



TRADITIONAL USE AND AVAILABILITY OF AQUATIC BIODIVERSITY IN RICE-BASED ECOSYSTEMS

**Report of a Workshop
held in
Xishuangbanna, Yunnan, P.R. China
21 - 23 October 2002**

**Inland Water Resources and Aquaculture Service
FAO, Rome
January 2003**

**Supported by the FAO-Netherlands Partnership Programme "Awareness of Agricultural Biodiversity"
through the FAO Interdepartmental Working Group on Biodiversity**



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This document is the report of the Asia regional workshop on “Traditional use and availability of aquatic biodiversity in rice-based ecosystems” jointly organized by the Food and Agriculture Organization of the United Nations (FAO) and the Network of Aquaculture Centres in Asia-Pacific (NACA) and hosted by the Agriculture Department of Yunnan Province in Xishuangbanna, P.R. China on 21-23 October 2003.

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The Workshop

Objectives

The Workshop was held in Xishuangbanna, Yunnan, P.R. China from 21-23 October 2002 with the following objectives:

- To facilitate communication and information exchange on the approach, findings, status, and lessons learnt of case studies in participating countries Cambodia, China, Laos, and Viet Nam
- To discuss a joint strategy for documentation and dissemination of outputs and options for learning about and communicating the outcome, and
- To discuss future activities including possible continuation and/or expansion of case studies in the next two years

Organizers and sponsors

The Workshop was jointly organized by the Food and Agriculture Organization of the United Nations (FAO) and the Network of Aquaculture Centres in Asia-Pacific (NACA) and hosted by the Agriculture Department of Yunnan Province. Support was provided to a number of participants by the FAO-Netherlands Partnership Programme (FNPP) through the FAO Interdepartmental Working Group on Biodiversity (see <http://www.fao.org/biodiversity>).

Participation

A total of 28 participants from 4 countries attended the workshop. The list of participants is given as Annex 1.

Session I. Status reports - aquatic biodiversity in rice-based ecosystems

Moderator:

Matthias Halwart

China

The first presentation was given by Mr Aidong Luo (Roger). Based on a 3 months' field study on the living aquatic resource availability and use pattern of the rice field ecosystem at 18 sites among 10 ethnic communities in Xishuangbanna, Yunnan province, in the Southwest of P.R. of China, more than 500 farmers' catches were screened for species representation. The largest category recorded were the fishes numbering a total of 60 utilized species, most of which were Cyprinidae (35 species). Other species found belong to Cichlidae (12 species), 3 species Oryzatiidae and 3 species of Sisoridae, 2 species of Anabantidae, 2 species of Channidae, 1 Homalopteridae (*Balitora Brucei*), 1 Symbranchidae (*Monopterus albus*) and 1 Tetraodontidae (*Tetraodon leiurus* Bleeker). Among those species, Nemacheilinae and Symbranchidae (Paddy eel) are favored by most local people, followed by Barbinae species and Danioninae.



There are also 20 species of traditionally utilized plant species which grow in rice-based ecosystems. For most recorded species, their microhabitats, the traditional collecting means, the gender of the collectors, the preference for and the special utilization of some species were described. Increased resource use and degradation due to agricultural intensification were identified among the most pressing problems.

Laos

The study was presented by Mr. Xaypladeth Choulamany of LARReC. The study and data collection on living aquatic animals and plants was conducted at the end of the dry / beginning of the wet season (from mid of May until the end of June 2002) in two of the northern upland provinces of Lao PDR, adjacent to the Vietnamese border. Xiengkhouang and Houaphanh Provinces are classified as mountainous and generally rich in aquatic resources. There are few floodplain areas but rice fields are habitat for fish and aquatic animals that are largely exploited. On sloping lands swidden, upland rice-based agriculture is typical, although in valleys, wet rice paddy is practised either in rainfed or irrigated paddies. In some suitable areas farmers will plant lowland rice, fruit trees, raise livestock (cattle, pigs and poultry) and practice aquaculture. If not located on a riverbank most of the villages will be situated not far from a river or a stream.

