

Annex 1 – Workshop agenda

**FAO INTERNATIONAL WORKSHOP ON
TECHNICAL GUIDELINES FOR THE RESPONSIBLE USE OF WILD FISH AND
FISHERY RESOURCES FOR CAPTURE-BASED AQUACULTURE PRODUCTION
Hanoi, Viet Nam, 8–12 October 2007**

AGENDA AND TIMETABLE

Monday, 8 October 2007

opening Session

08:00 – 08:30	Arrival and registration
08:30 – 09:00	Opening remarks Introduction of experts
09:00 – 09:15	Adoption of Agenda

Introduction

09:15 – 09:30	Introduction of Technical Guidelines
09:30 – 10:00	General discussion
10:00 – 10:30	<i>Coffee/Tea</i>

Presentation Session I – Reviews

10:30 – 11:00	Environmental and biodiversity impacts of CBA – Y. Sadovy
11:00 – 11:30	Social and economic impacts of CBA – R. Pomeroy
11:30 – 12:00	General discussions

Presentation Session II – Species Papers

12:00 – 12:15	Pangasiids and snakehead – A. Poulsen & D. Griffiths
12:15 – 12:30	<i>Clarias</i> catfish – V. Poumogne
12:30 – 14:00	<i>Lunch</i>
14:00 – 14:15	Mullet – M. Saleh
14:15 – 14:30	Indian major carps – M. Rahman
14:30 – 14:45	European eel – P. Prouzet
14:45 – 15:00	Atlantic bluefin tuna – F. Ottolenghi
15:00 – 15:15	Cod – K. Midling & Ø. Hermansen
15:15 – 15:30	Yellowtail – M. Nakada
15:30 – 16:00	<i>Coffee/Tea</i>
16:00 – 16:15	Grouper – M. Tupper
16:15 – 16:30	Mud crab – C. Shelley
16:30 – 16:45	Oysters – K. S. Choi
16:45 – 17:45	General discussion

Tuesday, 9 October 2007

Session III – Working Groups

08:30 – 10:00	Draft guidelines status and setting up of working groups - Secretariat
10:00 – 12:30	Working Groups discussions and drafting
12:30 – 14:00	<i>Lunch</i>
14:00 – 16:00	Working Groups discussions and drafting
16:00 – 17:30	Working Groups presentations and plenary discussions
19:30 – 21:30	Official dinner

Wednesday, 10 October 2007

Session III – Working Groups (continued)

08:30 – 09:00	Plenary summary and presentation of key themes/status of draft guidelines
09:00 – 12:30	Working Groups discussions and drafting
12:30 – 14:00	<i>Lunch</i>
14:00 – 17:00	Technical ½ day field trip

Thursday, 11 October 2007

Session III – Working Groups (continued)

08:30 – 09:00	Plenary summary and presentation of key themes/status of draft guidelines
09:00 – 12:30	Working Groups discussions and drafting
12:30 – 14:00	<i>Lunch</i>
14:00 – 16:00	Working Groups discussions and drafting
16:00 – 17:30	Working Groups presentations and plenary discussions

Friday, 12 October 2007

Session IV – Plenary discussions

08:30 – 10:00	Plenary summary and presentation of key themes/status of draft guidelines
10:00 – 12:30	Working Groups discussions and drafting
12:30 – 14:00	<i>Lunch</i>
14:00 – 15:30	Plenary discussions on workshop achievements and way forward
15:30 – 16:00	<i>Coffee/Tea</i>
16:00 – 17:00	Final discussion and closing ceremony

Annex 2 – List of participants

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Annex 3 – Expert profiles

FUNGE-SMITH, Simon – Mr Funge-Smith qualified as a Marine biologist from the University of Liverpool (United Kingdom) and completed his Doctorate at the Institute of Aquaculture, University of Stirling (Scotland, United Kingdom) in the area of tropical aquaculture. His postdoctoral work (1991–1994) was based heavily in the field in Thailand working on environmental and management aspects of brackishwater shrimp aquaculture. He worked for two years (1995–1997) as a consultant based in Asia working in China, Malaysia, Sri Lanka, Bangladesh, Philippines and Thailand. Several of the assignments were for FAO. In 1997, he joined FAO as a Chief technical advisor to an aquaculture development project in the Lao People's Democratic Republic working in rural extension of aquaculture. Following the closure of the project, he briefly worked with the Mekong River Commission as a consultant before taking up his current post as Aquaculture Officer into the FAO Regional Office in Bangkok. His responsibilities span 40 Member countries in the Asia-Pacific Region and he has travelled, for work reasons, in over 22 of these. His work covers project development management as well as the work of the Asia-Pacific Fishery Commission. Some key areas of work that he has been involved in are the use of low value and trash fish for aquaculture, co-management mechanisms, inland fisheries management, aquaculture certification, and routine analysis of the aquaculture and fisheries of the Asia-Pacific Region.

