

BACKGROUND

Review of the COTSAC Program

In December 1988, following criticism in the media of the Great Barrier Reef Marine Park Authority's handling of the crown-of-thorns starfish (COTS) issue, the then Minister for the Arts, Sport, the Environment, Tourism and Territories, Senator the Honourable Graham Richardson, requested a review of the Authority's crown-of-thorns starfish research program and policies. The research program had been recommended to the Authority by the Crown-of-thorns Starfish Advisory Committee (COTSAC), a body of experts convened by the Authority in 1984 for this purpose. Funding of \$3 million over four years for the program (1985-86 to 1988-89) was provided by the Federal Government. The program was reviewed annually by another advisory body established by the Authority, the Crown-of-thorns Starfish Advisory Review Committee (COTSARC). Zann and Moran (1988), Moran and Johnson (1990) and Lassig (1991) have summarised the structure and results of this program.

The review for Senator Richardson was undertaken in January 1989 by Professor D. T. Anderson, Challis Professor at the University of Sydney. Terms of reference for the review were:

1. 'To review the Great Barrier Reef Marine Park Authority's present policy for managing the Marine Park in terms of the developing knowledge of the Crown-of-thorns Starfish and in particular the Authority's policy of limiting direct intervention to areas of special scientific or tourist interest.'
2. 'To review the adequacy of the mechanism for defining, reviewing and operating the Crown-of-thorns Starfish program.'

Anderson concluded that the research program had been defined, reviewed and operated in an efficient and productive manner and that the Authority's policy for crown-of-thorns starfish control (i.e. intervention only in areas of special interest to tourism or science) was soundly based, taking into account current knowledge of starfish populations on the Great Barrier Reef (Anderson, 1989). He recommended the program be continued for another three to five years at a dedicated and committed funding level of at least \$1 million a year. He also recommended changes to the review committee to give that committee a more effective role in determining, in consultation with the Authority, the pattern of expenditure of these funds (see appendix 1). On 30 March 1989 Senator Richardson notified the Authority's Chairman, Professor Graeme Kelleher, he had accepted the recommendations of Anderson's report.

The Crown-of-thorns Starfish Research Committee (COTSREC)

Anderson recommended that Professor John Swan (who had chaired the COTSARC) continue as chairperson of the new advisory committee and that the committee include two representatives from the Great Barrier Reef Marine Park Authority (GBRMPA), two from the Australian Institute of Marine Science (AIMS) and three external experts. Professor Swan convened two meetings of an 'interim advisory committee' on 24 April 1989. He invited the Authority and AIMS representatives to determine Terms of Reference for the new committee (appendix 3) and to nominate additional members. Professor Ray Golding (Vice Chancellor of James Cook University of North Queensland) was invited to attend the second meeting later in the day to represent that institution (which had significant involvement in the previous research program). This meeting focused on allocation of residual funds for the current financial year. It was agreed the committee be called the Crown-of-thorns Starfish Research Committee (COTSREC).

Subsequently Professor Golding, Mr Robert Pearson (QDPI and former member of COTSARC), Dr Keith Sainsbury (CSIRO) and Professor Peter Davies (BMR, now University of Sydney) were invited to join the COTSREC. All four accepted the positions.

The full COTSREC first met in July 1989 in conjunction with a workshop organised to facilitate discussion on future directions in the crown-of-thorns research program. About forty scientists and managers attended the workshop. Discussion centred on current and future research in the areas of predation, terrestrial inputs and possible links with COTS outbreaks, geological studies to determine past occurrences of COTS, coral and starfish dynamics, recruitment, biology and controls. As well as convening workshops to review the status of knowledge in particular areas and to recommend further research needs, the Committee established a number of specialist working groups (see figure 1).