The study was carried out in 3 villages with good participation from the villagers. One of their motivations in participating actively in the study was because no study of this kind has ever been made in this part of Lao PDR until now. The local authorities gave strong support for coordinating field activities and making arrangements with the village authorities as well as villagers. The survey can be summarized as follows:

- 23 species of fish were recorded in rice fields of Xiengkhouang and Houaphanh provinces, out of which 17 have been caught and photographed during the survey.
- 14 types of fishing gears have been identified, out of which ten are commonly used.
- 10 species of amphibian have been recorded, out of which ten have been found in the rice field and photographed.
- 7 species of reptiles have been found in rice field.
- 5 types of crustaceans and 8 species of molluscs have been recorded and used for human consumption but as well as for feeding animals.
- 16 species of insects are found in the rice field and a total of 16 species of aquatic plants have been identified in the studied area.



Fish play the most important role in the livelihood of the villages surveyed. It is the main source of animal protein. Most of the fishes caught in the three villages are for consumption. Fishing is dominant in the wet season from May to December, while in the dry season fishing is not practiced periodically. Initial results from the survey show that there are 23 fish species out of which 17 were caught in the rice field. Ten of these species are among the most frequently caught. Five species are more difficult to catch. Six fish species can breed in the rice field. Most of the villagers will be consuming fresh fish, but if there is surplus fish will be processed as dried fish or fermented fish enabling longer preservation which in turn facilitates the sale on the village market or in the barter system.

Viet Nam

The study from Viet Nam was presented by Mr. Eric Meusch. The main objective of the study which was conducted under the umbrella of the UNDP “Aquaculture Development in the Northern Upland Project” was to compile detailed information about aquatic organisms being utilized from rice-based production systems in mountainous areas of northern Viet Nam. It was explained that the widely used term “rice-fish” refers to aquatic resources management in rice-based production systems which covers both capture and culture of aquatic organisms



and includes rice fields and other adjacent water bodies such as pond and ditches. Project sites Tuan Giao District, Lai Chao Province and Mai Chau District, Hoa Binh Province were selected. Various participatory activities were conducted and information on a total of 74 aquatic species was obtained through a variety of means (farmers’ own catch, collection from markets, interviews). Species composition included fishes (42 species), plants (10) and other aquatic organisms (22) which could further be grouped into

crustaceans (3), mollusks (7) amphibians and reptiles (6) and insects (4). Plants serve various purposes for human consumption, as livestock feed, spices, green fertilizer, and medicine. The species directly observed were collected as specimens, photographed, and stored at the Research Institute for Aquaculture No. 1. In general there is a lot of variation with regard to both availability of and preference for certain species. They are caught with different kinds of nets (6) and traps (4) as well as other capture methods (6). An initial database has been developed which compiles all the information but the species information on all but fishes and plants needs to be verified by taxonomists.

Cambodia

The Cambodian study in Kampong Thom Province was introduced by Ms T. Balzer. This is the first published case study of the series *Traditional Use and Availability of Aquatic Biodiversity in Rice-based Ecosystems*. Ms Balzer described the Great Lake, Tonle Sap, ecosystem and ricefield fisheries in Cambodia, and then explained the scope and the methods used in this study which was conducted from September to December 2001 in eight villages within 3 districts of Kampong Thom province. A three-step sequence of Participatory Rural Appraisal, sample collection from farmers’ own catch and interviews was followed. In the PRA village meetings, people were requested to enumerate the aquatic organisms available in their rice fields and to describe their uses. A reference list of organisms for the future collection was the result which also served as an introduction to the communities. In a second step - the daily collection - the researchers every day visited the places where the villagers catch fish in the rice fields. Every new species encountered was photographed and listed. Examples of the more than 100 utilized aquatic species (fishes, reptiles, amphibians, crustaceans, molluscs, insects, and plants) collected in rice fields and used daily by rural households were presented. In conversations with the people the researchers learned local information about the species. In a third step, towards the end of the fishing season, the researchers were conducting group interviews with the villagers of the eight target villages. In these interviews the previously collected information was checked for consistency using the photographs as reference material. In the report, these findings are linked to information on collection tools, methods, uses, and traditional knowledge. Measures threatening aquatic organisms, particularly the clearing of flooded forests and destructive fishing tools, are highlighted and promising approaches for the sustainable management and use of this rich

