LIST AND SHORT SUMMARY OF AQUACULTURE CONSULTING FIRMS
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AQUACULTURE CONSULTING FIRMS

by
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Pacific Islands Development Program
East-West Center
Honolulu, Hawaii

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I. INTRODUCTION

The Pacific Islands Development Program (PIDP) of the East-West Center was established in 1980 to address specific research needs of the Pacific Islands region. These needs were identified by the Pacific Islands Conference held in Honolulu in 1980. One of the research topics identified was aquaculture.

As a result of this mandate, PIDP initiated an aquaculture assistance project. The first step in the development of this project was to identify key people and aquaculture activities in the region. It was found that no regional review of aquaculture existed for the entire Pacific Islands area. This discovery prompted PIDP to compile such a review.

During the process of compiling aquaculture profiles for each political entity in the region, recurrent problem areas were uncovered in regard to aquaculture projects. One problem that was noted was the poor success rate of aquaculture development projects in the region which used consulting firms. This summary of consulting firms and a companion paper by Gregor Hodgson, titled, "Considerations Regarding the Use of Consultants in Aquaculture Projects," are two efforts by PIDP aimed at addressing this specific problem area.

The objectives of this particular study are:

1. to identify aquaculture projects completed in the Pacific Islands region which were not previously reported or published;
2. to make available summary information on consulting firms to Pacific Islanders; and
3. to provide Pacific Islanders with insight into the diversity and quantity of the consulting firms available.

The first objective answers the question, "Does the firm have Pacific Islands experience?" It also provides additional input into the aquaculture profiles which PIDP compiled for each political entity in the region.

The second and third objectives will be met by the compilation and distribution of this study to fisheries divisions in the region. It should be noted that this document was never intended to be a definitive, complete guide to aquaculture consultants. Instead, it was designed to enable the reader to appreciate the number and diversity of companies available in this field.

The first step in this study was to identify aquaculture consultants. A list of consultant firms was compiled based on the 1981 Annual Buyers Guide published by Aquaculture Magazine. Since this publication is U.S. based, the majority of firms which place advertisements and therefore the majority of firms surveyed, are U.S. firms. This list contained names of 116 firms.

1 Pacific Islands Development Program
   East-West Center
PIDP sent a letter to each firm requesting information on their previous work, as well as present capabilities in the area of aquaculture planning and assessment. They were specifically asked to provide details of their experiences in the Pacific Islands area. Forty-six replies were received, of which 36 offered consulting services. The other replies were from firms distributing aquaculture-related equipment such as aerators, chemicals, and floating cages. These latter companies are not included in the summaries which follow.

In short, this informational summary has been compiled from information supplied by companies in response to PIDP's letter of inquiry. There was great variation in the amount of information supplied by the companies which responded. Thus more detail is included in these summaries for some companies than for others. For example, some companies provided extensive lists of professional staff and detailed qualifications of individual staff members. Other companies gave no information about staff. Some companies gave explicit details of the services they offered, others were vague about their expertise. In addition, some companies provided extensive information on their past experience; others simply named a few projects without relating the extent of their involvement. Although the letter of inquiry did not ask for names of associated consultants or species experience, this information was sometimes provided. When available, this information was provided in the summaries.

There is a wide range of services offered by companies in aquaculture. Relatively few firms combine their specialization in aquaculture with the ability to offer full financial management and planning advice. Those companies which replied ranged from large engineering and management consulting firms with several hundred employees to one-man operations.

Of special note is the evolution of firms and their entry into the field of aquaculture. Some companies moved into the field of aquaculture from fisheries, resources management, environmental management, or agriculture. A few companies were established by leading researchers in aquaculture. Others entered the aquaculture arena from the engineering or waste-water management fields. The background, specialization, and capabilities of firms which responded to PIDP's inquiries were quite varied.

It should be re-emphasized that this compilation effort is not definitive, nor is it totally complete. It is limited to firms which responded to PIDP's initial information inquiries. No follow-up action was taken by PIDP to obtain a higher response rate. Inclusion of a firm in these summaries does not represent endorsement by PIDP, nor does exclusion of a company imply PIDP's disfavor. Inclusion simply indicates that a firm responded to PIDP's initial inquiry with material suitable for this summary.

The decision on the amount and form of information to include in these summaries was necessarily arbitrary. It was based on and limited to materials sent by the individual consulting firms.
Please note that PIDP is not advocating the use of a particular firm over another. Instead, as stated earlier, the objective of this study is to enable Pacific Islanders to appreciate the quantity and diversity of the aquaculture consulting firms available for use.
II. CONSULTING FIRM SUMMARIES
ABA INTERNATIONAL INC.
P.O. Box 3674
Honolulu, Hawaii 96811
U.S.A.