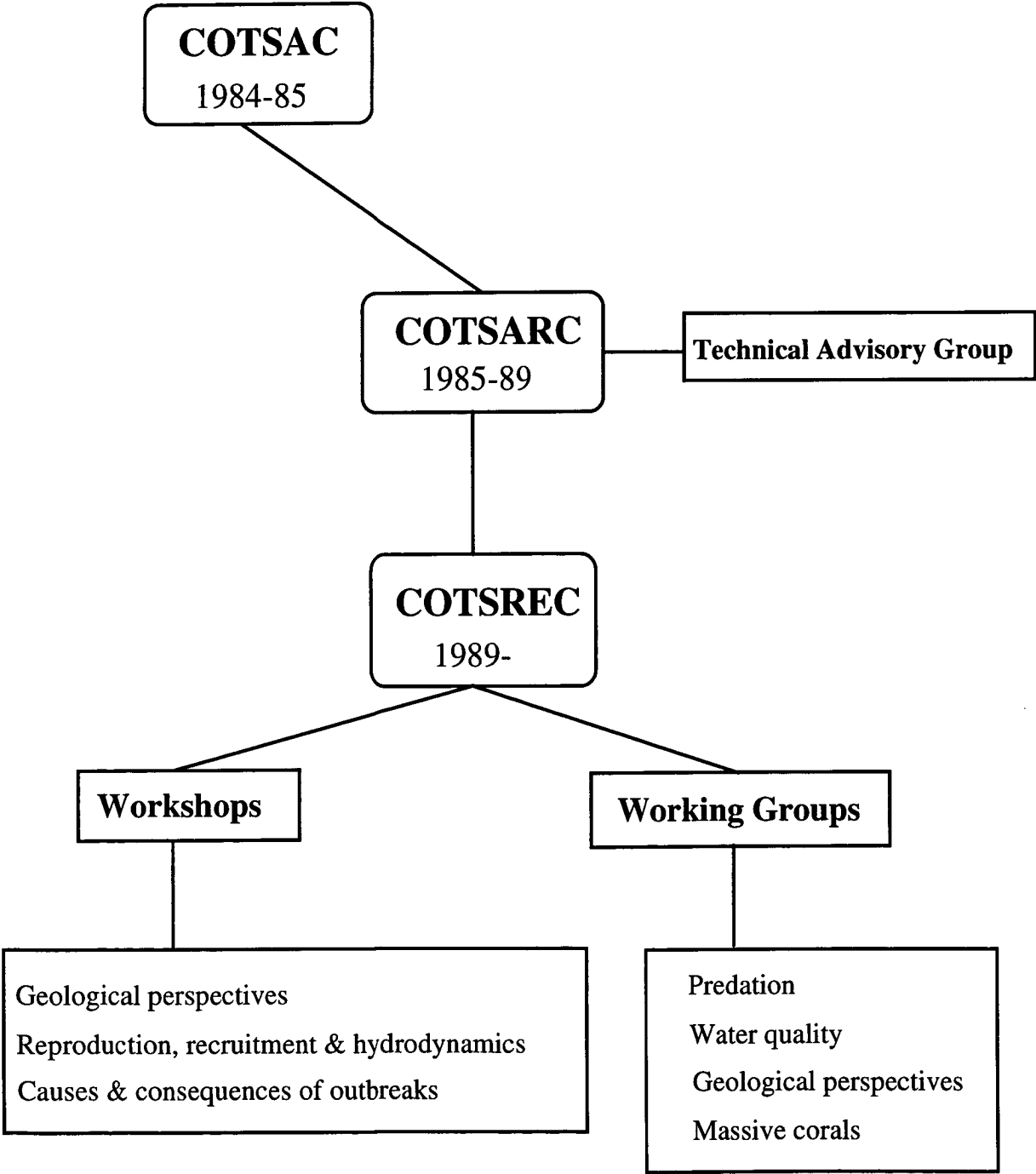


Figure 1. Review and program development processes used by COTS advisory committees

