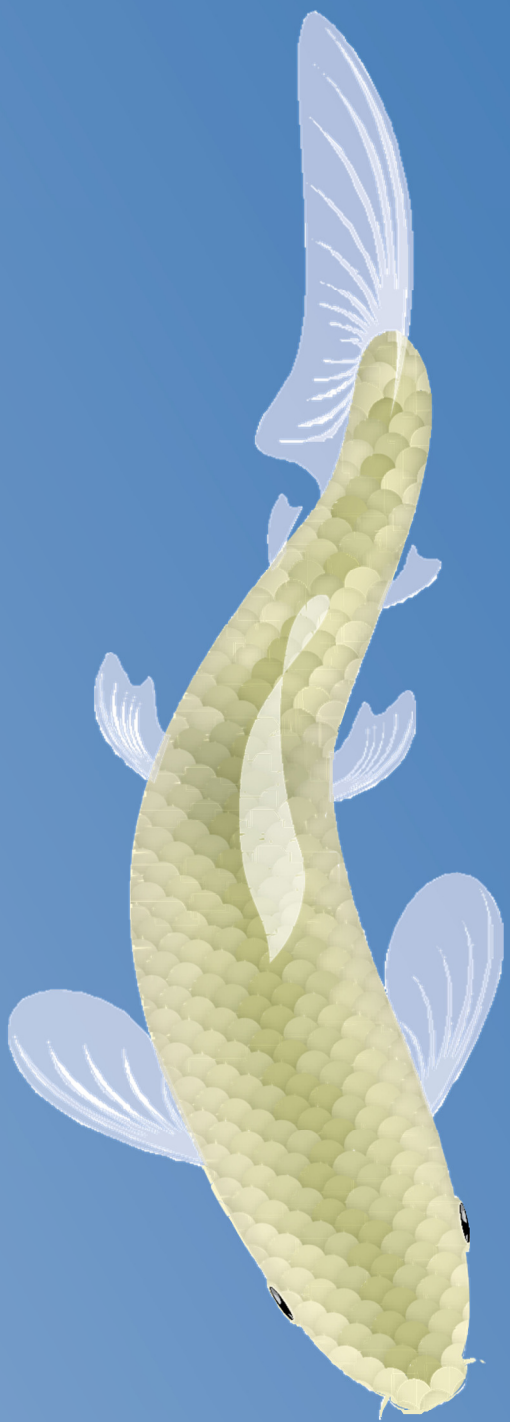
Culture-based Fisheries in Inland Waters



Training Handbook

Culture-based Fisheries in Inland Waters

Training Handbook

Venue: Institute of Aquaculture, Nha Trang University, Nha Trang, Vietnam

Time: 30th October – 8th November 2017

Organizers: The United Nations University Fisheries Training Programme (UNUFTP),
Network of Aquaculture Centres in Asia-Pacific (NACA)
Nha Trang University (NTU)

UNITED NATIONS UNIVERSITY
Fisheries Training Programme

Contents

1 Background

We are gradually moving into an era of increasing realisation and acknowledgement of the importance of food fish as a source of nutrition and its role in food security at large[1, 2] and an associated call for increasing food fish production to minimise the widening gap between supply and demand.

In the context of the need to increase food fish production one cannot ignore the contribution that aquaculture *per se* have made to this end. However, questions are being posed whether intensive forms of aquaculture requiring and competing with limiting resources such as land and water, as well as biological inputs in the form of fish meal and fish oil, can continue to maintain an annual growth rate of six percent as it had done over the last two decades; added to this is the increasing concerns of maintaining environmental integrity, and in most instances these demands on aquaculture may have impact on its growth rate in the future, thereby paving the way for production processes such as culture-based fisheries (CBF) to come into prominence. In general there is an increasing consensus that inland fisheries production has major potential to contribute to the increasing demand for food fish[3,4].

Culture based fisheries (CBF) is a form of extensive aquaculture, ideally conducted in small water bodies that are incapable of sustaining a fishery of any scale through natural recruitment processes, that adopts a stock and recapture strategy, suitably developed, and managed communally. CBF is a low-cost, environmentally friendly activity usually with seed stock being the only external input that engages rural communities, requires limited technical expertise and or associated legislative changes. CBF aims at being an effective utiliser of water resources for the secondary purpose of food fish production without negating and or negatively impacting on the primary use of water resources that more often than not is for downstream rice cultivation, plus home garden cultivation. CBF often benefits rural communities (who tend to be relatively more impoverished compared to the urban counterparts[5]) by bringing about additional income and also provide access to food fish which will enhance the nutrition of these communities. CBF perhaps is an easily adoptable strategy that could contribute significantly to this envisaged growth in food fish production in developing countries in inland waters.

