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**RECORD OF UNDERSTANDING RELATING TO THE  
CROWN-OF-THORNS STARFISH ADVISORY COMMITTEE  
RECOMMENDED RESEARCH PROGRAM**

**AUSTRALIAN INSTITUTE OF MARINE SCIENCE  
and  
GREAT BARRIER REEF MARINE PARK AUTHORITY**

Record of Understanding relating to the Crown-of-Thorns  
Starfish Advisory Committee  
recommended research program

1. This document is a Record of Understanding between the Australian Institute of Marine Science (hereinafter called "the Institute") and the Great Barrier Reef Marine Park Authority (hereinafter called "the Authority") in relation to the responsibilities for the conduct and coordination of the research and investigations recommended by the Crown-of-Thorns Starfish Advisory Committee (hereinafter called "the Committee") should funding be provided in accord with the Committee's recommendations.

The Committee's Recommended Research Program

2. In April 1984, the Authority established the Committee as an expert scientific body to advise it on matters related to crown-of-thorns starfish since previous findings in 1980. The Committee's report represents the best advice available. It concluded that "The view of the Committee is that the destruction of hard coral by aggregations of A. planci poses a serious threat to the organisation and functional relationships within some reef communities within the Great Barrier Reef, at least in the short term." However it recognized that current knowledge is inadequate for scientists to agree on the nature and significance of recent crown-of-thorns infestations. The Committee also concluded that the current level of research activity is unlikely to lead to a short term (3 to 5 years) resolution of the problem, and it identified a number of research activities which should be undertaken immediately as part of a coordinated program of Australian research into the crown-of-thorns phenomenon.

3. On 18 November 1984, the Government announced a one year \$1.016 million grant to the Institute under the Community Employment Program to enhance its field and laboratory studies on the crown-of-thorns phenomenon. However the scale and scope of this enhanced program is not sufficient to resolve fully the scientific questions on the crown-of-thorns issue. Thus while the basic thrust of the Committee's report remains fully valid, its specific recommendations need to be interpreted in the light of the Institute's enhanced studies on the crown-of-thorns phenomenon.

4. The Committee proposed an ambitious and coherent agenda of research (hereinafter called "the Program", see Attachment A) to be coordinated by GBRMPA. The Committee concluded that the program, initiated at once, should lead in 3 to 5 years to an improved understanding of the crown-of-thorns phenomenon and contribute to determining the appropriate management actions, if any, which are necessary to ensure the conservation of the Great Barrier Reef. It also recommended that a senior officer be appointed to the Authority to coordinate the Program.

5. The Committee's agenda of research tasks falls naturally into two parts, as indicated in Attachment A. Part 1 involves the mainly ecological research tasks needed to understand the infestation phenomenon. Part 2 involves the research tasks which are more directly related to management and policy development. Funding for the Program has been sought from Government. It is anticipated that an announcement will be made on funding related to the Program in the 1985 budget context.

6. It is proposed that the mainly ecological research tasks (Attachment A, Part 1) be undertaken by the Institute. These would be organized together with the Institute's other research on the crown-of-thorns phenomenon as a discrete Crown-of-Thorns

Study (hereinafter called "the Study") in association with the Institute's core research program in coral reef ecology.

#### Period of Agreement

7. The arrangements specified in this document are agreed by both parties for a period of 5 years commencing on the date of provision of agreed funds to the Institute by the Authority in accordance with the schedule of payments in Attachment C. Any proposal to terminate this agreement by either party before it has run its projected course will take into full consideration personnel employed under the agreement. However parties to the Agreement, consultants and employees shall not be entitled to compensation for prospective loss of profits. The terms of this agreement in no way relate to and cannot be allowed to affect the normal approved staffing for the Institute.

#### Responsibilities

8. The responsibilities of the Institute under this agreement are as follows:
- i. The undertaking of scientific research within the Study on the scale and along the lines of the research program described at Attachment B in satisfaction of the Committee's recommendations for mainly ecological research (Attachment A, Part 1);
  - ii. The assignment of a senior scientist at the Institute to provide scientific leadership for the Study - with the scientist's duty statement, where it relates to this Agreement, to be agreed by both parties;

- iii. The provision of annual reports by July 30 to the Authority on the progress of research within the Study;
  - iv. The provision of annual statements of receipts and expenditure by July 30 to the Authority on the disbursement of funds within the Study;
  - v. Consultation with the Authority through the Program coordinator on the development of the research within the Study and its coordination with other research in satisfaction of the Committee's recommendations;
  - vi. The hosting of an annual workshop at the Institute to review research on the crown-of-thorns phenomenon, with funding set and provided by the Authority;
  - vii. Annual notification by July 30 to the Authority of the brand, serial number and warranty details of capital equipment purchased by the Institute with funds provided under this Agreement, for inclusion in the Authority's Assets Register. At the conclusion of the project, the equipment must be returned to the Authority unless the Institute elects to purchase the equipment at prices to be agreed.
9. The responsibilities of the Authority under this agreement are as follows:
- i. The provision to the Institute of funding as set out in Attachment C to support the Study;
  - ii. The appointment of a senior officer to the Authority to coordinate the Program - with the officer's duty statement, where it relates to this Agreement, to be agreed by both parties;

