FISHERIES RESEARCH & DEVELOPMENT CORPORATION

NATIONAL MANAGEMENT ADVISORY COMMITTEE

COURSE

VENUE: SYDNEY FISH MARKETS
NEW SOUTH WALES

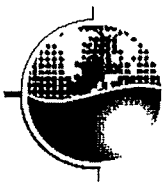
DATE: 7TH - 8TH APRIL 2000

CO-ORDINATOR: DR. ALISTAIR MCILGORM

FISHERIES RESEARCH & DEVELOPMENT CORPORATION

AMC search LTD
WAY AHEAD !!
A Subsidiary of the Australian Maritime College

EXCELLENCE IN MARITIME TRAINING CONSULTANCY & RESEARCH



AMCsearch

Australian Maritime College and FRDC present:

FISHERIES MANAGEMENT "MAC I" PROGRAMME
7th-8th April, 2000

VENUE: SYDNEY FISH MARKETS, PYRMONT, SYDNEY.

DAY 1 FRIDAY 7th APRIL CONFERENCE ROOM

Time	Subject	Lecturer
0900-0910	What is a MAC Course?	Alistair McIlgorm
0910-0930	Review of MAC Arrangements in Different States of Australia	Alistair McIlgorm
	Discussion: *Participants discussion on MAC arrangements in each state.*	
0930-1000	Responsibilities of an FMC/MAC Member	Marc Wilson & Alistair McIlgorm
1000-1015	Morning Tea	
1015-1045	Role of a Chairman in a MAC	Marc Wilson
1045-1115	Management and Leadership	Alistair McIlgorm
1115-1145	The Processes of Government	Marc Wilson
1145-1200	Discussion: *Leadership, Government and the Fishing Industry*	
1200-1300	Lunch	
1300-1400	Fisheries Research and Stock Assessment	Marc Wilson
1400-1445	Fishery Rights, Access and Resource Security	Alistair McIlgorm
1445-1500	Afternoon Tea	
1500-1545	Fisheries Economics	Alistair McIlgorm
1545-1630	Discussion: *(i) Rights and compensation;* *(ii) Industry role in determining fisheries research and stock assessment priorities;* *(iii) Cost recoveryand management.*	
1830	Course Dinner	

DAY 2	SATURDAY 8TH APRIL	SFM CONFERENCE ROOM
0830-0945	Risk Assessment in Fisheries Management	Marc Wilson
	Discussion: Risk Assessment in Fisheries Management	
0945-1000	Morning Tea	
1000-1045	Environment and the Fishing Industry	Alistair McIlgorm
	Discussion: Environment, Habitat and the Fishing Industry	
1045-1130	Fishing Technology and the Environment	Marc Wilson
1130-1200	Fisheries Management Plans	Alistair McIlgorm
1200-1300	Lunch	
1300-1345	Conflict Resolution in Fisheries Management	Marc Wilson Alistair McIlgorm
1345-1445	Discussion: *Communication/Constituency & Leadership within Resource User Groups*	Marc Wilson Alistair McIlgorm
1445-1500	Role of Training: Discussion, Recommendations and Closing Summary	
1500	Afternoon Tea	

Course Coordinator: Dr. Alistair McIlgorm

Section 1

What is a MAC Course?

FRDC NSW MAC COURSE

7TH – 8TH APRIL, 2000

SYDNEY, NEW SOUTH WALES

What is a MAC course?

- Second FRDC Project - Training for Fisheries Managers 1997-2000.
- Training professional fishery managers
- Training for industry representatives - MAC courses.
- 200 MAC representatives/fishers from 6 states have attended since 1994.

Breaking the myths and changing the culture:

- A MAC course is not:
  - going back to school!
  - experts talking at participants.
- Conclusion:
  - we all learn most from discussion;
  - listening to the other point of view.

Successful MAC courses have:

- Participation by all groups
- Best delivery? - facilitators seed the debate with short presentations
- Are different from MAC meetings.
- Ideally we gain understanding not take positions!

WELCOME

- ***Interstate visitors –Western Australia and Tasmania***
- ***We will have lunch and a course meal this evening***
- ***We look forward to an interesting time here in Sydney***

Section 2

Review of MAC Arrangements in Different States of Australia

REVIEW OF MAC ARRANGEMENTS IN DIFFERENT STATES IN AUSTRALIA

- THE CURRENT STATE OF PLAY!

COMMONWEALTH MAC'S

- Fisheries Administration Act, 1991.
- MAC's are at the core of the management structure.
- Major fisheries have a MAC (SBT,NPF).
- MAC's are primarily industry driven - little wider involvement.
- MAC member has legal responsibility under the ACT.

More than Advisory?

- Have Federal MAC's more than an advisory role? (MAC versus MC).
- Powers based in a Management Plan as per their legislation (FMA,1991).
- They are a step above most of the state MAC's due to the devolution of power-with added responsibility for industry.

Western Australia:

- WAFIC is a strong peak industry body.
- Fisheries Resources Management Act 1994.
- Cost recovery is coming in.
- Interest in a statutory body for fisheries management.
- Principal client groups in each fishery are in MAC's

Purpose of MAC's in WA

- The Government is not devolving management decision making, resource sustainability or resource allocation.
- To advise the minister - via a report from each meeting; the timing and process of this is important.

What is a MAC in WA?

- An advisory body
- The minister is not obliged to accept its recommendations - the great majority of decisions will be accepted
- The Minister is not bound to seek advice from a MAC- independent Advice sought when required.

MAC's in South Australia:

- Fishery emphasis.
- Newly elected members/Chairs?
- Costs and fees for services.
- How do they compare nationally?
- Are FMC's working in SA? How can we measure their effectiveness?

Other states and MAC's:

- Tasmania - Fishery Advisory Committees (FAC's): advise and recommend, FMP's.
- Victoria - Co-management Council.
- NSW - share-managed and restricted fishery MAC's, advisory, cost recovery.

Summary:

- MAC's are now common in all states.
- Representation, advisory/management tensions.
- Cost recovery and servicing - a defining issue.
- Wider stakeholder involvement.
- Future directions?

Section 3
Responsibilities of an FMC/MAC Member

Section 4

Role of a Chairman in a MAC

CHAIRING A MAC

CONSIDERING THE ROLE AND DUTIES OF A MAC CHAIRPERSON

ROLE OF A CHAIRPERSON - AFMA

- Ensuring effective and thorough discussion of factors affecting performance in a fishery.
- Independent Chair conducting meetings.
- Understands meeting procedures and practices.
- Can identify strategic goals and objectives in the MAC process.

Role of a Chairperson – AFMA:

- Can act as a MAC spokesperson to all parties.
- Understands industry and public policy.
- Knowledge of fisheries/fisheries management.
- Responsible for communication of outcomes to Board.

Appointment of a Chairperson:

- Who nominates?
- Who selects?
- What is the role of the MAC members in the appointment?
- What basis are Chairpersons employed on? (contract, paid, travel expenses, have executive officer support etc?).

Chairpersons in State MAC's:

- Selection.
- Fisheries knowledge necessary?
- Previous experience in similar role.
- A good chairperson makes a good MAC?
- Strong leadership/facilitator/personal attributes essential.

Section 5
Management and Leadership

MANAGEMENT & LEADERSHIP IN FISHERIES MANAGEMENT

ISSUES FOR MAC'S

Managing Fisheries:

- Regulations used to control exploitation.
- Regulation has influenced the nature of the industry.
- Stakeholders now on MAC's:
  - a development in management structure;
  - an opportunity to re-appraise management and leadership.

Regulating Industry:

- The government protecting the public interest complicates management.
- REGULATION leads to:
  - use of information - litigation;
  - lobbying of the management agency;
  - frustration for stakeholders and managers.

Co-management: Incorporating Stakeholders:

- Co-Management - more participation.
- MAC's become an important link.
- "Management is about GOALS, MAKING DECISIONS about EFFICIENT and EFFECTIVE use of organisational RESOURCES in order to achieve high PERFORMANCE" (Peter Drucker).
- 1990's - management AS FACILITATION.

Management Skills:

- Technical skills.
- Human skills - peers, leadership, conflict resolution.
- Conceptual skills - information, decision making, resource allocation, entrepreneurial skills, skills of introspection.
- MAC's -a place for management skills?

Is Leadership Important?

- "People don't want to be managed - they want to be led".
- "If you want to manage somebody, manage yourself, then you can lead".
- "Leadership is not just one person at the top - it comes in many forms, at many levels".
- "Leaders should have followers!"

Leadership:

- Taking responsibility.
- Is developed, not discovered.
- Leaders:
  - are born;
  - have seen it modelled;
  - learned it through training;
  - have self-discipline.

Managers as Leaders:

- Common characteristics:
  - longer-term thinkers;
  - curious how things work;
  - emphasise vision, values and motivation;
  - have political skills;
  - don't accept the status quo;
  - implement change.

Common Problems for all!:

- Poor people skills; lack imagination; have personal problems; passing the buck; poorly organised; inflexible to change; poor team spirit; insecure/defensive or secure and inactive.
- CHANGE - fear of failure, of the unknown; pain versus gain; don't rock the boat.

Solutions:

- Develop trust with people.
- Change yourself; then ask others.
- Understand organisational history.
- Understand influencing others, communication, informal updating, etc.
- Show people the benefits of change.
- Give people ownership of the change.

MAC's - Problem Solving:

- Ask the RIGHT QUESTION.
- Talk to the RIGHT PEOPLE.
- Get the HARD FACTS on the situation.
- Get INVOLVED in the process.
- Welcome to the MAC!

Parable of the Trees (Judges Ch9):

- Trees want a ruler to rule them. They ask:
  1) olive tree:- too busy giving good oil;
  2) fig tree:- should I cease my sweetness and good fruit;
  3) vine said:- should I cease my wine which cheers up men;
- So the bramble became ruler!
- A UNIVERSAL PROBLEM IN GETTING LEADERS?

Transcontinental Geese:

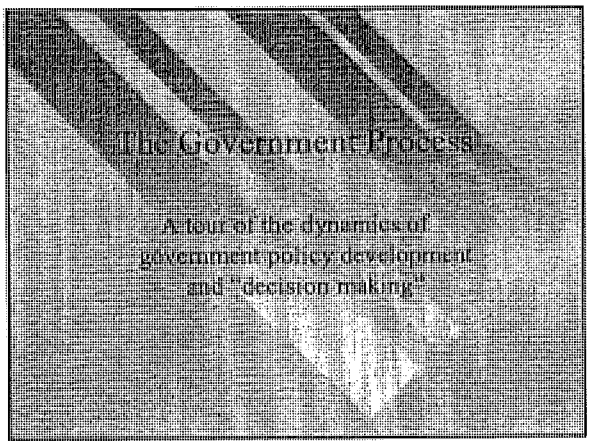
- Three qualities:
  - they rotate leadership; no one bird stays out front all the time;
  - they choose leaders that can handle turbulence;
  - when one bird is leading, the others are honking in affirmation;

– Bruce Larson "Wind and Fire"

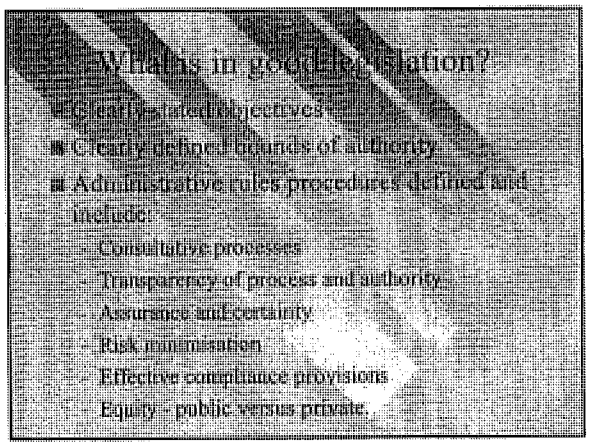
Managing - Past and Future:

- MAC's - are a new model for fisheries management.
- All stakeholders are involved in management.
- A time to build good relationships between MAC members for the future.
- Decide to take this opportunity.

Section 6
The Processes of Government


The Government Process
A tour of the dynamics of
government policy development
and "decision making"


Legislative Process
State and Federal Parliaments
Pass Bill which become Acts/Statutes
Direct/control through:
- law
- delegated legislative power (Regulations)


What's in good legislation?
Clearly stated objectives
Clearly defined grounds of authority
Administrative rules procedures defined and include:
- Consultative processes
- Transparency of process and authority
- Assurance and certainty
- Risk minimisation
- Effective compliance provisions
- Equity - public versus private

What is in good legislation?

- Identification and definition of stakeholders
  - Public
  - Commercial
  - Non-commercial
    - Recreational
    - Indigenous

Controls

- Administrative law has developed to control and regulate statutory powers.
- Administrative law relates to all government departments, agencies and any other body established by statute.

