

## Participants



### **A.K.M. Reshad Alam**

*Project Manager, GOLDA Project*  
CARE Bangladesh Headquarters  
House #65, Road #7A  
Dhanmondi R/A  
Dhaka, Bangladesh  
☎ +880-2-814195 to 98  
☎ +880-2-814183  
✉ [carebang@bangla.net](mailto:carebang@bangla.net)

### **Warlito C. Antonio**

*Aquaculture Technician*  
IIRR  
Y.C. James Yen Center  
Silang, Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [information@iirr.org](mailto:information@iirr.org)

### **S. Ayyappan**

*Director*  
Central Institute of Fisheries Education  
(CIFE-ICAR)  
Seven Bungalows, Versova  
Mumbai 400061, India  
☎ +91-22-636 3404  
☎ +91-22-636 1573  
✉ [ayyapans@yahoo.co.uk](mailto:ayyapans@yahoo.co.uk)

### **Ian G. Baird**

*Chairperson*  
Global Association for People and the Environment (GAPE)  
P.O. Box 860  
Pakse, Lao PDR  
☎ +856-21-251 491  
✉ [ianbaird@laonet.net](mailto:ianbaird@laonet.net)

### **Zubaida U. Basiao**

*Scientist/Station Head*  
Binangonan Freshwater Station  
SEAFDEC Aquaculture Department  
Binangonan, Rizal, Philippines  
☎ +63-2-289 1886; 652 0077  
+63-918-900 1279  
☎ +63-2-289 1886; 652 0077  
✉ [zed2@pacific.net.ph](mailto:zed2@pacific.net.ph)

### **Arsenia Cagauan**

*Associate Professor and Senior Researcher*  
Freshwater Aquaculture Center  
Central Luzon State University (CLSU)  
Muñoz, Nueva Ecija 3120, Philippines  
☎ +63-44-456 0680 to 83  
☎ +63-44-456 0681; 44 456 0683  
✉ [f-fishgn@mozcom.com](mailto:f-fishgn@mozcom.com)

### **Barry Clough**

*Senior Research Scientist*

Australian Institute of Marine Science  
PMB 3, Townsville Old 4810  
Australia  
☎ + 61-74-753 4444  
☎ +61-74-772 5852  
✉ [b.clough@aims.gov.au](mailto:b.clough@aims.gov.au)

Fernando B. Dalangin  
*Municipal Environment and Natural  
Resources Officer*  
Sablayan 5104  
Occidental Mindoro, Philippines  
☎ +63-2 535 4557

Harvey Demaine  
*Coordinator*  
Aquaculture and Aquatic Resources Management  
Asian Institute of Technology  
P.O.Box 4, Khlong Luang  
Pathum Thani 12120 Thailand  
☎ +66-2-524 5212  
☎ +62-2-524 5218  
✉ [hdemaine@ait.ac.th](mailto:hdemaine@ait.ac.th)

K. Devadasan  
*Director*  
Central Institute of Fisheries Technology  
Matsyapuri, Cochin 682029  
Kerala, India  
☎ +91 484 666880  
☎ +91 486 668212  
✉ [devadasan@satyam.net.in](mailto:devadasan@satyam.net.in); [dev@cift.ker.nic.in](mailto:dev@cift.ker.nic.in)

Nguyen Huy Dien  
*Project Manager (UNDP/FAO Project)*  
Ministry of Fisheries  
10 Nguyen Cong Hoan  
Bachinh, Hanoi  
Vietnam  
☎ +84 22 855493  
☎ +84 22 855494  
✉ [vie98009@undp.org.vn](mailto:vie98009@undp.org.vn)

Christie Fernando  
*Media Coordinator*  
Small Fishers Federation  
Pambala, Chilaw  
Sri Lanka  
☎ +94-32-22201  
☎ +94-32-47960  
✉ [sff@sri.lanka.net](mailto:sff@sri.lanka.net)

Luis Maria B. Garcia  
*Scientist II*  
SEAFDEC Aquaculture Department  
5021 Tigbauan, Iloilo, Philippines  
☎ +63-33-335 1009; 336 2965; 336 2937  
☎ +63-33-335 1008  
✉ [wgarcia@aqd.seafdec.org.ph](mailto:wgarcia@aqd.seafdec.org.ph)

