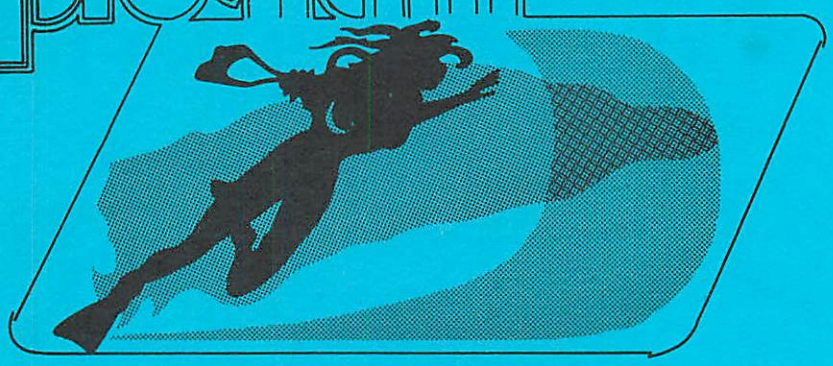
ANNUAL REPORT
1976 - 77

UNIVERSITY OF HAWAII

marine option program



UNIHI-SEAGRANT-MR-78-02

December 1977

University of Hawaii Sea Grant College Program

Cover design by Robert Hill

UNIVERSITY OF HAWAII MARINE OPTION PROGRAM

ANNUAL REPORT 1976-77

by

John J. McMahon

Report on program activities of Sea Grant project, Marine Option Program (E/MO-01); John P. Craven, Principal Investigator, Sea Grant Year 08; John J. McMahon, Principal Investigator, Sea Grant Year 09.

Sea Grant Miscellaneous Report
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December 1977

This annual report describes the program sponsored in part by NOAA Office of Sea Grant, Department of Commerce, under Grant Nos. 04-5-158-44026 and 04-6-158-44114, the Office of Naval Research, the University of Hawaii, and the State Office of the Marine Affairs Coordinator. The US Government is authorized to produce and distribute reprints for governmental purposes notwithstanding any copyright notations that may appear hereon.

FOREWARD

The University of Hawaii Marine Option Program (MOP) involves undergraduate students from any major field of study in academic course work and practical marine activities which lead to a certificate indicating proficiency in a marine area. MOP students must complete a minimum of 12 credit hours of marine-related courses with grades of "B" or better by the time they graduate. At the same time, they must demonstrate proficiency in a marine skill.

During fiscal year 1976-77, the Marine Option Program has continued to grow: new marine courses have been developed; the Ninth Legislature of the State of Hawaii examined the Marine Option Program and was favorably impressed; and a fourth campus in the UH system received federal assistance in starting a Marine Option Program. MOP students again received state and federal funding for projects valuable to the state. As usual, MOP students contributed their time, energy, and talents in working with marine professionals toward solutions for marine-related problems throughout the state.

The Marine Option Program's development during the 1976-77 fiscal year has been substantial. This report documents that growth as another step in the maturing of marine programs at the University of Hawaii.

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INTRODUCTION

The initiation and early development of the Marine Option Program were detailed in the first biennial report (UNIHI-SEAGRANT-MS-73-02) published in June 1973. That report described how the Marine Option Program was carefully designed to meet the needs of undergraduate students for marine affairs education in Hawaii's complex, technological society. The Marine Option Program has roots in Hawaii's past, tangible benefits at the present, and promise for the future. Although this report is concerned with the present, a brief description of the origins of the Marine Option Program is included to provide a useful perspective.

Historical Perspective

Historically, the sea has been important to many groups which comprise modern Hawaii's cultural milieu. Hawaiian society was deeply rooted in oceanic traditions and strong interactions with the sea were obvious in religion, transportation, land use, subsistence, and recreation. Today, with the imposition of a Western socioeconomic system and the development of a technological society, day-to-day interaction with the sea is less intense. However, spiritual, recreational, and, occasionally, partial subsistence interactions remain strong.

Japanese and Chinese traditions both contain much that is related to the sea. Modern Hawaii's oriental population, however, is largely derived from agricultural laborers imported to work in the sugar and pineapple fields. Thus, despite cultural ties to the sea, many descendants of those laborers lack direct sea experience and interact primarily through recreational fishing and dietary preferences.

Hawaiian residents of European stock generally descended from religious or commercial interests. Marine business and recreation are their primary modes of interaction with the sea.

The sum of these components appeared in modern Hawaii as an aggregate of multiple uses of the sea by a population whose members lacked direct, personal knowledge of the sea. Hawaii's people generally possessed a vague, undefined awareness of the ocean's importance, but they lacked opportunities to develop their awareness to knowledge and then understanding of marine affairs.

During the last decade, significant interest in the sea has grown throughout Hawaii's society. Hawaii's leaders have mandated a continuing interaction with the sea. Specific actions include the establishment of the office of the Marine Affairs Coordinator under the Office of the Governor, as well as a major study by the Department of Planning and Economic Development entitled *Hawaii and the Sea--1969* and its 1974 sequel. An interisland hydrofoil has begun operation while an interisland ferry system remains under consideration. Major interest in the status and potential of aquaculture in Hawaii is being actively pursued by the State Legislature and the Department of Planning and Economic Development.

Many citizens have channeled their concern about beach access, overfishing, and pollution into ongoing coastal zone management plans at the state level.

In addition, current national and international interest in economic exclusion zones, marine mineral development, ocean transportation, and ocean thermal energy conversion all have direct application to Hawaii's future. Yet, despite this strong cultural predisposition to things marine, the pervasive influence of the sea on daily life in Hawaii, the actions of Hawaii's leaders, and the economic and recreational importance of the sea, many people in modern Hawaii lack the most fundamental factual knowledge of the sea.

Because an informed citizenry is "essential to proper, balanced decisions in matters affecting both the use and preservation of the environment" (Goodwin, 1974), it is essential that Hawaii's residents obtain opportunities to learn about the sea. The University of Hawaii system provides some of these opportunities.

Although no single college or department of the University has sole responsibility for marine curricula, under the direction of the Dean of Marine Programs there is a University-wide focus on marine activities. Marine interests involve departments in the College of Arts and Sciences, in the College of Engineering, and at Leeward Community College and, to a major extent, at four research institutes and laboratories, specifically: Hawaii Institute of Marine Biology, Hawaii Institute of Geophysics, Pacific Biomedical Research Center, and Look Laboratory of Oceanographic Engineering. Although some departments have a greater marine orientation than others, there is no section of the University untouched by marine influences.

It is the philosophy of the University that all students should have the opportunity for study in marine-related fields; however, University policy requires that undergraduates receive a solid background in a major field of study before specialization or graduate work can be undertaken. Recognizing the importance of an early exposure to the marine environment and its unique problems, and responding to the desire of many students to study marine subjects, the Office of Marine Programs established the Marine Option Program to assist undergraduate students in meeting their needs in the area of marine studies.

The Program

The Marine Option Program, at the Manoa and Hilo campuses and at the Windward and Honolulu Community Colleges, is a long-range program designed to encourage the undergraduate student to acquire knowledge in a marine field.