GRIFFITHS, Don – Mr Don Griffiths has over 20 years of experience in fresh, brackish and marine aquaculture development and extension primarily in Asia (Bangladesh, Cambodia, India, Lao People's Democratic Republic, Malaysia, Thailand, Viet Nam), but also Fiji, Lesotho and Mozambique, working for a variety of donor agencies including Overseas Development Agency (ODA), United Kingdom Department for International Development (DFID), Danida, United States Agency for International Development (USAID), the European Union (EU) and Mekong River Commission. Mr Griffiths is currently working as the Senior Advisor for the Government of Viet Nam–Danida funded Sustainable Development of Aquaculture (SUDA) component under the Fisheries Sector Programme Support Phase II (FSPS II). The FSPS II will run to the end of 2010.

HERMANSEN, Øystein – Mr Hermansen presently conducts applied research on the economics of capture-based aquaculture operations in Norway, particularly on the Atlantic cod. This involves research on the private and full cost profitability and also factors which hinder fishermen in undertaking this activity. In addition, he collaborates on projects to investigate the bioeconomics of various capture-based aquaculture fisheries, intending to identify properties that define the profitability of this aquaculture practice. He has also worked on capacity issues in fisheries and was the secretary for a National Advisory Panel for Capacity Reduction in Norwegian Fisheries. Mr Hermansen has an MSc degree in Fisheries and Aquaculture from the Norwegian College of Fisheries Science, University of Tromsø, Norway obtained in 2002.

HOLTHUS, Paul – Dr Holthus's work is focused on achieving sustainable development of marine and coastal areas and the sustainable use of marine resource and sustainable livelihoods, with an emphasis on bringing together the private sector and the environmental concerns to realize solutions. His experience ranges from working

with the directors of United Nations (UN) agencies on international ocean policy to working with fishermen in small island villages. He has been involved in coastal management and marine resource conservation and sustainable use in over 30 countries in Asia, the Pacific, Central America, and West Africa. From 1998–2007, Paul was the founding Executive Director of the Marine Aquarium Council (MAC). MAC is an international standards-setting, certification and capacity-building organization for sustainability of the global marine aquarium fishery and trade, including aquaculture. MAC has built a global multi-stakeholder network of the marine aquarium industry/fishers, conservation groups, public aquariums, international organizations and government agencies; developed international standards of best practice for certification of the communities, companies, culturing facilities and chain of custody in the marine ornamentals industry; and created industry and consumer demand for MAC Certified marine ornamentals. Past senior positions have included: Deputy Director, Global Marine and Coastal Programme, The World Conservation Union (IUCN); Senior Programme Officer, Asia-Pacific Marine Programme, The Nature Conservancy; and Senior Programme Officer, South Pacific Regional Environment Programme (SPREP, part of the UN Environment Programme's Regional Seas Organizations), as well as international projects as an independent consultant. He is a graduate of the University of California and the University of Hawai'i.

KWANG SIK, Choi – Dr Kwang Sik has been working since 1995 as a professor at the School of Applied Marine Science, Cheju National University. Apart from his teaching obligations in aquaculture Dr Kwang Sik's main area of interest is bivalves. His applied research work focuses on shellfish disease diagnosis, culture and ecology. Prior to joining the University, he worked for a few years as Senior Researcher at the Korean Institute of Nuclear Safety during which time he was involved in inspecting environmental safety of thermal effluents from nuclear power plants. Dr Kwang Sik obtained his both his MSc (1987) and his PhD (1992) in Oceanography at the Texas A&M University, United States of America.

LOVATELLI, Alessandro – Mr Lovatelli, a trained marine biologist and aquaculturist, obtained his Bachelor (BSc) and Master of Science (MSc) degrees at the universities of Southampton and Plymouth (UK), respectively. His first experience with FAO dates back to 1987 working as the bivalve expert attached to an FAO/United Nations Development Programme (UNDP) regional project. His subsequent FAO assignment was in Mexico working on a regional aquaculture development project (AQUILA) funded by the Italian Government. From 1993 to 1997 he worked in Viet Nam, Somalia and then again in Southeast Asia. In Viet Nam he headed the aquaculture and fisheries component of a large European Union project developing, among other activities, 10 regional aquaculture demonstration, training and extension centres. In Somalia he acted as the lead aquaculture and fisheries consultant for the European Commission. Following an additional year in Viet Nam as one of the Team Leaders under the Danish-funded Fisheries Master Plan Project, Mr Lovatelli was recruited by FAO as the Aquaculture Advisor attached to the FAO-EASTFISH project based in Denmark. In 2001 Mr Lovatelli once again joined the FAO Fisheries and Aquaculture Department. The main activities currently focused on are marine aquaculture development, transfer of farming technologies and resources management. Mr Lovatelli has coordinated and co-authored an FAO review on capture-based aquaculture (CBA) published by FAO in 2004.