Wenresti G. Gallardo  
*Scientist*  
SEAFDEC Aquaculture Department  
Tigbauan 5021, Iloilo, Philippines  
☎ +63-33-335 1009

+63-33-335 1008  
✉ [gallardo@aqd.seafdec.org.ph](mailto:gallardo@aqd.seafdec.org.ph)

Julian F. Gonsalves  
*Vice-President for Program*  
IIRR  
Y. C. James Yen Center  
Silang, Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [julian@accessway.ph](mailto:julian@accessway.ph); [juliangonsalves@yahoo.com](mailto:juliangonsalves@yahoo.com)

John H. Grover  
*Senior Aquaculture Scientist*  
ICLARM - The World Fish Center  
House 22B, Road No 7, Block H  
Banani, Dhaka 1213, Bangladesh  
☎ +880-2 881 3250  
☎ +880-2 881 1151  
✉ [iclarm@dhaka.agni.com](mailto:iclarm@dhaka.agni.com)

Matthias Halwart  
*Fishery Resources Officer (Aquaculture)*  
Food and Agriculture Organization of the United Nations (FAO)  
Via Delle Terme di Caracalla  
00100 Rome, Italy  
☎ +39-06-570 55080  
☎ +39-06-570 53020  
✉ [matthias.halwart@fao.org](mailto:matthias.halwart@fao.org)

Nazmul Hassan  
*Professor*  
Institute of Nutrition and Food Science  
University of Dhaka  
Bangladesh  
☎ +88-2-508 268  
✉ [nhassan@bangla.net](mailto:nhassan@bangla.net)

Khorkiat Koolkaew  
*Chief of Station*  
Songkhla Coastal Aquaculture Station/ Department of Fisheries  
Klongdan, Ranod District  
Songkhla, Thailand 90140  
☎ +66-1-9598444  
☎ +66-2-561 3997  
✉ [khorkiatk@fisheries.go.th](mailto:khorkiatk@fisheries.go.th)

Dilip Kumar  
*Team Leader*  
Empowerment of Coastal Fishing Communities for Livelihood Security (UNDP/FAO Project)  
JALPARI, Kalatali, Cox's Bazar, Bangladesh  
☎ +88-0341 63871  
☎ +88-0341 63871  
✉ [dilipk@agni.com](mailto:dilipk@agni.com)

Felix Marttin  
*Associate Professional Officer*  
Food and Agricultural Organization of the United Nations  
Viale Delle Terme Di Caracalle  
00100 Rome, Italy  
☎ +39-06-570 53850  
☎ +39-06-570 53020  
✉ [felix.marttin@fao.org](mailto:felix.marttin@fao.org)

M.C. Nandeesh  
*Project Coordinator, GOLDA Project*  
CARE Bangladesh  
Road 7/A, House 65  
Dhanmondi 1209, GPO Box 226  
Dhaka 1000, Bangladesh  
☎ +880-2 8114195-8  
☎ +880-2 8114183  
✉ [mcnraju@bangla.net](mailto:mcnraju@bangla.net)

S. S. Tabrez Nasar  
*Program Officer, Agriculture and Natural Resources Management*  
Learning Community Program  
IRR  
Y. C. James Yen Center  
Silang, Cavite, Philippines  
☎ +63-46-414 2417; 918-827 5995  
☎ +63-46-414 2420  
✉ [Tabrez.Nasar@iirr.org](mailto:Tabrez.Nasar@iirr.org); [Tabreznasar@yahoo.com](mailto:Tabreznasar@yahoo.com)

Gary F. Newkirk  
*Coordinator*  
Coastal Resources Research Network  
Dalhousie University  
1321 Edward Street  
Halifax, Nova Scotia B3H 3H1  
Canada  
☎ +1-902-494 2284  
☎ +1-902-494 1216  
✉ [Gary.Newkirk@Dal.Ca](mailto:Gary.Newkirk@Dal.Ca)

Julia Lynne Overton  
*Postdoctoral Researcher*  
Centre for Tropical Ecosystems Research  
Department of Ecology and Genetics  
Institute of Biological Sciences  
University of Aarhus, Building 540, Ny Munkegate  
DK8000 Aarhus C  
Denmark  
☎ +45-8942 3349  
☎ +45-8942 3350  
✉ [julialynne@compuserve.com](mailto:julialynne@compuserve.com)

