

**LATIN AMERICA AND THE CARIBBEAN REGION EXPERT PANEL MEETING
POND DYNAMICS/AQUACULTURE COLLABORATIVE RESEARCH SUPPORT PROGRAM**

**Friday, February 1, 2002
Double Tree Club Hotel San Diego
San Diego, California**

The meeting started shortly after 8:30 a.m. The program was followed as arranged prior to the meeting.

MEETING ATTENDEES PRESENT

Expert Panel Members: Fernando Alcántara, Wilfrido Contreras-Sánchez, Carole Engle, Susan Kohler, Greg Lutz, Joe Molnar, Raul Piedrahita, Julio Querioz, Jim Rakocy, and Suyapa Triminio de Meyer

Co-Moderators: Hillary Egna and Jim Diana

Observers: Harry Rea, Kevin Fitzsimmons, Danielle Clair, Cormac Craven, and Kris McElwee

Recorder: Gwyn Newcombe

OPENING COMMENTS (MODERATORS – HILLARY EGNA AND JIM DIANA)

Hillary Egna opened by welcoming LAC Expert Panel Members. Egna apologized for the late start to the meeting (due to hotel's electrical problems) and for any inconvenience panel members may have experienced while trying to locate required reading materials.

Proposal Planning Executive Committee (PPEC) members were introduced (Jim Diana, Kevin Fitzsimmons, Danielle Clair, and Egna). Egna presented background information on why the PPEC was established.

The goal of the Expert Panel Meeting is to come up with a list of researchable priorities for the CRSP for the Latin America and Caribbean Region. Since inception, the CRSP has been organized around constraints and deals with questions such as: What do we need to do to make aquaculture more sustainable? What are the site-specific, regional, and global impediments to aquaculture research and development? What are the major obstacles for poor farmers to gain access to resources? How can farmers become more able to handle risk and become profitable? The expert panel will be asked to identify constraints, then take it one step further and think about how those constraints can be framed as researchable priorities. PPEC will review researchable priorities for each region, combine them to get global priorities, and evaluate PD/A CRSP comparative advantages, duplications with other programs, and donor goals in coming up with the research framework for 2003–2008. The Request for Proposals will be written from the research framework.

Egna introduced Jim Diana as Co-Moderator and Gwyn Newcombe as Notetaker.

Egna gave a brief background about the CRSP. The CRSP is a program centered on partnerships that carry out research with host country institutions and universities. Faculty from the US and from host countries work together on research problems and involve students in carrying out that research. Fundamental tenets include partnerships that involve working on CRSP priority research, involving students and faculty at institutions in the US and host countries, and focusing on improving the livelihoods of small farmers and people without traditional access to a lot of resources in many countries. The CRSP has not focused on heavily industrialized and commercialized producers.

Egna asked panel members to use this opportunity to think of how the CRSP can change and respond to challenges now as well as over the course of the next 20 years.

The first CRSP Stakeholder Meeting was held in Honduras in August 2001. Attendees were non-experts, people involved in aquaculture activities who are not in the CRSP and who could be considered to be end-line beneficiaries of CRSP research. That meeting resulted in the Honduras Stakeholder Meeting Report, which is included in the meeting packet along with the White Papers (developed by the Technical Committee), and the CRSP Current List of Constraints. Egna noted that the Honduras Stakeholder Report lists "Lack of an integrated plan for the aquaculture activity" as their top constraint, a topic that does not appear on the CRSPs list of current constraints.

In closing, Egna expressed the importance of receiving input, advice, and assistance from panel members in looking at outputs and impacts of CRSP research. Their input will assist the CRSP in writing the grant proposal for 2003–2008.

Carole Engle asked to what extent broader training and extension initiatives would be looked at. Egna acknowledged the importance of and the need for extension and training. Although the CRSPs focus should be on research, it is possible to integrate training needs with research.

Sue Kohler asked if we are getting away from aquaculture at the subsistence level and at what point does the CRSP get involved with the large-scale aquaculturist. Egna clarified that we are not getting away from aquaculture at the subsistence level but that we had in the past focused more on small producers and not necessarily on subsistence farmers and that we can return to subsistence farming now if we choose. Egna does not see a real role in this publicly financed program for supporting very large, heavily capitalized, highly industrialized and commercialized farms.