PROFESSIONAL STAFF:
Wayne Richardson, Jr. President

ASSOCIATED CONSULTANTS:
ABA International is formally affiliated with AECOS in aquabusiness development projects. It also has formal affiliation with Oceanic Institute.

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
ABA specializes in providing a comprehensive service in commercial aquaculture development projects including finance, production, marketing, training, management, consulting, implementation and operation.

PAST AQUACULTURE PROJECT EXPERIENCES:
Feasibility studies for various clients.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
A.B.A. INTERNATIONAL, INC. is an international agribusiness consulting and management firm. They have extensive experience in agricultural management and have recently moved into aquaculture consulting. In this field they work in close cooperation with AECOS, a private consulting firm specializing in aquaculture, and Oceanic Institute, a private non-profit research lab in Hawaii. See AECOS and Oceanic Institute summaries for their specific capabilities.
PROFESSIONAL STAFF:
George J. Krasnick, Executive President. Phytoplankton ecologist.
Paul Bartram. Geologist/fisheries specialist.
Eric Guinther. Invertebrate zoologist.
Irwin Haydock. Vertebrate zoologist.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Field surveys, environmental planning and management, aquaculture feasibility studies, systems design and management.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:
Maui County: Aquaculture development plan.
Hawaii, Guam, American Samoa, and Northern Marianas Islands: Regional fisheries development plan.

COMMENTS:
AECOS was established in 1971 and specializes in aquatic resource assessment, development and management. Their experience is in many fields of environmental planning and management.

AECOS is associated with ABA International.
AQUACULTURE ASSOCIATES INC.
1110 Richards St., Room 206 Honolulu, Hawaii 96813
U.S.A.

PROFESSIONAL STAFF:
Frederick Mencher. M.S. Oceanography.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Gracilaria spp.
Heterocarpus ensifer (deep sea shrimp)
Porphyra tenera (nori)
Trout
Salmon

SERVICES OFFERED:
Consulting and research.

PAST AQUACULTURE PROJECT EXPERIENCES:
Review of marine biomass program for conversion of cultured kelp to methane.

PACIFIC ISLANDS EXPERIENCE:
Hawaii: Feasibility of Gracilaria culture using power plant effluents.
Hawaii: Use of ocean thermal electric conversion plant (OTEC) effluent for culture of nori, trout and salmon.

COMMENTS:
Aquaculture Associates Inc. was established in 1980 by Fast, Mencher and Spencer who have maintained close contacts with the University of Hawaii and the Hawaii Institute of Marine Biology. The primary focus of this company is research.
AQUACULTURE SYSTEMS INTERNATIONAL  
11211 Sorrento Valley Rd.  
San Diego, California  92121  
U.S.A.

PROFESSIONAL STAFF:
Jon Van Olst, President. M.S. Marine biology.  
James Carlberg, Vice President. M.S. Marine biology.  
Michael Massingil. M.S. Fish physiology.  

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
ASI biologists have worked with approximately 90 species in either  
laboratory culture, pilot or commercial production including species of  
clownfish, lobster, crab, oyster, shrimp, mackerel and tilapia.

SERVICES OFFERED:
Site feasibility studies.  
Management services.  
Design of aquaculture research facilities.

PAST AQUACULTURE PROJECT EXPERIENCES:
Caribbean: development of marine shrimp culture.  
Nigeria: development of fisheries/aquaculture.  
California/Oregon: culture of striped bass, sturgeon and catfish.  
Egypt, South America and Europe: feasibility studies and site surveys.

PACIFIC ISLANDS EXPERIENCE:  
Hawaii: Feasibility studies and site surveys.

COMMENTS:
The principals of A.S.I. are actively involved in research in addition to  
their consulting activities. The principals have also had extensive  
research experience, particularly with lobster culture and use of waste  
heat in aquaculture; they have been involved in the design, construction  
and operation of a number of research and pilot scale facilities.
PROFESSIONAL STAFF:
   Gordon T. Yamada, President.
   Large number of professionals with expertise in aquaculture and seafood.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
   Eels

SERVICES OFFERED:
   Capability to organize resources for aquaculture planning and assessment.

PAST AQUACULTURE PROJECT EXPERIENCE:
   Chesapeake Bay joint venture with Japanese company for processing eels for shipment to Japan and other foreign countries.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
   AQUAFOODS INTERNATIONAL, INC. is closely tied to EXECUTIVE RESOURCE ASSOCIATES, INC., a management consulting firm based in the Washington, D.C., area. ERA is engaged in a variety of management consultant activities including aquaculture development.
AQUASERVICE CONSULTING ENGINEERS IN AQUACULTURE
Centre Commercial Du Chateau Vert
34200 Sete FRANCE

PROFESSIONAL STAFF:

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Zooplankton and phytoplankton, oysters, prawn & shrimp, turtle, trout, eel, sea bass, catfish, mullet & tilapia.

