WORKSHOP ON AQUACULTURE, HUMAN HEALTH, AND ENVIRONMENT

Mitigating Negative Environmental Impacts/ Activity/ 07MNE07UM

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ABSTRACT

The AquaFish CRSP Workshop on Aquaculture, Human Health, and Environment was held in Shanghai, China from 7-10 July 2009. The workshop was attended by at least 28 people, including faculty, students, and staff from all Asian host country universities, as well as staff from the World Wildlife Fund. Professors Liu Liping and Min Jiang made the arrangements for hosting by Shanghai Ocean University. The workshop served as a wonderful venue for members of the AquaFish CRSP team to review their progress, discuss future plans, and consider the relationship between their research program and needs within their countries.

The first day of the workshop presented an opportunity for each project to summarize their results to date. Altogether, 11 presentations were made on the results of research conducted by CRSP institutions. There was a lot of discussion among CRSP participants about the kind of research being done in some countries and the kind that should move forward in other countries, as a result of the exchange of information and studies being conducted across the region.

The second day of the workshop focused on interaction among participants regarding the major issues related to aquaculture that should be a focus for our research programs in the CRSP. The first step of this process was for each individual to list three issues they felt were important. Upon review of this list, we summarized the issues by various areas of work and combined similar areas into the overall list of research priorities. The priorities fell into four categories: aquaculture practices, fisheries, mitigating environmental impacts, and socio-economics. After compression of the topics, a total of 26 different areas of research were listed under these four categories. Each person was then given the opportunity to vote on two research priorities. Highest priority was given to studies on water quality and effluents, followed by microcystins, and a three-way tie for third place—sediment management, species introductions and impacts on indigenous species, and the quality of seed in hatchery management. These research priorities will be used to consider cross-region proposals in the next round of RFPs for AquaFish CRSP research.

Workshop on Aquaculture, Human Health, and Environment

The AquaFish CRSP Workshop on Aquaculture, Human Health, and Environment was held in Shanghai, China from 7-10 July 2009. The workshop was attended by at least 28 people, including faculty, students, and staff from all Asian host country universities, as well as staff from the World Wildlife Fund. A list of attendees is in Table 1. Unfortunately, we did not have a full accounting of the students present, although some students are on the list. The atmosphere of the workshop was saddened by the deteriorating health condition of its creator,

Professor Yang Yi, who could not attend the workshop; his health was constantly on our minds. Professors Liu Liping and Min Jiang substituted for Yang Yi and made the arrangements for hosting by Shanghai Ocean University. The workshop served as a wonderful venue for members of the AquaFish CRSP team to review their progress, discuss future plans, and consider the relationship between their research program and needs within their countries.

The first day of the workshop presented an opportunity for each project to summarize their results to date. Altogether, 11 presentations were made on the results of research conducted by CRSP institutions. The quality of these presentations was a clear indication of the high quality of faculty, staff, and students working on the CRSP, as well as the research questions in which they are engaged. The agenda is in Table 2, and the enclosed CD includes files of all of the Power Point presentations given at the workshop. There was a lot of discussion among CRSP participants about the kind of research being done in some countries and the kind that should move forward in other countries, as a result of the exchange of information and studies being conducted across the region.

The second day of the workshop focused on interaction among participants regarding the major issues related to aquaculture that should be a focus for our research programs in the CRSP. This section was facilitated by Jim Diana. The first step of this process was for each individual to list three issues they felt were important and submit them to Jim. Upon review of this list, we summarized the issues by various areas of work and combined similar areas into the overall list of research priorities. The priorities fell into four categories: aquaculture practices, fisheries, mitigating environmental impacts, and socio-economics. After compression of the topics, a total of 26 different areas of research were listed under these four categories.

The next step in research prioritization was for each individual to vote on what they considered the top areas for future research. Each person was given the opportunity to vote on two research priorities. The 26 aquaculture practices and their eventual vote totals are shown in Table 3. Highest priority was given to studies on water quality and effluents, followed by microcystins, and a three-way tie for third place—sediment management, species introductions and impacts on indigenous species, and the quality of seed in hatchery management. These research priorities will be used to consider cross-region proposals in the next round of RFPs for AquaFish CRSP research. Already, participants from different countries have agreed to sample algal material from their ponds and lakes and provide them for the studies on microcystins. Such cooperation will be an important component of integrating the CRSP across the regions of Asia.

Upon completion of the prioritization of research goals, the workshop became more of a social venue. Participants went on tours of Shanghai, including interaction at Shanghai Ocean University with the president of the university and several faculty members.

On termination of the workshop, several CRSP members traveled to Chengdu to visit Professor Yang Yi. While he was quite ill, we were able to speak with him for some period of time and to inform him of the results of the workshop, as well as plans for our proposal. These had been serious issues on Yang Yi's mind, and it was heartening to see him engaged in this area and interested in its outcome. Unfortunately, he passed from this world two weeks after termination of the workshop. While he is no longer with us, he clearly has a spiritual significance to all members of the Asian community of the AquaFish CRSP.