There have been a number of changes to the Committee membership since its establishment. For personal reasons Professor John Swan reluctantly relinquished his position as Chair of the Committee in January 1992 and was replaced by Professor Graham Mitchell (now Director of Research, CSL Limited; formerly Director, Royal Melbourne Zoological Gardens). Dr Meryl Williams replaced Dr Joe Baker when she was appointed as the new Director of AIMS in 1992. Dr Peter Moran was replaced by Dr Tenshi Ayukai because of increased commitments in other areas. Professor Peter Davies was replaced by Professor David Hopley (James Cook University of North Queensland) in mid-1993. Professor Chris Crossland (Director, CRC Reef Research Centre) joined the Committee in early 1994. Dr Peter Moran re-joined the Committee as Acting Director of AIMS following the departure of Dr Williams to take up an appointment as Director-General of ICLARM in early 1994. Dr Russell Reichelt was appointed Director of AIMS in early 1995 and AIMS representation on COTSREC is currently under review.

Since July 1989 the COTSREC has met twice annually - in April/May to develop recommended annual programs and in November/December to review progress.

The Availability of Funds and the Start of Research

In the August 1989 Federal budget it was announced that funds of \$750 000 were to be provided for COTS research in 1989-90 and \$1 million in 1990-91. In response to Professor Kelleher's seeking assurance of the third year of funding (as recommended by Anderson), Senator Richardson replied 'Although the Government's decision authorised funding for the program to 1990-91, I am happy for the Department and the Authority to operate on the basis that the program will continue into 1991-92. However, I would ask you that prior to entering the third year of the program, an assessment be carried out towards the end of the second year.' This assessment is described in the following section (Review of the COTSREC Program).

Funds for the first year of the program were made available to the Authority in August 1989. The COTSREC-recommended program of research was approved at the Marine Park Authority's meeting on 13 October 1989. Ministerial approval to enter into contracts involving payment of more than \$50 000 (as required under S.56(a) of the Great Barrier Reef Marine Park Act, 1975) was granted on 9 November 1989.

All submitted proposals for funding which had not been peer reviewed previously were sent for review and returned to proponents for modification if required. Contracts were then drawn up with successful individuals and their institutions and the funds disbursed.

Many projects were thus not commenced until late 1989 or early 1990 (towards the end of the summer spawning and recruitment period for *Acanthaster planci*). The unavailability of suitable personnel for some projects resulted in delays of nearly twelve months. Dr Hugh Sweatman, the post-doctoral fellow appointed by James Cook University for crown-of-thorns starfish predation studies took up his position in September 1990.

Review of the COTSREC Program

In accepting the recommendations of Professor Anderson, Senator Richardson requested that the program be assessed after two years. This review was conducted by Dr R. E. Johannes, Senior Principal Research Scientist at the CSIRO Division of Fisheries in Hobart. Terms of reference for this review were:

1. 'To review the Great Barrier Reef Marine Park Authority's crown-of-thorns starfish research program with reference to the recommendations made by Professor D. T. Anderson in his 1989 report to Senator Richardson.'

2. 'To make recommendations on the provision of additional funds for the program.'

Appendix 4 lists the conclusions and recommendations arising from Dr Johannes' review. Dr Johannes recommended, inter alia, that the program be continued and this has occurred.

The Australian Institute of Marine Science (AIMS)

Professor Anderson noted that the facilities and expertise of the Australian Institute Marine Science were essential to the completion of crown-of-thorns starfish ecological research, but he highlighted a number of difficulties with the relationship between AIMS and the Authority. To overcome these problems, an Inter-Institutional Agreement was drawn up between the two organisations through the Australian Government Solicitor's office. The Agreement was established on 14 November 1989 and formalised aspects such as: the responsibilities of each institution and relevant personnel; reporting procedures; allocation of funds; ownership of capital equipment and research information; procedures for the disclosure of information; dealing with potential conflicts and the content of reports.

The Agreement has been updated each year to incorporate new or modified tasks (projects) for the successive financial years of the program. Progress reports for the majority of research tasks have been provided to the Authority by 30 April and 30 October each year.

While each Agreement contained a schedule for the payment of funds (quarterly in advance) a lengthy delay in funding was experienced at the beginning of the 1989-90 fiscal year (as discussed above). Some of the projects were on-going and funds were required to ensure the continuity of employment for staff. The Authority provided \$75 000 (from unspent funds in the previous year) to cover expenses incurred during this hiatus in funding. Similar delays are experienced each year during the period of supply, prior to the Commonwealth Government's budget.