There had been considerable R & D activities on CBF in the last decade or so, and the results

[1] Committee on World Food Security (2014). Report of the High Level Panel of Experts on Sustainable fisheries and aquaculture for food security and nutrition. June 2014. www.fao.org/cfs/cfs-hlpe

2 Běně, C., Barange, M., Subasinghe, R., Pinstrup-Andersen, P., Merino, G., Hemre, G.-I., and Williams, M. (2015). Feeding 9 billion by 2050- putting fish back on the menu. Food Security. doi: 10.1007/s12571-015-0427-z. 16 pp.

[3] Beard T.D. Jr, Arlinghaus R., Cooke S.J., McIntyre P., De Silva S., Bartley D., Cowx I.G. 2011. Ecosystem approach to inland fisheries: research needs and implementation strategies. **Biology Letters** 7(4), 481–483.

[4] Youn, S-J., Taylor, W.W., Lynch, A.J., Cowx, I.G., Beard Jr., T.D., Bartley, D. and Wu, F. (2014) Inland capture fishery contributions to global food security and threats to their future. Global Food Security (2014), http://dx.doi.org/10.1016/j.gfs.2014.09.005. 7 pp.

5 Yunus, M. (2007). Creating world without poverty. Public Affairs, New York. 280 pp.

from these studies also generated a significant quantum of basic scientific information, published in the primary as well as in the grey literature, which is being used by many groups. Governments of some developing countries has embraced CBF as a low-cost strategy to increase food fish production and very successfully made some major progress, which continues to contribute significantly to national food fish production.

The scientific knowledge and practice experience are however far from being widely disseminated as they should be, and adoption of scientific-based CBF with a promising wider geographic coverage is still constrained by limited technical knowhow of concerned rural communities. There has to be a concerted attempt to build capacity among fishery/ aquaculture workers to this end, and develop better management practices of CBF if it were to make a significant contribution to food security and rural nutrition in the long run.

The training course, jointly organized by the United Nations University Fisheries Training Programme, the Network of Aquaculture Centres in Asia-Pacific and Nha Trang University, is a regional capacity building effort in collaboration with other regional partners and professionals, aiming at synthesizing and distilling knowledge from R&D and practical experiences of CBF in the region to form a "dissemination package" and effectively and efficiently extending the knowledge and skills of CBF to professionals who are likely to be involved in operations and monitoring of CBF activities.

2 Training Objectives

During and at the end of the training course, training participants are expected to be able to:

1) Define CBF in the context of aquaculture and capture fisheries
2) Explain why CBF is considered as a low-cost strategy and holds potential in sustaining continuous growth of food fish production
3) Explain why CBF is important to rural communities in rural development
4) Review the current CBF practices and critically identify constraints, risk and other problems and propose possible improvements
5) Identify factors that affect sustainability of CBF in long run
6) Demonstrate relevant skills that are essential for CBF practices in:
    a. community consultation
    b. rural resource appraisal
    c. community motivation and management
    d. hydrological, biological and ecological evaluation of water bodies for CBF
    e. decision on species selection and stoking density
    f. establishment of management system for CBF
    g. stocking practices and stock assessment
    h. proper harvest and marketing

7) Propose strategies and plans for CBF development in respective countries.

3 General Training Approach

1) **Learner central approach:** Sessions are designed in such a way that facilitates maximum experience sharing among participants. Through dynamic training activities participants will be able to consolidate, critically analyze and synthesize their experiences before reaching some generalization.

2) **A focus on skill enhancement:** It is expected that a set of **analytical, assessment and application tools** will be developed/provided to participants for planning, operation, monitoring and evaluation of CBF along with theories and principles. Participants will be able to practice these tools in simulated classroom exercises and in their case studies.

3) **A practical and problem-solving orientation:** Participants are encouraged to bring their own cases, identify practical issues, and apply knowledge and skills they learn in the training course to plan for CBF with proposed approaches and solutions.