- iii. The provision of annual reports to the Institute on the progress of all research in satisfaction of the Committee's recommendations;
- iv. Consultation with the Institute through the Study leader on the development of the research within the Study and its coordination with other research in satisfaction of the Committee's recommendations;
- v. The organisation and funding of the annual workshop described in paragraph 8 (vi) above, subject to prior agreement between the parties on costs, to review research on the crown-of-thorns phenomenon.

#### Publicity

10. The Authority and the Institute agree to coordinate publicity relating to the Committee's recommended research program and the Institute's Study through the Program coordinator and Study leader.

11. Whichever party initiates publicity relating to the Committee's recommended research program shall meet all the costs of that publicity unless otherwise agreed by both parties.

#### Variation of Record of Understanding

12. Any amendments to the substance of this Record of Understanding will be made by means of a formal variation of understanding agreed to and signed by both parties.

13. This Record of Understanding will supercede all earlier documents of the subject matter hereof. Work done prior to the date of establishment of this Record of Understanding however may, subject to the agreement of the parties, be treated as if the work had been done after the date hereof.

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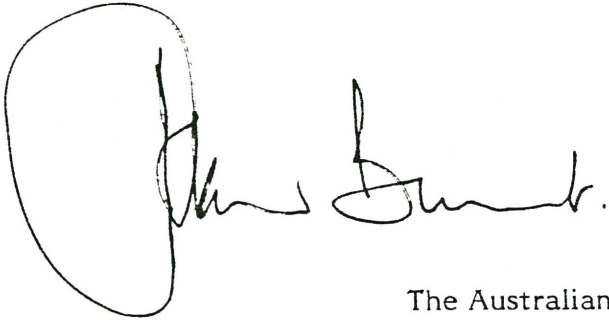
Signed this

15<sup>th</sup>

day of

August

1985



The Australian Institute of Marine Science



The Great Barrier Reef Marine Park Authority

**ATTACHMENT A**  
**PROPOSED COORDINATED RESEARCH PROGRAM ON THE**  
**CROWN-OF-THORNS STARFISH**

This program interprets the research recommended by the Committee in the light of recent developments. The Institute will be primarily responsible for undertaking the mainly ecological research needed to understand the infestation phenomenon (see Part 1 below). This will be done in association with its core program in coral reef ecology. The Authority will be primarily responsible for the aspects of the research that are more directly related to management and policy development using its established contract procedures (see Part 2 below). Indicative costs over the 5 year life of the program are given in Part 3 below.



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Part 1: mainly ecological research tasks

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1. **Data analysis and modelling studies:** to generate preliminary explanatory and predictive models of the infestation phenomenon using existing data. (Committee Rec 8)
2. **Priority research studies:** to initiate high priority research projects identified by the current data analysis and modelling studies being conducted by the Institute. (Committee Rec 9)
3. **Geological climatic study:** to determine whether geological techniques of climate reconstruction can identify earlier periods which resemble those prevailing at the time of recent outbreaks of crown-of-thorns starfish. (Committee Rec 11)

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Part 2: mainly management and policy development research tasks

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1. **Review workshops:** to evaluate annually research progress and projections on the phenomenon. (Committee Rec 4)
2. **Human causes study:** to test hypotheses regarding human factors which may trigger or exacerbate outbreaks of crown-of-thorns starfish. (Committee Rec 10)
3. **Risk analysis study:** to contribute to assessment of the need for control of the crown-of-thorns starfish. (Committee Rec 1)
4. **Oral history study:** of human use and experience of the GBR. (Committee Rec 6)
5. **Socio-economic study:** to evaluate the social and economic consequences of infestations of crown-of-thorns starfish. (Committee Rec 12)
6. **Biological control study:** to assess the feasibility of developing efficient techniques of biological control such as through natural predators or pathogenic organisms. (Committee Rec 3)
7. **Geological sediments study:** to evaluate evidence of prior major occurrences of crown-of-thorns starfish populations through the presence of their remains in reef sediments. (Committee Rec 7)