SERVICES OFFERED:
Assessment of aquaculture potential, market studies, site selection, feasibility studies, engineering and implementation studies, design and development of aquaculture facilities.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
AQUASERVICE specializes in aquaculture projects. It has conducted numerous consultancies in the service of national governments, international agencies (FAO, World Bank, UNDP). It has also consulted for fishing cooperatives. It owns or part owns pilot facilities for development of new technologies.
PROFESSIONAL STAFF:
Barry B. White, Chairman.

ASSOCIATED CONSULTANTS:
100 personnel available for short and long term assignments.

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Full range, comprehensive, world-wide aquaculture and fisheries
development consulting service. Project assessment; site selection;
design and costing; construction supervision; management and training;
turnkey projects; integrated aquaculture/agriculture projects.

PAST AQUACULTURE PROJECT EXPERIENCES:
Site surveys, feasibility studies, project assessments, proposals and/or
installations in the Bahamas, Puerto Rico, the Dominican Republic, Mexico,
Egypt and the United Arab Emirates.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
Mr. White has experience in the Cook Islands, as a consultant, fisheries
Director, and Director of the Cook Islands Marine and Atoll Development
Agency (CIMADA).
AQUATIC FARMS
49-139 Kamehameha Hwy.
Kaneohe, Hawaii 96744
U.S.A.

PROFESSIONAL STAFF:
Edward D. Scura, President. Marine biology.
Charles F. Greenwood, Vice-President. Agricultural economics.
Andrew M. Kuljis, Vice-President. Marine biology.
Richard E. Schatz, Director, Overseas Operations. Economics.

In addition to a full time professional staff of 7 other individuals.

ASSOCIATED CONSULTANTS:
John Eugene Bardach, Zoologist.
Robert R. Abbot, Aquaculturist.
Frank J. Hester, Marine biologist.
Henry R. Bransetter, Marketing.
Darrell Deppert, Fisheries biologist.
Chhorn Lim, Fisheries biologist.
James Ellis, Aquaculturist.
Kenneth E. Neils, Aquaculturist.

AQUACULTURE SPECIES CAPABILITIES:
Prawn, shrimp, tilapia, mullet, milkfish, carp, oysters.

SERVICES OFFERED:
Site survey, feasibility study, design, engineering, market consultancy.

PAST AQUACULTURE PROJECT EXPERIENCES:
Malaysia, Pakistan, Bangladesh, Indonesia, Philippines, Colombia: Commercial shrimp production facilities and hatcheries.
Pakistan, Nepal: Technical aquaculture advisory services.
Hawaii: Caged culture of tilapia in prawn ponds.

PACIFIC ISLANDS EXPERIENCE:
Hawaii, Guam, Ponape: Aquaculture development plans.
Hawaii: Aquaculture training.
Hawaii: Commercial aquaculture farm.

COMMENTS:
AQUATIC FARMS owns and operates an aquaculture farm in Hawaii, producing a variety of products. It provides consulting services for international and government agencies in Asia, the Pacific and Latin America. AQUATIC FARMS is affiliated with HART CORP., engineering and management consultants.
PROFESSIONAL STAFF:
Robert R. Shafer, Director, Construction Management. Civil engineer.
John W. Worholic, Project Engineer.
Eugene G. Williams, Senior Designer.
D. Timothy Bollinger, Design Engineer.
Robert J. Demer, Assistant Manager.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Trout species.
Striped bass.

SERVICES OFFERED:
Water quality testing. Design of Facilities.
Financial analysis. Construction management.

PAST AQUACULTURE PROJECT EXPERIENCES:
New Jersey: Mercer waste heat aquaculture facility.
East Coast U.S.: Bass & trout spawning &/or hatching & rearing facilities.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
A civil engineering corporation, established in 1946, whose services include town planning, transport systems, water and wastewater treatment.
PROFESSIONAL STAFF:
Jeffrey J. Tobolski, President. Marine biology/Business management.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Economic feasibility.
Market analysis.
Business development.

PAST AQUACULTURE PROJECT EXPERIENCES:
Ontario: aquaculture evaluation.
Guam, Virgin Islands & Puerto Rico: Prawn farm site studies.

PACIFIC ISLANDS EXPERIENCE:
Guam: Economic analysis of aquarium plan.
Hawaii: Subcontract on Hawaii fisheries development plan.

COMMENTS:
EARL R. COMBS INC. specializes in consulting for the seafood processing industry. Most of the firm's experience is with the fishing industry in Alaska, Canada and northwestern U.S.
PROFESSIONAL STAFF:
Sir John Prideaux, Chairman.
I. D. Richardson, Managing Director. Fisheries biologist.
S. J. Appleby. Fisheries biologist.
R. D. Cardover. Aquaculturist.
I. Keen-Smith. Fisheries biologist.

In addition to a professional staff of 12 other individuals.

ASSOCIATED CONSULTANTS:
Over 100 specialists on call when required.