The Marine Option Program was designed to meet the following goals:

1. To provide an opportunity for any undergraduate student in any academic discipline at the University or community colleges to acquire a marine orientation during his residency at the University of Hawaii

2. To add focus and relevancy to academic marine courses by aiding the student in acquiring a "marine skill"

3. To help each Marine Option Program student, through counseling, to discover and implement his individual educational career goals

4. To provide special seminars and interdisciplinary courses designed to acquaint the undergraduate student with the broad bases and many facets of marine affairs

5. To continue to provide opportunities and guidance to students who desire to contribute their talent by working toward solutions of social and environmental ocean-related problems

Each student receives individual counseling from program coordinators and faculty in his own discipline to aid him in his individual search for learning in the marine environment. This "learner-centered" philosophy of education has proven to be sound and Marine Option Program students have shown their ability to meet high standards of excellence in their courses and practical marine field activities.

The Marine Option Program has two basic requirements--academic and practical.

The academic requirement is that the student complete--with a grade of "B" or better--the following academic core of 12 credit hours of study in marine and marine-related courses as a minimum:

1. Oceanography 201 or equivalent

2. One three credit-hour marine interdisciplinary course

3. Two three credit-hour marine-related courses in the student's major field or area of interest

A list of marine-related courses has been compiled and several new marine interdisciplinary courses have been created especially for the program.

As the practical requirement for completion of the program the student must acquire a marine skill. Marine skill is defined as a level of proficiency attained in a specific area through repetitive exposure to and practice of marine-related techniques.

Many undergraduate students already have a high degree of proficiency in a marine skill upon entering the program. For instance, some are certified SCUBA divers proficient in underwater construction, exploration, or photography. Others have developed competence as oceanographic technicians, aquaculturists, aquarists, or small boat handlers. In such cases, the demonstration of that skill and the completion of academic requirements are deemed sufficient to meet the requirements of the program.

Upon completion of program requirements, the student is awarded a certificate by the Dean of Marine Programs attesting to the student's competence in a specific marine activity and in marine academic study.

MARINE OPTION PROGRAM ACTIVITIES: FISCAL YEAR 1976-77

From July 1, 1976 to June 30, 1977, the Marine Option Program participated in both academic and practical activities throughout the state. Manoa MOP and Hilo MOP each developed new marine courses which are being offered on their campuses. All campuses offered seminars, field trips, and marine films to the general student body. The Manoa, Hilo, and Windward Community College campuses involved undergraduates in meaningful team research projects directly related to the needs of the state. All campuses regularly provided guidance to individual students to help them define and meet their own career goals.

The two major academic accomplishments of the year were the development of a seminar series at the Hilo campus covering selected topics in marine studies, and the development of Hawaiian fish, algae, and invertebrate identification courses at Manoa. The Hilo campus marine studies seminar series consists of two one credit-hour seminars which are offered each semester through the Center for Continuing Education and Community Service (CCECS). These courses provide UH Hilo students and faculty direct access to state-of-the-art presentations by marine experts from UH Manoa. The one credit-hour seminars offered during the 1976-77 academic year were:

1. "Sea Floor Spreading and Plate Tectonics" by Dr. Donald Hussong

2. "Harvest from the Sea" by Dr. John Bardach

3. "Aquaculture in Hawaii" by Mr. William Ebersole (a field trip to the major research and commercial facilities on Oahu)

4. "Biology of Hawaiian Reef Fish" by Dr. Leighton Taylor

A total of 179 students participated in these courses which were considered a resounding success. The series will be continued in the 1977-78 academic year.

At UH Manoa a non-credit fish identification course was offered by MOP student Leonard Torricer in the evenings during the fall 1976 semester for any interested individuals. Mr. Hiroshi Kato of the Windward Community

College faculty advised Mr. Torricer. This course stressed correct identification of species of Hawaiian fish. The Marine Option Program reference slide collection was combined with visits to the Waikiki Aquarium, Sea Life Park, various pet shops, snorkeling trips, and SCUBA dives to observe fish under various conditions. Approximately 30 people participated in the course. Ten students elected to take the final exam which required correct scientific identification of Hawaiian reef fish by family, genus, and species. More than 100 slides were presented at 15-second intervals. The lowest score was 92.7 percent after penalties were assessed for spelling errors!

During the spring 1977 semester, Manoa MOPer Douglas Davis initiated a non-credit algae identification course in response to student demand. Fifteen students became proficient in identifying common nearshore algae to genus. This course followed the format of the fish identification course and utilized the Marine Option Program slide collection combined with Mr. Davis' personal herbarium, as well as snorkeling and SCUBA diving field trips. All students elected to take the rigorous final exam and passed.

In response to student demand, Manoa MOP students Dennis Yamase and Douglas Davis initiated a non-credit survey course in common invertebrate identification which was taught by Dr. S. Arthur Reed of the Manoa faculty. The students worked with Dr. Reed to develop a simple key to the common, local macro-invertebrates. Approximately 15 students participated in this course and gained proficiency in macro-invertebrate identification.

All UH Manoa courses were student initiated. Two courses--fish and algae identification--were student taught. All were offered free of charge, without academic credit, by unpaid, qualified instructors in the evenings and were open to all members of the UH Manoa community. Grades were optional but rigorous grading procedures were used by the student initiators.

The student instructors gained valuable experience in course design, presentation, and evaluation. The students in the courses developed proficiency in species identification and reef ecology as well as an appreciation of the diversity of Hawaiian marine flora and fauna. These courses will, of course, be continued.

The UH Manoa MOP staff was consulted by various colleges, research institutes, and private organizations concerning marine course development. Although contributions were minimized due to administrative responsibilities, the MOP staff assisted in developing one formal academic course in 1976-77 and at least six additional courses are planned for 1977-78.

Numerous seminars, field trips, films, and community service activities were offered by the Marine Option Program systemwide during the 1976-77 academic year.

At UH Manoa, a series of "MOP-IN" seminars was offered throughout the year. Topics included marine baseline studies, methods of collecting aquarium fish, prawn rearing in Hawaii and Mexico, manganese nodule potential for Hawaii, baitfish-tuna interactions, and marine opportunities for

students in Hawaii. Manoa MOP and Hilo MOP each offered a regular marine film series. Both series were, of course, well received. Specific dates and titles are shown in Appendix A.

In addition to the traditional academic activities already described, some Marine Option Program students originated and participated in research projects related to expressed state needs in marine affairs.

Cynthia Baldwin and Miles Nagata of Hilo MOP completed the Kauai Coastal Zone Resource Survey which was begun in 1975. This study obtained biological and physical baseline data from selected sites on Kauai and integrated it with a sociological survey of the coastal zone activities of Kauai residents. This study was nominated for the Arthur L. Dean Prize in social science by the Dean of Marine Programs.

Hilo MOP students Robert Wright and Michael Lay assisted in the assessment of Hawaii's green sea turtle population by studying the distribution, abundance, and behavior of sub-adult turtles near the island of Hawaii. This study complemented the green sea turtle research of Mr. George Balazs at the Hawaii Institute of Marine Biology. Mr. Balazs provided substantial assistance throughout the study period.

Guy Anzai, a Manoa MOP student, led a team of students who performed biological baseline studies off Papohaku Beach, Molokai and Molokini Island. The results of the Papohaku Beach study document the changes in the marine environment concurrent with changes in the adjacent terrestrial environment (primarily the Sheraton-Molokai hotel development complex) between the June 1974 MOP baseline study (Oishi, 1975) and June 1976.