Jim Diana provided a brief introduction and description of why panel members were invited to attend the meeting. Panel members come from within the CRSP and outside the CRSP and come from a variety of backgrounds. Their involvement will provide a broadened perspective and will open up the process of identifying constraints to aquaculture and developing researchable priorities. Only the panel members are invited to participate in the discussions; observers were asked to observe and help as needed.

DEVELOP LIST OF CONSTRAINTS

Each panel member was asked to write down his or her top five constraints to aquaculture development while incorporating stakeholder constraints, constraints brought out in literature, and their expert knowledge of constraints. Diana then asked panel members to take turns to read and explain the constraints from their notecards. Kevin Fitzsimmons noted each constraint on flip charts.

PRIORITIZE LIST OF CONSTRAINTS

Each panel member was given 10 dots for use in identifying which constraints had the most importance or weight. The following is the list of identified constraints in the order in which panel members read from their notecards and then weighed its importance by affixing a dot.

LIST OF CONSTRAINTS TO THE DEVELOPMENT OF AQUACULTURE IN THE LATIN AMERICA AND CARIBBEAN REGION		
NUMBER	CONSTRAINT	WEIGHT (DOTS)
1.	Environmental issues	Too broad – merge w/ #10
2.	Lack of strategic and aquaculture sector planning	8
3.	Lack of institutional capacity	2
4.	Lack of extension and technical assistance; technology transfer	5
5.	Insufficient materials in native languages	2
6.	Lack of quality seedstock (cultured and traditional species)	6
7.	Lack of suitable production systems (green water, recirculation)	3
8.	Lack of quantity of native seedstock	Merge w/ #13
9.	Lack of funds for initial investments	1
10.	Lack of information on “real” environmental impacts and technique to reduce impacts (positive and negative)	4
11.	Lack of production and enterprise budgets	5
12.	Lack of financial skills	
13.	Lack of information on domestication of native species and use in polyculture	10
14.	Lack of validation of source of fish (wild vs. domestic)	1
15.	Lack of data regarding water quality (cost, availability, use, security rights, carrying capacity, effluents, processing, wastes)	13
16.	Lack of information for siting and facility design (watershed)	3
17.	Lack of understanding of developing country knowledge systems	1
18.	Lack of understanding of globalization and international transfers of genetic materials and international markets.	2
19.	Insufficient knowledge of alternative and local feed input	4

	systems	
20.	Failure to apply IPM biosecurity principals	1
21.	Lack of knowledge regarding low cost technique, materials, & tanks	
22.	Lack of technical assistance	1
23.	Lack of organization among producers	1
24.	Need for feeds and species that thrive with plant proteins - maximize plant proteins (environmental impact)	4
25.	Lack of controls on sanitation and epidemiology monitoring and labeling	Covered elsewhere
26.	Lack of information on fish pathogen transfers between native and cultured	1
27.	Lack of establishment of quality assurance program (monitoring, labeling, certification, HACCP, green, etc.)	1
28.	Lack of legislative controls	
29.	Problems with public perception of aquaculture	1
30.	Lack of understanding of local domestic markets	3
31.	Incomplete knowledge of the aquaculture sector	Merge w/ #2
32.	Lack of control over predators	3
33.	Lack of value added alternative products	2
34.	Lack of understanding of impacts on household security and family dynamics	1
35.	Lack of information on economic impacts	2
36.	Failure to apply proper genetic principals in breeding programs	2
37.	Need for processing and distribution information and technologies	2

Thirteen top constraints were identified as a result of the above constraints prioritization exercise. Working in small groups, the 13 constraints were fine-tuned and then listed on the flip charts. The group reviewed and edited the 13 constraints and added two more (#14 and #15) to this list for a total of 15 constraints. Below is the list of prioritized constraints in constraint language.

PRIORITIZED CONSTRAINTS IN CONSTRAINTS LANGUAGE		
NUMBER	CONSTRAINT	WEIGHT
1.	Insufficient information on water and its use in aquaculture <ul style="list-style-type: none"> • Cost of water • Availability of water • Competing uses • Resource use conflicts • Water rights • Hydrographic budgets • Effluents and treatment • Carrying capacity • Water reuse 	Was #15