Administrative Law

Deals with:

- the processes that must be followed by decision-makers in arriving at a decision, and
- the processes that establish remedies for persons adversely impacted upon by government action or inaction.

Basis for Decisions

- Statutes establish processes for decision-making but provide for performance to be either compulsory or discretionary.
- In the case of the former the operative word is 'shall' whereas in the latter 'may' provides for discretion but does not absolve government from reaching a decision after following the process prescribed by statute.

Constraints to Discretion

Three constraints to discretion are recognised:

- Confined Discretion - the Act prescribes what factors can be used in reaching a decision.
- Structured Discretion - the Act prescribes what procedure are to be used in reaching a decision.

Constraints to Discretion

- Checked Discretion - the Act provides for the decision to be reviewed on the basis of merit i.e. was the decision a reasonable one.
- The Commonwealth Administrative Appeals Tribunal (AAT) is a formal merit review process.

Judicial Review

- The grounds on which the lawfulness of government decisions can be challenged are based on two common law principles; *ultra vires* and natural justice

Ultra vires (Lat. beyond power).

- The exercise of Authority must be within the power given and exercised properly and fairly.
- For example if an official has power to suspend a fishing license, he or she cannot cancel it. *Ultra vires* limits the discretion of power. There are several forms recognised;

Substantive *Ultra vires*

- where the decision made was outside the powers prescribed by statute.
- Examples would be in relation to say conditions applied to a fishing license these are limited by the Act. Often older Acts do not envisage the types of conditions required today and these may fall outside the limits of the Act.

Extended *Ultra Vires*

- Where the decision made lies within the powers prescribed but the decision is unwarranted on the grounds of being:
  - made in bad faith
  - made for an improper purpose
  - made on the basis of irrelevant and unreasonable considerations
  - manifestly unreasonable
  - too uncertain
  - based on inflexible application of policy

The challenger is to demonstrate the decision was based on considerations outside those envisaged by the statute.

Procedural *Ultra Vires*

- Where the legislation prescribes a process and that process is not followed. The challenge usually revolves around what is a mandatory step and what is directionary.

Natural Justice

- Natural justice does not alter the discretionary power as such but it requires that proper procedures be followed when decisions are made which can seriously affect a person. The two principles are
  - a fair hearing and
  - no bias

Redress

- Merit- AAT
- Judicial – Federal or Supreme Court
  - Only persons of *locus standi* or standing can seek a judicial review of a government decision. To be of standing
    - a person's private right is interfered with (e.g. property or income) and
    - a person has suffered special damage over and above that suffered by the general public.

Independent Scrutiny

- Ombudsman
- Crime Authority/Commission

The development of new law

Two distinct processes:

- Procedural – drafting, presenting the Bill to parliament and its passage through parliament through to royal assent.
- Policy –making
  - the defining of the problem,
  - the development of the solution within socio-economic bounds.

Policy - the genesis of law!

How does it develop?

- Problem: The problem, situation or perception of a problem developing
- Need: The need to solve, fix, remove, modify etc the problem
- How: How to meet the need, what method, when and by whom i.e. the policy

Who originates new law?

- Government - the major source - long
  - government departments - the major source of policy
  - executive government
  - the governing party's non-Parliamentary organisation and branch structure
  - private members

Outline

- The Legislative Setting
- The Public Policy Process
- The Decision Making Environment

Fisheries Management Act, 1994

(1) The objects of this Act are to conserve, develop and share the fishery resources of the State for the benefit of present and future generations

FMA Objectives (2)

(2) The objects of the Act include:

- to conserve fish stocks and key fish habitats
- to conserve threatened species, populations and ecological communities of fish and marine vegetation and
- to promote ecologically sustainable development including the conservation of biological diversity

and, consistently with those objects:

- to promote viable commercial fishing and aquaculture industries
- to promote quality recreational fishing opportunities and
- to appropriately share fisheries resources between the users of those resources

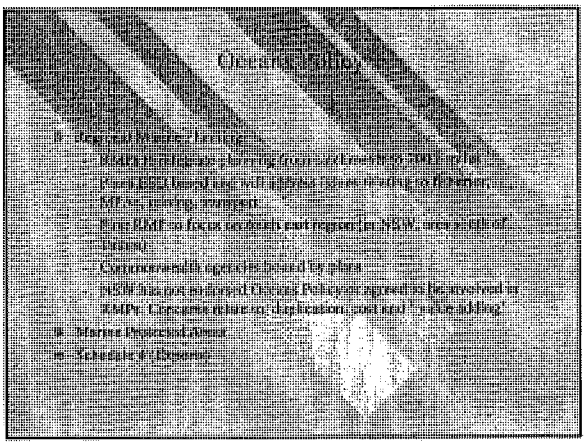
Marine Parks Act, 1997

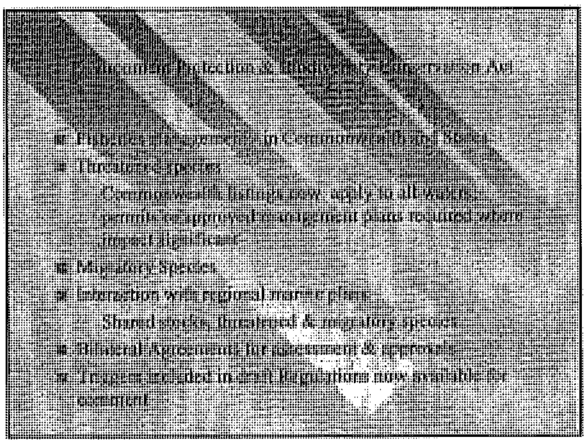
The objects of this Act are:

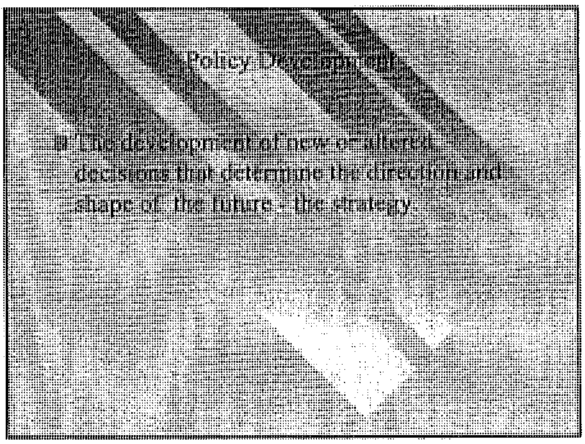
- to conserve marine biological diversity and marine habitats by declaring and providing for the management of a comprehensive system of marine parks
- to maintain ecological processes in marine parks

and, where consistent with the preceding objects,:

- to provide for ecologically sustainable use of fish (including commercial and recreational fishing) and marine vegetation in marine parks, and
- to provide opportunities for public appreciation, understanding and enjoyment of marine parks


Oceans Policy
Commonwealth agencies bound by plans
Marine Protected Areas


Protection & Biodiversity Conservation Act
Fisheries management in Commonwealth and States
Threatened species
Commonwealth listings now apply to all waters; permits or approved management plans required where impact significant
Migratory Species
Interaction with regional marine plans
Shared stocks, threatened & migratory species
Bilateral Agreements for assessment & approvals
Triggers included in draft Regulations now available for comment


Policy Development
The development of new or altered decisions that determine the direction and shape of the future - the strategy.

Policy – What is it?

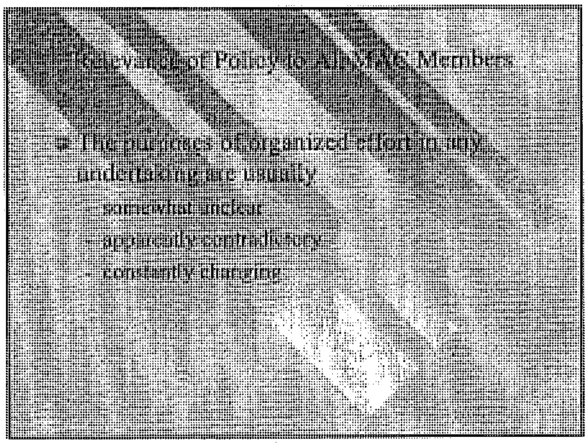
- Often used to represent goals, programs, decisions, laws, standards, proposals etc
- Policy is defined as a "standing decision characterized by behavioral consistency and repetitiveness on the part of both those that make it and those who abide by it"
- Policy is dynamic – it is always developing.

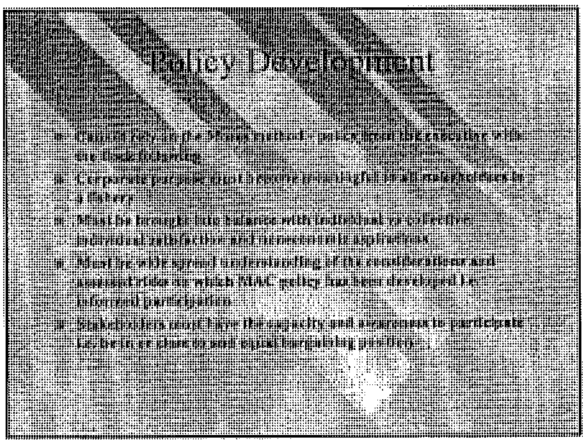
Public Policy Components

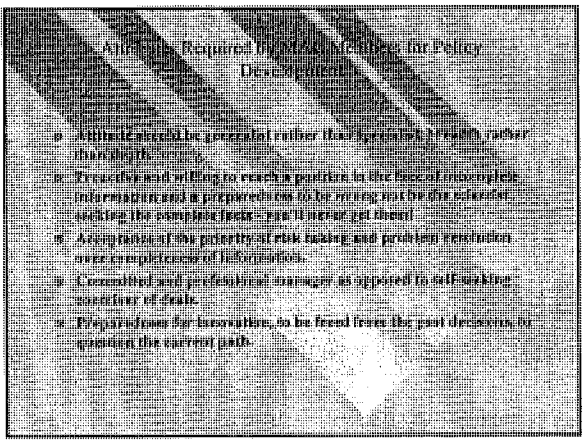
- Intentions - The true purposes of action
- Goals - The stated ends to be achieved
- Plans or proposals - Specified means of achieving goals
- Decisions or choices - Specific actions taken to set goals, develop plans, implement and evaluate programs
- Effects - The measurable impacts of programs (intended and unintended)

Policy Development

- The functions and responsibilities of managers, the identification of the crucial problems that affect success and the decisions that determine the direction and shape of the future.


Relevance of Policy to All MAC Members
The purposes of organized effort in any undertaking are usually
- somewhat unclear
- apparently contradictory
- constantly changing


Policy Development
Cannot rely on the Moses method - policy from the executive with the flock following.
Corporate purpose must become meaningful to all stakeholders in a fishery
Must be brought into balance with individual or collective individual satisfaction and socioeconomic aspirations
Must be wide spread understanding of the considerations and assessed risks on which MAC policy has been developed i.e. informed participation
Stakeholders must have the capacity and awareness to participate i.e. be in or close to and equal bargaining position


Attributes Required by MAC Members for Policy Development
Attitude should be generalist rather than specialist, breadth rather than depth.
Proactive and willing to reach a position in the face of incomplete information and a preparedness to be wrong, not be the scientist seeking the complete facts - you'll never get them!
Acceptance of the priority of risk taking and problem resolution over completeness of information.
Committed and professional manager as opposed to self-seeking corridor of deals.
Preparedness for innovation, to be freed from the past decisions, to question the current path.

Beware the Functionary

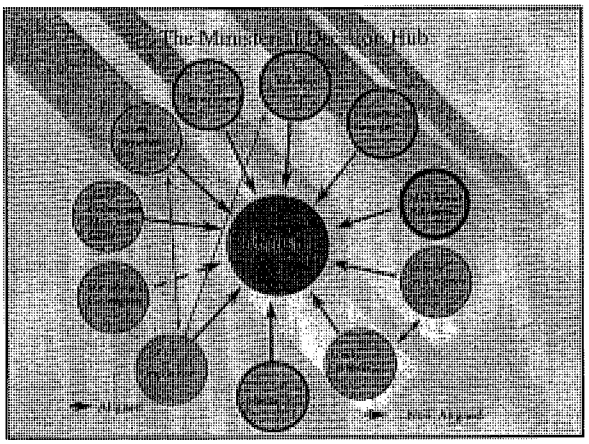
- Conflicts of functional bias lead to political stalemate
- functional bias must be subsumed by collective purpose
- the good of the whole is better than the good of a part.

