AWMS POSITION STATEMENT
Adaptive Management

Background

Management of natural resource systems is complex. Not only are the relationships between the bio-physical components of the system complex and in a dynamic balance, but the system itself is under constant pressure and change due to the actions of people. Traditionally, scientists have tried to understand natural resource systems and to develop policies and management practices for them based on a study of the parts of the system and their interaction rather than examining the system as a whole. While this approach has and will continue to yield important information and progress our knowledge in many areas of biology, it on its own has had limited success for managing natural resources. Managers are unlikely to have all the information that they would like to feel comfortable about how best to manage most natural resource systems. However, policy developers and natural resource managers continually need to make decisions about these systems, often at short notice. A new approach is required. The adaptive approach to management (Adaptive Management), has been developed to help with these complex systems. However, it can also help in the management of less complex, replicated systems such as, restoration of wetlands, fire ecology of forests and habitat fragmentation in agricultural landscapes.

What is Adaptive Management?

Adaptive Management formulates management as experiments that probe the response of the systems and in people's attitudes. The aim is to increase knowledge about the ecosystem processes and structures and consequently, to design better policies and to formulate better studies and management programs.

The components of an adaptive management approach are as follows with those components that are considered to be core to the adaptive management approach indicated with an *:

- Holistic/consultative approach*
  - treating the system as a complex bio-physical, social and economic system; All interest groups (stakeholders) are identified and the values and inputs of all key individuals are considered and valued – they include researchers, resource managers, policy developers, industry, and community interest groups; The bio-physical, social and economic dimensions of the problem and available information are identified often through stakeholder workshops*; Models of the system are developed by a sub-group from the workshop based on a collective understanding of the stakeholders; Models are used to:
  - assess information gaps and uncertainties; and
  - predict outcomes from alternative management strategies; Stakeholders develop management plan(s) to *
  - meet desired outcomes;
  - generate new information to reduce uncertainty and information gaps;
  Management plans are implemented usually as an experiment* where;
  - results are monitored*;
  - new information analysed*; and

- Management strategy modified as understanding of the system grows*.

Where appropriate AWMS encourages the use of the adaptive management approach for natural resource systems. In doing so AWMS:

RECOGNISES that it can be costly in time and resources, and for complex systems such as major marine fisheries, it can take several years to test various management alternatives;

UNDERSTANDS that it can threaten established attitudes and research programs, so much so that strong positioning by some groups can derail the process; and

RECOGNISES that pro-environment outcomes are not guaranteed.

Nevertheless, an adaptive approach to management:

ENCOURAGES management even if the knowledge of the system being managed is incomplete;

VALUES the input of Professionals and Non-professionals;

RECOGNISES that adaptive management helps to generate solutions that fit within management restrictions and ownership of the problem and the solution by key stakeholders; and

CAN develop a system that is likely to be able to respond to new stresses because the system is likely to be more flexible with more options and stakeholders are likely to be more cooperative to adopting future necessary changes.

Further reading on this topic can be found in *Conservation Ecology* on the web at:

http://www.consecol.org/vol/3iss1
http://www.consecol.org/vol3/iss2

and
Walters, C. and Holling, C. 1990 Large-scale management experiments and learning by doing *Ecology* 71: 2060-2068.

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