4 Training Schedule[6]

30 October 2017, Monday

Time	Activity

08:30 – 09:30	• **Registration (Hung[7])**
	• **Welcome**
	  ○ Welcome Address –NTU
	  ○ NACA Remark (**Yuan[8]**)
	  ○ Opening Address (UNU-FTP, **Tumi[9]**)
	• **Introduction of resource persons**
	• **Introduction of participants**

09:30 – 09:45	• **Introduction to the training course (Yuan)**
	  ○ Pre-set training objectives
	  ○ Course contents and structure
	  ○ Resources
	  ○ Logistics

09:45 – 10:15	**Coffee/Tea Break**
	SESSION 1 **Culture-based fisheries: What, Why, Where and How**
10:15 – 11:00	**Session 1.1** **L&D[10]:** Why fish and aquaculture **(Sena[11])**
11:00 – 11:10	**Break**
11:10 – 12:00	**Session 1.2** **L&D:** CBF: What, why, where and how **(Sena + Liu Jiashou[12])**
12:00 – 13:30	**Lunch**
	SESSION 2 **Culture-based fisheries: Review of current practices**
13:30 – 16:00	**Session 2.1** Country presentation– Part 1 (**Yuan**): **Briefing and Preparation**
16:00 -	Logistics with **Wella[13]**

[6] The schedule is provisional and subject to change. You will be informed in advance if major changes are considered necessary.
[7] **Hung:** Dr. Pham Quoc Hung
[8] **Yuan:** Dr. Yuan Derun
[9] **Tumi:** Dr. Tumi Tómasson
[10] **L&D:** Lecture and discussion
[11] **Sena:** Prof. Sena S De Silva
[12] **Jiashou:** Prof. Liu Jiashou
[13] **Wella:** Ms. Wiratee Udomlarp

31 October 2017, Tuesday

Time	Activity		
	SESSION 3	**Evaluation of suitability of water bodies for CBF**	
08:30 – 10:00		**Session 3.1**	**L&D:** Hydro-biological characterizations for CBF development **(Upali[14])**
10:00 – 10:30	**Coffee/Tea Break**		
10:30 - 12:00		**Session 3.2**	**L&D:** Assessment of production potential **(Upali & Tumi)**
12:00 – 13:30	**Lunch**		
13:30 – 14:00		**Session 3.3**	**L&D:** Species selection **(Yuan)**
14:00 -		**Session 3.4**	**Classroom simulating exercises**: Evaluation of suitability of water bodies for CBF **(Upali)**

1 November 2017, Wednesday

Time	Activity		
	SESSION 4	**Establishment of Management system**	
08:30 – 09:15		**Session 4.1**	**L&D:** Multiple use of water resources **(Simon[15])**
09:15 – 10:00		**Session 4.2**	**L&D:** Community consultation **(Upali)**
10:00 – 10:30	**Coffee/Tea Break**		
10:30 – 11:30		**Session 4.3**	**L&D:** Legal and policy framework **(Simon)**
	SESSION 8	**Practical: Country CBF development strategies and planning**	
11:30 – 12:00		**Session 8.1**	Briefing **(Yuan)**
12:00 – 13:30	**Lunch**		
	SESSION 4	**Establishment of Management system**	
13:30 –		**Session 4.4**	**Practical:** Community consultation – Simulating exercises on RRA and PRA **(Upali)**

[14] **Upali:** Prof. Upali Amarasinghe
[15] **Simon:** Mr Simon Wilkinson

2 November 2017, Thursday

Time	Activity		
	SESSION 2	**Culture-based fisheries: Review of current practices**	
08:30 – 10:00		**Session 2.2**	**L/D:** CBF: Experiences, current practices, constraints and development potential in China **(Jiashou)**
10:00 – 10:30	**Coffee/Tea Break**		
	SESSION 4	**Establishment of Management system**	
10:30 – 12:00		**Session 4.5**	**L&D**: The entrepreneurship plan prepared for the development of CBF in Ellewewa reservoir in Sri Lanka **(Upali)**
12:00 – 13:30	**Lunch**		
13:30 – 14:30		**Session 4.6**	**L/D:** Gender mainstreaming **(Upali)**
14:30 – 14:45	**Break**		
	SESSION 2	**Culture-based fisheries: Review of current practices**	
14:45 – 16:45		**Session 2.1**	Country presentation-Part 2 **(Yuan)**