Mr. Anzai's team study of Molokini Island was done in response to a resolution of the Eighth Legislature of the State of Hawaii. The results were submitted to the Department of Land and Natural Resources for consideration in developing regulations to preserve Molokini's unique environment. DLNR regulations became effective in July 1977. The report by Anzai et al. has been reviewed and accepted for publication by the UH Sea Grant College Program and is currently in final preparation. It was also nominated for the Arthur L. Dean Prize in science by the Dean of Marine Programs.

The same team of Manoa MOP students conducted a baseline study of Honolua Bay off Maui for Kapalua Land Company, Ltd. The final report, authored by MOP student Leonard Torricer, has also been reviewed and accepted for publication by the UH Sea Grant College Program.

Ms. Linda Ward of Manoa MOP completed a study of larval polychaetes in Hawaiian waters and developed a taxonomic key for them. This study has direct application to various pollution studies in Hawaii. It has been accepted for publication by the UH Sea Grant College Program.

Manoa MOPer Matthew James received the Arthur L. Dean Prize in science for his honors thesis on scanning electron microscopy of cone shell radulae.

Although no separate MOP report will be written, six Manoa MOPers assisted the Department of Planning and Economic Development in its

development of an aquaculture master plan for Hawaii. The students were able to draw on their own experience in hatchery economics, aquarium reef fish collecting, and larval fish and prawn rearing to make significant contributions to this large-scale study. The final aquaculture report is expected to be published in December 1977.

Additional aquaculture studies are currently underway at Hilo MOP and Windward MOP. Hilo MOP students are working cooperatively with the topminnow culture project at the Hawaii Institute of Marine Biology by testing the feasibility of topminnow culture in a one-half acre coastal pond near Hilo. Windward MOP students are working with aquaculturists from the Hawaii Institute of Marine Biology and the Oceanic Institute on mullet (*Mugil cephalus*) and awa (*Chanos chanos*) culture techniques in a Kaneohe Bay fishpond. Both projects provide students with a real world focus for their interests and relevancy for their academic courses.

In addition to these large-scale studies, many Marine Option Program students worked during the past year in individual marine activities including: assisting in Department of Education and Waikiki Aquarium marine education programs; porpoise training; aquaculture economics; sediment and water quality studies of Kaneohe Bay; SCUBA instruction; marine resource surveys; marine photo-journalism; and prawn (*Macrobrachium rosenbergii*) rearing, nutrition, and genetics.

MOP students have also recognized the support of the University and the state of Hawaii and are therefore assisting in community service activities whenever possible. In addition to developing and teaching courses and offering seminars, films, and field trips to the UH community, MOPers have voluntarily assisted in many marine activities. During fiscal year 1976-77 MOP students assisted in the National Marine Fisheries Service open house; helped clean up *Eucheuma* in Kaneohe Bay; manned a MOP information table during spring registration; estimated the fish populations in the UH Manoa campus quarry pond for the Facilities Management Office; participated in Dr. Edward Shallenberger's whale watch; testified at the Ninth State Legislature; catered the dinner welcoming the Directors of the Law of the Sea Institute to the University of Hawaii; and hosted a marine literature workshop sponsored by the Hawaii Council of Teachers of English at the Waikiki Aquarium.

MARINE OPTION PROGRAM STATISTICS

Although statistics alone cannot establish the value of a program, they are often helpful in developing an understanding of a program's results. The following Marine Option Program statistics are included to provide a historical perspective of MOP funding and to show the diversity of MOP students and their activities (Tables 1, 2, and 3).

TABLE 1. UNIVERSITY OF HAWAII MARINE OPTION PROGRAM FUNDING SUMMARY

September 1, 1970 - August 31, 1978

Year	Source of Funding						Total
	UH	NOSG	ONR	MAC	NSF-SOS	Other	
1970-71	$ 11,000	$ --	$ --	$ --	$ --	$ --	$ 11,000
1971-72	--	495[1]	--	--	24,000	15,000[2]	39,495
1972-73	23,603	18,323	--	--	17,000[2]	10,000[2,3]	68,926
1973-74	15,338	20,000	--	12,000	27,560	35,127[3]	110,025
1974-75	26,088	27,861	79,983[4]	10,243	--	84,667[5]	228,842
1975-76	15,642	31,800	80,000[4]	14,236	--	99,108[6]	240,786
1976-77	38,754	64,900	60,001[4]	18,481[7]	--	65,300[3]	247,436
1977-78	43,680[2]	67,000	60,000[4]	30,000[8]	--	72,500[3]	273,180
TOTAL	$174,105	$230,379	$279,984	$84,960	$68,560	$381,702	$1,219,690

Note: UH = University of Hawaii; NOSG = National Office of Sea Grant; ONR = Office of Naval Research; MAC = Marine Affairs Coordinator (State of Hawaii); NSF-SOS = National Science Foundation-Student Originated Studies

[1]Additional funds from UH Sea Grant Program Management account; funding level not readily available
[2]Estimated
[3]Blue-Water Marine Laboratory (DOE, MAC, Sea Grant, lab fees, tuition fees, Ocean Charter Service, Inc., McInerny Foundation); records prior to 1973-74 not available
[4]Funds for student help at Naval Ocean Systems Center (formerly Naval Undersea Center); total funds received May 1, 1974 to June 30, 1976, $159,983
[5]Blue-Water Marine Laboratory, $79,967 only
[6]Blue-Water Marine Laboratory, $96,108 only
[7]Student projects, $11,000 only
[8]Available for student projects which meet state of Hawaii needs

TABLE 2. UNIVERSITY OF HAWAII MARINE OPTION PROGRAM: ENROLLMENT BY MAJOR FIELD OF STUDY

(As of June 30, 1977)

Major Field of Study	Manoa	Hilo	Windward	Honolulu	Total
Agriculture	1	3	--	--	4
American Studies	1	--	--	--	1
Animal Science	2	--	--	--	2
Art	3	1	--	--	4
Art (Photography)	1	--	--	--	1
Asian Studies	1	--	--	--	1
Biology	36	14	11	4	65
Botany	2	--	--	--	2
Business, General	--	2	--	--	2
Business Management	2	--	--	--	2
Chemistry	1	--	1	--	2
Communications	3	--	--	--	3
Data Processing	--	1	--	--	1
Economics	1	--	--	--	1
Education	2	--	6	--	8
Education, Special	2	--	--	--	2
Electronics Technology	--	--	--	7	7
Engineering, Civil	2	--	--	--	2
Engineering, Electrical	4	--	--	--	4
Engineering, General	4	1	--	--	5
Engineering, Ocean	5	--	--	--	5
English	3	--	--	--	3
Environmental Studies	1	--	--	--	1
Food and Nutritional Science	1	--	--	--	1
Geology	4	2	1	--	7
Geography	2	--	--	--	2
Hawaiian Studies	1	1	--	--	2

TABLE 3. UNIVERSITY OF HAWAII MARINE OPTION PROGRAM: ENROLLMENT BY CLASS STANDING

(As of June 30, 1977)

Class Standing	Manoa	Hilo	Windward	Honolulu	Total
Freshman	16	--	11	3	30
Sophomore	47	14	13	9	83
Junior	61	11	--	1	73
Senior	57	6	--	--	63
Unclassified	--	--	18	4	22
TOTAL	181	31	42	17	271

ACKNOWLEDGMENTS

During the 1976-77 fiscal year, the Marine Option Program received funds from the UH Sea Grant College Program, the Office of Naval Research, the University of Hawaii, and the Office of the Marine Affairs Coordinator. We gratefully acknowledge this support.