aquatic biodiversity outlined. The presentation concluded with two key messages addressed to the researchers themselves: ‘Hear what people say – make them talk to you’ and ‘Have fun’! The CD ROM is available from the FAO Inland Water Resources and Aquaculture Service and can also be accessed via the Internet ([http://www.ecoport.org/EP.exe\\$PassCheckStart?ID=E131](http://www.ecoport.org/EP.exe$PassCheckStart?ID=E131)).

Session II. Approaches used, problems encountered, solutions proposed

Moderators:

Matthias Halwart

Peter Balzer

Aidong Luo

Session II started with a brainstorming exercise among the participants to identify organizations, whether represented or not at this Workshop, that work on aquatic biodiversity in rice-based ecosystems in Asia and its role for food security and poverty alleviation. Next, the group focussed on the problems that were encountered and the solutions and the lessons that were learned in the course of their work. A presentation by Mr. Balzer on “How to take photos of aquatic organisms’ provided guidance on the professional photo documentation of aquatic species (slide show available in Ecoport at [http://www.ecoport.org/EP.exe\\$PassCheckStart?ID=S122](http://www.ecoport.org/EP.exe$PassCheckStart?ID=S122)). This was followed by a presentation on ‘The documentation and dissemination of findings’ by Mr. Halwart (available in Ecoport at [http://www.ecoport.org/EP.exe\\$PassCheckStart?ID=S121](http://www.ecoport.org/EP.exe$PassCheckStart?ID=S121)) which led the way into the group discussion on this subject.

Organizations involved in aquatic biodiversity/rice ecosystem research and extension work

REGIONAL

- MRC - CAM LAO capture fisheries data and species identification, fish migration assessment project, reservoir fisheries project, aquaculture of indigenous Mekong species
- DFID Self recruiting Species Project in Vietnam Cambodia - life cycle and importance in livelihoods of fish species that recruit in farmer-managed systems
- AIT AARM Outreach CAM, LAO, VIE - building capacity and developing methodologies to approach aquatic resources in relation to rural livelihoods in different types of culture and capture systems

CAMBODIA

- FAO - Siam Reap - Natural Resource Management
- WCS CAM - Wetland biodiversity
- ICLARM Cambodia - wetland project - economic valuation of aquatic resources
- Community Aid Abroad (CAA) Stueng Treng - community based management systems in rice
- Botanic Research Institute Meng Lun - Mekong River Biodiversity Conservation and Development Project
- Royal University of Agriculture/Preak Leap Agricultural College - research on walking catfish and elephant fish
- ACIAR CAM - increasing productivity and reducing risk of aquatic biodiversity in rice-based ecosystem

- Community Development Fund CDF AusAid funded CAM - conduct research on catfish in lowland rainfed rice

LAO PDR

- University of Queensland working in Savannakhet - study of aquatic biodiversity
- ICLARM/DFID Lao - understanding livelihood dependent on fisheries
- GEF/UNDP/IUCN Wetland Conservation and Sustainable use in Attapeu Province
- Wildlife Conservation Society Lao - Herpetology training in Thailand
- Imperial College Lao - Impact of irrigation on aquatic animals
- University of Hull (Sweden?) - aquatic plants in water channels of Vientiane