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Feasibility studies, social cost-benefit analysis, design, equipment selection, management consultancy.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:
Kiribati: Identification of fisheries and aquaculture potential.

COMMENTS:
F.D.L. is a specialist fisheries consultancy, established in 1973, and is a member of a London merchant banking group. Its area of major expertise is in all phases of commercial fisheries development, and it has worldwide experience in this field. It also has expertise in seafood marketing.
PROFESSIONAL STAFF:
    Kenneth P. Ferjancic, Aquaculture Management Specialist. Fisheries
    biology.
    Duane C. Fagergren. Aquatic pollution biology, shellfish aquaculture.

ASSOCIATED CONSULTANTS:
    Obtained as necessary, on a project-to-project basis.

AQUACULTURE SPECIES CAPABILITIES:
    Salmon, trout, oysters, clams.

SERVICES OFFERED:
    Development of design criteria, site studies, management assistance.
    FishPro also does environmental analysis (water quality; bioassays;
    toxicology) and habitat restoration projects.

PAST AQUACULTURE PROJECT EXPERIENCES:
    Northwest U.S.: Salmon hatchery design & management.
    Washington: Island County Regional Aquaculture Study.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
    FishPro is a relatively small company with experience in the Northwestern
    United States.
PROFESSIONAL STAFF:
Harald D. Frederiksen, President

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Fin fish, prawn, shrimp, and shellfish.

SERVICES OFFERED:
Resource evaluation; lake and stream management; artificial propagation; equipment selection and use; operative assistance. In the specific area of aquaculture it does:
Feasibility studies: site & species selection;
Technology and production planning; marketing studies; design; construction supervision; training; and operations.

PAST AQUACULTURE PROJECT EXPERIENCES:
Indonesia: Site investigation for shrimp farming.
U.S.: Salmon hatchery.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
F.K. is primarily a consultant in water and land resource evaluation, development and management. F.K. is a subsidiary of Woodward-Clyde Consultants. They have done projects for the World Bank, Asian Development Bank, and USAID, in addition to projects directly for individual governments.
GLUDE AQUACULTURE CONSULTANTS INC.
2703 W. McGraw
Seattle, Washington 98199
U.S.A.

PROFESSIONAL STAFF:
John B. Glude, President. Fisheries.
Maynard A. Steinberg. Food science.
Roy C. Stevens. Fisheries Marketing.
James A. DeBoer. Seaweed Aquaculture.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Salmon, trout, oysters, clams, mussels, prawns, shrimp, and seaweed.

SERVICES OFFERED:
Analysis of aquaculture ventures
Planning aquaculture systems
Development of production facilities
Processing and marketing strategies

PAST AQUACULTURE PROJECT EXPERIENCES:
Several projects on aquaculture feasibility and opportunities worldwide for private firms, governments, and various national and international aid organizations.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
G.A.C. is a small consulting firm established in 1977. It specializes in the analysis of aquaculture ventures and the planning and development of aquaculture systems. The firm is based largely on the experience and capabilities of John Glude, former NOAA aquaculture program coordinator, and FAO shellfish aquaculture expert to the Pacific Islands (1971-1972).
INTERNATIONAL MARINE FISHERIES COMPANY
2216 Coral Way
Miami, Florida 33145
U.S.A.

PROFESSIONAL STAFF:
Robin Rackowe, President.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Financial analysis, marketing.

PAST AQUACULTURE PROJECT EXPERIENCES:
Feasibility study for shrimp farm. Dominican Republic.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
INTERNATIONAL MARINE FISHERIES COMPANY specializes in marketing fisheries products, including financial analysis, processing and transportation analysis. Mr. Rackowe who established this company in 1978 has extensive experience in this field, especially international seafood marketing.
KCM INTERNATIONAL INC.
1917 First Avenue
Seattle, Washington 98101
U.S.A.

PROFESSIONAL STAFF:
Paul B. Liao, President KCM International. Environmental engineer.
Colin E. Nash, Manager, Applied Sciences.
Carol M. Brown. Bioengineer.
Craig L. Paulson. Aquatic biologist.
In addition to a staff of 250.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Oysters, clams, lobsters, freshwater prawns, marine shrimps, carp, mullet, salmonids, eels and tilapia.

SERVICES OFFERED:
Project evaluation, planning, design, research and technical training.

PAST AQUACULTURE PROJECT EXPERIENCES:
KCM has assisted in development of more than 80 fish and shellfish culture facilities in 23 states and 10 countries.

PACIFIC ISLANDS EXPERIENCE:
American Samoa: Tuna processing plant wastewater monitoring study.
Guam and Hawaii: Design of aquarium.