MIDLING, Kjell – Mr Midling is a specialist in capture-based aquaculture and has worked for the Norwegian Institute of Fisheries and Aquaculture Research since 1988. Fish behaviour, fish communication (sound) and fish preferences have played a major part of his research, dealing both with technological developments and studying their

behaviour *per se*. He is an inventor on patents involving cage constructions (flat-bottom cages for species without a gas-bladder) and feeding system (submerged “intelligent” feeding). He has been involved in a large number of projects nationally and abroad both within aquaculture and fisheries varying from fishing gear, live transportation, cages for restitution, slaughter technologies, fish welfare and quality. He was scientist in charge of the first offshore farm in Hainan, People’s Republic of China (1997–99) and has hands-on experiences in commercial fisheries and aquaculture. He has been a member of several scientific commissions, including 12 years in the Norwegian Research Council.

NAKADA, Makoto – In his present position Mr Nakada provides technical advice on marine aquaculture and fisheries to the Japanese industry as well as to developing countries under a cooperation scheme of the Tokyo University of Marine Science and Technology. In particular Mr Nakada provides advice on fish nutrition and feed formulation, water treatment for aquaculture, and farming techniques. Mr Nakada has worked extensively on Yellowtail aquaculture in Japan and abroad and has published numerous papers and reports including “Yellowtail Aquaculture in Japan, Handbook of Mariculture (CRC Press Inc.), “Yellowtail and Related Species Culture, Encyclopedia of Aquaculture” (John Wiley & Sons), and “Yellowtail culture development and solutions for the future, Aquaculture Growout System, Challenges and Technological Solutions (CRC Press Inc.).

OTTOLENGHI, Francesca – For almost a decade Ms Ottolenghi has been engaged in projects in the field of aquaculture and related subjects. As a project leader she coordinated scientific tuna projects financed by the Italian Ministry of Agriculture and by the European Commission (EC). She has participated as a tuna expert in the Italian delegation at meetings organized by the International Commission for the Conservation of Atlantic Tunas (ICCAT) as well as acted as “Chair” of the tuna session at the 2006 World Aquaculture Society Conference held in Bali, Indonesia. Ms Ottolenghi actively participated in the “Working Group on Sustainable Bluefin Tuna Farming/Fattening Practices in the Mediterranean” jointly set up by the General Fisheries Commission for the Mediterranean (GFCM) and ICCAT. She is the main author of an FAO report entitled “Capture-based aquaculture”. Ms Ottolenghi is presently working for Halieus, an Italian non-governmental organization (NGO) conducting international cooperation projects in the field of fisheries and aquaculture.

PHAM, Anh Tuan – Dr Pham Anh Tuan is currently the Deputy Director in charge of research and training at the Research Institute for Aquaculture No. 1 (RIA 1) located in the vicinity of Hanoi. He obtained a BSc at the University of Fisheries in Nha Trang (Viet Nam) in 1977 and a MSc in Aquaculture at the Asian Institute of Technology (AIT), Bangkok, Thailand, in 1992. He obtained his PhD at the University of Wales Swansea (UK) in 1997 working on sex ration control of Nile tilapia. The main fields of expertise of Dr Pham An Tuan are fish breeding and genetics based on the fact that he has been working on gene bank development of fish by application of sperm cryopreservation, genetic improvement of rohu and mrigal, selective breeding of tilapia for saline aquaculture, development of all male tilapia and prawn, introduction of aquatic species in Viet Nam, etc. He has worked extensively as a national aquaculture consultant for projects funded by the Asia Development Bank (ADB), United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO) and other development organizations (e.g. DANIDA, DFID, IFAD). His experience ranges from project formulation and evaluation. Dr Pham Anh Tuan has coordinated a national project on improving freshwater fish seed supply and performance in small-holder aquaculture systems in Asia. This project evaluated the

state of hatchery systems in Viet Nam with the objective of developing a seed supply strategy for smallholder aquaculture systems. The project also looked for approaches to improve performance of existing hatcheries and seed distribution networks.