We would also like to acknowledge the Marine Option Program staff for their dedication and hard work. Without their efforts, MOP would not have developed substantially during the past year. In the central MOP Office, Mrs. Claire Y. Nakamura, Administrative Officer, and student helpers Linda M. Axtell, Cynthia N. Katano, and Cheryl A. Sato provided all administrative and fiscal services for the systemwide Marine Option Program. The MOP Coordinators who provided guidance during the 1976-77 fiscal year were: Mr. William C. Ebersole, UH Hilo; Mr. David B. Eckert, UH Manoa; Dr. Kakkala Gopalakrishnan, Honolulu Community College; and Dr. Gary D. Stice, Windward Community College.

REFERENCES CITED

Anzai, G.A., et al. "Data Acquisition Project: Honolua Bay, Maui." Accepted for publication by the University of Hawaii Sea Grant College Program, Honolulu.

Goodwin, H.L. 1975. *Marine Affairs Education in Hawaii's Future.* Curriculum Research and Development Group, University of Hawaii, Honolulu.

Oishi, F.G. 1975. *Papohaku Beach Survey: Data Acquisition Group, June 24-25, 1974.* Working Paper No. 14, University of Hawaii Sea Grant College Program, Honolulu.

Department of Planning and Economic Development, State of Hawaii. 1969. *Hawaii and the Sea--1969.* Report to the Governor's Task Force on Oceanography. Honolulu.

Department of Planning and Economic Development, State of Hawaii. 1974. *Hawaii and the Sea.* Prepared for the Governor's Advisory Committee on Science and Technology. Honolulu.

Torricer, L.L. "Data Acquisition Project: Honolua Bay, Maui." Accepted for publication by the University of Hawaii Sea Grant College Program, Honolulu.

Ward, L.A. "Polychaete Larvae of the Hawaiian Coastal Waters." University of Hawaii Sea Grant College Program working paper, in production.

APPENDICES

Appendix A. University of Hawaii Marine Option Program: Calendar of Events by Campus

(September 1976 - May 1977)

SEPTEMBER 1976

Manoa

07	First day of classes
22	MOP-IN: Welcome to new members, introduction, presentation of fall schedule
29	MOP-IN: Guy Anzai and Leonard Torricer recruiting for DAP

Hilo

15	OFS: "Challenge of the Oceans"
22	OFS: "Conquering the Sea"
29	OFS: "Waves Across the Pacific"
--	STO: Geol 194--Sea Floor Spreading and Plate Tectonics by Dr. D.M. Hussong

OCTOBER 1976

Manoa

01-02	MOP display for NOAA open house at NMFS (Kewalo)
06	MOP-IN: Film, "Undersea World of Jacques Cousteau: Lake Titicaca" DAP: Introduction, paperwork for recruits
13	MOP-IN: Douglas Davis on collecting marine aquarium fish DAP: Parts of a fish, Acanthuridae and Belonidae
15	Field trip to United Fishing Agency morning auction
20	MOP-IN: Film, "Plankton: Life of the Sea" DAP: Blennidae and Holocentridae, review
23	Field trip to Coconut Island to participate in HIMB-sponsored *Eucheuma* clean-up
27	MOP-IN: John Dermengian on 1976 Summer Olympics DAP: Kuhliidae and Mullidae, review

Hilo

06	OFS: "Tuna Fishing in Hawaii"
13	OFS: "Attack of Sharks"
20	OFS: "Fishing Partners"
27	OFS: "Undersea World of Jacques Cousteau: Lake Titicaca"

Note: OFS = Ocean Film Series; STO = Selected Topics in Oceanography

NOVEMBER 1976

Manoa

03	MOP-IN: Film, "Eyes of Inner Space"
	DAP: Field trips explained; Muraenidae and Tetraodontidae
07	DAP: Field trip to Waikiki Aquarium
10	MOP-IN: Kathleen Hoff on prawn raising in Hawaii and Mexico
	TGIThanksgiving Blast, Waikiki Aquarium
	DAP: 2001 field trip details; review of all fish
13	DAP: Field trip to 2001
14	DAP: Field trip to 2001
17	MOP-IN: Film, "Orange County Marine Science Floating Lab"
	DAP: Sea Life Park field trip details; review of all fish
21	DAP: Field trip to Sea Life Park
24	MOP-IN: Linda Axtell and Barbara Lee on January dive cruise
	DAP: Transect methods, dive training; review of all fish
28	DAP: Field practice

Hilo

03	OFS: "Hunters in the Reef"
10	OFS: "Life on a Coral Reef"
17	OFS: "Behavior and Ecology of a Coral Reef"
24	OFS: "Venomous Sea Animals"
--	STO: Biol 194--Harvest from the Sea by Dr. John Bardach

DECEMBER 1976

Manoa

01	MOP-IN: Dr. James Andrews on manganese nodules
	DAP: Final fish review
05	DAP: Transecting field practice
08	MOP-IN: Andy Brittain on nehu attraction for tuna
	DAP: Fish identification
10	DAP: Organizational meeting for qualifying candidates
14	Last day of classes

Hilo

01	OFS: "Surtsey Volcano"
08	OFS: "Cloud Over the Coral Reef"

January 1977

Manoa

09-11	Dive cruise, sponsored by Barbara Lee and Linda Axtell
13-14	MOP information table at registration
19	Marine breakfast, sponsored by Dr. John Craven
19-20	MOP information table at registration
21	Spring *Hotline* mailed out
24	First day of classes
28	First annual quarry pond fishing derby, co-sponsored by Campus Center Snack Bar
29	Whale-watcher's seminar by Dr. Edward Shallenberger, co-sponsored by BML
30	Beach party

FEBRUARY 1977

Manoa

03	Legislative hearing on MOP, House Committee on Ocean and Marine Resources (COMR)
05	Field trip to Kahuku Farms
09	MOP Opportunity Day: Recruiting seminars by Jeremy Harris (MAP), Chuck Shipman (Department of Parks and Recreation), Craig MacDonald (Zoology)
16	DAP: Introduction to limu, Spermatophyta and Chlorophyta Marine breakfast, sponsored by Dr. John Craven
20	DAP: Field trip to Natatorium
21	Law of the Sea Institute dinner, catered by MOP and sponsored by Office of Marine Programs and HIMB
23	Legislative hearing on MOP, COMR DAP: Phaeophyta and Cyanophyta Intramural basketball game
27	DAP: Field trip

MARCH 1977

Manoa

01	Essay contest (deadline for submission) sponsored by Propeller Club
02	DAP: Rhodophyta, review Intramural basketball game
03	Marine breakfast, sponsored by Dr. John Craven
04	Approaches to the Sea program by Dr. Richard Astro (OSU), assisted by MOP; sponsored by HCTE
05	Field trip to Oceanic Institute Intramural water polo game
06	DAP: Field trip to Kualoa; transecting practice

09	DAP: Marine algae identification exam Intramural basketball game
12	Intramural water polo game
16	Marine breakfast, sponsored by Dr. John Craven
18	Field trip to NOSC
19	DAP: Transecting practice