COMMENTS:
KCM INTERNATIONAL INC. is a subsidiary of the engineering consulting firm KRAMER, CHIN AND MAYO INC which was established in 1950. They have extensive experience in fisheries and aquaculture projects in the U.S.A. They have undertaken similar work outside the U.S. since 1975.
PROFESSIONAL STAFF:

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
- Mussels, Mytilus edulis
- Oysters, Ostrea edulis
- Crassostrea gigas
- Palourde, Venerupis sp.

SERVICES OFFERED:
- Mollusc culture from hatchery to marketable product.
- Parasitological diagnosis, treatment services.
- Consultative services in fish culture.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
This company's work is entirely based in Italy. Their expertise is in culture of molluscs by suspension culture and exploitation of reclaimed land and salt marshes.
LANDELL MILLS ASSOCIATES  
Columbus House  
Trossachs Drive  
Bath BA 2 6RR  ENGLAND

PROFESSIONAL STAFF:  
John Landell Mills, Managing Director.  Agriculture.  
Malcolm Christie, Executive Director.  Economics.  
Nigel Peacock, Senior Fisheries Consultant.  Marine biology.  
David Dawson, Market Research Manager.  Marketing.  
Jeremy Saniforth, Senior Economist.  Economics.  
David Jones, Export Marketing Consultant.  
With a professional staff of 35.

ASSOCIATED CONSULTANTS:  
John Arrundale.  Marketing and processing.  
James Knowles.  Mollusc culture.  
Ian McCrone.  Salmon farming.  
Donald Swift.  Aquaculture.  
Mike Pannell.  Fish processing.

AQUACULTURE SPECIES CAPABILITIES:  
Salmoids, marine flatfish, tilapia, bass, mullet, marine and freshwater crustacea and molluscs.

SERVICES OFFERED:  
Research, consultancy and project management activities in agriculture, fisheries and related processing and marketing industries. In aquaculture it offers assistance with:  
species selection; site selection; design and feasibility studies;  
farm development and management; and market analysis.

PAST AQUACULTURE PROJECT EXPERIENCES:  
Worldwide survey of aquaculture (for a pharmaceutical firm).  
Zambia:  Design and development of tilapia farm.  
Europe:  Aquaculture market studies.  
Ireland:  Fish farming development study.

PACIFIC ISLANDS EXPERIENCE:  
Fiji:  Survey of tuna market.

COMMENTS:  
LANDELL MILLS ASSOCIATES was established in 1967 and has offices in London and Bath, England, and Lusaka, Zambia. Its clients are from both private and public sectors, including national and international agencies.
PROFESSIONAL STAFF:

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
Dr. Fast is employed by Hawaii Institute of Marine Biology. Most of his consulting work is done through this institute or through other consulting firms. LIMNOLOGICAL ASSOCIATES is a one man operation undertaking short term projects only.
PROFESSIONAL STAFF:
Ronald D. Mayo. Civil engineer.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Planning and design services for aquaculture worldwide.

PAST AQUACULTURE PROJECT EXPERIENCES:
Saudi Arabia: Preliminary design of marine fish farm.
Puerto Rico: Site study for marine fish & prawn farm.

PACIFIC ISLANDS EXPERIENCE:
Guam: Planning & design of marine prawn farm.
Carolines, Marianas, Samoa: Site studies for marine species farms.

COMMENTS:
Founded in 1980 by Ronald Mayo, formerly of Kramer, Chin and Mayo Inc.
TMA develops a consulting team specifically tailored to each project.
Team members typically include a design firm with offices in the study area, individual expert, specialized technology firms, construction firms, and TMA management.
PROFESSIONAL STAFF:
  Michael F. McMaster, Sole Proprietor. Fisheries biologist.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
  Consulting in fisheries and environmental management, mariculture and aquaculture management.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
  This appears to be a one man operation.
PROFESSIONAL STAFF:
   Richard D. Glenn, President. Biologist.
   James McBeth. Biologist.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
   Oysters, clams, abalone.

SERVICES OFFERED:
   Feasibility studies.
   Establishment and operation of shellfish hatcheries and growth facilities.
   Marketing.

PAST AQUACULTURE PROJECT EXPERIENCES:
   Mexico and California: Establishment of shellfish farms.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
   MSA INC. are primarily environmental consultants with their major
   experience in environmental matters.
PROFESSIONAL STAFF:
C. D. Meryman, President. Pathologist, pharmacist, ichthyologist.
D. Garcia, Aquatic Specialist. Pathology and physiology.
D. L. Diehl, Aquatic Specialist. Fish kill investigations.
L. L. Stehlik, Director, Marine Biology. Coastal engineering & environmental technology.
In addition to a professional staff of 8.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
MEE offers services in eight areas: aquaculture; chemistry; environmental engineering; environmental sciences; executive management; fisheries; information services; and permitting. In the specific area of aquaculture it offers assistance in: design development; financial planning; specific species culture; and state and federal permitting.