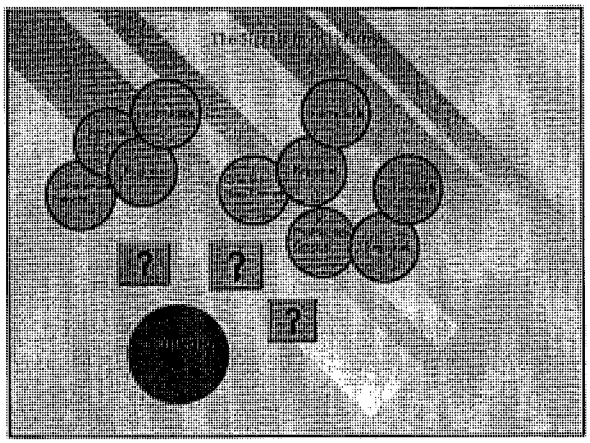
A Policy Process Framework

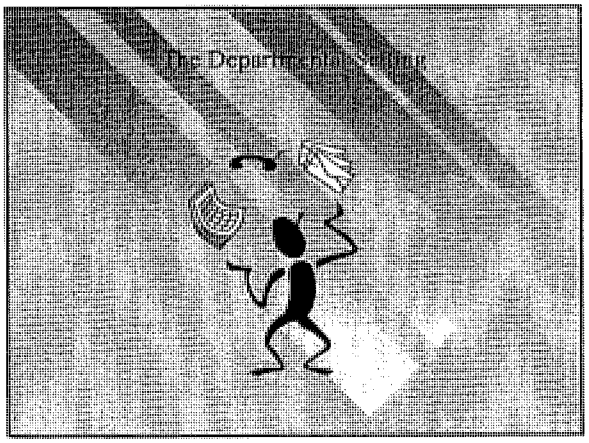
Activities	Questions
Perception/definition	What is the problem to which this proposal is directed?
Aggregation	How many people think it is an important problem?
Organisation	How well organised are these people?
Representation	How is access to decision makers maintained?
Agenda setting	How is agenda status achieved?
Formulation	What is the proposed solution? Who developed it and how?
Legitimation	Who supports it and how is majority support maintained?
Budgeting	How much money is provided? Is it perceived as sufficient?
Implementation	Who administers it and how do they maintain methods?
Evaluation	Who judges its achievements and by what methods?
Adjustment/termination	What adjustments have been made and how did they come about?

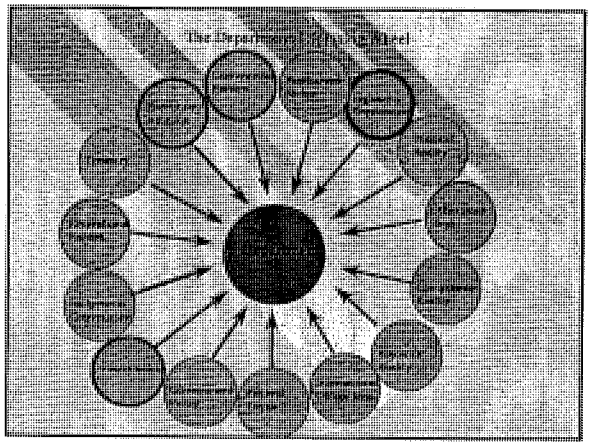
A Reality Check

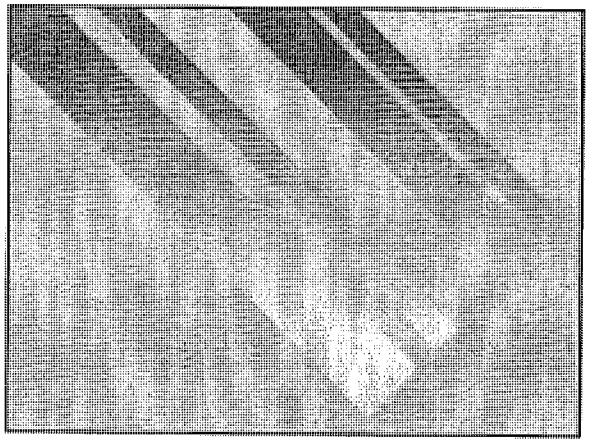
- Politics is said to be the art of the possible.
- What determines the possible?


The Ministerial Knowledge Hub




The Departmental Setting





Section 7
Fisheries Research and Stock Assessment

FISHERIES STOCK ASSESSMENT

RISK ASSESSMENT
- THE PRECAUTIONARY PRINCIPLE APPLIED TO FISHERIES MANAGEMENT

BY
MARC A. WILSON

PRECAUTIONARY PRINCIPLE

The Six Concepts behind the Precautionary Principle (O'Riordan and Cameron 1984).

1. Preventative anticipation
2. Safeguarding ecological space
3. Proportionality of response
4. Duty of care or onus of proof on those who propose change
5. Promoting the cause of intrinsic natural rights
6. Paying past ecological debt

PRECAUTIONARY PRINCIPLE CONCEPTS

1. Preventative anticipation:-

A preparedness to make decisions before scientific evidence suggest or indicates a decision is warranted. The preparedness is based on the concept that to delay a decision will be more costly in the long run to both society and the environment and as such also has a generational equity consideration.

2. Safeguarding ecological space:-

Taking into account an ecosystem's capacity to withstand and assimilate the proposed resource use.

3. Proportionality of response:-

an accounting of the cost of the action taking into account the lack of information and the consequences to future generations.

4. Duty of care or onus of proof on those who propose change:-
Self explanatory but needs to be seen as a positive step to progress rather than a negative step hindering development.

5. Promoting the cause of intrinsic natural rights:-

The inviolate requirement to maintain the ecosystem, to ensure that the perturbation caused by man is not irreversible

Fisheries Stock Assessment 1884

"I believe, then that the cod fishery, the herring fishery, the pilchard fishery, the mackerel fishery and probably all the great fisheries are inexhaustible, that is to say, that nothing we do seriously affects the numbers of the fish. And any attempt to regulate these fisheries seems consequently, from the nature of the case to be useless"

TH. Huxley President Royal Society at the International Fisheries Exhibition London 1884.

Fisheries Stock Assessment 1983

"All those concerned with making policy decisions about fisheries must take into account, to a greater or lesser extent, the condition of the fish stocks and the effect on these stocks of the actions being contemplated"

John Gulland (1983)

Fisheries Management

"Fisheries management is so accustomed to inaccuracy in its basic models that striking differences between model and observation are scarcely noted. Nevertheless, fisheries biologists fit data to model that are clearly inaccurate and make decisions on that basis"

Peters (1991)

Stock Assessment

- To explain quantitatively the behaviour of a fished stock to past fishing effort and management.
- To make quantitative predictions about the reactions of an exploited stock to future fishing effort and management.

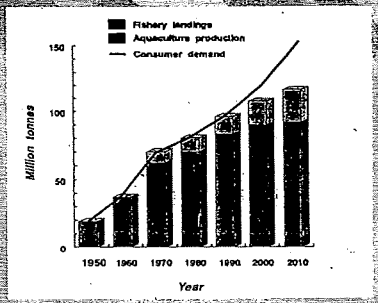
Fisheries Management

- Objective
  - Sustainable production
  - optimise economic and social benefit
- Methods
  - Input and output restrictions through license condition and or regulation
- Information requirements
  - Economic
  - Social
  - Biological

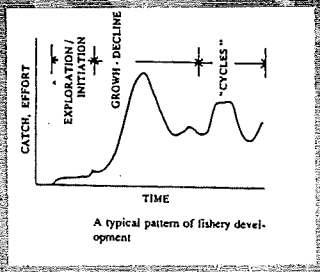
Stock Assessment Options

- Quantitative Modelling
- Qualitative deduction
- Comparative Assumption
- Intuition

Global Fisheries Production

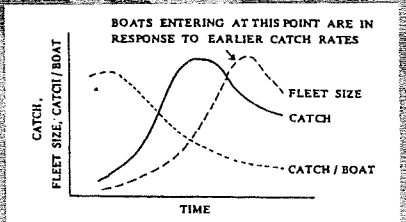


Development of a Fishery

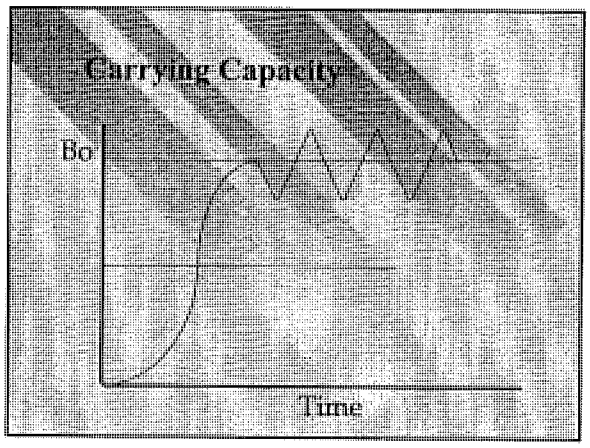


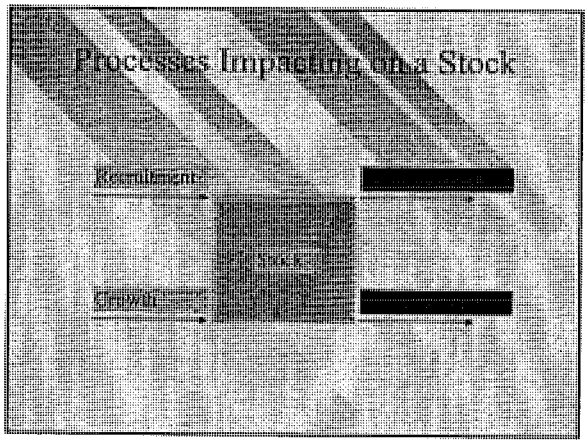
A typical pattern of fishery development

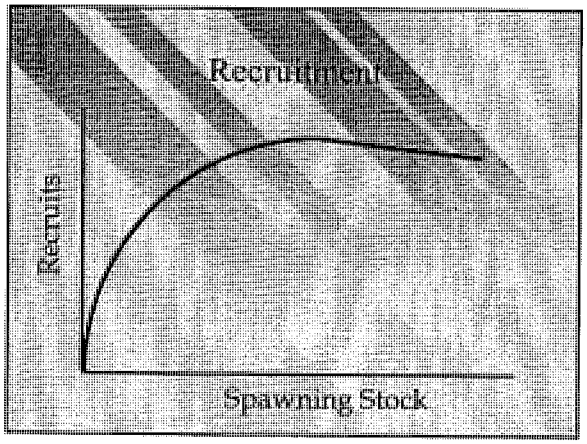
The Effort Lag



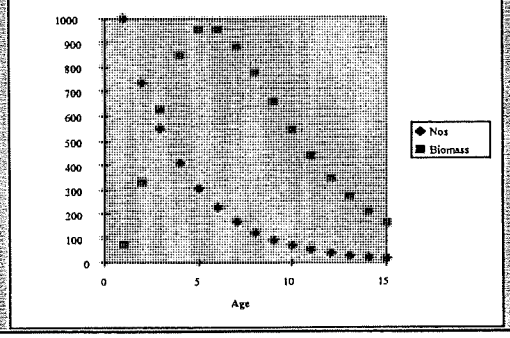
During fishery development, boats may enter the fleet until well after catch rates are too low to attract further growth, due to time lags between investment decisions and actual entry.