APRIL 1977

Manoa

04	Begin work on campus beautification project
06-08	Aquaculture on Oahu (Biol 194) class, sponsored by UH Hilo CCECS
07	Marine breakfast, sponsored by Dr. John Craven
14-15	Tester Symposium, sponsored by Department of Zoology
16	DAP: Transecting practice Intramural water polo game
18	DAP: Invertebrate lecture by Dr. S. Arthur Reed
20	Marine breakfast, sponsored by Dr. John Craven
23	Intramural water polo game
26	DAP: Invertebrate lecture by Dr. S. Arthur Reed
27	DAP: Invertebrate lecture by Dr. S. Arthur Reed

Hilo

06-08	STO: Biol 194--Aquaculture in Hawaii, a tour of Oahu's research and commercial operations
22-23	Net fishing workshop and party at Leleiwi Beach Park

MAY 1977

Manoa

02-03, 09-10	Red Cross CPR class
10	Last day of classes
21	Combined Manoa/Windward MOP graduation party
23-26	Dive cruise

Hilo

13-14	STO: Biol 194--Biology of Hawaiian Reef Fish by Dr. Leighton Taylor

Appendix B. University of Hawaii Marine Option Program: Skill-Project Reports Available for Distribution

Anzai, G.A., et al. 1975. Data Acquisition Project from Kapahulu Groin to Diamond Head.

Anzai, G.A., et al. 1976. Data Acquisition Project: Papohaku Beach, Molokai, and Molokini Island, Maui.

Auyong, J.S.H., et al. 1973. Artificial Reef Project: Final Report.

Axtell, L.M. 1976. A Photographic Key of Common Components of Hawaiian Marine Sediment.

Baldwin, C.L., et al. 1977. Kauai Coastal Zone Resource Survey.

Berglund, S.A. 1976. My Experiences with Marine Animals at NUC.

Crockett, W.J. 1974. Pago Pago to Lahaina.

Dermengian, J., et al. 1974. Pearl City Instructional Facility Pond Project Proposal (interim report).

Ford, J.I. 1973. Ecological Baseline Study of the Intertidal Zone: Kapoho, Hawaii--A Preliminary Report.

Fortner, H. 1975. Proposal: A Cookbook of Hawaiian Limu (interim report).

Hill, R.R., et al. 1975. The Marine Option Program (slides and slide-show script).

Isett, S.A. 1976. Food from the Sea (slide-show script only).

Kea, G.P. 1975. *Aegir,* Underwater Habitats.

Kersting, D.A. 1976. My Experience in the Marine World.

Kuwabara, J.S. 1975. Application of a Statistical Optimization Technique for the Culture of *Macrobrachium rosenbergii* Larvae (Giant Malaysian Prawn).

Kwock, W.S.H. 1973a. Aboard the *Kana Keoki*.

Kwock, W.S.H. 1973b. *Glomar Challenger* Drill Site Survey Aboard the *Kana Keoki*.

Mertz, N.S. 1976. Frail Shores (slide-show script only).

Muraoka, G.Y., et al. 1975. Marine Biological Survey of Kaneohe Bay: A Baseline Study.

Myers, R.F. 1975. Identification of Hawaiian Reef Fishes and Underwater Survey Techniques.

Nishimura, R.T. 1976. Aspects of Mullet Breeding and Larval Rearing Research at the Oceanic Institute, Waimanalo, Hawaii.

Oishi, F.G., et al. 1974. Data Acquisition Project: Papohaku Beach Survey.

O'Leary, C.U. 1975. An Aquarist: A Marine Skill.

Patch, J.F. 1976. Hawaii's Land and Sea (slide-show script only).

Peterson, R.A. 1972. Salvage of the Battleship *Oklahoma*.

Peterson, R.A., et al. 1972. HEART: A Study of the Honolulu Environmental Area Rapid Transit System.

Rastetter, E.B. 1976. Description of Work Done for the Marine Environmental Management Office (NUC).

Richardson, R.M., and J.F. Patch. 1976. A Study of the Proposed Hanawi Stream Water Diversion Project.

Roach, J.H., et al. 1975. SSRS Test Deposit Sand Level Observations/ Kahalu (sic) and Disappearing Sands Beach Observations (Hilo MOP).

Rooney, A.H., and S. Herrick. 1973. Inter-island Transportation Survey for the Governor's Task Force on Oceanography: A First Draft.

Shiroma, E.N. 1976. Effects of Mercury on Fertilization and Cleavage of *Tripneustes gratilla*.

Snyder, K.J. 1976. Marine Skill Report.

Stahl, K.I. 1976. Living in Water (slide-show script only).

Stahl, K. 1977. The Feeding Intensity of Larval Moi, *Polydactylus sexfilis*, on *Artemia nauplii*.

Torricer, L.L. 1976. Data Acquisition Project: Honolua Bay, Maui.

Uyemura, G.M. 1972. *Crassostrea virginica* Mariculture in Molii Fishpond.

Uyemura, G.M., et al. 1976. Systems Farming of Molii Fishpond, Kaneohe, Oahu: Cultivation of *Chanos chanos*--Project I.

Ward, L.A. 1976. Polychaete Larvae of the Hawaiian Coastal Waters (interim report).

Wilson, R. 1970. Freshwater Supply at Koaie Village and its Relation to the Structural History of the Complex.

Wilson, R. Underwater Archeology: Problems and Techniques.

Appendix C. Sponsors of Marine Option Program Students

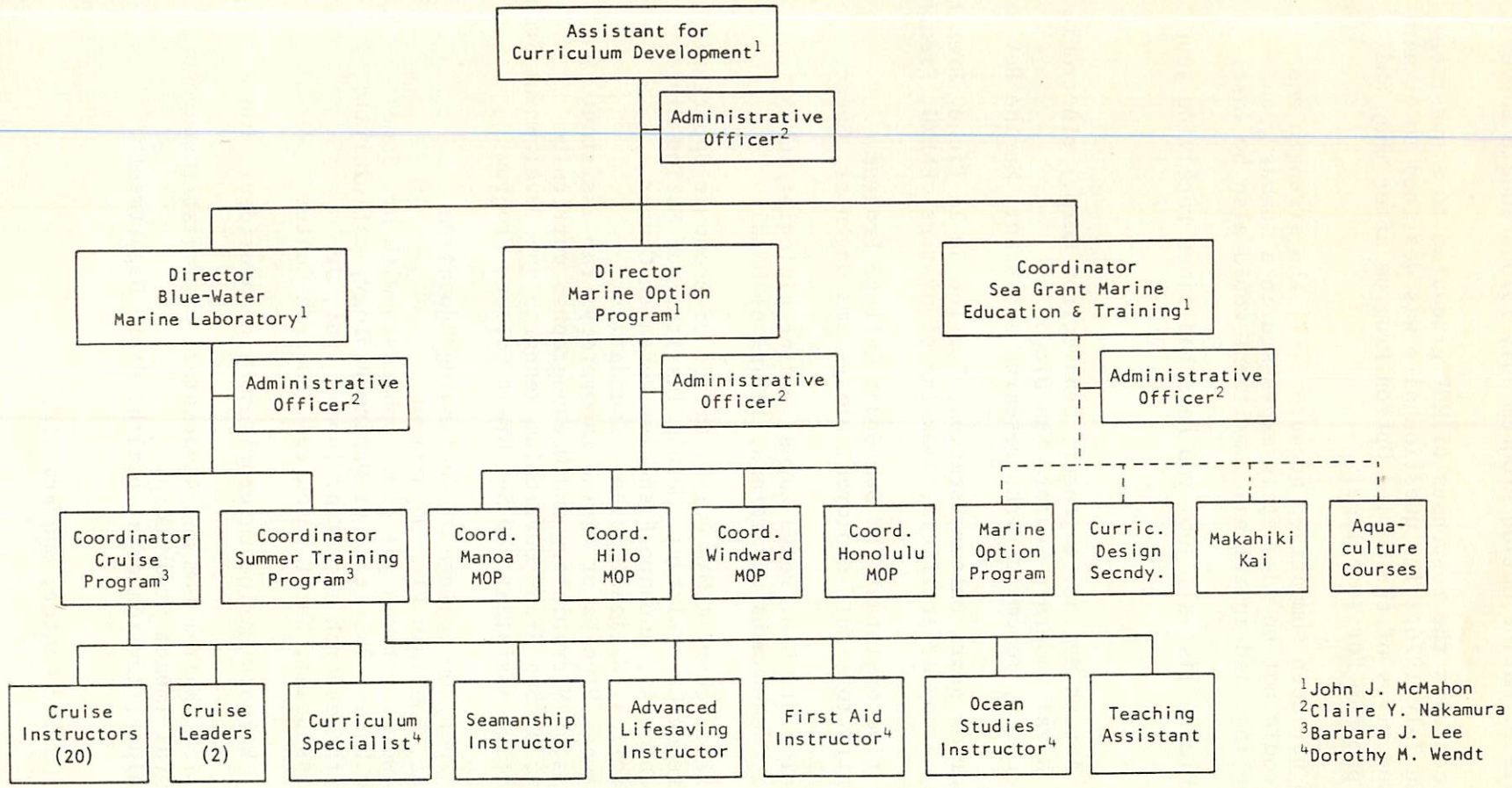
A. Federal Government
   1. National Marine Fisheries Service
   2. Naval Ocean Systems Center, Office of Naval Research