Elena Z. Par  
*Community Organizer/Research Assistant*  
International Institute of Rural Reconstruction  
Sablayan, Occidental Mindoro  
☎ +63-917-496 7925  
☎ +63-917-563 9630

Jurgenne Primavera  
*Senior Scientist*  
SEAFDEC Aquaculture Department  
Tigbauan, Iloilo 5021, Philippines  
☎ +63-33-336 2965  
☎ +63-33-335 1008  
✉ [jhprima@aqd.seafdec.org.ph](mailto:jhprima@aqd.seafdec.org.ph)

Mark Prein  
*Program Leader/Senior Scientist*  
ICLARM – The World Fish Center  
GPO Box 500  
10670 Penang  
Malaysia  
☎ +60-4-6261 606 loc. 401

+60-4-6265 530  
✉ [m.prein@cgjar.org](mailto:m.prein@cgjar.org)

R.K.U.D. Pushpa Kumara  
*Deputy Director/Head Coastal Aquaculture and Sea Farming*  
National Aquaculture Development Authority of Sri Lanka  
307 1/1 T.B. Jayah Mawatha  
Colombo 10, Sri Lanka  
☎ +94-1 675316-8  
☎ +94-1-675435

Tran Van Quynh  
*Deputy Directors of Department of Science and Technology*  
Ministry of Fisheries  
10 Nguyen Cong Hoan  
Badinh, Hanoi, Vietnam  
☎ +84-4 8354515  
☎ +84-4 7715982  
✉ [vie98009@fmail.vnn.vn](mailto:vie98009@fmail.vnn.vn)

Mokhlesur Rahman  
*Monitoring and Evaluation (M&E) Specialist/Consultant*  
Fourth Fisheries Project  
Department of Fisheries  
Matshaya, Bhaban  
Romna, Dhaka 1000  
Bangladesh  
☎ +880-2 9554716; 9339516  
☎ +880-2 956 0543  
✉ [mrsoft@bdmail.net](mailto:mrsoft@bdmail.net); [m7rahman@yahoo.com](mailto:m7rahman@yahoo.com)

Alejandro E. Santiago  
36 C. Santos St., Ugong  
Pasig City  
☎ +63-2-671 7927  
☎ +63-2-671 0830  
✉ [aldrin@pacific.net](mailto:aldrin@pacific.net)

P.P.G.S.N. Siriwardena  
*Head/Inland Aquatic Resources and Aquaculture*  
National Aquatic Resources Research and Development Agency  
Colombo 15, Sri Lanka  
☎ +94-1 522005  
☎ +94-1 522932  
✉ [sunil@nara.ac.lk](mailto:sunil@nara.ac.lk)

V. V. Sugunan  
*Principal Scientist and Head of Northeastern Research Centre*  
Central Inland Fisheries Research Institute  
Barrackpore, Calcutta 743101 (W.B.), India  
☎ +91 361 548757  
☎ +91 361 548757  
✉ [sugunan@gwl.dot.net.in](mailto:sugunan@gwl.dot.net.in)

Wilfredo G. Yap  
*Consultant*  
SEAFDEC Aquaculture Department  
17 Times St., West Triangle  
Quezon City, Philippines  
☎ +63-2 372 3980  
☎ +63-2 372 3983  
✉ [fredyap@pworld.net.ph](mailto:fredyap@pworld.net.ph)

Yang Yi  
*Assistant Professor*

AASE/SERD  
Asian Institute of Technology  
G.P.O. Box 4  
Klong Luang, Pathumthank 12120  
Thailand  
☎ +66-2 5245454  
☎ +66-2 5246200  
✉ [yangyi@ait.ac.th](mailto:yangyi@ait.ac.th)

Xiaowei Zhou  
*Program Officer*  
NACA  
P.O. Box 1040  
Kasetsart Post Office  
Bangkok 10903, Thailand  
☎ +66-2 5611728-9  
☎ +66-2-5611727  
✉ [zhoux@fisheries.go.th](mailto:zhoux@fisheries.go.th)