PAST AQUACULTURE PROJECT EXPERIENCES:
U.S.: Aquaculture water quality analysis, nutrition research, fish disease research and treatment recommendations for several clients.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
MEE uses an interdisciplinary professional staff and has complete laboratory and analytical facilities on call 24 hours a day. It is a subsidiary of Fish Doctor Clinical Center.

MEE, established in 1980, is a subsidiary of Fish Doctor Clinical Center. It has an interdisciplinary professional staff and has complete laboratory and analytical facilities on call 24-hours a day.
YEAR PROFESSIONAL STAFF:
Anthonie M. Schuur. Economics of aquaculture systems.
Gerald Ginnelly, Principal Aquaculture Scientist.
Constantino M. Senon, Supervising Engineer. Mechanical engineer.
Robert B. Uhler, Vice-President. Environmental engineer.
In addition to a professional staff of 250.

ASSOCIATED CONSULTANTS:
John E. Colt. Environmental engineering.
Robert Cordover. Fish rearing.
Kenneth J. Rosenberg. Fisheries management.
Guy N. Rothwell. Ocean engineering.
Gerald L. Schroeder. Oceanography.
Robert A. Shleser. Aquaculture management.

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Water and wastewater consulting. In the field of aquaculture the
following services are offered: technical assistance; design of hatchery
facilities; planning and design of commercial systems; design of
commercial systems; design using domestic, industrial and agricultural
wastewaters; training and technology transfer.

PAST AQUACULTURE PROJECT EXPERIENCES:
Egypt: Technical services in an aquaculture development project.
Washington: Fish hatchery design.
Honduras: Shrimp farm technical consulting service.
Venezuela: Shrimp farm development study.
Arizona: Catfish hatchery design.
Costa Rica: Shrimp farm consulting services.
Idaho: Fish hatchery & water management plan.
Maryland and California: Aquarium design/consulting.
Florida: Aquaculture systems study.
California: Wastewater aquaculture development study;
Design & analysis of abalone rearing habitat.

PACIFIC ISLANDS EXPERIENCE:
Hawaii: Shrimp farm site study.

COMMENTS:
JMM is a large, diversified firm of consulting engineers established in
1945. It has experience in many large civil engineering projects.
PROFESSIONAL STAFF:
  Michael Bernard New, Partner. Fisheries biologist.
  William George Northcroft, Partner. Food processing.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
  Freshwater prawns.

SERVICES OFFERED:
  Consulting in food processing, market research and aquaculture. Specific areas of aquaculture include:
  feasibility studies;
  site selection;
  project management;
  marketing;
  nutrition.

PAST AQUACULTURE PROJECT EXPERIENCES:
  Dominica, Jordan, Greece and Nigeria: Feasibility studies.

PACIFIC ISLANDS EXPERIENCE:
  Guam: Development of feeds for marine shrimp.

COMMENTS:
  NORTHCROFT AND NEW, established in 1979, has worked for international and national government agencies, consulting organizations and individual clients.
PROFESSIONAL STAFF:
- Robert Shlesser. Director of Research.
- Robert Brick. Shrimp program coordinator.
- Frank Follett. Pond manager.
- Paul Magarelli. Chief nutritionist.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
- Mullet.
- Milkfish.
- Marine shrimp.
- Dolphin fish (mahi mahi).

SERVICES OFFERED:
Aquaculture related services include:
- economic evaluation;
- technical advisory services;
- engineering & design;
- management & training;
- provision of stock for start-up;
- fiberglass fabrications;
- feed formulation.

PAST AQUACULTURE PROJECT EXPERIENCES:
- Egypt: Fish farm design and management.
- Ecuador: Shrimp farming-technical assistance.

PACIFIC ISLANDS EXPERIENCE:
- Hawaii: Technical and economic evaluation of marine shrimp farming; Aquaculture education/training for native Hawaiians; baitfish production; aquaculture and livestock feed production.

COMMENTS:
O.I. CONSULTANTS INC. is a wholly-owned private sector corporation which complements the capabilities of the OCEANIC INSTITUTE, a private research institution, with broad experience in the area of tropical aquaculture. O.I. CONSULTANTS is a tax paying entity which provides consultation on aquaculture and marine resource development to industry and the private sector.
PIGEON POINT AQUACULTURE CENTER
921 Pigeon Point Rd.
Pescadero, California 94060
U.S.A.

PROFESSIONAL STAFF:
Anthony H. Weaver, President.
J. Ted Kuiper, Vice-President.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Oysters, clams, scallops, mussels, abalone, shrimp, catfish, milkfish.

SERVICES OFFERED:
Provision of hatchery seed and larvae.
Development of aquaculture projects.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
PIGEON POINT AQUACULTURE CENTER operates a shellfish hatchery.
They are affiliated with PHIL-ORBEX AQUAVENTURA, which is active in
Southeast Asia. They are also buying out International Shellfish
Enterprises, which is involved with shellfish nursery and growout
operations in California.
PRINDLE, PATRICK AND ASSOCIATES
199 South Fifth St.
Columbus, Ohio 43215
U.S.A.