B. State of Hawaii Government
   1. Department of Education
   2. Department of Land and Natural Resources
      a. Division of Fish and Game
      b. State Parks, Outdoor Recreation, and Historic Sites Division
   3. Department of Planning and Economic Development
   4. Office of the Marine Affairs Coordinator
   5. University of Hawaii
      a. Blue-Water Marine Laboratory
      b. College of Education
      c. College of Engineering
      d. Department of Botany
      e. Department of Chemistry
      f. Department of Oceanography
      g. Department of Political Science
      h. Department of Zoology
      i. Hawaii Institute of Marine Biology
      j. Marine Animal Laboratory, Kewalo Basin

C. Private
   1. Kapalua Resort, Maui Land and Pineapple Company, Inc.
   2. Hawaii Council of Marine Science Teachers
   3. McWayne Marine Supply, Ltd.
   4. Ocean Charter Service, Inc.
   5. Oceanic Institute
   6. Pryor Corporation
   7. Sea Life Park
   8. Young Men's Christian Association

Appendix D. University of Hawaii Office of Marine Programs Marine Curriculum Development Organization

The Assistant for Curriculum Development reports directly to the University of Hawaii Dean of Marine Programs. This chart shows the responsibilities of the Assistant for Curriculum Development as they apply to the Marine Option Program, Blue-Water Marine Laboratory, and the Marine Education and Training component of the UH Sea Grant College Program.



06/06/77

UNIVERSITY OF HAWAII OFFICE OF MARINE PROGRAMS MARINE CURRICULUM DEVELOPMENT ORGANIZATION CHART

Appendix E. Results of Marine Option Program July 1976 Graduate Survey

This appendix contains the responses of MOP graduates to a questionnaire distributed in July 1976. The questionnaire was designed to obtain the graduates' perspectives of the Marine Option Program after they had been away from the program for some time.

Responses have not been summarized because: (1) the strength and versatility of MOP could not be adequately expressed in a summary, and (2) the personal feelings and individual commitment would also be lost.

Question #1: Please list all jobs you have had since receiving your MOP certificate.

1. --
2. Salesman, Astech Marine; engineer, Dynalectron Corp.; electronic engineer, Naval Undersea Center, San Diego
3. Personnel clerk, Yosemite Park; research assistant, Marine Review Committee
4. Coordinator of pearl culture station, Service de la Piche, French Polynesia; study of artificial spawning of oysters, ENEXO, French Polynesia
5. Administrative assistant, UH Sea Grant College Program
6. Diving contractor, self-employed; biosystems engineer, Seaco, Inc.
7. Marine biologist, U.S. Peace Corps; marine biologist/SCUBA instructor, Kamehameha Catamarans, island of Hawaii
8. --
9. Graduate researcher, ATMAR Corp., Office of Economic Opportunity; graduate research assistant, Hawaii Institute of Marine Biology; aquatic biologist, Anuenue Fisheries Research Center
10. Research fellow, National Science Foundation
11. Lab assistant, Blue-Water Marine Laboratory; lab assistant, UH departments of Microbiology and Oceanography; curriculum specialist, UH Sea Grant Curriculum Research and Development Group
12. Administrative assistant, UH Sea Grant College Program
13. --
14. Student helper, UH College of Continuing Education
15. Firefighter, Honolulu Fire Department
16. Volunteer work: starch gel electrophoresis with Dr. James Shaklee at Hawaii Institute of Marine Biology; cellulolytic enzymes with research assistant Thomas Iwai, Jr.
17. Research assistant, Water Resources Research Center
18. --
19. President, Waipolu Marine Enterprises; vice-president, Dan's Dive Shop, Inc.
20. Soils control, Walter Lum and Associates; biologist/researcher, Environmental Impact Study Corp.
21. Student helper, environmental health, State Department of Health
22. --
23. Salesman, Guitar Center, San Francisco

24. Graduate assistant, UH College of Business; economic analyst, Sea Grant, Washington, D.C.
25. Quality assurance engineer, Fairchild Camera and Instrument; electronics design engineer, new products projects engineer, Telesensory Systems, Inc.
26. Cost engineer, Hawaii Dredging and Construction Co.; field engineer, Oahu Construction; field engineer, General Construction Co.; cost engineer, Del Webb Corp.

Question #2: If you have continued your education, please list institution, degree, major, and date.

1. UH, BS Horticulture, May 1977
2. UH, MS Ocean Engineering, December 1974
3. University of California at Santa Barbara, MA Environmental and Population Biology, candidate
4. --
5. --
6. Planning to in not too distant future
7. --
8. --
9. UH, MS Animal Nutrition (aquaculture), 1976
10. California Institute of Technology, MS Environmental Engineering, June 1976; PhD Environmental Engineering, candidate
11. UH, unclassified graduate student, September 1975 to May 1976
12. Oregon State University, MS Science Education, June 1976
13. --
14. UH, MSW Social Work, candidate
15. Honolulu Community College, AS Fire Science, December 1976
16. University of Washington, MS Fisheries, candidate
17. UH, BS Civil Engineering, beginning September 1976 or January 1977
18. Informally, research work in ocean matters occupies a good deal of time
19. --
20. --
21. UH, MPH Environmental Health, candidate
22. University of Missouri at Kansas City, Dentistry
23. --
24. UH, MBA, December 1975
25. University of Santa Clara, no degree, Electrical Engineering masters program, September 1972 to June 1973; MBA, candidate
26. UH, MBA Business Administration, candidate

Question #3: What is the highest degree you expect to attain? When?