Carrying Capacity
Bo
Time

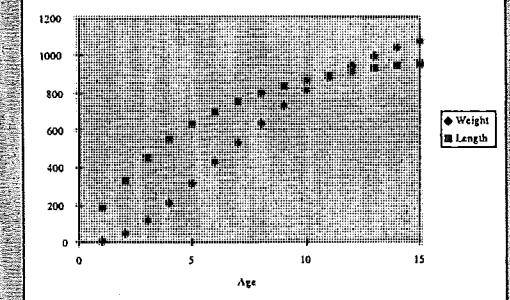

Processes Impacting on a Stock
Recruitment
Growth


Recruitment
Recruits
Spawning Stock

Stock Structure



Growth

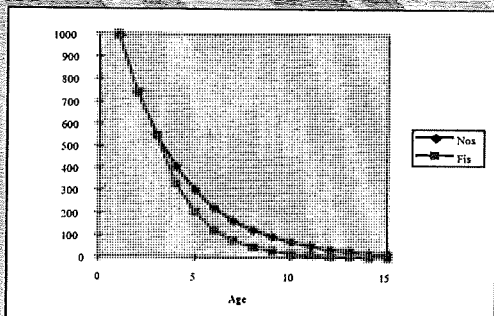


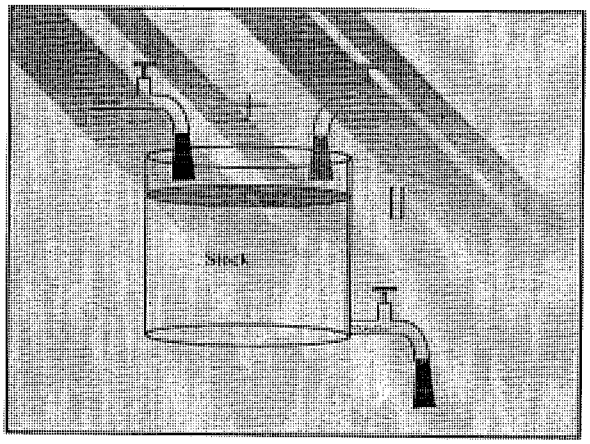
Energy Utilisation

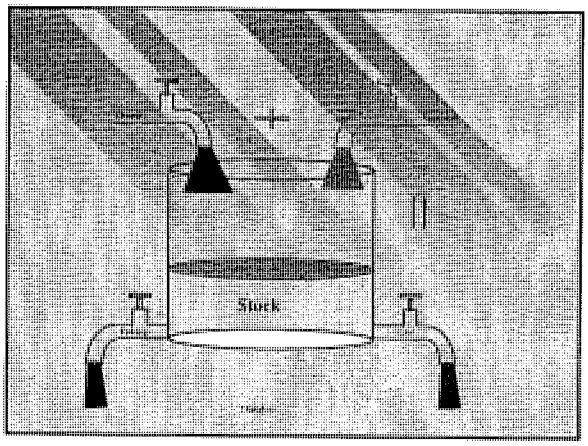
$$U = Ex + M + G$$

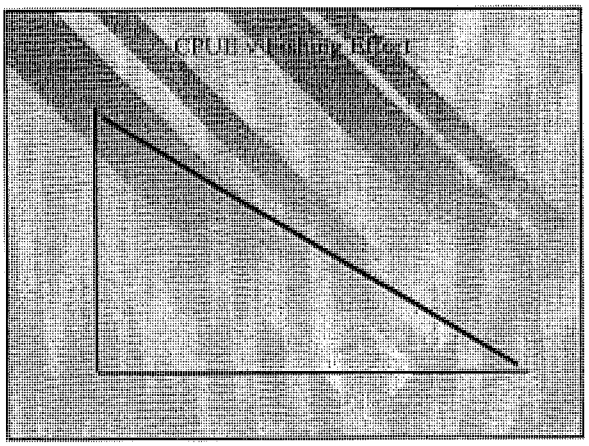
U - utilisation
Ex - excretion
M - metabolism
G - growth

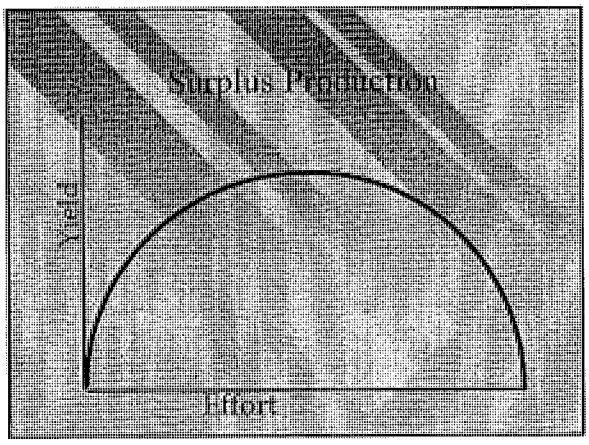
Mortality

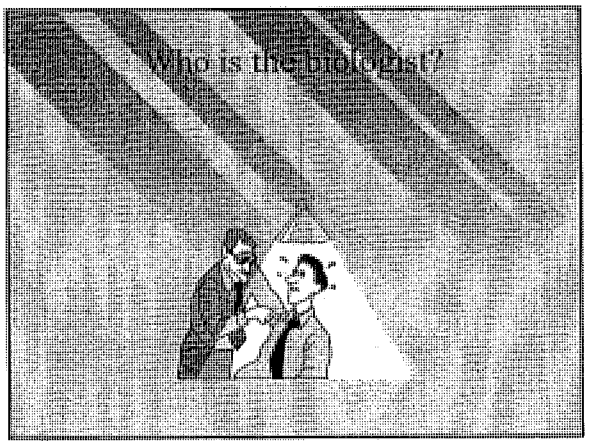

1000
900
800
700
600
500
400
300
200
100
0
0
5
10
15
Age
Nos
Fis


Stock


Stock


CPUE
Fishing Effort


Surplus Production
Yield
Effort


Who is the biologist?

Fisheries Research and Stock Assessment

Why Stock Assessment?

- resource information required to meet legal and 'sustainability' criteria
- society expects use of resources to be optimized and risk minimised
- resource users want to know the status of the resource
- scientific reasons

Managers require assessment to help in:

- Allocation
- Conservation
- Optimization

What do we need (or know?

- What is the stock?
- Is current stock & level of usage sustainable?
- What are the Risks associated with a particular management strategy.
- What are the bigger picture (ecosystem) consequences of the harvest strategy

What questions can stock assessment methods answer?

- stock definition
- current level of exploitation
- optimum level and area of exploitation
- effects of changes on exploitation rates
- explain catch/rate fluctuations
- assess risks against established criteria

Fisheries Models

Mathematical Models

- Modeler imposed constraints
  - what is and what isn't essential - a question of choice
- Model imposed constraints
  - mathematical limitations in representing the "system" dynamics

Fisheries Models

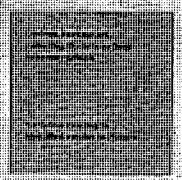
- Dynamic in that they represent the current state of the fishery on the basis of past results.
- Deterministic models are where the parameters are kept constant ie the output will always be the same
- Stochastic models allow the variation in one or more variables in a random constrained or unconstrained manner results in different outputs

Fisheries Models

- Continuous models rely on equilibrium conditions as usually they relied on differential calculus to solve the equations formed to analyse the fishery.
- Discreet models use computers to analyse difference equations to solve the same analytical problems but without the constraint of the equilibrium assumption.

Fisheries Models

- Should be explanatory with clear statement of assumptions etc.



Inputs

Outputs

Model Types

- Surplus Production or Biomass Dynamic Model
  - Schaefer and Fox forms
  - time series of abundance and catch measurements
  - abundance may be measured using CPUE
  - CPUE will need to be standardised

Model Types

- Age or size structured models
  - Virtual Population or cohort analysis
  - long time series of age or size structure and catch
  - time series depends on age characteristics of species
  - information intensive

Model Types

- Dynamic Pool or Yield Per Recruit
  - Original models assume steady state and knife edge recruitment
  - used to determine optimal age or length at first capture
  - newer versions remove the need for steady state (yield curve) take into account spawning biomass and so cannot be used by itself

Fisheries Management

Harvest Strategies

Constant Catch Rate

- Maintenance of constant rate of Fishing Mortality
  - stock biomass varies year to year due to mortality (both M and F) and recruitment variation
  - annual yield will need to be determined on the basis of available biomass
  - requires very good data, and that fishing power remains constant or is effectively taken account of
  - as annual catches will change it may impact on the marketing of produce

Constant Catch

- Maximum long term sustainable catch
  - achievable within acceptable risk bounds
  - in the long term provides lower long term yields than constant catch rates
  - obvious choice for quota managed fisheries or competitive TAC
  - danger if original estimates too high due as it will result in a decline in biomass
  - difficulty in then reducing catches to safe levels

Constant Spawning Biomass

- Management to allow a constant biomass of spawning stock to be present each year ie. escape capture. A spawning biomass that ensures the maintenance of the stock at the desired level is established.
  - salmonid and trout fisheries are managed in this fashion
  - fish caught are surplus to reproductive requirements
  - assumes a good understanding of stock recruitment relationship and a lack of significant variability in recruitment

Risk Assessment

- Determining the level of uncertainty due to
  - sampling variation
  - inherent system variability
- Quantifying Uncertainty
  - allows the assessment of risk
  - establishes confidence intervals
  - using Monte Carlo methods

MAFRs & Fisheries Research

- provides management information
- specific problems can be identified & addressed
- results can be communicated to fishers
- research can aid in the evaluation of management options
- provides opportunity for stakeholders to input knowledge and experience and to in the determination of research priorities

Advisable to obtain fisheries independent techniques:

- research or charter vessel surveys
- independent population composition assessment

Ecosystem Based Management.

- Existing Information
- Usually single species based
- Ill defined roles in ecosystem
- Ill defined ecosystem
- Management models reliant on single species concepts and systems (undefined)
- stability.

Section 8

Fishery Rights, Access and Resource Security

FISHERIES ACCESS RIGHTS & RESOURCE SECURITY

Fishery Property Rights:

- The tragedy of the commons.
- Open access leads to:
  - over-exploitation,
  - uneconomic fisheries,
  - uneconomic fisheries,
- Limited entry - use by a few.

Solving the Open Access Problem:

- Intervention (regulation).
- Communal solutions (users groups to self-government.
- Increase ownership rights of individual users?
- Some institutional mixture of the above- co-management.

Allocating Rights to a Fishery:

- Property is real (land, buildings).
- Property rights are a bundle of characteristics:
  - duration;
  - exclusivity;
  - transferability;
  - divisibility.

Degrees of Property Right Characteristics:

- A one year licence.
- A five year lease.
- A transferable quota.
- Determined by the regulatory authority.
- Tested in the courts.
- Only enhanced by the regulator.

Issues:

- Does enhancing user property rights lead to better stewardship?
- Can regulators devolve control?
- What rights does industry want?
- How secure are current rights? - a personal privilege or a statutory right?
- What rights are there to compensation?

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Section 9
Fisheries Economics

FISHERIES ECONOMICS FOR MAC REPRESENTATIVES
THE SUSTAINABLE DOLLAR FROM PROPER MANAGEMENT OF THE RESOURCE

Economic Issues:

- Catch rates (sustainability).
- Price and costs.
- Profitability.
- Implications of above for management and policy.

Fishery Economic Models:

- Input - output analysis.
- Effort in ----------> Catch out.
- Cost of effort-----> Revenue from catch = Profit.
- Modeling objective: Profit maximisation through time. Other objectives are not the role of an economist (socio-economics).
- Open access model for the representative vessel in the fleet.

Economic Policy Issues:

- Profitability - income surveys
- Rent - needs bio-economic modeling and cannot be measured accurately from income surveys.
- Restructuring - limited entry, over capitalisation, buy-back regimes, ITQ's, costs of management and rent/royalties (taxes).

Section 10

Risk Assessment in Fisheries Management

Risk Assessment - the Precautionary Principle applied to Fisheries Management.

by

Marc A. Wilson

The Rio Declaration on Environment and Development

Principle 15:

In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environment degradation

Precautionary Principle

The Six Concepts behind the Precautionary Principle (O'Riordan and Cameron 1984):

1. Preventative anticipation
2. Safeguarding ecological space
3. Proportionality of response
4. Duty of care or onus of proof on those who propose change
5. Promoting the cause of intrinsic natural rights
6. Paying past ecological debt

Precautionary Principle Concepts

- All these concepts are not enshrined in legislation either international or domestic. Actually the precautionary principle as commonly practiced is more a framework requiring "stewards" of resources to act prudently in relation to the level of uncertainty (information dependent) and the risk of irreversibility of the action.

Uncertainty

- Clearly a cornerstone of the practice of a precautionary approach is the assessment of uncertainty. Uncertainty can be due to three distinct situations which are usually synergistic.

Uncertainty- due to information deficiencies

- Information requirements will vary in relation to situation uncertainty is highest where no information exists but more information may only marginally decrease the level of uncertainty. It is suggested that information deficiencies can be overcome through modelling but the nature of the models is still based on the basis of known information which may be inadequate.

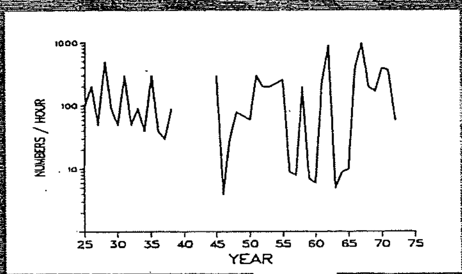
Uncertainty due to inherent system variability.

Research into biological systems is based on being able to collect long (in a number generational sense) data series and to identify patterns and responses to perturbations. If the measurement accuracy is greater than the variability then this is a nonsense alternatively the period of variability may be outside the information and study period in which case the variability will not have been identified.

Uncertainty due to indeterminacy.

The system being studied is beyond the scope of current science and/or it may not be definable. Alternatively the variability of the system is induced by apparently unrelated events.

Recruitment Variation



Identifying and understanding Change

Monitoring

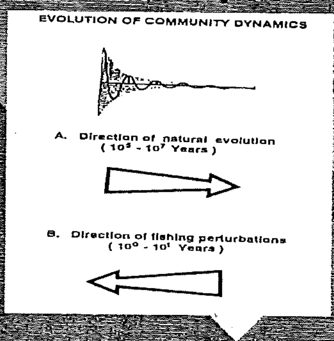
- The precautionary approach is often seen as being "informationally demanding" i.e. good scientific analysis will provide a working framework for prudent decision making.
- By implication monitoring of exploited fisheries should provide the scientist with the information to analyse the impact of exploitation and then also to monitor the continuing impact of new levels of exploitation.

