowing nature her space

Marine parks play a bigger role than just managing fisheries

THE draft report of the Resource Planning and Development Commission, which addresses "no-take" Marine Protected Areas in the Bruny bioregion, and the State Government's response to it, has precipitated a vigorous debate about the value of MPAs.

INVASION: The arrival of sea urchins in Tasmanian waters has resulted in barrens habitats, left, which destroy the biodiversity

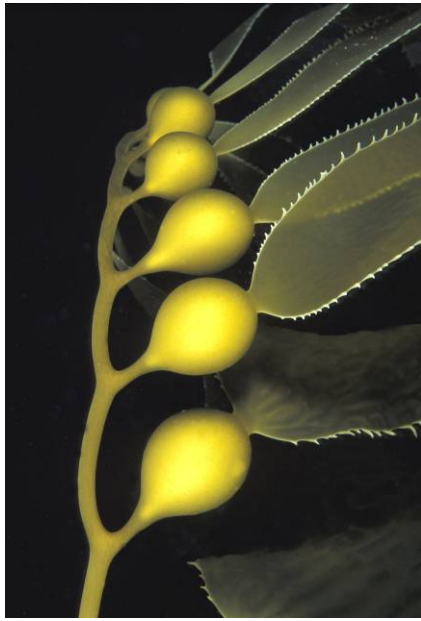
have enabled researchers to clearly identify these links in the system, and ongoing work in closed areas supported by the commercial and recreational fishing sectors is identifying management options to minimise the risk of further barrens formation.

As reference sites no-take MPAs enable us to understand the functioning of the ecosystem, without the effects of human activities. They help identify the components that make marine systems resilient to human impact, including some of

MPA's – several functions

Biodiversity conservation

Fisheries management



However fisheries management already has a range of spatial management options

Closed areas

Closed seasons

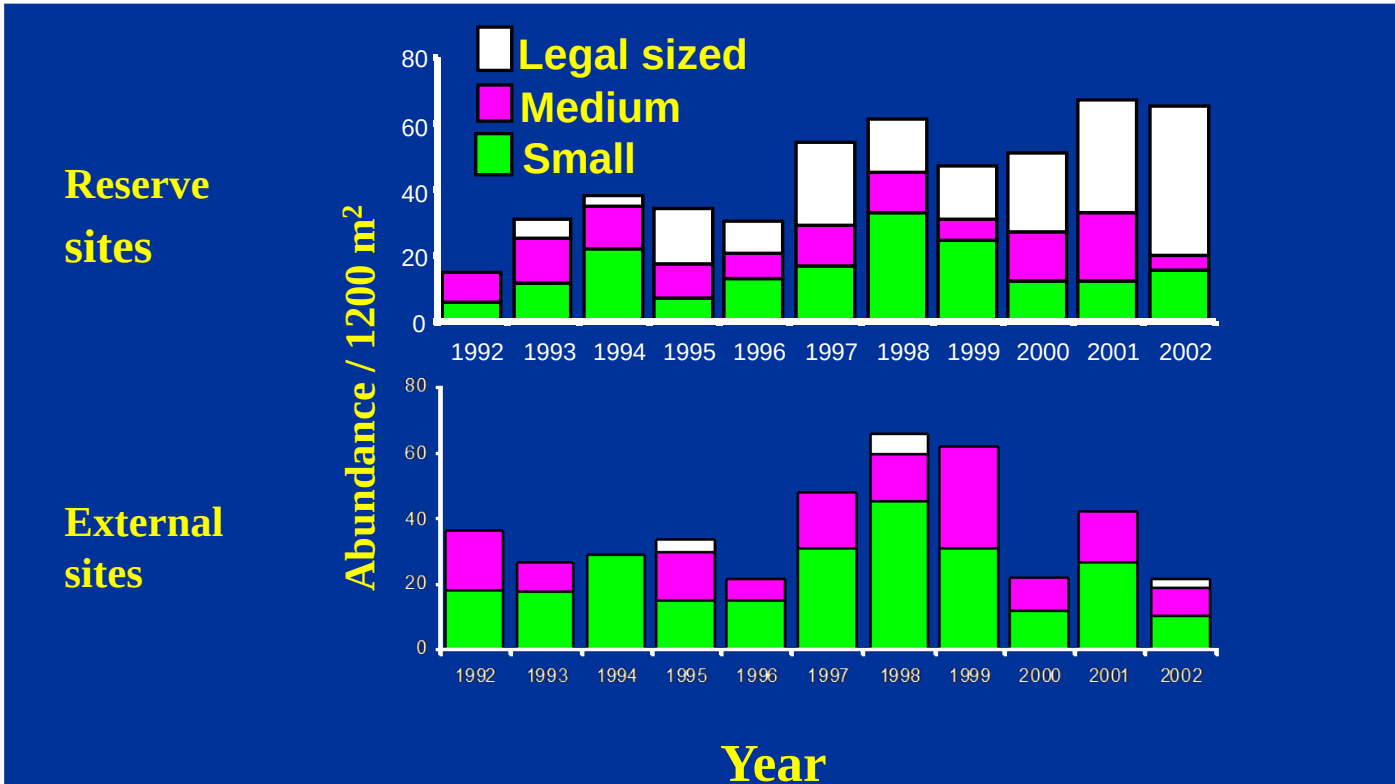
Protection of spawning and nursery regions