POMEROY, Robert – Dr Pomeroy is currently an Associate Professor in the Department of Agricultural and Resource Economics and Connecticut Sea Grant College Fisheries Extension Specialist at the University of Connecticut – Avery Point in Groton. Before starting at the University of Connecticut in August 2002, Dr Pomeroy worked at the World Resources Institute in Washington DC from September 1999 to December 2001 where he helped develop a marine programme. Prior to that, he worked at the International Center for Living Aquatic Resources Management (ICLARM) in Manila, Philippines from 1991 to 1999. From 1984 to 1991, Dr Pomeroy was on the faculty of Agricultural and Applied Economics at Clemson University in South Carolina. Dr Pomeroy holds a PhD in Resource Economics from Cornell University. His areas of professional interest are marine resource economics and policy, specifically small-scale fisheries management and development, coastal zone management, aquaculture economics, international development, policy analysis, and seafood marketing. Dr Pomeroy has worked on research and development projects in over 40 countries in Asia, Africa, the Caribbean and Latin America. He is a Senior Research Fellow at the WorldFish Center headquartered in Penang, Malaysia.

POULSEN, Anders – Mr Poulsen currently works as an Adviser to the Ministry of Agriculture and Rural Development (MARD) and provincial fisheries departments (DOFI) in Viet Nam on the sustainable management of capture fisheries in both marine/coastal and inland waters, a programme founded by Danida. He is also engaged in co-management pilot activities in the Mekong Delta, where the pangasiid catfish culture is extremely important. Mr Poulsen started his overseas career as an associate professional officer (APO) with FAO on a river fisheries project in the Sepik River in Papua New Guinea in 1991. He has been working for the Mekong River Commission (MRC) in the Lao People's Democratic Republic as a Technical Adviser for the fisheries programme, particularly focusing on fisheries ecology and assessment in the lower Mekong basin. He worked in Bangladesh on two assignments: recently as Team Leader and Inland Biodiversity Expert for the Aquatic Resources Development, Management and Conservation Studies under the Fourth Fisheries Project (funded by World Bank/GEF), and prior to this as a Training and Extension Adviser for an aquaculture extension project (funded by Danida). He also worked as Biodiversity Expert with the Caspian Environment Program in Tehran, Iran Islamic Republic.

POUOMOGNE, Victor – Since 2004, Dr Poumogne has been carrying out research work in collaboration with agrofishers within Santchou valley, who use African catfish fingerlings (*Clarias* spp.) from the wild for aquaculture purpose. Since 1995, he has been fully involved in tropical aquaculture and fisheries programmes aiming at spreading scientific information and adoption of viable farming techniques by key users. In this regards, he worked as consultant for FAO, WorldFish Center and many other international development agencies. Dr Poumogne has over 20 years of professional and academic experience in research and teaching. His interests and experience include rural small-scale fish farming, partnership with farmers, reservoir fisheries management and environmental impact assessment.

PROUZET, Patrick – As head of a National Research Programme for IFREMER, on “Ecosystem Approach for Fishery Management” Dr Prouzet coordinates scientific projects with the objective of developing a multidisciplinary approach combining biology, economy, fishing technology and fish product transformation in the framework

of the sustainable development. Since the seventies, he has been involved in scientific programmes on amphihaline species, including migratory salmonids, shads, sea lampreys and eel. He is an active member of the International Council for the Exploration of High Seas (ICES) Working Group on European eel and coordinate studies in the framework of an InterregIII programme entitled "INDICANG", the objective of which is to set up a net of knowledge on eel stocks. He worked from 1989 to 2000 on the anchovy population of the Bay of Biscay, coordinating EU projects and provided expert advice to the French fisheries administration and EU (STECF and ICES).

RAHMAN, Mokhlesur – Mr Rahman is a specialist in natural resource management in Bangladesh, with focus on wetlands and coastal zones and livelihood analysis and development. In 1994 he joined the national Center for Natural Resource Studies (CNRS) working, among other things, on wetland and coastal communities' livelihood. Prior to this Mr Rahman was involved in GIS activities and contributed to the development of an aquaculture Environmental Impact Assessment (EIA) manual. He conducted a series of spacial studies on biodiversity of fisheries and carried out a nation-wide (Bangladesh) water-body inventory and developed related databases and GIS maps. From 1990 to 1991 he worked on an FAO field project as an Integrated Fish Culture Expert. Mr Rahman obtained his Bachelor of Science (BSc) and his Master of Science (MSc) degrees from Dhaka University in Zoology and Fisheries. He is a member of the US-based International Association for the Study of Common Property.