### Contributors

Li Kangmin  
Freshwater Fisheries Research Center  
Qitang, Wuxi City  
Jiangsu Province 214081, China  
☎ +86-510-5556262  
☎ +86-510-5553304  
✉ [cosmos@public1.wx.js.cn](mailto:cosmos@public1.wx.js.cn)

José Aguilar-Manjarrez  
*Information Management Specialist*  
GILF Division  
FAO of the United Nations  
Viale delle Terme di Caracalla 00100  
Rome, Italy  
☎ 3906 570 55452  
✉ [Jose.AguilarManjarrez@fao.org](mailto:Jose.AguilarManjarrez@fao.org)

Miao Weimin  
*Deputy Director*  
Freshwater Fisheries Research Center  
Qitang, Wuxi City  
Jiangsu Province 214081, China  
☎ +86-510-5558719  
☎ +86-510-5553304  
✉ [wmmiao@public1.wx.js.cn](mailto:wmmiao@public1.wx.js.cn)

## Advisory Committee

**Joy Rivaca-Caminade**  
IIRR

**Harvey Demaine**  
AIR

**Julian F. Gonsalves**  
IIRR

**Matthias Halwart**  
FAO-UN

**Dilip Kumar**  
NACA

**S. S. Tabrez Nasar**  
IIRR

**Gary F. Newkirk**  
CRRN, Dalhousie University

**Rolando Platon**  
SEAFDEC

**Mark Prein**  
ICLARM

## Production staff

---

### Concept Development

Julian F. Gonsalves  
IIRR

S. S. Tabrez Nasar  
IIRR

---

### Workshop Coordinators

Evangeline C. Montoya  
IIRR

S. S. Tabrez Nasar  
IIRR

---

### Editors

Carlos William W. Azucena  
*Senior Environmental Management Officer*  
Bataan Integrated Coastal Management Program – Project Management Office  
(BICMP-PMO)  
Office of the Governor, Bataan Provincial Capitol  
Balanga, Bataan, Philippines  
☎ +63-47-791 6174; 0919-3658563  
☎ +63-47-237 2413  
✉ [yamzky@yahoo.com](mailto:yamzky@yahoo.com); [yamzky@hotmail.com](mailto:yamzky@hotmail.com)

Bernadette P. Joven  
#53 Lakeview Subdivision  
Bucal, Calamba  
Laguna, Philippines  
☎ +63-49-244 5265  
✉ [bpjoven@yahoo.com](mailto:bpjoven@yahoo.com)

Siobhan O'Malley  
*Information Education Communication Coordinator*  
NGOs for Integrated Protected Areas (NIPA)  
Parks and Wildlife, North Avenue  
Quezon City, Philippines  
☎ +63-2-929 6214  
☎ +63-2-929 6214  
✉ [siobhann@hotmail.com](mailto:siobhann@hotmail.com)

Ma. Stella S. Oliver  
9597 Diamond St.  
Umali Subdivision  
Los Baños, Laguna, Philippines  
☎ +63-49-249 2586; 536 2075  
☎ +63-49-536 2075  
✉ [marest@lb.msc.net.ph](mailto:marest@lb.msc.net.ph)

Mayla Hernandez Viray  
29 ADB Subdivision  
Del Remedio, San Pablo City  
Laguna, Philippines  
☎ +63-49-561 3982; 0919-353 0745  
✉ [Mye1025@yahoo.com](mailto:Mye1025@yahoo.com)

---

## Artists

Carlito N. Bibal  
Philippine Rice Research Institute (PhilRice)  
Maligaya, Muñoz  
Nueva Ecija, Philippines  
☎ +63-44-456 0651 loc. 511  
☎ +63-44-456 0651 loc. 511

Ric E. Cantada  
Don Gregorio Heights Subdivision  
Bucal, Dasmariñas  
Cavite, Philippines  
☎ +63-46-973 1013; 0919-574 2998

Rey Cuevas  
334 Carsadang Bago  
Imus, Cavite, Philippines  
☎ +63-0919-425 1113  
✉ [artsunltd@hotmail.com](mailto:artsunltd@hotmail.com)