Most of these are "single species" fisheries management concepts.

Use of MPAs for Fisheries

We have used MPAs to

- Understand the effects of fishing
- To enhance our knowledge about assessment issues
- To understand the impact of introduced species
- To monitor climate change



Conclusions

State level:

- ITQs appear to be working well for single species coastal resources

  Resource status good

- Co-management arrangements working well

  Strong industry representation

  Mutual respect between participants

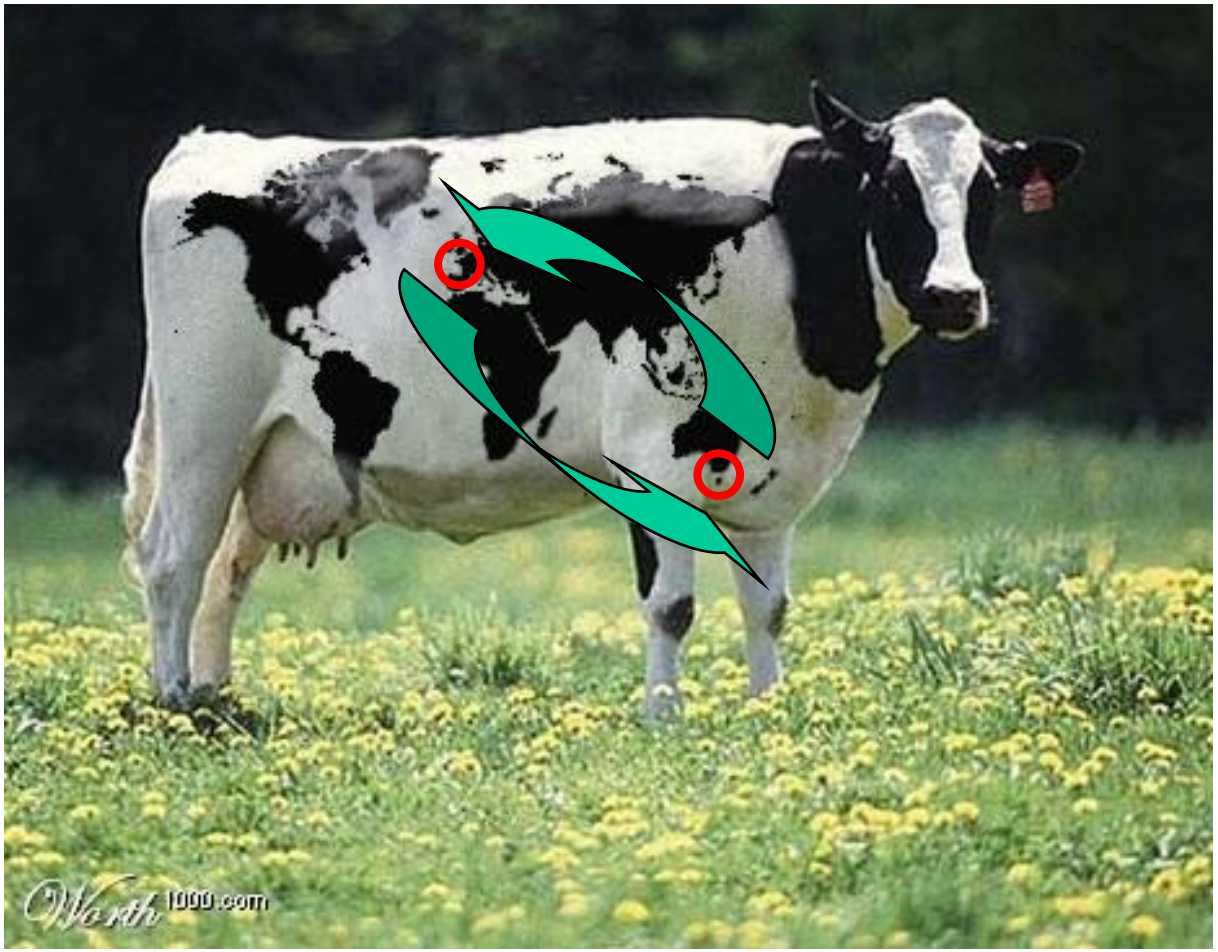
  Stakeholders confident in process

  Industry well positioned to adapt to external drivers

Conclusions

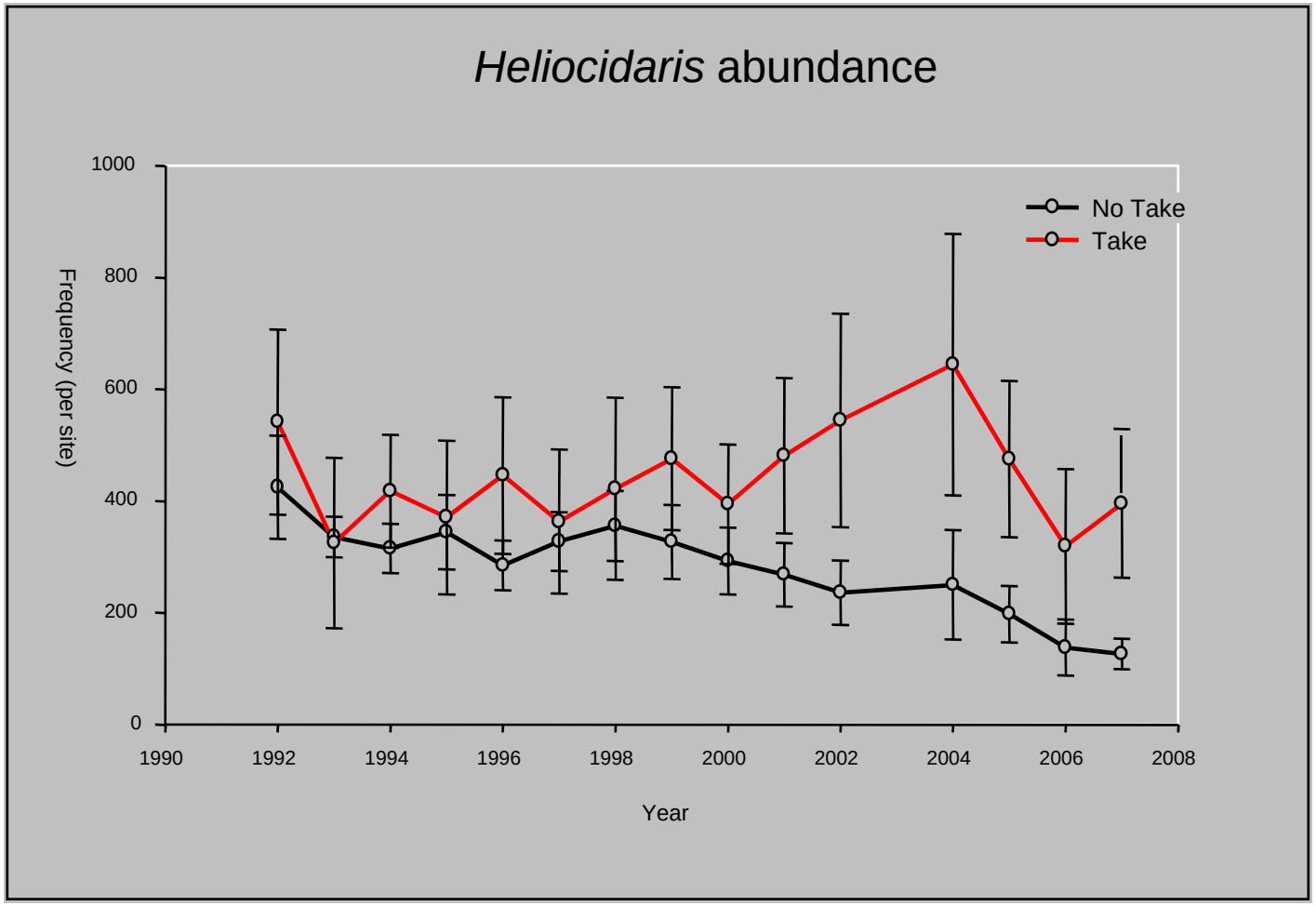
Marine Protected Areas:

- For fisheries they are valuable in providing increased knowledge of processes that influence management
- Important for understanding external drivers such as climate change



We thank the France – Australian Science and Technology Program for supporting this collaboration.

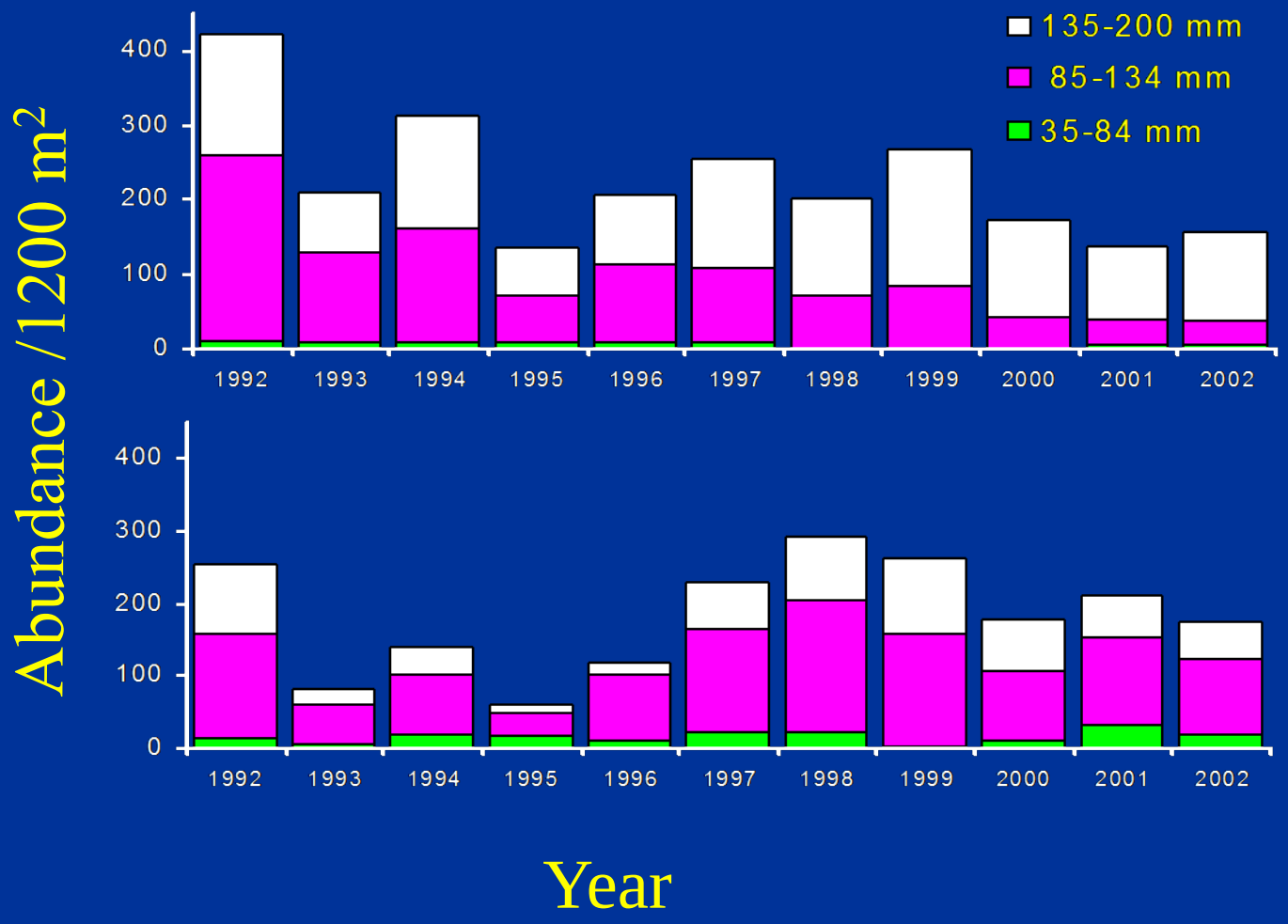
Abundance of common urchins at Maria Island