P.R. CHINA

- Jinghong Municipal Fisheries Research Institute - Rice-fish culture research and extension and fish seed production for farming in paddies
- Yunnan Provincial Fisheries Research Institute - Research Project on rice-fish farming
- Yunnan University - species identification and ecology
- Kunming Institute of Botany - water plants
- Kunming Institute of Zoology - China study

VIET NAM

- Research Institutes for Aquaculture 1, 2, 3 - general work for promoting ricefield fisheries and increasing production
- Cantho University - farming systems approach
- Ho Chi Minh Agriculture and Forestry University -
- Institute of Agricultural Genetics/Institute of Ecology (Hanoi) - ecological functions of aquatic macrophytes, water treatment, water quality etc.
- Hanoi University, Dept of Botany - Aquatic plant identification, museum, plant biodiversity and uses (medicinal purposes and food)
- Ministry of Fisheries - Documentation of fish (database, poster, picture book) of economic fish species

Problems, solutions, lessons learnt

The problems identified during the course of work were all first listed by the participants. Similar problems were then grouped and each participant identified the solution(s) he or she had found for a particular problem complex at their respective sites.

<i>Problems/constraints</i>	<i>Solutions</i>
1. <i>Time constraints</i> - field work - species identification - seasonality, short sampling period	- Longer duration - Regular replication over the course of year
2. <i>Geographic problems</i> very localized results	- Select different locations in different ecological conditions
3. <i>Lack of information on indigenous knowledge</i>	- Do a literature survey on documented traditional knowledge
4. <i>Lack of knowledge on the impact of introduced species</i>	- Follow established procedures and protocols and negotiated agreements/Environmental

	Impact Assessment
5. <i>Species identification</i> - local name of species, classification - lack of local expertise in identification of species in Laos	- Help from known experts for interpretation - Create links with national institutes - Provide more training for researchers and extension workers
6. <i>Methodologies</i> - PRA - lack of quantitative information - assessment of nutritional contribution of fish to household diet	- Long duration, household surveys to better understand use - Refer to previous MRC & other studies (e.g. AIT, Keller) on baseline household surveys, catch, consumption & develop methodology
7. <i>Lack of money</i>	- Develop proposal for funding - Create dialogue with donors
8. <i>Lack of coordination among studies</i>	- Develop standard methodology & approach for specific study

Session III. Future steps: Where do we go from here?

Moderators:

Eric Meusch

Xaypladeth Choulamany

In this Session the priorities for current and potential future studies were discussed. Important questions included:

- *How can we ensure increased awareness in the countries?*
- *Should we include more sites to ensure replicability of results?*
- *Should we expand the scope of the studies?*
- *How can we learn about and document outcome?*

Participants were asked to list their priorities and define related activities. These were then sorted in three time frames (short term/by May 2003, medium term/by December 2004 and long term/after December 2004). The most important priority was to complete the current case studies for China, Laos, and Viet Nam where different components are still missing. A sequence of activities and responsibilities was agreed upon. A main conclusion identified by the participants was the immediate need for enhanced communication and sharing of knowledge and information.

It was recommended that the FAO Inland Water Resources and Aquaculture Service should facilitate this by establishing an electronic **Aquatic Biodiversity News Group** which enables study members to have a forum for exchange and learn from each other on a regular basis. Increased awareness in the countries was thought to best achieved by national workshops which bring together the various stakeholders. At these workshops, a prioritization of activities should take place and institutional arrangements for further studies and development efforts should be discussed and agreed upon. With regard to sites and replicability the group felt that a longer duration is needed for these studies in order to overcome various constraints e.g. the seasonality of species. An increase in the number of study sites would be important to cover a wider range of ecological conditions. This as well as the need to initiate new studies covering the nutritional contribution of aquatic biodiversity for rice farming households

should be subject of discussion at the national workshops. Another means of increasing awareness is the development of communication and extension materials at various levels including booklets, material for school kids, posters, videos and TV spots. Resources are needed for this and the national workshops should identify the sources for financing these activities.