PROFESSIONAL STAFF:
Jan L. Michalek, Consultant in Charge.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Temperate freshwater species, especially trout.

SERVICES OFFERED:
Specialized technical, architectural, and engineering services for design and management of fish farming. Site surveys, design, training.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
PRINDLE, PATRICK AND ASSOCIATES is a firm of architects and consulting engineers. On aquaculture projects they work in conjunction with Jan Michalek who runs a private laboratory and fish hatchery. Mr. Michalek has considerable experience in all aspects of design and management of fish farming and fish processing facilities in Europe and North America. Most of his experience is with temperate fresh water species.
PROFESSIONAL STAFF:  
About 750 people

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:  
Site evaluation and selection.  
Husbandry techniques.  
Design.  
Feed formulation.  
Economic evaluation.  
Farm management training.

PAST AQUACULTURE PROJECT EXPERIENCES:  
South Africa: Study into the farming of native flat fish species.  
Greece: Preliminary study of prospects for fish farming.

PACIFIC ISLANDS EXPERIENCE:  
Gilbert Is.: Feasibility study of the tuna fishing industry.  
Pacific Islands: Simulation of joint venture contract negotiations for FAO.  
Tuvalu: Assistance with joint venture fishing contract negotiations.

COMMENTS:  
The SEA FISH INDUSTRY AUTHORITY (formerly the White Fish Authority) is a British Public Authority which initially functioned to assist the British fishing industry. Since 1974, the authority has undertaken overseas consultancy projects. Their expertise is in all aspects of the fishing industry including fisheries management, resource assessment, fishing facilities design, aquaculture and product development and marketing.
SHEARWATER FISH FARMING LTD.
Low Plains
Carlisle CA4 97T
UNITED KINGDOM

PROFESSIONAL STAFF:

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
   Trout, salmon, turbot, sea bream.

SERVICES OFFERED:
   Feasibility studies, design, management & staff training.

PAST AQUACULTURE PROJECT EXPERIENCES:
   Greece: Aquaculture development project.
   Saudi Arabia: Fish farm feasibility project.
   Caribbean: Two short studies on aquaculture potential.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
   SHEARWATER FISH FARMING LTD., established in 1973, is a subsidiary of KRAFT INC. Its primary business is the management of their own commercial fish farms in the U.K. Consultancy work is secondary. Their experience is mainly in U.K. and Europe with temperate water species. They have an active Research and Development program in oxygenation techniques and hatchery techniques for marine species.
PROFESSIONAL STAFF:
  J. Monty Little, President.
  M. Kim Harker, Director.
  William E. Vanstone, Senior Aquaculturist.
  Brian Emmett, Biologist.
  Dominick Mendola, Project Manager.
  Henry Wang, Aquaculturist.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
  Fish, shrimp, mollusc, and algae culture.

SERVICES OFFERED:
In the area of aquaculture, the following services are offered:
  feasibility studies;
  management assistance;
  training;
  engineering;
  financing;
  marketing;
  seed production;
  and experimental programs.

PAST AQUACULTURE PROJECT EXPERIENCES:
  Tunisia, Mexico: Brackishwater fish and shrimp farms. Indonesia:
  Feasibility study, carp hatchery.
  Malaysia: Marine fish hatchery pilot project.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
SYNDAL INTERNATIONAL INC. specializes in providing consulting services to
the aquaculture industry. It has also undertaken joint venture projects.
It is affiliated with SYNDAL LABORATORIES INC., a manufacturer of organic
chemicals including hormones, anesthetics, and disease control agents for
use in aquaculture.
UNDERWOOD MCLELLAN LTD.
200-6545 Bonsar Ave.
Burnaby, British Columbia V5H 1H3
CANADA

PROFESSIONAL STAFF:
T. Y. Miyanaga, Co-ordinator, Aquaculture.
D. C. Sinclair, Hatchery Management.
D. Reid, Process Design.
A. Szabo, Hatchery Process Design.
P. B. Makowichuk, Groundwater and geotechnical engineering.
A. H. Neufield, Electrical design.
D. E. Mortin, Hydraulic Design.
P. W. Benjamin, Mechanical Design.

ASSOCIATED CONSULTANTS:
B. A. Campbell. Fisheries economist.
P. J. McCart. Fisheries biologist.
W. E. Vanstone. Fisheries advisor.
C. L. Kerns. Aquatic consultant.
G. Hanek. Fisheries development consultant.
A. C. Sinclair. Fish culture.

AQUACULTURE SPECIES CAPABILITIES:
Salmon & Trout.

SERVICES OFFERED:
Research.
Economic & feasibility studies.
Conceptual design.
Detailed engineering design.
Construction management.
Start-up and operational assistance.