Identifying and understanding Change

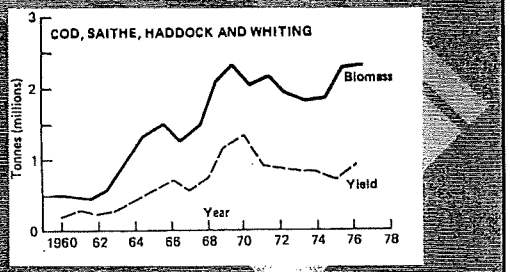
Monitoring

- But is the monitoring program designed to measure an impact on the ecosystem and in particular its component biota or just the relatively narrow area of the captured biota?
- Implicit in identifying change is a capacity to adequately explain the causal links bringing about the noted change.

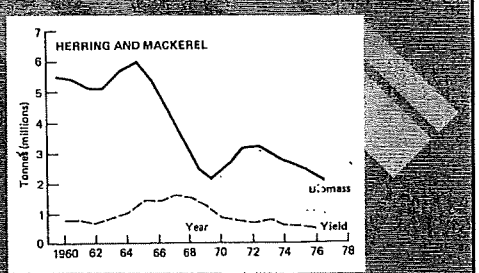
EVOL Com Dyn Piet



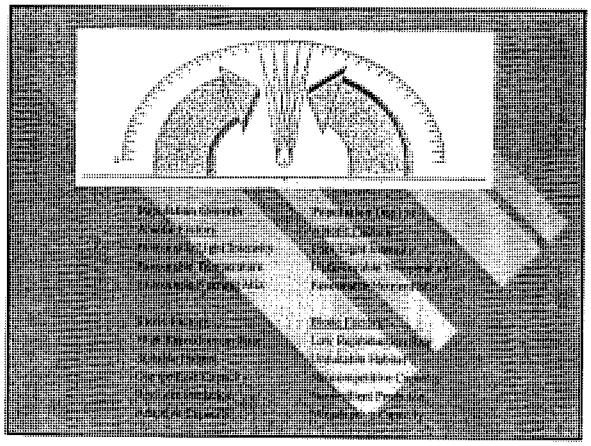
Species Interactions



Species Interactions



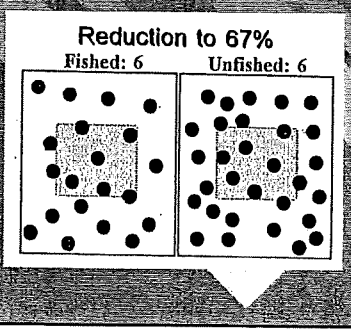
Interannual variability



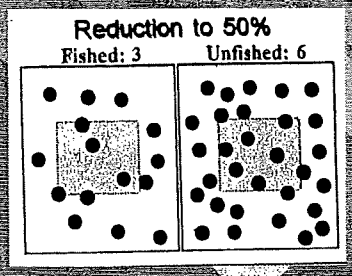
Population Estimation

Population processes such as mortality and its causes cannot be quantified in the most studied terrestrial insect species population predictions cannot be achieved over more than roughly three generations. So to expect to be able to do this in fisheries is clearly absurd. To extend the understanding to be able to predict and explain the impact of man on an ecosystem is even more difficult.

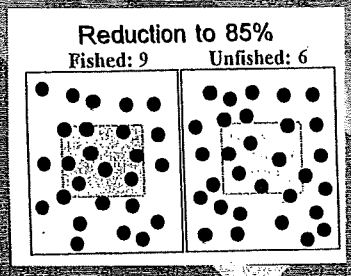
Determining Population Change



Determining Population Change



Determining Population Change



Fisheries Science

What questions can be answered by assessment methods?

Hunt (1994)

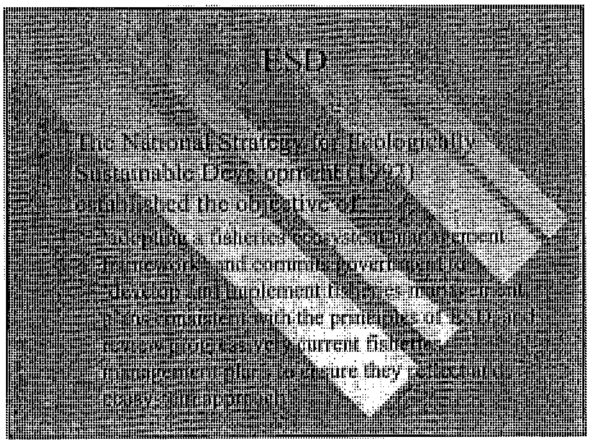
- Implicit in most interpretations of the precautionary principle is the recognition that scientific knowledge cannot adequately predict the potential environmental consequences of human activities. On this basis, it is argued, we should act more cautiously.

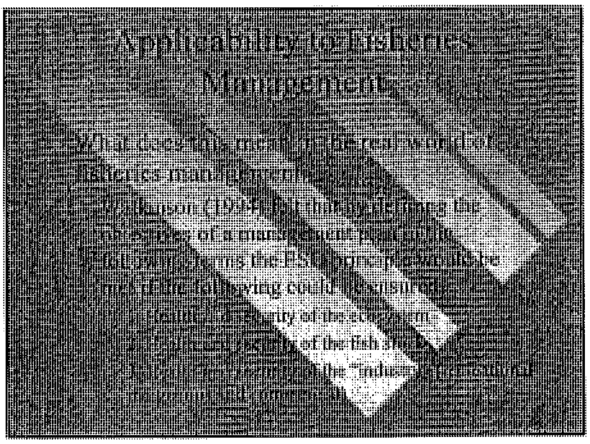
Consequences of a Precautionary Approach

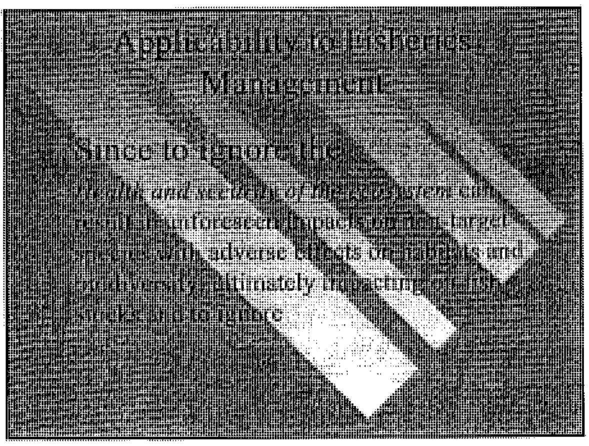
- Interestingly the concept opens up questions about larger issues such a societal values and generational equity and as such a technical appraisal of the facts is but one tool in the decision process.
- It can be further argued that the benefit for a technical assessment the scientist brings is negated by the scientists and other stakeholders.

Australian Situation

- The precautionary principle is seen as the guiding principle for ESD.


ESD
The National Strategy for Ecologically Sustainable Development (1992)
established the objective of


Applicability to Fisheries Management
What does this mean in the real world of fisheries management?


Applicability to Fisheries Management
Since to ignore the
resulting unforeseen impacts on non-target species with adverse effects on habitats and biodiversity, ultimately impacting on fish stocks and to ignore

Applicability to Fisheries Management

Since to ignore the…

Health and security of the fish stock risks highly variable catches with unpredictable and rapid shifts in effort between different fish stocks and fisheries, often with the collapse of what should be stable and economically viable fisheries. To ignore

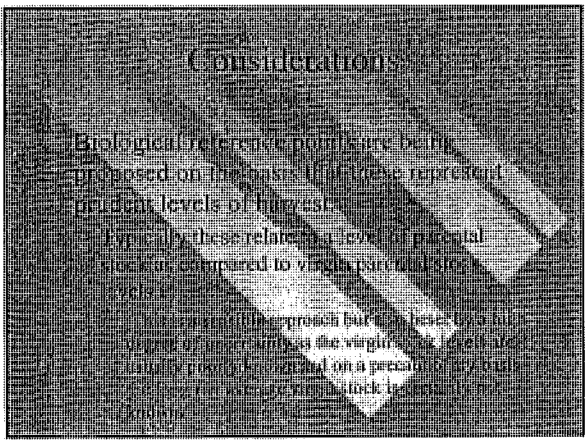
Applicability to Fisheries Management

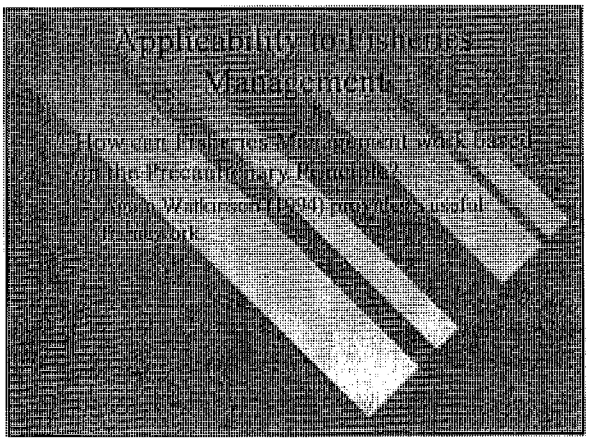
Since to ignore the…

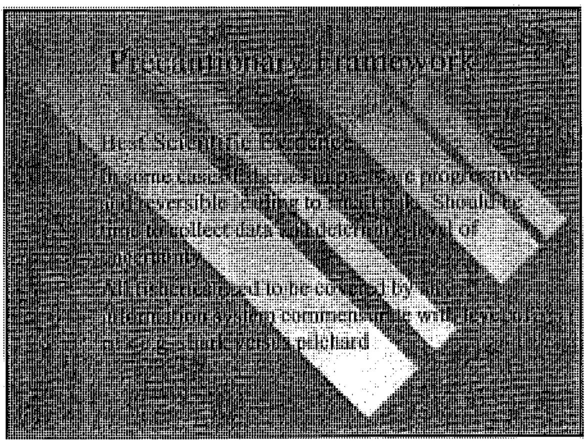
Health and security of the industry risks unprofitability, overcapitalization and undesirable social consequences driven by market forces. Competition between competing sectors can exacerbate the situation, particularly where recreational catch levels are significant.

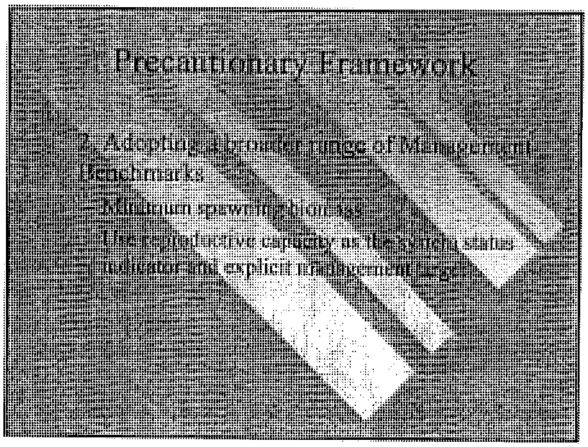
Considerations

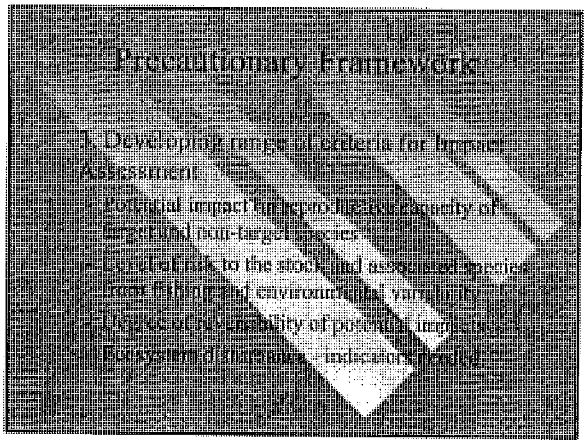
Clearly the economic and social objectives are beholden to the wellbeing of the ecosystem and stock. How can this be achieved given the established variability of population existence and the uncertainty of the science?