2.	<p>Insufficient information on biology, production, and marketing of native species in aquaculture</p> <ul style="list-style-type: none"> • Domestication and culture • Polyculture • Restocking • Validation 	Was #13
3.	<p>Lack of strategic planning to promote and enhance sustainable development in and for the aquaculture sector</p> <ul style="list-style-type: none"> • Characterization of existing sector • Policy development • Identification of responsible parties • Analysis of existing plans 	Was #2
4.	<p>Inadequate availability and quality of seedstock</p> <ul style="list-style-type: none"> • Characterize existing supply chains and current industry demand • Identify alternative on-farm production strategies for traditional and alternative species • Identify appropriate methodologies for practical genetic improvement • Characterize performance characteristics of available strains 	Was #6
5.	<p>Lack of organized extension and technology transfer programs and educational materials</p> <ul style="list-style-type: none"> • Insufficient materials in native languages (paper or electronic) • Equipment, computer • Trainers • Terms of training needs • Methodology of training • Follow-up training and evaluation • On-farm demonstrations / research verification • Participatory research 	Was #4
6.	<p>Lack of information on cost, price, and risk relationships in aquaculture production</p> <ul style="list-style-type: none"> • Enterprise budget development • Pro forma business and loan proposal development • Impacts of interest rate and inflation levels • Farm business analysis, management, and planning 	Was #11
7.	<p>Lack of information on the real (positive and negative) environmental impacts of aquaculture and the development of aquaculture practices that minimize the negative impacts</p>	Was #10
8.	<p>Lack of information and adoption of technologies (soft and</p>	Was #24

	<p>hard) to reduce the use of animal proteins in feeds</p> <ul style="list-style-type: none"> • Use of vegetable proteins • Low-protein feeds • Culture of attractive species that thrive on feeds with low animal protein content • Semi-intensive culture (non-animal-fed systems) • Efficiency of food use in systems (FCR), sustainability • Feed additives and medicines 	
9.	<p>Insufficient knowledge and awareness of alternative and local feed input systems, to include:</p> <ul style="list-style-type: none"> • Nutritional characterization of local plant and animal products for feed ingredients • Seasonal availability of ingredients • Quantity available for harvest • Marketing channels for buying and selling local feeds • Spin-off enterprise development • Local ingredients than increase palatability (attractants) 	Was #19
10.	<p>Lack of suitable alternative production systems for resource-limited areas</p> <ul style="list-style-type: none"> • Systems design, construction, and management • Species • Input requirements • Outputs • Economics 	Was #7
11.	<p>Lack of information needed for site selection (watershed characterization) and system design</p> <ul style="list-style-type: none"> • Environmental • Social • Economic 	Was #16
12.	<p>Lack of effective methods to control predators and poachers</p> <ul style="list-style-type: none"> • Biological control • Mechanical controls (nets, cameras, guards) • Chemical • Impacts, environment, biodiversity • Cost-efficiency • Legality • Environmental 	Was #32
13.	<p>Lack of information on domestic market relationships for aquaculture products</p> <ul style="list-style-type: none"> • Aquaculture product demand • Aquaculture product supply • Market channels and margins • Processing and distribution • Price analysis for aquaculture products 	Was #30

	<ul style="list-style-type: none"> • New product marketing • Product acceptance • Post-harvest management 	
14.	Lack of information on the real (positive and negative) social impacts of aquaculture <ul style="list-style-type: none"> • Public perceptions of aquaculture • Household security • Family / community dynamics • Institutions 	New
15.	Lack of understanding of environmentally appropriate fish health strategies <ul style="list-style-type: none"> • Biosecurity (small farmers, consumers) • Therapeutants 	New

DISCUSS RESEARCHABLE PRIORITIES ARISING FROM CONSTRAINTS AND DEVELOP LIST OF RESEARCHABLE PRIORITIES

The next group exercise involved identifying research topics for each of the 15 constraints. Panel members broke out into three groups. They were given 4 to 5 constraints to discuss and then list researchable topics on each constraint. Results were recorded on the flip chart pages and then displayed the page above the constraint. The group as a whole then reviewed / edited / added to the researchable topic lists.

RANK RESEARCHABLE PRIORITIES

Panel members were given 5 dots to mark which researchable priorities had the most importance or weight. Five minutes was allowed for this exercise. The following table contains the final list of researchable priorities.