<i>Time Frame</i>	<i>Priorities</i>	<i>Activities</i>
Short term 6 months (by May 2003)	- Complete current case studies	<ul style="list-style-type: none"> - Carry out field visit (only Laos) - Take some additional pictures (China, Laos, Viet Nam) - Search for documented traditional knowledge on aquatic biodiversity (China) - Finalize report (China, Laos, Viet Nam) - Send final report to FAO (China, Laos, Viet Nam) - Verification of taxonomic information (FAO to send to taxonomists) - Send report to guest editor (FAO) - Final editing (FAO) - Publication of report in the series (as CD), possibly with additional relevant information - putting the report into Ecoport
	- Raise awareness and prioritize activities about aquatic biodiversity issues at national level	<ul style="list-style-type: none"> - Plan workshops with budget estimate and list of participants - Hold national workshops in Cambodia, Laos, Viet Nam and provincial workshop in Yunnan, China - Identify institutional arrangements/national focal agency for implementation of prioritized activities - Prepare workshop reports
	- Create links with national and private institutions/organizations having required expertise	<ul style="list-style-type: none"> - Localize information and knowledge sources in different organizations e.g. universities, NGOs etc. - Invite professionals and resource managers to national workshops
	- Prepare an awareness raising video	- Film activities in the most advanced case study site in Cambodia
	- Improved information exchange	- Establish virtual aquatic biodiversity group with monthly newsletter (FAO) which provides an update of activities and serves

		as a communication tool to highlight and discuss specific problems
Medium term 18 months (by Dec. 2004)	- Develop a regional synthesis of findings	- Publish summary report in 4 languages (FAO) - Publicize widely via the Internet (Ecoport, STREAM website)
	- Allow for a longer duration of the studies and annual replications	- Refer to previous MRC studies and others as Keller, AIT etc. on baseline household surveys catch and consumption and develop a methodology - Link up with Universities for thesis work - Ensure regular sampling of organisms during one year - Decide on number and locations of studies - Identify researchers - Conduct research - Publish results
	- Increase number of study sites to cover role of utilized aquatic biodiversity in various ecosystems	- Select different locations in different ecological conditions
	- Initiate new studies	- Analyse available fish species and their importance for a balanced diet (e.g. regarding Vitamin A, essential fatty acids) - Conduct follow-up research on the more important consumed species in terms of nutritional value - Investigate possibilities to increase the availability of these species
	- Develop communication and extension material	- Develop and print booklets, material for extension workers/officers, handout materials for rural school kids, posters, videos and TV spots
Long term 18 months (after Dec. 2004)	- Create dialogue with donors	- Develop proposal to secure funding

Field Visit

Field Trip to Mengzhe Township, Menghai County, Xishuangbanna, Tuesday, 22 October 2002

Xishuangbanna, literally meaning twelve thousand plots of paddy field, is one of the rice bowls in Yunnan province and rice is the staple food for local peoples. There are 43,730 ha of rice field in Xishuangbanna. Integration of rice farming with fish, vegetables and aquatic plants of economic value is commonly practiced. In 2001, the area of rice-fish farming expanded to 6,400 ha in Xishuangbanna, producing a total of 2,272 mt of fish from paddy field. The average annual yield of fish from rice-fish farming was 335 kg/ha in 2001. Both co-existence rice-fish farming and rotational farming of rice and fish are practiced.

A one-day field trip was organized for workshop participants on Tuesday, 22 October 2002 to Mengzhe Township in Menghai County, about 2.5 hours from Jinghong City by road. The field trip had two major activities: 1) visit rice field based fish farming; and 2) visit a local village and have lunch in the village.

Mengzhe Township is located in a flat valley surrounded by hills with thick vegetations. The average holding size of paddy for a family of six (grand parents, parents and children) here is about one ha. Water for irrigation comes from the nearby hills and reservoirs by gravity. More than 600 ha of paddy field has been renovated to suit fish farming. The completed renovation includes merging smaller plots into large ones and excavating ditches and pitches as fish shelter, etc.