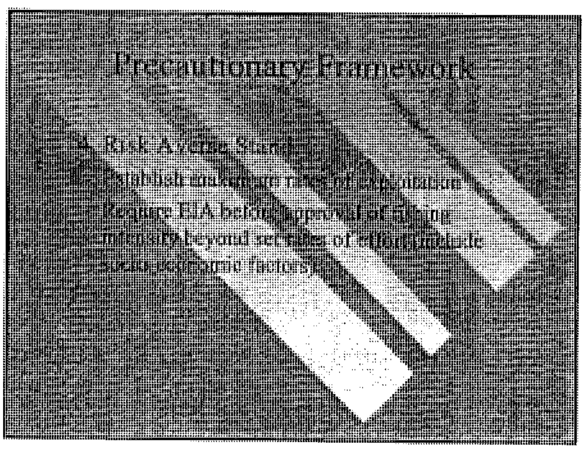

Considerations
Biological reference points are being proposed on the basis that these represent prudent levels of harvest
Typically these relate to a level of parental stock size compared to virgin parental stock levels

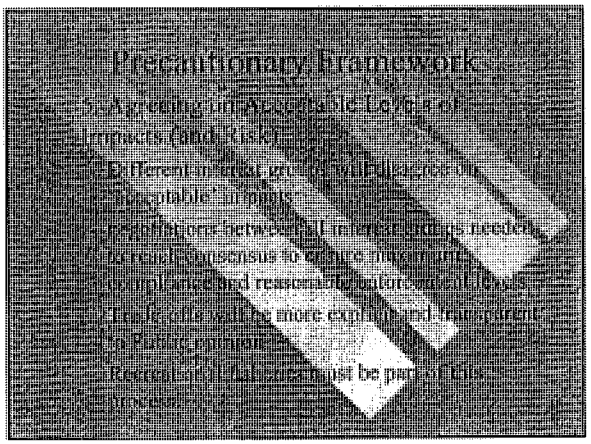

Applicability to Fisheries Management
How can Fisheries Management work based on the Precautionary Principle?
Kevin Watkinson (1994) provides a useful framework

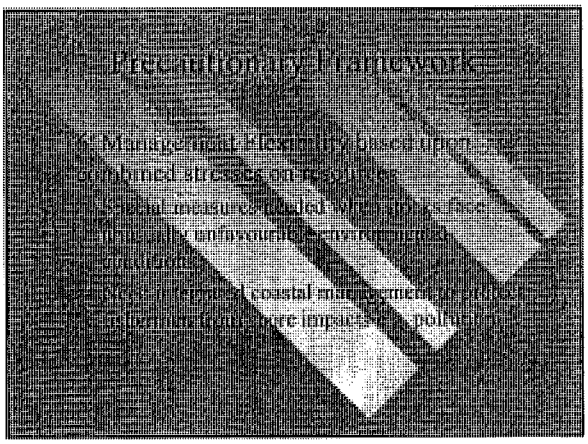

Precautionary Framework
Best Scientific Evidence
time to collect data and determine level of uncertainty
e.g. shark versus pilchard


Precautionary Framework
2. Adopting a broader range of Management Benchmarks
– Minimum spawning biomass
– The reproductive capacity as the system status indicator and explicit management target


Precautionary Framework
3. Developing range of criteria for Impact Assessment
– Potential impact on reproductive capacity of target and non-target species
– Level of risk to the stock and associated species from fishing and environmental variability
– Degree of reversibility of potential impacts
– Ecosystem disturbance - indicators needed


Precautionary Framework
4. Risk Averse Standards
– Establish maximum rates of exploitation
– Require EIA before approval of fishing intensity beyond set rates of effort(include socio-economic factors)


Precautionary Framework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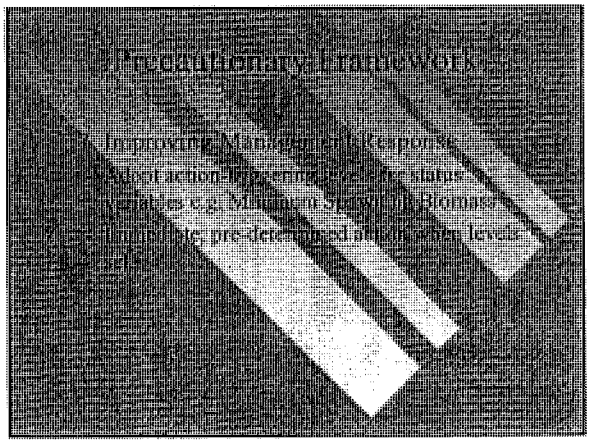
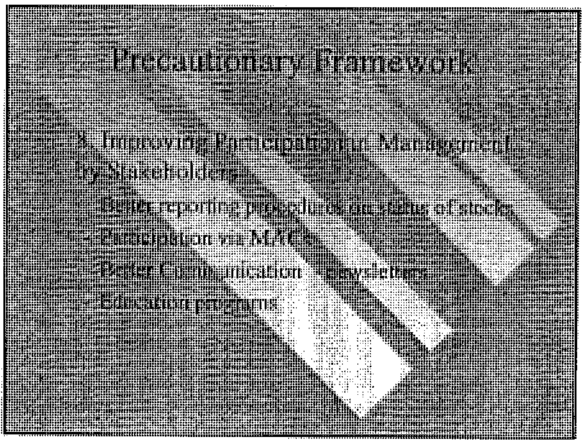
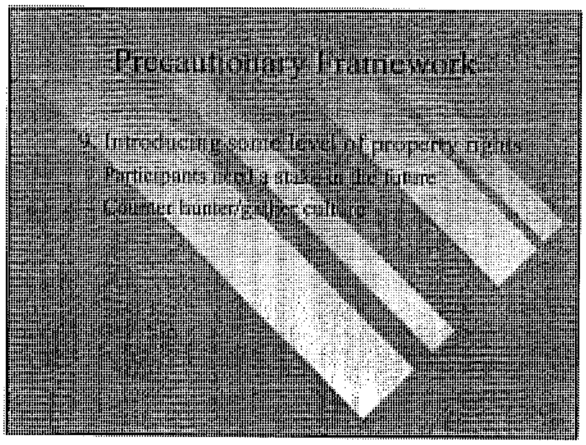
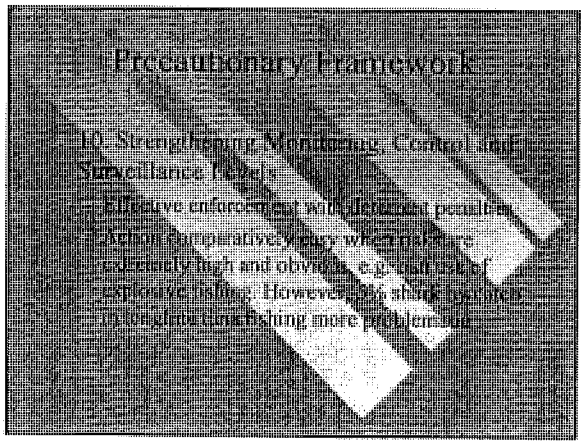

Precautionary Framework

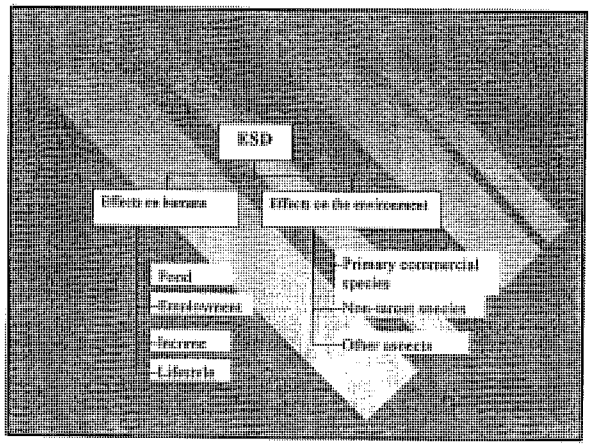

Precautionary Framework
8. Improving Participation in Management by Stakeholders
– Better reporting procedures on status of stocks
– Participation via MACs
– Better Communication – newsletters
– Education programs

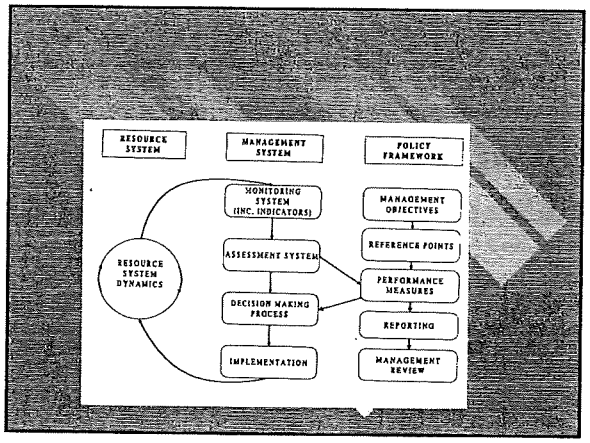

Precautionary Framework
9. Introducing some level of property rights
– Participants need a stake in the future
– Counter hunter/gather culture

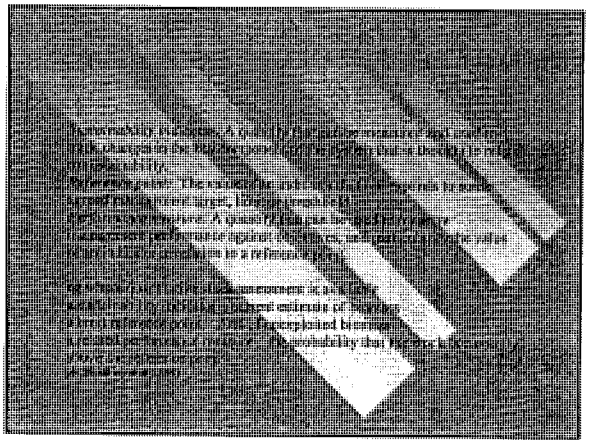

Precautionary Framework
10. Strengthening Monitoring, Control and Surveillance Levels
– Effective enforcement with deterrent penalties
– Action comparatively easy when risks are extremely high and obvious, e.g.
explosive fishing. However,
in longline tuna fishing more problematic

Assessing the Risk

LIP – Stock Definition


ESD
Effects on humans
Effects on the environment
Food
Freshwater
Income
Liberia
Primary commercial species
Non-target species
Other aspects


RESOURCE SYSTEM
MANAGEMENT SYSTEM
POLICY FRAMEWORK
MONITORING SYSTEM (INC. INDICATORS)
ASSESSMENT SYSTEM
DECISION MAKING PROCESS
IMPLEMENTATION
RESOURCE SYSTEM DYNAMICS
MANAGEMENT OBJECTIVES
REFERENCE POINTS
PERFORMANCE MEASURES
REPORTING
MANAGEMENT REVIEW



Section 11
Environment and the Fishing Industry

ENVIRONMENT & THE FISHING INDUSTRY

Environmental Issues!

- International environmental agreements.
- Trade embargoes.
- Production methods- trawling/by-catch.
- Protected species.
- Closed areas.
- Codes of conduct for user groups.

International Environmental Instruments:

- HARD LAW.
- Binding.
- Law of the Sea Convention.
- Driftnet agreements.
- UN Straddling Stocks and Highly Migratory Species.

International Environmental Instruments:

- SOFT LAW.
- Non-binding.
- May become binding through time.
- Agenda 21.
- FAO Code of Conduct.
- Driftnet resolutions.

Non-fishery Agreements:

- RAMSAR - wildfowl habitat.
- World Heritage Convention.
- CITES - Endangered Species.
- Bonn Convention - Wild animals.
- Convention on Biological Diversity.

Implications of International Agreements:

- We have to "conserve and optimally utilise".
- Conservation of areas - vessel access.
- Endangered species protection - areas, fishing methods and bycatch.
- Greater details in management planning.
- Shifting of the burden of proof - user must prove the environment will not be adversely impacted.

Trade Measures:

- Environmental embargoes - eg US and dolphin tuna, are illegal under WTO.
- Production methods and trade embargoes- TED caught prawn in US (Illegal internationally?)
- Protected species - CITES and SBT?
- Non-Tariff Barriers - Sanitary and Phyto-Sanitary Regulations (SPS).

What can industry do about Environmental Instruments?

- Do not ignore international developments.
- Have response to bycatch issues.
- Do we fish responsibly? - Codes of Conduct.
- Area closures and access rights.
- Benefits from a clean environment (Eco-accreditation schemes).
- Educating the industry.
- Resourcing industry representative bodies.

Section 12
Fishing Technology and the Environment

Fishing Technology and the Environment - Bycatch

Bycatch Definition

- Components of Fishing Mortality

Bycatch Definition

- Total Catch can be further divided into landed and discarded portions of which:
  Landed Catch comprised of target catch and byproduct
  Discarded catch comprised of live and dead animals

Bycatch Definition

- **Unobserved Mortality** is that caused through interaction with the gear eg passing through the meshes which induces stress and death
  Other is mortality induced by environmental damage caused by the use of the fishing gear eg the disturbance of benthic biota.

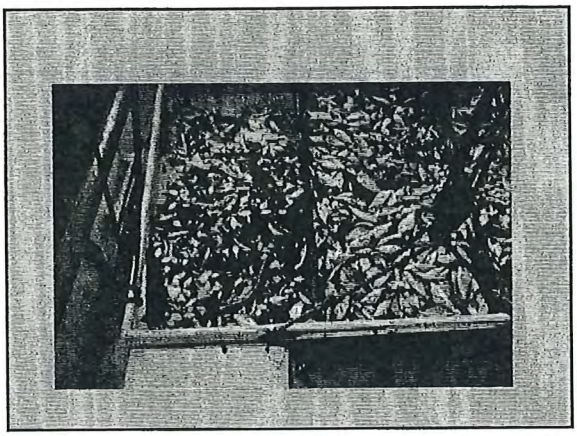
Bycatch Definition

- **Current Definition**
  As environmental issues have focussed on the sector the definition of bycatch has expanded to include all of the above.

