

MANAGEMENT IN UNCERTAINTY: USING THE OPPORTUNITY TO ADOPT AN EXPERIMENTAL APPROACH TO MANAGEMENT

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INTRODUCTION

Managers and researchers have a common aim in the effective conservation of our natural resources. Most managers would like the security of research to assist in the correct choice of management prescriptions. Similarly most researchers would like to be able to provide the information needed by managers. In reality such an ideal situation is not possible. Managers will have to manage in varying degrees of uncertainty. This workshop discussion revolved around two themes (although these were not treated as separate topics).

1. Managers adopting an experimental approach to management so as to improve the choice of prescription in the future.

2. Support that can be provided by researchers in gathering and analyzing data.

SIMPLE AND ROUTINE SITUATIONS

Many actions by managers are responses to simple situations which may be "one-off" or recurring. The appropriate action is usually chosen by applying ecological principles or from experience and many current management prescriptions have developed from an accumulation of experience. However, much of this knowledge is stored only in peoples' memories and it is important to capitalize on this experience. Written records must be kept to ensure the availability of accumulated knowledge to

other people and to evaluate the results of management actions. It is important to record why something was done as well as what was done and what the result was. It is also important to record a decision to do nothing, why that decision was made, and what happened. Managers can record management actions to evaluate the effectiveness of their action. However, to achieve this objective, records must be made on a structured scientific basis, treating the operation as an experiment.

There are a number of constraints that must be taken into account. These include time, resources and the level of expertise of field staff as they are usually not trained researchers. Techniques should be simple. For example photographic records are valuable. Setting up quadrats and controls may not be appropriate. Researchers can assist with advice on designing experimental procedures and analyzing results.

Where management actions are frequently repeated under similar situations, it would be sufficient to treat a proportion as experiments requiring experimental procedures to be followed.

It is very important to build up a history of management actions. Thus it is important to record each event whether or not it is treated as an experiment. Fire is a good example of this approach. It may only be necessary to follow experimental procedures to record a proportion of control burns in order to determine the effects of

fire under different circumstances. Nevertheless it is essential that a fire history for the area is maintained.

Useful information could be gathered by encouraging rangers and other managers to keep notes on organisms that interest them. Researchers should be contacted for advice before rangers and/or managers started such a study.

RECORDING METHODS

Record keeping is often inadequate. Personal notes and daily logs may not be accessible to others. There have been some attempts in the Department of Conservation and Land Management (CALM) to devise formal data sheets but there is no centralized or computerized system for storing, sorting or disseminating these data. This is an area that must be addressed with the assistance of researchers. In CALM there are three different reserve inspection forms in use now.

COMPLEX SITUATIONS

Researchers should be involved with complex problems. Many complex issues are the subjects of research programs already. It may be possible for managers to assist in these programs, e.g. in regular data collection.

Managers who have complex problems should liaise with researchers who may be able to establish research programs, include the problem by adapting existing programs or advise the manager on the setting up of a program. In any event the researcher may be able to advise the manager on the most appropriate action to take until research results resolve the problem.

It is appropriate for managers (with the assistance of researchers) and institutions such as universities to undertake relatively short-term research projects. Long term programs should be undertaken by properly funded research bodies such as CSIRO and the research division of CALM.

MONITORING

The value of monitoring as a means of solving management problems is important. For example zoning of public use and sanctuary areas

on the Ningaloo Reef has been proposed without a good knowledge of the effects of public use. However, transects will be set up in each zone and monitored so that, perhaps ten years hence, managers can assess the impact of use and review the effectiveness of zoning.

OTHER RELEVANT ISSUES

Management plans could be useful as a framework on which to base experimental management.

Environmental stress and change caused by long term phenomena such as climatic change creates an element of uncertainty that is usually overlooked. Researchers should consider allocating more resources to this area.

Fears of a backlash from public opinion or political considerations may influence the decisions that managers make.

CONCLUSIONS

Managers will always have to make decisions on limited knowledge. However they can do much to improve the situation by adopting an experimental approach to management prescriptions. Advice from researchers is available to managers who intend following this approach.

In any event, managers should maintain records of management actions so as to compile a management history of the areas under their control.

At present, methods for recording and storing data are inadequate. This area needs to be addressed as a matter of urgency.

Complex problems should be investigated by researchers although managers may be able to assist. Generally organizations like CALM and CSIRO should be involved in long term programs while universities and competent managers should address short term projects.

ACKNOWLEDGEMENTS

I thank all members of the group for their participation in this useful discussion. I also thank Gordon Friend for taking meticulous notes during the workshop session and Denis Saunders for his assistance with editing of the report.