Jonas Diego  
3349 Apartment 4, Aguila Street  
Rhodas Subdivision, Anos, Los Banos  
Laguna, Philippines  
☎ +63-49-536 6403  
✉ [jonas\\_diego@yahoo.com](mailto:jonas_diego@yahoo.com); [diego\\_silang@hotmail.com](mailto:diego_silang@hotmail.com)

Ariel Lucerna  
259 2nd St.  
Salinas, Bacoor, Cavite, Philippines  
☎ +63-0917-439 1962; 463 6619  
✉ [ariellucerna@hotmail.com](mailto:ariellucerna@hotmail.com)

Rollie N. Nicart  
09 Sampaloc II, Bucal  
Dasmariñas, Cavite, Philippines  
☎ +63-46-851 1826

---

## Dekstop Publishing Staff

Celso Amutan  
*Publication Development Associate*  
IIRR  
Y. C. James Yen Center, Silang  
Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [Celso.Amutan@iirr.org](mailto:Celso.Amutan@iirr.org)

Hannah K. Castaneda  
4 Castaneda Subdivision  
Mambog, Bacoor  
Cavite, Philippines  
☎ +63-0917-471 3836; 46-472 0450  
☎ +63-46-973 0647  
✉ [email\\_me@hannahsmail.com](mailto:email_me@hannahsmail.com)

Ivan Roy Mallari  
#182 Biga  
Silang, Cavite, Philippines  
☎ +63-46-865 0183  
✉ [idroid@yahoo.com](mailto:idroid@yahoo.com); [ivandroid@mailcity.com](mailto:ivandroid@mailcity.com)

Jeffrey T. Oliver  
*Publication Development Associate*  
IIRR

Y. C. James Yen Center, Silang  
Cavite Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [Jeff.Oliver@iirr.org](mailto:Jeff.Oliver@iirr.org)

---

### **Administrative Support**

Ma. Aida Gaerlan  
*Administrative Assistant*  
IIRR  
Y. C. James Yen Center, Silang  
Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [magaerlan@yahoo.com](mailto:magaerlan@yahoo.com)

---

### **Logistics Support**

Annex Costa  
IIRR  
Y. C. James Yen Center, Silang  
Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420

Ronnie De Castro  
IIRR  
Y. C. James Yen Center, Silang  
Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420

Marlon Manila  
10183 Cordillera St.  
Umali Subdivision  
College, Laguna  
☎ +63-49-536 2428

---

### **Post-production Coordinators/ Desktop Publishers**

Evangeline C. Montoya  
*Publication Development Associate*  
IIRR  
Y. C. James Yen Center  
Silang, Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [jelmontoya@hotmail.com](mailto:jelmontoya@hotmail.com)

---

### **Editors**

Jeffrey T. Oliver  
IIRR

S. S. Tabrez Nasar  
IIRR

Julian F. Gonsalves  
IIRR

Joy Rivaca-Caminade  
*Head, Publications and Communication Program*  
IIRR  
Y. C. James Yen Center

Silang, Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [joy.caminade@pacific.net.ph](mailto:joy.caminade@pacific.net.ph)

Erlinda Bolido  
#2230 P. Singalong Street  
Malate, Metro Manila  
☎ +63-02-522 1450  
✉ [lbolido@hotmail.com](mailto:lbolido@hotmail.com)

---

## **Illustrator**

Ariel Lucerna

---

## **Cover Design**

Federico Dominguez  
44 Lt. J. Francisco Street, Krus na Ligas  
Quezon City, Philippines  
☎ +63-2-925 0865

---

## **Administrative Support**

Lilibeth T. Sulit  
*Administrative Assistant*  
Publications and Communication Program  
IRR, Silang, Cavite, Philippines  
☎ +63-46-414 2417  
☎ +63-46-414 2420  
✉ [Lilibeth.Sulit@iirr.org](mailto:Lilibeth.Sulit@iirr.org)

## Correct citation:

IIRR, IDRC, FAO, NACA and ICLARM. 2001. Utilizing Different Aquatic Resources for Livelihoods in Asia: a resource book. International Institute of Rural Reconstruction, International Development Research Centre, Food and Agriculture Organization of the United Nations, Network of Aquaculture Centers in Asia-Pacific and International Center for Living Aquatic Resources Management. 416 p.

## Printed in the Philippines

ISBN 1-930261-02-0