Historical Precedence

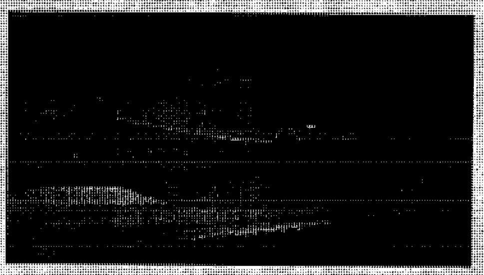
- "Again, the kingdom of heaven is like a dragnet that was cast into the sea and gathered some of every kind"
- "Which, when it was full, they drew to shore; and they sat down and gathered the good into the vessels, but threw the bad away"
- Matthew 13:47,48

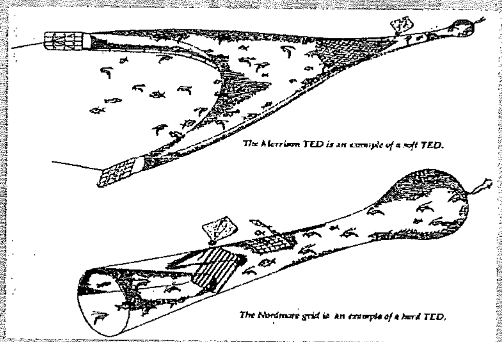
Bycatch Reduction in Prawn Fisheries



An Aerial View

In Water View - AMC Flume Tank





Comparison "Monster" catches

	Super shooter	Standard	Sshooter & square window	Standard	NAFTED	Standard
Stingray	0 (13)	13 (13)	0 (24)	2 (24)	0 (7)	0 (7)
Sharks	6 (13)	18 (13)	7 (24)	22 (24)	3 (7)	4 (7)
Turtles	0 (13)	0 (13)	0 (24)	1 (24)	0 (7)	1 (7)
Total	6 (13)	31 (13)	7 (24)	25 (24)	3 (7)	5 (7)

Does it lose prawns?

Prawn catches for various BRDs	
AusTED	-25%
AusTED	-25%
Super shooter + fisheye	-2%
Super shooter + fisheye	-10%
Super shooter + sq mesh window	-10%
Nordmore grid + sq mesh window	-38%
Nordmore grid + sq mesh window	-38%
NARTED	-3%
Super shooter	+3%

Do they require maintenance?

- Funnel damage and clogging
- Grid damage and clogging
- Chafed netting
- Mesh damage or distortion

"Regular inspection & maintenance of BRDs will ensure optimal performance"

Fisheries bycatch and Nature Conservancy

- New vocabulary in Fisheries
  - CITES,
  - Endangered Species,
  - Threat Abatement Plans,
  - Species Recovery Plans
  - Codes of Practise
  - Biodiversity
  - Precautionary Principle

Nature Conservationists Attitudes

- Impatient with progress within Industry and Fisheries Agencies and are pushing for a greater involvement of Conservation and Environmental Agencies and thus are pushing for use of existing and new legislation to intervene and speed the response of industry.

Nature Conservancy Laws

- Endangered Species Act 1992
  Cooperative Conservation Management
  Species may be listed as endangered or threatened
  Endangering activities may be listed as threatening a species
  Plans need to be developed and implemented within 3 years of listing

Species Protection

- Species protected by take prohibition under the Act ie listed as threatened
  And remain so until a recovery plan is implemented
  A threatening process may continue whilst the Threat Abatement Plan is being prepared

CITES/Wildlife Protection Act 1982

- International treaty regulating the trade in listed species
  Appendices
  1-Commercial Trade Prohibited
  2-Commercial Trade Permitted
  3-Commercial Trade Protected In-Country
- "Liberal Party Policy explicitly identifies the use of CITES as a fisheries Management Tool"

Section 13
Fisheries Management Plans

MANAGEMENT PLANS - The Essentials

Why Management Plans?

- Strategic planning principles.
- Set the management direction in a fishery.
- Alternative is crisis management.
- People come and go - the plan remains and develops.
- Can be incorporated in legislation and yet is fishery specific.

Background Issues for the Plan:

- Legislative base.
- Jurisdictional assumptions (State v Feds.).
- Objectives.
- Management plan composition.
- Management responsibilities from plan.
- Accountability.
- Transparency and natural justice.

What is in a Management Plan?

- Objectives:
  - major objectives are in the Act;
  - can be fishery specific;
  - generally conserving - sustainability;
  - or efficiency (economic, social).

- Defining the fishery:
  - area and species;
  - historical perspective;
  - management history;
  - catch history;
  - current situation overview:
    - threats and opportunities;
    - constraints.

What is in a Management Plan? (cont.)

- Resource interests:
  - not only commercial;
  - recreational, conservationist, indigenous, etc.
  - definition of a stakeholder;
  - accounting for the public interest.

- Economics of the fishery:
  - catch rates, prices, costs, productivity, sustainable harvest levels and re-structuring.

- Environmental information:
  - habitat, monitoring trends, changes.

- Biological information:
  - stock assessment, population monitoring.

- Research and monitoring:
  - budgets, project selection.

- Compliance:
  - how much is needed and who pays.

- Administration:
  - support needs (budget, staff, secretarial, etc.).

- Performance indicators:
  - problem of measurement.

- Management Plan Review:
  - consultant;
  - appeals;
  - amendments.

Rules behind the Plan:

- Management rules can also be specified:
  - existing:
    - endoresments;
    - restrictions;
    - offences;
    - penalties.

Making a Plan Survive:

- Nothing magic in management plans!
- Credible - reflect the true situation.
- Dynamic - be adaptive and response.
- Current and effective - bring change.
- Responsible - must be seen to be effective.
- Ownership - must be accepted by stakeholders.

Making Management Plans Work:

- Poor masters, but good slaves.
- People make plans work:
  - honest communication;
  - trust;
  - patience;
  - compromise and negotiation;
  - personal integrity.

Section 14
Conflict Resolution in Fisheries Management

CONFLICT MANAGEMENT IN ADVISORY STRUCTURES

BY MARC WILSON

OUTLINE

- The importance and potential for benefits, or otherwise, arising out of the conflict.
- The source or probably source of the conflict (in terms of what we talked about in the discussion).
- The most appropriate approach to resolving the conflict.

KEY POINTS

MANAGEMENT OF CONFLICT

Ideas on the management of conflict have been changed significantly. It used to be said that any conflict was bad. Now it is recognised that a certain amount of conflict can be good. It is not that the conflict itself is good - but it is through it's resolution that progress and new solutions arise.

Not all conflict is good. Too much conflict wastes time and energy in dealing with the emotions and not enough time on their resolution. No progress is made when there is too much conflict.

SOURCES OF CONFLICT

To be able to resolve conflict, it is first necessary to identify the source of the conflict. The conflict framework previously provided seeks to identify logical and reasonable sources of conflict. However, there may be personal conflict involving *individual differences*, for example, when two people have completely different values and just do not get along. These may be very difficult to resolve.

Communication and information problems cause many problems as well and are usually much easier to sort out. It may highlight deficiencies in the communication chains and processes in the structure. There may also be *role incompatabilities* that cause conflicts - such as organisational heads having different views because of their different constituency.

Another common and potentially quite intense type of conflict is that caused by *stress in the environment* and these are dealt with in detail in the conflict framework previously discussed this stress is most apparent when allocation is the issue.

APPROACHES TO RESOLVING CONFLICT

There are five different approaches to resolving conflicts:

An ***avoidance*** strategy means not taking any action, and acting as if the conflict does not exist.

An ***accommodating*** strategy means sacrificing your needs for the other person's wishes.

A ***forcing*** strategy means you insist on getting your own way at the expense of the other person's needs.

A ***compromise*** is a strategy where both sides agree for the time being to give in and sacrifice something, but neither gets exactly what they want.

A ***collaborative*** approach is one where both sides attempt to come to terms with each other's needs, and constructively develop a solution that fully satisfies both sides.

Each of the above strategies may be appropriate in certain circumstances. An effective MAC member is one who can recognise which conflicts he/she can ignore, which he/she can afford to lose a little, which he/she must win and which both parties must win.

CONFLICT RESOLUTION TECHNIQUES

Problem Solving
Face-to-face meeting of the conflicting parties for the purpose of identifying the problem and resolving it through open discussion.

Superordinate Goals
Creating a shared goal that cannot be attained without the co-operation of each of the conflicting parties. In reality, in Fisheries Management where compliance is essential for management, to be effective, co-operation and acceptance are fundamental.

Avoidance

Withdrawal from, or suppression of, the conflict.

Smoothing
Playing down or difference while emphasising common interests between the conflicting parties.

Compromise
Each party to the conflict gives something of value.

Authoritative Command
Management uses its formal authority to resolve the conflict and then communicates its desires to the parties involved. Such a process means that one or more of the participants feels aggrieved and disadvantaged.

Altering the Human Variable

Using behavioural change techniques such as human relations training to alter attitudes and behaviours that cause conflict.

Altering the Structural Variables

Changing the formal structure and the interaction patterns of conflicting parties through changing the mechanism or methods of interaction.

FISHERY CONFLICTS - THE DYNAMICS OF CONFLICT IN FISHERIES

BY MARC WILSON

Fisheries in the developed world impact upon many sectors of the community. This impact is somewhat dependent upon the location and nature of the fishery. Fisheries located close to populated areas of the coast or estuaries will impact more directly on the community than industrial fisheries operating "out of sight". Fisheries will in turn be impacted upon by the of such population ie pollution and competition for space. Fisheries resources will fluctuate in terms of availability and catch due to these factors and to a host of non human related abiotic and biotic factors. Within such a dynamic process uncertainty is high and conflict inevitable. Resources allocation, ownership and access issues foster conflict.

The objectives of fisheries management have changed over the past fifty years. Post WW II the driving activity was development and the maintenance of good order in the fishing industry. The latter being a rather vague but powerful catchall for control and development. The recent trend in fisheries acts is to define the objectives in terms of conservation (usually in terms of ESD), Economic performance (optimising or maximising economic return to the community) and equity (a fair allocation of the resource and benefits to members of the community including fishers).

An examination of the trends in the makeup of fisheries management agencies reflects the dynamic nature of the of natural resource use and management. Fifty years ago most fisheries were managed by government agencies reporting directly to Ministers of the Crown. As the degree of interaction and competition between the community and fishers increased politicians have tried to distance the decision process from themselves. The politicians quickly realised that fisheries administration provides few "wins" and many political losses. The at arms length approach has been fostered by the industry as they soon realised that there were very few issues they could win in a public conflict - the weight of votes of non fishers usually prevailed. Within this process of conflict over access, what chance is there of a fisher trying to develop new fisheries?

There are however, instances where fisheries and the community effectively manage conflict. What can be learned from these? Can conflict be understood and mitigated through a process of categorisation , identification and resolution?

Inter and Intra Fishery Conflict

Most fisheries under conflict are undergoing a management process that seeks to reduce the fishing effort which is translated to participants or their share in a fishery. Often the legislation under which fisheries management is being undertaken espouse such management objectives as optimum utilisation or optimise economic efficiency, Invariably decisions need to be made about who gets what and how many?

Who get what and how many - the basis of intra fisheries conflict.

Rational economists reforms are based on economic rent arguments, ie exploitation should occur at levels that maximise economic rent. At these levels of rent the resource will return its greatest "benefit" to society. The benefit to society of the exploitation of a resource may however, not be only assessed in terms of financial return there are sociological benefits which may be considered more important than the maximising rent argument. Effectively, society decides that the value of an exploitation system that doesn't meet this objective is greater and thus chooses that method but it still should be aware of the cost of that decision. How does society decide? The political process is the formal method but it is subject to a great deal of informal input.

As soon as the level of effort being employed In a fishery becomes an issues the inevitable question is asked how much resource is there? The argument is reasonable if the effort is too high then the resource size must be known to make that judgement. Immediately conflict is created between resource scientists and the industry because inevitably the resource size is not known with any degree of certainty, the impact of declining catch per unit effort is more easily monitored than is resource size. Agency competency is brought into question at all levels of government. There is another reason for the question relating to resource size, that is how much is there to split up or allocate?

There are three major issues that result in conflict in the allocation process. Firstly, what size is the global allocation? Secondly on what basis will the allocation be made? Thirdly, what surety does the allocation provide. The latter revolves around the tangibility of the fishery property and of the quality of the allocation size ie will the allocation be maintained all frequently changed downwards.