SADOVY de MITCHESON, Yvonne – Dr Yvonne Sadovy de Mitcheson is a professor in the Department of Ecology and Biodiversity, University of Hong Kong, which she joined in 1993. Prior to this position, she was Director of the Fisheries Research Laboratory of the Government of Puerto Rico and worked as a fisheries biologist for the Caribbean Fishery Management Council where she also held a position on the Scientific Advisory Committee during the 1990s. She holds a PhD in Zoology from the University of Manchester (1986) and is also the Chair (since 1998) of The World Conservation Union (IUCN) Specialist Group for Groupers and Wrasses (Serranidae and Labridae). Dr Sadovy has published two books and has over 100 other outputs, most of which are peer-reviewed and in international journals. Her speciality is in reef fishes, especially their reproductive biology, and age and growth, and in the conservation and management of vulnerable reef fishes. She has worked extensively in the field in the tropics and has broad in-water and laboratory experience. Dr Sadovy is on the Editorial Boards of Journal of Fish Biology, Conservation Biology, Fish and Fisheries, and Reviews in Fish Biology and Fisheries.

SALEH, Magdy – Dr Saleh is in-charge of supervising five general directorates responsible for the extension and management of aquaculture and inland water fisheries in both the private and governmental sectors. This covers governmental as well as private fish farms, hatcheries, marine wild fry collection/nursery stations, fish disease prevention and fish feed production and formulation. For the last 35 years Dr Saleh has been involved in supporting the development of modern and sustainable aquaculture in Egypt through his continuous work in various national organizations in-charge of fisheries management and development in the country. Dr Saleh obtained his MSc in Aquaculture and Fisheries Management from Stirling University (United Kingdom) (1986) and his PhD in Aquaculture Management and Fish Disease from Suez Canal University, Egypt (1995).

SHELLEY, Colin – Dr Shelley has over 25 years experience in a wide range of marine sciences including aquaculture, fisheries science, environmental science, and marine

biology. He has acted as principal scientist for numerous aquaculture R&D projects in tropical Australia. He is also the manager of aquaculture industry development and policy for the Department of Primary Industries and Fisheries, Queensland. His work includes industry development planning, aquaculture planning, policy development and the regulatory framework for aquaculture. He is actively involved in the commercial development of mud crab aquaculture in the Pacific and Southeast Asia regions. Dr Shelley obtained his MSc in Biology at the University of Papua New Guinea (1982) and his PhD in Zoology from James Cook University (Australia) (1990).

TUPPER, Mark – Dr Tupper is a marine ecologist with 15 years professional and academic experience in research, teaching and consulting. His interests and experience include marine protected area management, habitat ecology, reef fish ecology, fisheries ecology and management, mariculture/stock enhancement, and environmental impact assessment. His present position as Coral Reef Scientist at the WorldFish Center engages him in original research in the field of coral reef resource management and reef fisheries biology. In Micronesia, Southeast Asia and in other parts of the world he has worked on grouper fisheries and aquaculture and enhancement programmes. Dr Tupper obtained his MSc in Biological Oceanography from McGill University (Canada) (1989) and his PhD in Marine Biology from Dalhousie University (Canada) (1994).

Annex 4 – Experts group photograph



Standing (left to right):

Alessandro Lovatelli, Paul F. Holthus, Patrick Prouzet, Robert S. Pomeroy, Mhd Mokhlesur Rahman, Colin Shelley, Don Griffiths, Mark H. Tupper, Kjell Ø. Midling, Magdy Saleh

Seated (left to right):

Makoto Nakada, Øystein Hermansen, Simon Funge-Smith, Francesca Ottolenghi, Yvonne Sadovy de Mitcheson, Choi Kwang Sik, Pham Anh Tuan, Victor Pouomogne

Missing:

Anders F. Poulsen

Capture-based aquaculture (CBA) makes use of wild fish and fishery resources in its production systems. Focusing on this subject, and within the framework of the project “Towards sustainable aquaculture: selected issues and guidelines” implemented by the Food and Agriculture Organization of the United Nations, this document addresses selected key issues of sustainability in relation to current global aquaculture practices and developments. It includes two review papers on the use of wild resources, one covering social and economic aspects and the other on environmental and biodiversity issues, as well as ten papers on selected marine and freshwater species used in CBA.

ISBN 978-92-5-106030-8 ISSN 0429-9345



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TC/M/0254E/1/07.08/1700