1. BS, May 1977
2. Maybe PhD, don't know when
3. Master's, December 1977
4. Don't know yet
5. Master's or professional degree, don't know when
6. Master's, don't know when
7. --
8. BA, June 1975
9. PhD, don't know when
10. PhD, June 1979
11. The sky's the limit, don't know when
12. MS, June 1976
13. MS, in the future
14. Master's in Social Work, May 1978
15. Don't know
16. PhD, less than or equal to 7 years
17. MS, don't know when
18. BA, Liberal Studies, 1975
19. --
20. MS, don't know when
21. Master's in Public Health, December 1977
22. DDS, 1980
23. BA, have it now
24. Maybe PhD, don't know when
25. 90% sure MBA, May 1978; 10% sure PhD, June 1984
26. MBA, 1979

Question #4: If you had to do it again, would you join MOP (be honest!)? Why?

1. Enjoyed entire program, its staff, members, and ideas
2. Course guidance and skill development helpful
3. Opportunities for practical experience and meeting professionals in marine fields, also interaction with students with similar interests
4. Plan to spend whole life in Polynesia, which is very sea-oriented
5. Ocean experience, on vessels and underwater, not normally available to students, e.g. biological surveying and sailing
6. Relevance to community and chance to do something meaningful as an undergraduate, plus good preparation for the future
7. Good opportunity
8. Opportunity to do things which enjoy doing
9. Gain experience in marine-related areas
10. Opportunity to learn a marine skill, and meet others with similar interests
11. Gave a wide range of opportunities in the marine field, many of which would still like to explore
12. Experience and exposure to marine activities and personnel involved in marine research
13. No. Not unless could pursue skill interested in, and if felt could help in obtaining some work in a marine field
14. Intelligent, motivated people with a genuine interest in the marine field, extensive opportunities to work on or get involved with
15. MOP broadened knowledge, enlarged acquaintances, greatly increased enjoyment of the sea
16. Ample opportunity to help selves and others, best program for students ever involved with
17. Offers kinds of experience which cannot be gained in any other department of the University
18. Studies in the marine area proving useful in research work
19. Got practical job-site training not available through regular channels
20. Provided valuable training and opportunity to meet people directly associated with the marine sciences
21. Invaluable experiences gained, could apply what learned in classes to real situations and problems
22. Can pursue marine-related activities which otherwise almost impossible without MOP
23. Enjoyed being able to participate in projects that required going to sea, diving, and identifying fish
24. People with common interests, useful skills, good contacts
25. MOP provided means of exposing self to the current developments in the marine field and to the basic nature of the ocean environment
26. Fun

Question #5: What was the best thing you got from MOP? Why?

1. Experience, meeting people with similar marine interests
2. Broad view of the marine sciences
3. Practical experience, indispensable in preparation for graduate studies and in obtaining work as biologist
4. Friendship, use in everyday life of knowledge acquired through MOP; neither of these encountered in studies in Tahiti and France
5. Ocean experience, on vessels and underwater, which not normally available to students, e.g. biological surveying and sailing; also a sense of direction in career
6. Exposure and practical application in the real world situation of classroom theory; best preparation for the future
7. Experience and contacts, which was not available in regular college work
8. Meeting people with the same interest in ocean science and recreation
9. Opportunity to acquire a number of valuable skills and experiences
10. Information on job opportunities in marine-related fields
11. In-the-field experience at sea and resultant personal growth, a job in field of interest, and contacts with many people in the marine area
12. Contact with things and people related to the marine sciences added to experiences and job opportunities
13. MOP certificate, which shouldn't mean much
14. Opportunity to meet fantastic people with common interest, to help out on research cruises, learn the techniques of specimen collection, etc.
15. Friendship, a little knowledge of and familiarity with the ocean
16. Ample opportunity to help selves and others, best program for students ever involved with
17. Work experience led to present position
18. Actual experience in the ocean environment on *Machias* cooking and teaching gave a realistic appreciation of the problems
19. Opportunity and encouragement to work on a project that was interesting; met, wrote to, and talked with people, and studied how to make a living in a marine field
20. Acute awareness of the marine sciences; have never regretted going into this field
21. Opportunity to take SCUBA diving, fish identification class; the new people that met
22. Experience and friendships
23. Opportunity to see and work with a greater area of ocean and its inhabitants than if had not been in MOP
24. Work on Sea Grant Hawaii Environmental Area Rapid Transit project under Dr. Jack Davidson; most useful in career
25. Fair idea of nature in the marine field, facilitated by seminars, work experience program, and side readings
26. Work in the State Legislature

Question #6: What was the worst thing you got from MOP? Why?

1. No time to participate in some of the projects
2. None
3. Lack of financial backing
4. None
5. None
6. Administrative hassles, lack of clear-cut communication and organization; but seemed to be clearing up with the arrival of the Director
7. Overworked, interfered with school work
8. None
9. None
10. Course requirements; MOP course requirements sometimes conflicted with the rigorous engineering curriculum
11. Seasickness
12. --
13. A lot of frustration and wasted time and effort because involved with a project that didn't enjoy
14. Politics involved higher up than MOP; group worked on Hanauma Bay survey for a semester of volunteer time, only to have it turned down
15. Seasickness
16. A cold from working in prawn ponds
17. Some problems because of lack of foresight of a few individuals who thought that their expertise was not to be questioned
18. Seasickness
19. Some of the SCUBA equipment bought and used by MOP inadequate
20. None
21. --
22. None
23. Red tape prevented UH Aquanauts and MOP from creating a viable diving community at UH Manoa
24. Hustled by members of the diving club
25. Opportunities lacking in involvements with current developments in engineering as it relates to marine programs or projects
26. --

Question #7: Would you recommend MOP to your friends? Why?

1. To interested friends because of the unique and interesting skills MOP can give them
2. Caters to many interests
3. If willing to put out a bit of effort, opportunities for obtaining skills and practical experience are great
4. Broadens view on human-ocean relationships, e.g., how marine resources are limited, why must protect marine ecosystems and life
5. Because of ocean experience, on vessels and underwater, which are not normally available to students, e.g., biological surveying and sailing; also a sense of direction in career
6. Relevance to community and a chance to do something meaningful as an undergraduate, plus preparation for the future; exposure and practical application in the real world situation of classroom theory, must work in the real world
7. Good experience
8. No friends attending college so does not qualify, but would recommend to anyone interested in any aspect of ocean activity
9. Yes
10. Would depend on their objectives in higher education
11. Wide range of opportunities available
12. For the experiences that can gain by being in MOP
13. Can be great program if could get into something useful and beneficial to the students; that is what would have liked to have done
14. Met many intelligent, motivated people interested in marine things; extensive opportunities to work on or get involved with things, e.g., important research; opportunities to help on research cruises and learn techniques of specimen collection, etc.
15. If interested in the ocean, so they could learn more, and in a friendly, happy, and helpful atmosphere
16. Best program ever been involved with for students, ample opportunity to help selves and others
17. Yes, with qualifications; some projects not well staffed with qualified people (e.g., qualification and personality besides other things), but in a sense this is something one should experience at the university level and not at the professional level
18. Yes
19. Vehicle for gaining experience in marine-related fields
20. MOP gives a person the desire, reinforces the decision, to continue in the marine sciences
21. That's how got interested in MOP
22. Provided invaluable experiences, knowledge, and friendships; truly one of the bright spots of education at Manoa
23. Enjoyed it, and have far greater opportunity to gain experience in working in the ocean
24. Helpful, but all friends too old
25. No matter what one's expertise is, can be directed and applied to a very exciting, stimulating, and young field, much to be learned and developed; the challenges are real and exciting and the rewards of success can be most satisfying
26. Yes

Question #8: Was your marine skill useful to you? How?