Charles (1992) categorises these issues under four related headings"

1. *Fishery jurisdiction* ie *ownership/stewardship the issue of who manages the fishery.*
2. *Management mechanisms* - the issues of resource size and "safe" harvest levels.
3. *Internal allocation* - the conflicts between internal users ie the fishers and associated sectors such as processors as they try to influence an allocation procedure that will benefit their position in the new order.
4. *External allocation* - conflict with other external users be its competition for space or resource eg tourism recreational fishing and aquaculture.

These can be further characterised per Charles (1992):

Fisheries Jurisdiction

Property Rights

There are major philosophical issues in relation to arguments as to what property rights a fisher should have. These issues will differ from fishery to fishery and there is no single clear answer. Legally the courts have held that a fisher who pays an annual licence has a reasonable expectation to have that licence renewed on an annual basis in a sense he has tenure the use rights are the real issue. True property infers a definable item to which the owner has rights of use and control whereas fisheries resources are dynamic and ill defined. Access and even an allocation of known but varying dimension maybe available but control and management may not. Within the Australian context many fisheries are moving towards a privatisation process however, in other societies the property and or ownership maybe vested in the community or in the form of individual territorial use rights in fisheries (TURFs)

The Role of Government

Conflicts arise where the centralised government management process is challenged by user groups who are charged for management of their fishery. Invariably the users claim the privilege of user pays user says and demands and increased role in management. The development of co-management challenges established bureaucratic organisations and cultures.

Intergovernment Conflicts

Charles (1992) characterises these as conflicts in the bureaucracy between agencies I dealing with the changing face of fisheries management. This understates the impetus for the conflict in that the strength of the bureaucratic conflict is due to the pressure being applied by the agencies clients. This bureaucratic conflict is a method by which members of the community bring pressure to bear on fisheries management. This pressure and conflict flows through to ministerial level.

Management Mechanisms

Fishery Management Plans

Are viewed by the industry as periodic plans to establish harvest levels and by association allocation. During their currency they represent the rules for the fisher. Usually they are documents generated by bureaucracy and thus are not "owned" by the fishers ie rules are established that fishers feels are imposed.

Compliance Conflicts

Enforcement activity is either seen as excessive when it impinges upon the fisher or when the fisher is paying a proportion of the costs of enforcement. Alternatively fishers feel insufficient enforcement activity is being undertaken to catch the "cowboys". Interestingly in the Australian situation where fishers are involved in the allocation of funds and the methods used for ensuring compliance there has been a rapid shift to cost efficient monitoring systems such as vessel monitoring systems.

Fisher/government Conflict

A pervading view in the fishing sector that government officials do not listen, take into account or ask for fishers views and knowledge. Fishers feel excluded from full input to decision making and thus gain no ownership of the decision.

Internal Allocation

Gear Sector Conflict

Where several gear types are being used in a fishery, conflict arises over the allocation to the operators of the various gear types. The issues are the comparative efficiencies of the gear types the issue is further heightened if the allocation is on the basis of vessel size, Usage levels also come into play in say the allocation to artisanal fishers versus commercial fishers. Gear interaction or area competition can also result in conflict.

User group conflict. Again competitive use groups, subsistence versus artisanal, commercial versus foreign venture, commercial versus recreational etc. Conflict is exacerbated by the very different segments of society represented by these groups. As a result there is no culture of cooperative management or discourse.

Industry Sectoral Conflict

Allocation issues are usually focussed on the harvest sector often the processors, marketeers and service sectors are not involved but are impacted upon. Vertically integrated operators have a distinct edge in this process and are able to adapt faster and thus gain a competitive edge over other non harvest sector participants.

External Allocation

Domestic Versus Foreign Fisheries

Distant water fishing nations may catch fish outside the managed area an therefore not be managed creating conflict. DWFN may be given access to a nations fishing area and the domestic sectors considers the access to be unfair and based on non fisheries considerations. DWFN may employ different gear which may interact with domestic fisheries causing conflict.

Fishers Versus Aquaculture

Competition for markets and area. The risk of disease spread from intensively cultured to harvest stocks. The alteration to genetic integrity of a wild stock through escapees from cultured stocks all these factors result in conflict.

Fishers and Other Marine Sea Users

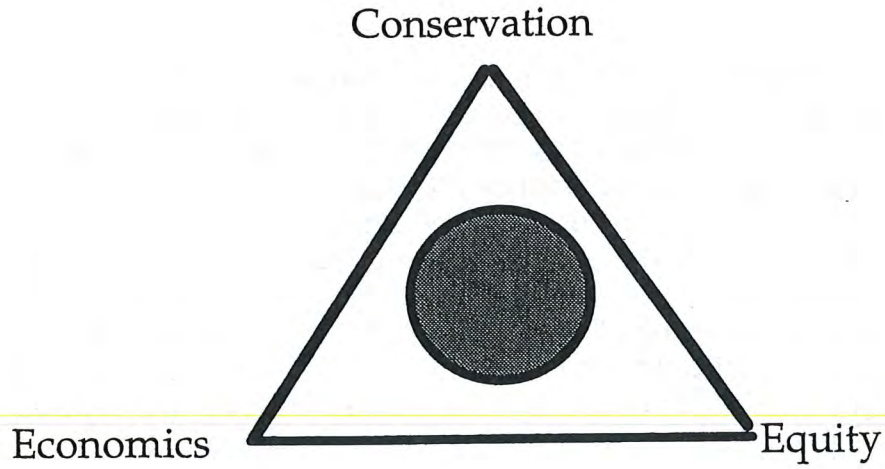
Many industries and recreational activities are involved in the competitive use of the sea. Usage competition becomes more pronounced the closer the fisher gets to the coast and the populated areas.

The Objectives of Fisheries Management

The nature of the conflicts cited above will depend upon the driving philosophy behind fisheries management. As previously stated modern fisheries management objectives can be defined in terms of conservation, economic performance and equity. Charles (1992) suggests that these objectives can be viewed as the apexes of a triangle. Each objective has a process that drives it. Fisheries management has to thus find a spot somewhere between these competing objectives.

Table 1. Fishery Management Objectives and Processes (modified from Charles , 1992)

Management objective	**Process**
Conservation / resource maintenance	Conservation
Economic performance / productivity	Rationalisation
Community welfare / equity	Distribution



The Processes

Conservation

The maintenance of the species within the fishery are the primary objective. In order to meet this objective information is required on the biology and ecology of the species. If truly holistic maintenance objective is to be followed then an ecosystem approach is required. The rate at which fish are being killed and habitat altered are the primary aspects to be controlled. Fishing effort thus needs to be controlled. Traditionally fisheries have been managed within the framework of biological sustainability. The strength of this objective is that it is intuitively sensible and acceptable to fishers , government and community. Unfortunately it also perhaps the most difficult objective to meet due to the dynamic nature of fisheries resources and on a single species based has failed to meet its driving objective of conservation (Larkin, 1977).

Rationalisation

The pursuit of maximum economic efficiency invariably results in the reduction in the amount of effort used and in the number of operators applying that effort. This objective has tended to overtake the conservation objective as the point of maximum economic efficiency is viewed as being more conservative in terms of exploitation levels than that of optimum or maximum sustainable yield. It is commonly held that excessive effort exists and the process of rationalisation meets both objectives. The rationalisation process carried through to its theoretical basis involves the privatisation of the of the resource and freely tradeable access rights/quotas to provide market driven efficiency.

Distribution

A conflict always exists between the rationalisation process and the distribution process in that the former seeks to maximise economic performance whereas the latter seeks to distribute the benefits tangible or otherwise of the resources to the community within an overriding consideration of equity. These consideration necessarily involve cultural and community welfare considerations. Within third world countries where fishing represents the primary protein source and where fishing is but one of the activities involved in obtaining food then the distributional argument hold favour. Although this objective may be contrary to other the conservation and rationalisation objectives. Within the developed world the reliance of regional towns on fishing activity and the "threat" that rationalisation poses to the survival of these towns sees the promotion of the community welfare argument ie the distributional process and this results in strong points of conflict with managers.

The conflicts created by differing public policy positions is not unique to fisheries the forestry sector suffers virtually identical conflict.

Harmonisation of management involves a consideration and involvement of all stake holders. Clearly a management policy which is driven by one of the three processes will fail for it will automatically alienate some of the stake holders. A management process that involves aspects of all three will producer a greater likelihood of acceptance and successful management. So clearly the ball lies in the middle a case of a round peg fitting a triangular hole.

WE'RE GETTING NOWHERE!
COMMUNICATION AND SOLVING DIFFERENCES

Personal Communication:

- We communicate in many ways.
- Not just words
  - the way we say things;
  - what we don't say;
  - body language;
  - listening;
  - eye contact/looking;
  - pre-conceptions.
- Be aware of the way you come across.

Conflict and how to handle it:

- Conflict is part of life and MAC's.
- Be bound together by it - (not divided):
  - inevitable, opportunity, evidences involvement;
  - separate the problems and the people;
  - keep communication direct;
  - short ledgers, balance them quickly;
  - seek change and keep atmosphere interactive;
  - leaders can invite disagreement;
  - problem, process and generate solutions.

Map the Conflict:

- What is the issue?
- Who is in conflict?
- What motivates each party?
- Face anxieties and fears!

Then:

- Confront issues but go soft on the person.
- Be honest in your beliefs and preferences.
- Be prepared to listen and change your mind!

Peacemaking:

- Peace is MADE by taking steps across the lines of division.
- Letting go of the past - (forgiving and trust).
- Recognise injustice.
- Attempt to restore equity.
- Clarify future intentions.
- Commit to being constructive.

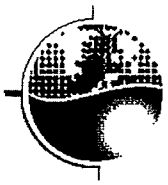
Meditation - A Useful Technique

- Useful when you are locked up in a dispute.
- Ground rules defined:
  - don't interrupt, etc.;
  - each party has a chance to speak;
  - feedback on what they heard.
- Summarise agreements and disagreements.
- A good chairperson should do a form of this in handling meetings.

MAC's are Relational:

- Science has thrown us off the trail.
- You make the culture and the climate.
- Takes time for trust to develop - build bridges - "you can't put a 30 ton truck over a five ton bridge.
- Decide to make your MAC work.
- This is a once off opportunity.

EXCELLENCE IN MARITIME TRAINING CONSULTANCY & RESEARCH



AMCsearch

A Subsidiary of the Australian Maritime College

NATIONAL MAC I COURSE QUESTIONNAIRE

7th - 8th April, 2000

Please circle the appropriate answer...

Friday 7th April	***Subject Matter/Content***			
Review of MAC Arrangements in Different States of Australia	Too Much	About Right	Not Enough	
Lecturer: Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:				

Responsibilities of an FMC/MAC Member	Too Much	About Right	Not Enough	
Lecturer: Marc Wilson/Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:				

Role of a Chairman in a MAC	Too Much	About Right	Not Enough	
Lecturer: Marc Wilson	Poor	Fair	Good	Excellent
Comments:				

Management & Leadership	Too Much	About Right	Not Enough	
Lecturer: Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:				

The Processes of Government	Too Much	About Right	Not Enough	
Lecturer: Marc Wilson	Poor	Fair	Good	Excellent
Comments:				

Fisheries Research & Stock Assessment	Too Much	About Right	Not Enough
Lecturer: Marc Wilson	Poor	Fair	Good	Excellent
Comments:			

Fisheries Rights, Access & Resource Security	Too Much	About Right	Not Enough
Lecturer: Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:			

Fisheries Economics	Too Much	About Right	Not Enough
Lecturer: Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:			

Saturday 8th April	***Subject Matter/Content***		
Risk Assessment in Fisheries Management	Too Much	About Right	Not Enough
Lecturer: Marc Wilson	Poor	Fair	Good	Excellent
Comments:			

Environment and the Fishing Industry	Too Much	About Right	Not Enough
Lecturer: Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:			

Fishing Technology and the Environment	Too Much	About Right	Not Enough
Lecturer: Marc Wilson	Poor	Fair	Good	Excellent
Comments:			

Fisheries Management Plans	Too Much	About Right	Not Enough
Lecturer: Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:			

Conflict Resolution in Fisheries Management	Too Much	About Right	Not Enough
Lecturer: Marc Wilson/Alistair McIlgorm	Poor	Fair	Good	Excellent
Comments:			

Course Content - Overall Response

Please circle the appropriate answer ...

SUBJECT MATTER/CONTENT: ***Too Much*** ***About Right*** ***Not Enough***

Comments:

LECTURERS: ***Too Much*** ***About Right*** ***Not Enough***

Comments:

Course Organisation

Please comment on the following:

Arrival/Transport, etc.:

Venue/Study Room/Accommodation/Food/Special Dinners, etc.

General Comments on Organisation - Suggestions for Improvements

Thank you for your assistance in this survey. It will be of use to us in our future short courses.

Dr. Alistair McIlgorm - Course Co-ordinator.