## Part 3

Indicative costs and program of expenditure

Research task	1985/86	1986/87	1987/88	1988/89	Total
<b>Mainly ecological research</b>					
Study Leader & support	53000	53000	53000	43500	202500
1. Data analysis & modelling	55000	55000	55000	40000	205000
2. Priority research	400000	500000	500000	100000	1500000
3. Geological climate	50000	50000	50000	-	150000
<b>SUBTOTAL</b>	<b>558000</b>	<b>658000</b>	<b>658000</b>	<b>183500</b>	<b>2057500</b>
<b>Mainly management and policy development research</b>					
Program Coordinator & support	53000	53000	53000	43500	202500
1. Review workshop	25000	-	-	-	25000
2. Human causes	130000	50000	50000	-	230000
3. Risk analysis	30000	-	-	-	30000
4. Oral history	10000	10000	10000	-	30000
5. Socio-economic	40000	-	-	-	40000
6. Biological control	55000	55000	55000	-	165000
7. Geological sediment	70000	70000	60000	-	200000
<b>SUBTOTAL</b>	<b>413000</b>	<b>238000</b>	<b>228000</b>	<b>43500</b>	<b>922500</b>
<b>TOTAL</b>	<b>971000</b>	<b>896000</b>	<b>886000</b>	<b>227000</b>	<b>2980000</b>

**ATTACHMENT B****Research tasks to be funded by the Authority within  
the Study to the levels indicated in Attachment C****1. Macro-scale dynamics of the coral/crown-of-thorns interaction**

**Objective:** To undertake a broad-scale resurvey of about 80 high priority reefs throughout the GBR 12 months after their initial survey by the Institute's CEP crown-of-thorns study.

**Significance:** The study will contribute to an understanding of the macro-scale dynamics of the interaction by deepening the time dimension of the analysis.

**2. Meso-scale dynamics of the coral/crown-of-thorns interaction**

**Objective:** To continue the detailed studies of the meso-scale dynamics of the interaction on selected reefs of the central GBR.

**Significance:** The study will contribute to an understanding of the meso-scale dynamics of the interaction with special reference to the ecological processes at work during the outbreaking and recovery phases of the interaction.

### 3. **Bionomic strategies of predator and prey**

**Objectives:** To undertake field and laboratory studies on the bionomic strategies of predator and prey using population genetical techniques.

**Significance:** The study will enhance our understanding of the demographic structure of the predator and prey with special reference to gene flows at the micro- and meso-scales.

### 4. **Trophodynamics of the coral/crown-of-thorns interaction**

**Objectives:** To undertake field and laboratory studies on the effect of the interaction on reef community metabolism.

**Significance:** The Study will enhance our understanding of the significance of the effect of the interaction on the flows of matter and energy within the reef ecosystem.

### 5. **Data analysis and modelling**

**Objectives:** To generate preliminary explanatory and predictive models of the crown-of-thorns phenomenon.

**Significance:** The study will enhance our understanding of the major structural links and forcings associated with the interaction.

## 6. Geological climate

**Objectives:** To undertake a broad-scale study throughout the GBR of geological cores from massive corals.

**Significance:** The study will identify climatic periods resembling those prevailing during recent outbreaks using geological techniques of climate reconstruction.

## 7. Ecology of starfish larvae in the plankton

**Objective:** To conduct a micro-scale oceanographic sampling program using a plankton pump in the central GBR to assess phytoplankton patches for their suitability as food sources for crown-of-thorns larvae.

**Significance:** The study will contribute to an understanding of the bionomic strategies of the larval phase of the crown-of-thorns starfish, with special reference to its feeding behaviour.

Indicative costs of research tasks

Research task	1985/86	1986/87	1987/88	1988/89	TOTAL
Macro-scale	127500	127500	-	-	255000
Meso-scale	175000	175000	175000	-	525000
Bionomic strategies	100000	100000	100000	60000	360000
Trophodynamics	100000	100000	-	-	200000
Data analysis	65000	45000	45000	45000	200000
Geological	85000	85000	85000	-	255000
Larval Ecology	40000	15000	15000	-	70000
<b>TOTAL</b>	<b>692500</b>	<b>647500</b>	<b>420000</b>	<b>105000</b>	<b>1865000</b>

**ATTACHMENT C**  
**FUNDING TO BE PROVIDED TO THE INSTITUTE BY THE**  
**AUTHORITY TO SUPPORT THE STUDY**

- i. \$279,000 on the commencement of the agreement and \$279,000 on 1 January 1986
- ii. \$329,000 on 1 August 1986 and \$329,000 on 1 January 1987
- iii. \$329,000 on 1 August 1987 and \$329,000 on 1 January 1988
- iv. \$91,750 on 1 August 1988 and \$91,750 on 1 January 1989

Additional funding for price and salary increases is subject to the normal budgeting process and shall not automatically be provided.