RESEARCHABLE QUESTIONS		
NUMBER	RESEARCHABLE PRIORITY	WEIGHT (DOTS)
1.	Insufficient information on water and its use in aquaculture <ul style="list-style-type: none"> • Characterization of effluents • Impact of discharge on receiving waters • System / facility carrying capacity • Technologies for reuse • Methods to improve water quality • Hydrological budgets for production systems • Resource conflicts • Institutional constraints on aquaculture development • Develop methods to reduce water consumption 	7 (Was #1 constraint)

2.	<p>Insufficient information on biology, production, and marketing of native species in aquaculture</p> <ul style="list-style-type: none"> • Trophic interactions among native species • Trophic interactions among cultured species • Develop methods to trace market fish to culture or natural origin • Genetic characterization of native species • Identifying species with market potential and market niches • Develop seed production techniques for native species • Develop broodstock for native species • Develop diets for native species • Develop culture methods for native species • Seed distribution centers 	6 (Was #2 constraint)
3.	<p>Lack of information on cost, price, and risk relationships in aquaculture production</p> <ul style="list-style-type: none"> • Develop template-based enterprise budgets for existing and emerging species and systems • Develop template-based pro forma financial statements for existing and emerging species and systems • Combine budgets and financial statements into sample business plans and proposals including investment models • Develop computer-based record keeping, simulations and management analysis models for important species and systems. • Analyze various alternative management strategies to maximize profits. • Analyze inputs of varying interest rates, inflation, and other indicators of income and financial risks • Develop and evaluate simple record keeping systems 	6 (Was #6 constraint)
4.	<p>Lack of organized extension and technology transfer programs and educational materials.</p> <ul style="list-style-type: none"> • Evaluate the utility of elementary and high school training in aquaculture • Develop materials in native language • Develop training follow-up program • Evaluate training methods • Conduct on-farm research and demonstration and research verification • Improve accessibility of information (electronic and paper) Include information in native language and from international sources. • Producing training modules. 	5 (Was #5 constraint)

5.	<p>Lack of strategic planning to promote and enhance sustainable development in and for the aquaculture sector.</p> <ul style="list-style-type: none"> • Identify existing plans with in the region <ul style="list-style-type: none"> • Compare and contrast • Identify strengths and weaknesses based on methodology • Develop a generic framework to facilitate plan development in the region • Develop guidelines for national coordinating committees and activities (producer-driven) • Develop guidelines for implementation committees and activities • Develop methodology and guidelines for characterization of existing sectors <ul style="list-style-type: none"> • Primary sources – inventory • Secondary sources – government, suppliers, buyers 	5 (Was #3 constraint)
6.	<p>Lack of information on the real (positive and negative) environmental impacts of aquaculture and the development of aquaculture practices that minimize the negative impacts</p> <ul style="list-style-type: none"> • Water quality assessment of aquaculture systems (cages, raceways, etc.) • Biodiversity impacts of aquaculture • Technologies to reduce negative impacts of aquaculture • Use of lands otherwise unsuitable for agriculture • Develop methods to diversify and improve agricultural systems • Develop methods to use of farm-raised broodstock to augment wild populations • Analysis and development of green-gold technologies. 	5 (Was #7 constraint)
7.	<p>Inadequate availability and quality of seedstock</p> <ul style="list-style-type: none"> • Identify alternative on-farm production strategies for traditional and alternative species • Identify appropriate methodologies for practical genetic improvement • Characterize performance characteristics of available strains • Characterize existing supply chains and current industry demand • Develop new methods of identifying and marking strains 	4 (Was #4 constraint)

8.	<p>Lack of information on the real (positive and negative) social impacts of aquaculture</p> <ul style="list-style-type: none"> • Determine public understanding and acceptance of aquaculture products and practices • Examine changes in community (producer and consumer) and family dynamics resulting from aquacultural development • Develop nutritional and dietary interventions at the critical human life stages • Measure income and food security impacts resulting from fish farming • Describe the role of the household - women and children - in aquacultural production and marketing • Assess organizational capacity to support aquacultural development (NGOs and government) • Facilitate collaboration among producers to secure services 	4 (Was #14 constraint)
9.	<p>Insufficient knowledge and awareness of alternative and local feed input systems, to include:</p> <ul style="list-style-type: none"> • Identify current utilization of local plants and animal products • Analysis of the effect of those ingredients on fish growth and water quality • Determine cost and feasibility of use • Assess the seasonal and quantity availability • Assess the potential to develop subsidiary industries and business 	3 (Was #9 constraint)
10.	<p>Lack of information and adoption of technologies (soft and hard) to reduce the use of animal proteins in feeds</p> <ul style="list-style-type: none"> • Determine protein requirements of culture and new (native) species • Develop diets that maximize plant protein and minimize animal protein • Develop feeding practices to improve FCR and reduce waste • Develop more palatable and digestible diets through use of attractants, pelleting methods, etc. 	1 (Was #8 constraint)
11.	<p>Lack of suitable alternative production systems for resource-limited areas</p> <ul style="list-style-type: none"> • System design, construction, and management • Species growth and reproductive characteristics • Research on cost-effectiveness of alternative systems • Environmental, social, and community impacts of alternative production systems 	1 (Was #10 constraint)