Table 1. CRSP attendees at the workshop on health and human nutrition, 8-9 July 2009.

Name	Nationality	Gender	Email Address
James S. Diana	USA	Male	jimd@umich.edu
Madhav Shrestha	Nepal	Male	madhavshrestha1954@gmail.com
Kamala Gharti Chhetri	Nepal	Female	
Kishore Kumar Upadhyaya	Nepal	Male	
Ngugen Phu Hoa	Vietnam	Female	phuhoa0203@yahoo.com
Vu Cam Luong	Vietnam	Male	vcluong@gmail.com
Lai Qiuming	China	Male	lqming815@163.com
Li Jinliang	China	Male	
Zhou Ling	China	Female	
Wang Weimin	China	Male	wangwm@mail.hzau.edu.cn
Gao Xexia	China	Female	
Zhou Xiaoyun	China	Female	
Yang Li	China	Male	
Jiang Min	China	Female	mjiang@shou.edu.cn
Liu Liping	China	Male	patrick-liu@163.com
Zhang Wenbo	China	Female	
Tuong Phi Lai (WWF)	Vietnam	Male	

Table 2. Meeting agenda.

July 7	18:00	Dinner, overnight at Howard Johnson Hotel located at 555 South Xinyuan Road.
July 8	08:30-9:00	Orientation and introduction of the workshop by Prof. James S. Diana Attendee's self introduction
	09:00-09:30	Group photo
	09:30-10:00	James S. Diana: Life cycle analysis of shrimp farming
	10:00-10:30	Madhav Shrestha: Polyculture of Sahar (*Tor putitora*) and tilapia (*Oreochromis niloticus*): part 1
	10:30-10:50	Coffee break
	10:50-11:20	Kamala Gharti Chhetri: Polyculture of Sahar (*Tor putitora*) and tilapia (*Oreochromis niloticus*): part 2
	11:20-11:50	Nguyen Phu Hoa: The impact of introduction tilapia on the fisheries and biodiversity of indigenous species in Tri An Reservoir of Vietnam: part I
	12:00-13:30	Tuong Phi Lai: The Aquaculture Dialogue on *Pangasius* in Vietnam
	12:30-13:30	Lunch
	13:30-14:00	Vu Cam Luong: The impact of introduction tilapia on the fisheries and biodiversity of indigenous species in Tri An Reservoir of Vietnam: part II
	14:00-14:30	Lai Qiuming: The situation of shrimp culture in Hainan
	14:30-15:00	Gao Zexia: Effectiveness assessment of current waste management practices for intensive freshwater pond aquaculture in Hubei province, China
	15:00-15:30	Coffee break
	15:30-16:00	Li Yang: Impact of introduction of alien species on the fisheries and biodiversity of indigenous species in Zhanghe Reservoir of China
	16:00-16:30	Jiang Min: Study on water quality in indoor intensive shrimp culturing
	16:30-17:00	Liu Liping: Toxic effect of the *Microcystis aeruginosa* on the red swamp crayfish *Procambarus clarkia* and the water flea *Daphnia magna*
July 9	08:30-10:00	Jim Diana: Discussion of major issues affecting aquaculture in the region
	10:00-10:30	Coffee break
	10:30-12:00	Jim Diana: Condensing the list of major issues and determining priorities
	12:00-13:00	Lunch
	14:00	Visit to Shanghai Ocean University, the East Sea Bridge, and Dishui Lake
	18:00	Dinner

Table 3. Summary of votes received and overall ranking for research priorities identified at the workshop.

	Overall Ranking	No. of Votes
Aquaculture practices		
Quality of seed and hatchery management	3	4
Microcystins mechanistic effects on farmed fish and advice to fish farmers	5	2
Deep water cage culture	6	1
Indigenous fish culture	6	1
Fish use in feeds and replacement of fish protein	6	1
Integration of fish with livestock for small-scale farmers	6	1
Disease in culture		0
Chemical use in aquaculture		0
Management of rice fish culture		0
Fisheries		
Species introductions and impacts on indigenous species	3	4
Stocking for fishery management and conservation	4	3
Understanding food webs		0
Community management of river fisheries		0
Mitigating environmental impacts		
Water quality and effluents	1	9
Microcystins	2	5
Sediment management in shrimp culture	3	4
Pond effluents as fertilizer for rice fields	5	2
Environmental carrying capacity	5	2
Environmental impacts on genetic diversity	6	1
Role of aquatic animals in eutrophication control	6	1
Climate change and aquaculture	6	1
Dams and fish passage		0
Socioeconomics		
Certification and best management practices	6	1
Food safety		0
Aquaculture supply chains		0
Role of aquaculture by small farmers in human nutrition		0