In Mengzhe Township, one crop of rice and two crops of fish are farmed in paddy field. Meanwhile, vegetables are grown on the dikes. The participants did not see rice growing in the field because harvest of rice was in Late September. According to the farmers and local officials, the first time stocking of fish was right after the rice plantation and the harvest of first batch also follows the rice harvest. Second time stocking of fish was done soon after the rice harvest. Fish harvest is selective based on size and the paddy will be drained to drive fish into their shelters to facilitate fish catching.

Species used includes silver carp, bighead, grass carp, common carp, etc. The minimum size of fingerlings for stocking is about 12 cm. In the pilot stage of rice-fish farming promoted by the local fisheries officers, fish fingerlings were provided by government for free to the selected demonstration families. Now farmers purchase their fingerlings from the fish hatcheries and nursery farms run by both government and private sector. The average fish stocking density is 200-225 kg/ha and the average fish yield is 1,600 kg/ha. Farmers with better skills and more careful management could reach 1,800 – 2,000 kg/ha. No commercial feed is supplied for fish, but refusals of vegetables grown on dikes and locally available farm by-products such as rice bran are used as supplementary feeds. Rice straw is placed in pile in

paddy field to allow natural decomposition as fertilizers to enhance the proliferation of planktons as natural food for filter-feeder fish. Use of chemical pesticides is forbidden in the entire area to avoid toxicity to fish. With such practice, farmers could also maintain an average yield of 7,500 kg/ha of rice.

For most farmers practicing rice-fish farming in Mengzhe Township, the fish produced is much more than sufficient for self consumption by their families. Villagers market their fish together with vegetables to the nearby towns and cities, and the market acceptance to the fish and vegetables is good because they are organically produced. There are some difficulties in marketing associated with the existing gravel and sand covered road system. Hopefully, marketing would be made easier with the new highway and road that are under construction.

Apart from rice-fish farming, the integration of rice with lotus (for seeds and roots), water chestnut and fish is being experimented by selected villagers in Mengzhe Township. If the integration model is proved to be practical and have better economic benefit, it will be introduced to more villagers.

The participants were told by the villagers that, certain locally found fish species disappeared from their paddy fields and irrigation canals many years ago due to use of chemical pesticides. Now these fish are coming back to their place. On the way from the main road to the Mansao Village, where the workshop participants stopped for lunch, a teenager girl coming from school for lunch at home showed off three fish to the participants, her catch of the day from the road-side irrigation canal.

At noon time, the workshop participants walked from the main road to the Mansao Village for lunch. All villagers are Dai minority. In the house of one of the village heads, many fishing gears were displayed to the visitors before lunch was served. Participants from Cambodia, Lao PDR and Vietnam said those gears look similar to what they have back in their countries.

The lunch was of typical Dai style and served on tables made of bamboo and canes. Among many dishes served, there were grilled fish, fermented fish and wild vegetables collected from the rice field.

Annex 1. List of participants

From	Sn	Participants
Cambodia	1.	<p>Tonette Balzer Advisor NRM Component, RDP Kampong Thom c/o German Development Service, PO Box 628 Phnom Penh, Cambodia Tel: +855-12-928975 E-mail.: p.balzer@mobitel.com.kh</p>
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Cambodia	3.	<p>Eric Meusch Consultant FAO/UNDP Study on aquatic organisms in rice-based production systems in Northwestern Vietnam Aquaculture Office Department of Fisheries PO Box 856, Phnom Penh CAMBODIA Tel: +855-23-210 565 Fax: +855-23-210 565 E-mail: emeusch@bigpond.com.kh</p>
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China	9.	Yang Zhengbin Xishuangbanna National Nature Reserve Sino-German: Tropical Rain Forest protection and rehabilitation project Tel. +86-691-2148394 Fax. +86-691-2148052