12.	<p>Lack of information needed for site selection (watershed characterization) and system design</p> <ul style="list-style-type: none"> • Develop criteria for facility siting, including: <ul style="list-style-type: none"> • topography • slope • soil • water sources • accessibility • security • market proximity • environmental impact (discharges) • work force availability • Develop a method (check-list) for site selection that can be used at the farm level 	1 (Was #11 constraint)
13.	<p>Lack of information on domestic market relationships for aquaculture products</p> <ul style="list-style-type: none"> • Research on aquacultural product supply and demand • Market channels • Processing and distribution • Price analysis for aquacultural products • New product market acceptance and market potential • Post-harvest management • Seasonal variations in supply and demand in relation to production strategies 	1 (Was #13 constraint)
14.	<p>Lack of understanding of environmentally appropriate fish health strategies</p> <ul style="list-style-type: none"> • Evaluate efficacy of various therapeutants in promoting fish health • Assess health problems and prevention practices currently in use • Compare effectiveness of various biosecurity practices currently in use by industry • Evaluate potential environmental impacts of various biosecurity practices and therapeutant use • Evaluate effect of identified practices on worker safety 	1 (Was #15 constraint)
15.	<p>Lack of effective methods to control predators and poachers</p> <ul style="list-style-type: none"> • Identify biological, mechanical, and chemical methods for control of predation by animals • Evaluate cost effectiveness of various control methods • Evaluate potential environmental impacts and legal implications of control methods • Identify and evaluate alternative methods to discourage theft 	0 (Was #12 constraint)

CLOSING COMMENTS

Jim Diana asked panel members to share their thoughts and offer suggestions about the meeting and meeting process. Comments are as follows:

- Adequate time was spent on identifying constraints and this allowed for easy identification of researchable priorities
- Important to have a very well-balanced mix of representation (disciplines)
- Group size is appropriate
- Group was selected using three general discipline areas (Biology / Zoology, Engineering / Information Sciences, Social / Economic Sciences)
- Special effort made to get representation from South American and Caribbean because stakeholder meeting was in Central America
- Need to have both stakeholder and expert panel meeting?

Egna thanked panel members for their good work. Egna announced that an RFP for Work Plan 11 (2-year workplan) would be issued in Fall 2002.

Meeting ended at 3:30 p.m.

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LATIN AMERICA AND THE CARIBBEAN AQUACULTURE EXPERT PANEL MEETING
SAN DIEGO, CALIFORNIA**

Double Tree Club Hotel San Diego
(formerly Regency Plaza Hotel)
Friday, 1 February 2002

8:00 AM	REGISTRATION
8:00 ~ 8:30 AM	OPENING COMMENTS Moderators ~ Hillary Egna and Jim Diana <ul style="list-style-type: none">• Preamble• Introductions• Ground Rules
8:30 ~ 10:00 AM	DEVELOP LIST OF CONSTRAINTS Incorporate stakeholder constraints, constraints brought out in literature, and expert knowledge of constraints
10:00 ~ 10:30 AM	PRIORITIZE LIST OF CONSTRAINTS
10:30 ~ 10:50 AM	COFFEE BREAK
10:50 ~ 12:00 PM	DISCUSS RESEARCHABLE PRIORITIES ARISING FROM CONSTRAINTS
12:00 ~ 1:00 PM	WORKING LUNCH ~ LUNCH WILL BE PROVIDED
1:00 ~ 2:00 PM	ENTIRE GROUP DISCUSSES AND DEVELOPS LIST OF RESEARCHABLE PRIORITIES
2:00 ~ 3:00 PM	RANK RESEARCHABLE PRIORITIES
3:00 ~ 3:30 PM	CLOSING COMMENTS Moderators ~ Hillary Egna and Jim Diana

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Latin American and the Caribbean Region Expert Panel Meeting
1 February 2002

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