PAST AQUACULTURE PROJECT EXPERIENCES:
North America: Numerous salmon and trout projects.
Indonesia: Fish hatchery and larval rearing site selection study.
Barbados: Prawn hatchery & rearing site study.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
UNDERWOOD MCLELLAN LTD., established in 1965, is a subsidiary of the UMA group, a Canadian firm of consulting engineers with a permanent staff of over 1000. They have their own research facilities and pilot plants for gathering data on operational characteristics and expertise in the use of low-grade waste heat.
The WATER QUALITY INSTITUTE (V.K.I.) is a Danish grant-supported, non-profit, self-governing institution, established in 1972 and concerned with all aspects of water quality. It has a growing research and development activity concerning aquaculture and undertakes projects considering production and environmental protection aspects of aquaculture. Its experience is almost exclusively in Northern Europe.
PROFESSIONAL STAFF:
John Wiley Perkins, Chairman.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Tilapia, catfish, carp, fresh water prawns & salt water shrimp.

SERVICES OFFERED:
Feasibility studies, preliminary design, supply of fingerlings.

PAST AQUACULTURE PROJECT EXPERIENCES:
Nigeria: Joint venture fish farm.
Egypt, Saudi Arabia: Aquaculture feasibility studies.

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
The WILEY CORPORATION is primarily concerned with import, export, distribution and retail sales of seafoods. They have been in aquaculture for approximately 5 years and have put together a team of experts for projects in this area.
RODNER R. WINGET: FISHERIES DEVELOPMENT SERVICES
P. O. Box 164
Redmond, Washington 98052
U.S.A.

PROFESSIONAL STAFF:
Rodner R. Winget.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:
Crabs, lobsters, prawns, clams, oysters, salmon.

SERVICES OFFERED:
PAST AQUACULTURE PROJECT EXPERIENCES:
PACIFIC ISLANDS EXPERIENCE:
Micronesia: Joint American Indian, Micronesian tuna fishing development program.

COMMENTS:
Mr. Winget was involved in aquaculture development by the SMALL TRIBES ORGANIZATION OF WESTERN WASHINGTON (STOWW) before establishing his own consultancy.
PROFESSIONAL STAFF:
John Edward Hugvenin, President. Ocean and aquacultural engineer.

ASSOCIATED CONSULTANTS:

AQUACULTURE SPECIES CAPABILITIES:

SERVICES OFFERED:
Preliminary design, evaluation, costing, research and development planning.

PAST AQUACULTURE PROJECT EXPERIENCES:

PACIFIC ISLANDS EXPERIENCE:

COMMENTS:
WOODS HOLE ENGINEERING ASSOCIATES INC. is a marine oriented research, development and consultancy group which was started in 1980. Its primary area of interest is new marine technologies and product development. It is a loose confederacy of professionals in a variety of disciplines. Small working teams are selected for specific projects.
The East-West Center is a public, nonprofit educational institution with an international board of governors. Some 2,000 research fellows, graduate students, and professionals in business and government each year work with the Center's international staff in cooperative study, training, and research. They examine major issues related to population, resources and development, the environment, culture, and communication in Asia, the Pacific, and the United States. The Center was established in 1960 by the United States Congress, which provides principal funding. Support also comes from more than 20 Asian and Pacific governments, as well as private agencies and corporations.

Situated on 21 acres adjacent to the University of Hawaii's Manoa Campus, the Center's facilities include a 300-room office building housing research and administrative offices for an international staff of 250, three residence halls for participants, and a conference center with meeting rooms equipped to provide simultaneous translation and a complete range of audiovisual services.
PACIFIC ISLANDS DEVELOPMENT PROGRAM

The Pacific Islands Development Program (PIDP) at the East-West Center helps meet the special development needs of the Pacific islands region through cooperative research, education, and training. PIDP also serves as the Secretariat for the Pacific Islands Conference, a heads of government organization involving leaders from throughout the Pacific region, and for the Pacific Islands Conference Standing Committee, which was established to ensure follow-up on development problems discussed at the 1980 Conference.

PIDP's research, education, and training activities are developed as a direct response to requests from the Standing Committee. PIDP's projects are planned in close cooperation with the Committee to ensure that the focus and the organization of each project address the needs identified by the heads of government on the Committee, a process which is unique within the East-West Center and in other research and educational organizations serving the Pacific.

A major objective of the program has been to provide quality in-depth analytical studies on specific priority issues as identified by the Pacific island leaders and people. The aim is to provide leaders with detailed information and alternative strategies on policy issues. Each island country will make its own decision based on national goals and objectives. Since 1980, PIDP has been given the task of research in eight project areas: energy, disaster preparedness, aquaculture, government and administrative systems, nuclear waste disposal, business ventures development and management, roles of multinational corporations, and regional cooperation.