1. Yes; personal satisfaction, being able to identify common Hawaiian reef fishes, training other interested students
2. No; skill oriented to a technician, present work theoretical; even practical experiments are planned and conducted with technicians
3. Some; useful for work that had in Hawaii (artificial reef project, coral reef fish behavior), but University of California campuses require further certification, and have had delays in obtaining it; doing thesis research in field that does not require SCUBA, so do little now although still enjoy it recreationally
4. Some; psychology of dolphins not much use yet, but had to SCUBA dive every day for jobs, and made weekly use of techniques for measuring physico-chemical parameters and zoophyte life of lagoon
5. Some; not in present job but should be useful aid in future
6. Yes; led to present job, helped lay foundations for a future career
7. Yes; good practical skill and useful in work
8. Some; not useful in helping to get career, useful by bettering self intellectually
9. Yes
10. Yes; gave good insight into research life ahead as a graduate student
11. Yes; helped begin a career in the field of marine education/ science
12. Some; useful for personal gain in knowledge, not in terms of job opportunities
13. No
14. Yes; learned how to work on and organize a major year-long project, taking full responsibility for deadlines and research; experience learning from professionals, putting together a slide show, showing it to people, trying to promote it as an educational tool
15. Yes; uses knowledge of the sea whenever around or in it, read anything about it, or when topic of the sea comes to mind
16. Some; not useful yet, but probably will be, especially in gut analysis; transect techniques may be useful, but first will have to become familiar with Pacific Northwest organisms
17. Yes; helped to get job
18. Yes; have standing offer to teach marine cooking to students of Pacific Maritime Academy, in process of preparing course materials for this work
19. Yes; employed full-time in marine recreation, which was field of study with MOP
20. Yes; uses MOP skills in present job as research and field biologist with Environmental Impact Study Corp.
21. Yes; marine skill was useful in embryology class and in understanding development in general
22. Some; not useful for dentistry, but invaluable for lab skills, microbiological techniques, and field experience

23. Yes; hopefully underwater photography will someday provide employment and marine career
24. Yes; it was career oriented
25. Undecided; unable to ascertain usefulness of porpoise training; not too many areas where can really be applied except in training porpoises
26. No

Question #9: Comments.

1. --
2. --
3. --
4. If political and airfare problems could be solved, sure that MOP students could conduct projects of major importance in French Polynesia, since no organization there willing to and capable of conducting such studies before the reef and lagoon deterioration reaches the point of no return. If MOP plans such a study-abroad program, please contact; will be glad to help and solve the logistics in French Polynesia.
5. --
6. Advertise; took four years to find out about MOP and then nobody in the office could say exactly what it was, just handed out a pamphlet. Hopefully things are different now. Suggests making a strong presentation to incoming freshmen if not already doing so, maybe something like old members soliciting new members through activities day, etc. Suggest initiating "pooling" of past and present MOP talent for referral to both public and private sectors. Realize that it is MOP policy not to become an employment agency, but such pooling and referral would expand the scope of MOP by supplying talent and meeting the needs of the marine community in Hawaii. All would become a two-way process with MOP developing talent in response to such needs. These are just rough ideas that are already somewhat implemented in the MOP intern programs, but would like to see such programs increasingly developed to ease the transition from academic to occupational pastimes.
7. --
8. Did not join MOP to gain points for a marine-related career, also not intending to pursue career in major of zoology; enrolled in both programs to study courses which were interested in and to take advantage of the GI Bill. But will consider any job openings in the field of marine sciences if they become available, and considers experience gained in MOP as a definite asset.
9. MOP is and can continue to be a progressive program in the education process by maintaining its responsiveness to the needs of students, community, and the state of Hawaii. Congratulations to MOP on a job well done in fulfilling their purpose, from a grateful MOP graduate.
10. --
11. MOP was a great idea when it first started, still is. Especially for students serious about exploring the marine world and daring to accept new responsibility and challenge, MOP offers an unlimited range of personal gain.
12. MOP served as: (1) a means of becoming involved in the UH and finding a niche in the system; (2) provider of opportunities like research in the National Science Foundation summer research projects, meeting marine researchers and others actively involved in marine affairs; (3) provider of a full-time job through MOP contacts with Dr. Jack Davidson. Has only praise for personal experiences.

13. If hadn't been such a persistent and stubborn person, would have quit MOP before got wrapped up in skill acquisition, sorry that didn't get out of MOP. What should have done was selected a skill that was really interested in and not one that was "just available at the time" because there was nothing else. As a result, really wasn't interested in what did and so didn't do a good job. Can only blame self, should have re-evaluated objectives in the program before got wrapped up in project.
14. Was really discouraged and distressed at the Department of Land and Natural Resources, not only because they let group out of a contract, but because the same thing has happened to other students. Understands John McMahon has taken some action on this, but sincerely urges that MOP makes sure that students get a fair shake in the future. The MOP staff has done an excellent job.
15. MOP should be funded. Has fulfilled a great need for Hawaii, its land, people, economy, and oceans. Made Hawaii's children become aware of the relationship and interaction between themselves and the land and sea, allowed them to adopt rational ways of using the ocean and land to provide themselves and their children with an intelligent and good standard of living in the future. A start would be aquaculture and land-sea planning.
16. If didn't think MOP worth the extra effort, wouldn't have put five years into it. It is the best program for students ever seen or been involved with, because students given ample opportunity to help selves and others.
17. As a whole MOP was an enjoyable and beneficial experience, even though it had a few problems that at times were quite a hassle. But school is the place to experience and be exposed to such things, because they occur in the working world, and it is best to be prepared for it, learn how to handle it.
18. The course "Ocean Future" tended to be provincial and tied strictly to Hawaii problems, without sufficient instructor preparation on how ocean solutions could be used. Most courses were worthwhile and informative.
19. Encourage MOP to explore possibility of putting interns into training with private enterprise in the growing marine recreation industry. Too much emphasis was put on writing proposals for NSF, etc. Part-time jobs and/or even subsidy could be worked out.
20. Training MOP students receive is excellent; maybe someday a floating lab will be available for these students.
21. Only regret is that joined MOP so late; even after only one semester in MOP, obtained a grasp of some of the ocean-related environmental problems, and a much better understanding of fish identification.
22. --
23. Encourage more achievement in diving, enable more people to go to sea and the outer islands.
24. --

25. Much can be gained by presenting problems to student(s) and have them work at the solution. This can be achieved in a work environment or academic one. Good example was Dr. Craven's "Floating City Seminar" which was perhaps the most stimulating course ever taken. Thesis work in the marine field applying one's discipline should be encouraged; present the relevant problem areas or suggest needed research, then tie in related work environments for the individual. Would have liked to work on an electrical engineering problem in the marine environment, but unaware of the possible areas of necessary work or research; this formed a barrier that was too naive to hurdle.
26. --