Abundance of blacklip abalone at Maria Island

Reserve sites

External sites



Observed changes over time

MPA (non-fished) Sites	Fished Site	
Yes	No	– Fishing and the environment are affecting the observed change
No	Yes	– Fishing is affecting the observed changes
No	No	– Fishing is not affecting the ecosystem
Yes	Yes	– The environment is affecting the observed changes

FACs Terms of Reference

Recommendations by the FAC can be made to the Minister on the following:

- Any matters that may be the subject of regulations under the Act
- Proposals to make, vary, or revoke regulations under the Act or make amendments to the Act
- Management programs for a fishery related to the committee
- Any matter related to the administration of the Act
- Any matter that the Minster refers to the FAC for advice or on which the FAC believes it should advise the Minister.

Research Advisory Groups

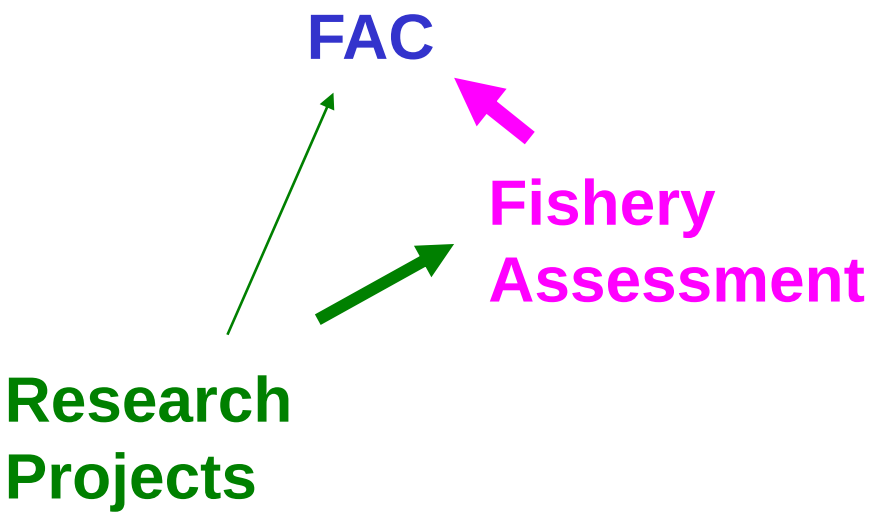
- Chair – Director of the Tasmanian Aquaculture and Fisheries Institute
- Scientists relevance to the sector (commercial, recreational, environmental) (from difference research agencies)
- Managers relevant to the sector (commercial and recreational)
- Industry participants (commercial, recreational, processors)

Purpose:

- To develop the Tasmanian Fisheries and Aquaculture 5 year Strategic Plan and update as required.
- To identify and prioritise research issues.

- Scientific Advice to the FAC is provided by the Scientist responsible for the fishery or the FAC can request advice form any other source.

- Scientific information is gained form annual assessments which are reviewed by a Fisheries Assessment Working Group (FAWG) and by research projects approved by the Research Advisory Group (RAG)



Insert pic of assessment doc

RPDC Objectives :

(a) to promote the sustainable development of natural and physical resources and the maintenance of ecological processes and genetic diversity; and

(b) to provide for the fair, orderly and sustainable use and development of air, land and water; and

(c) to encourage public involvement in resource management and planning; and

(d) to facilitate economic development

(e) to promote the sharing of responsibility for resource management and planning between the different spheres of Government, the community and industry in the State.