This delay in the provision of funds at the start of the COTSREC program led to certain projects being deferred as there were insufficient funds to employ new staff. Nonetheless, selection procedures were conducted during this period so that staff could be appointed once additional funds were received.

The first major payment of funds was made in early December 1989 enabling two additional research position appointments. Dr John Keesing, was appointed as a post-doctoral fellow to lead research into the survival of juvenile COTS and Dr Russ Babcock was appointed to lead investigations into the reproduction of the starfish.

Structure of the Research Program

The COTS Program operates as a sub-program within the Authority's Research and Monitoring Section. The budget for the Program, as a special Commonwealth Government fund between 1989 and 1992, was run separately to the Section's general budget. In 1992-93 funding for COTS research was incorporated into the Authority's appropriation. The Program is coordinated by the Program Coordinator who reports to the Director of the Research and Monitoring Section. The Coordinator liaises between researchers, their institutions and COTSREC members. Dr Leon Zann acted as the COTS Program Coordinator until December 1989, when he was succeeded by Dr Brian Lassig.

All research projects conducted by researchers at institutions other than AIMS are managed directly as individual projects by Authority staff employed through the COTS Program. Three staff managed the Program between 1989 and mid-1992. Staffing was reduced to two when Program funding was cut in mid-1992.

The conduct of projects is covered by legal agreements between the Authority, the researchers and their institutions. Agreements specify project execution details, allocation of funds, reporting

schedules and responsibilities. Progress reports are scheduled to be submitted by researchers for consideration by the COTSREC at its biannual meetings.

The COTS research undertaken at AIMS operates as a sub-program of the Authority's program. Under the AIMS' terminology, the sub-program is referred to as a 'Study' and the individual projects as 'Tasks'. The COTS Study forms a discrete entity within the Reef Studies program. The Study consists largely of tasks funded by the Authority, but the Institute also provides substantial support (see table 2, page 66) and initiates some research tasks independently with Institute funds. Between 1989 and early 1993 Dr Peter Moran managed the AIMS COTS Study. During this time Dr Moran's commitments to the Reef-wide monitoring program and other institutional activities precluded his continuing in the COTS Study Manager's role. This was taken over by Dr Tenshi Ayukai in May 1993.

The COTS Study has included a variable number of tasks from year to year. Each task has a unique number that corresponds to that given in the main body of the Inter-Institutional Agreements (see table 3, page 67).

In 1990-91 AIMS received \$800 000 p.a. from the Commonwealth Government for monitoring of the GBR. The funds provided to AIMS by the Authority for broad-scale surveys of COTS and corals (a major project funded through the COTS Program) were added to this independent funding to establish a long-term monitoring program that included more detailed surveys of benthos and fish as well as water quality sampling. From June 1993 the monitoring program was conducted through the then recently established Cooperative Research Centre for Ecologically Sustainable Development of the Great Barrier Reef (CRC Reef Research Centre) and AIMS was supported for this task through the CRC Reef Research Centre rather than by the Authority directly.

Within the AIMS COTS Study, each task has a Leader who is responsible for controlling the resources of that task as well as ensuring that the task objectives are completed as efficiently and effectively as possible. The Task Leaders report to the COTS Project Manager who is responsible for coordinating and managing the entire Study (including all research, personnel and resources). The Project Manager in turn reports to the Director of AIMS and liaises with the Program Coordinator at the Authority. This structure is currently under review.

The CRC Reef Research Centre has three main programs which each consist of four to six projects. Projects consist of a number of tasks. The Long-Term Monitoring conducted by AIMS is a task within the Inputs and Impacts Project which is a major component of the Regional Environmental Status Program. The CRC COTS Project consisted of six tasks in 1994-95. Each Task has a Chief Investigator and a User Contact (from management or industry). Program Leaders manage and coordinate tasks and projects and report to the Director of the Centre (Professor Chris Crossland). The Director reports to the Centre's Board.