Lao PDR	10.	Xaypladeth Choulamany Director Living Aquatic Resources Research Center (LARREC) National Agriculture and Forestry Research Institute Ministry of Agriculture and Forestry P.O. Box: 9108, Vientiane Lao PDR Tel: 856-21-215015 Fax: 856-21-214855 E-mail: larrec@laonet.net
Lao PDR	11.	Bounthong Saphakdy Chief of Technical Division Department of Livestock and Fisheries Ministry of Agriculture and Forestry P.O. Box: 811, Vientiane Lao PDR Tel: +856-21-416932 Fax: +856-21-415674 E-mail: eulaodlf@laotel.com
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FAO	14.	Matthias Halwart Fishery Resources Officer (Aquaculture) FIRI, FAO, Rome, Italy Tel: +39-06-5705 5080 Fax: +39-06-57053020 Mobile: +39-349-2376019 E-mail: Matthias.Halwart@fao.org
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Local Participants:

Mr. Cha Ke	Deputy Director, Xishuangbanna Government (speaker at opening ceremony)
Mr. Yan Wenchai	Xishuangbanna Agricultural Bureau
Mr. Piao Zhou	Deputy Director, Xishuangbanna Agricultural Bureau (speaker at closing ceremony)
Mr. Zhou Xingqiang	Xishuangbanna Agricultural Bureau
Mr. Cao Hongxiang	Agricultural Bureau, Menghai County, Xishuangbanna
Mr. Li Zonghua	Agricultural Bureau, Menghai County, Xishuangbanna
Ms Xu Shiyong	Fisheries Station, Xishuangbanna Agricultural Bureau
Mr. Gu Li	Xishuangbanna Agricultural Bureau
Mr. Yang Wenwu	Xishuangbanna Government
Mr. Fu Kaiwei	Xishuangbanna Government
Mr. Qi Wenlong	Fisheries Station, Xishuangbanna Agricultural Bureau
Mr. Xiong Guozhang	Xishuangbanna Government

Annex 2. Workshop Agenda

Saturday, October 19

Arrival of participants at Jinghong City, Xishuangbanna

Sunday, October 20

18:00 - 19:30 Registration

Monday, October 21

8:30 - 9:00 Registration

Opening remarks

9:00 -9:15 Chinese host

9:15 -9:30 FAO/NACA

9:30 -9:45 Coffee Break

Session I. Status reports - aquatic biodiversity in rice-based ecosystems

09:45 - 10:15 China (Luo Aidong)

10:15 - 10:45 Laos (Xaypladeth Choulamany)

10:45 - 11:15 Vietnam (Eric Meusch)

11:15 - 11:45 Cambodia (Tonette Balzer)

11:45 - 13:30 Lunch Break

Session II. Approaches used, problems encountered, solutions proposed

13:30 - 14:00 Institutions working on aquatic biodiversity and rice ecosystems

14:00 - 15:00 Problems, solutions, lessons learned

15:00 - 15:15 Coffee break

15:15 - 15:30 Photo documentation (Peter Balzer)

15:30 - 15:45 Documentation and dissemination of findings (Matthias Halwart)

15:45 - 17:00 Discussion on documentation and dissemination

Tuesday, October 22

08:00 - 17:30 Field day, visit a Dai Village

Wednesday, October 23

Session III. Future steps: Where do we go from here?

08:30 – 09:30 Moderated discussion on continuation/expansion of current studies (valuation issues, nutritional studies, statistics), inclusion of additional sites/countries, interregional networking

09:30 - 09:45 Coffee Break

09:45 - 12:00 Moderated discussion (continued)

12:00 - 13:30 Lunch Break

13:30 - 15:00 Wrap up

15:00 - 15:15 Coffee Break

15:15 - 15:30 Closing remarks from the FAO & NACA

15:30 - 15:45 Closing remarks from the Chinese host