3 November 2017, Friday

Time	Activity	
08:30 – 09:30	**SESSION 5**	**L&D: Risks Associated with CBF and Management (Sena)**
09:30 – 10:30	**SESSION 6**	**L&D: Constraints to and Sustainability of Culture-based Fisheries (Sena + Jiashou)**
10:30 – 10:45	**Coffee/Tea Break**	
	SESSION 2	**Culture-based fisheries: Review of current practices**
10:45 – 12:00	**Session 2.1**	Country presentation - Part 3 **(Yuan)**
12:00 – 13:30	**Lunch**	
13:30 – 15:00	**Session 2.3**	**L/D:** CBF: Experiences, current practices, constraints and development potential in Vietnam **(Anh[16])**
15:00 – 15:15	**Break**	
15:15 – 16:30	**Session 2.1**	Country presentation- Part 4 **(Yuan)**

[16] **Anh**: Dr Bui The Anh

4 November 2017, Saturday, Weekend break

5 November 2017, Sunday, Sightseeing

6 November 2017, Monday

Time	Activity		
	SESSION 7	**Stocking practices**	
08:30 – 10:00		**Session 7.1**	**L/D:** Stocking calendar, size, rate/density, transport of seeds **(Upali + Sena)**
10:00 – 10:30	**Coffee/Tea break**		
10:30 – 12:00		**Session 7.2**	Classroom exercise: Stocking calendar, size, rate/density, transport of seeds **(Upali + Sena)**
12:00 – 13:30	**Lunch**		
13:30 -		**Session 7.3**	**L/D and classroom exercise – Part 1:** Stock assessment **(Einar[17])**

7 November 2017, Tuesday

Time	Activity		
	SESSION 7	**Stocking practices**	
08:30 – 10:00		**Session 7.4**	Cases of mitten crab and mandarin fish CBF **(Jiashou)** Consideration of species selection for CBF Bioenergetic and ecological modelling
10:00 – 10:30	**Coffee/Tea Break**		
10:30 – 12:00		**Session 7.3**	**L/D and classroom exercise:** Stock assessment and practical procedures – **part 2 (Lam Anh[18])**
12:00 – 13:30	**Lunch**		
13:30 – 14:00		**Session 7.5**	**L/D:** Strategies and techniques for newly stoked fish seeds **(Yuan)**
14:00 – 14:30	**SESSION 7**	**L/D: Harvesting and marketing strategies (Sena)**	
	SESSION 8	**Practical: Country CBF development strategies and planning**	
14:30 –		**Session 8.2**	Preparation and progress **(Yuan)**

[17] Dr Einar Hjorleifsson
[18] Dr Nguyen Lam Anh

8 November 2017, Wednesday

Time	Activity
	SESSION 8 Practical: Country CBF development strategies and planning
08:30 – 12:00	**Session 8.3** Presentations **(Yuan)**
12:00 – 13:30	**Lunch**
13:30 -	Open forum (Yuan) Evaluation (Yuan) Certificates Closing remarks
18:30 -	**Farewell dinner**

5 Lists of Participants

5.1 List of Trainees

Australia

CHARLES DAVID (Mr) Senior Project Officer Fisheries Torres Strait Regional Authority 46 Victoria Parade, Thursday Island, Torres Strait, QLD 4875	**Tel:** **Fax:** **Email:**	+0467 859 343 +0467 859 343 Charles.David@tsra.gov.au	
JERRY STEPHEN (Mr) Elected Board Member Torres Strait Regional Authority 46 Victoria Parade, Thursday Island, Torres Strait, QLD 4875	**Tel:** **Fax:** **Email:**	+0458 123 170 +0458 123 170 ugar.member@tsra.gov.au	

Bangladesh

MOHAMMAD SULTAN MAHMUD (MR) Upazila Fisheries Officer, Sylhet Department of Fisheries(DOF) Kulaura, Moulvibazar Bangladesh	**Tel:** **Fax:** **Email:**	+880 17 22386630 +880 8 62456646 sultanfbau@gmail.com	

Cambodia

SAVRY CHHY (MS) Deputy Director, Department of Aquaculture Development Fisheries Administration, Ministry of Agriculture Forestry and Fisheries #186, Preah Noromdom Blvd, Sangkat Tonle Bassac, Khan Chamkar Mon, Phnom Penh Cambodia	**Tel:** **Fax:** **Email:**	+855 17 92 98 99 +885 23 215 470 chhysavry@yahoo.com	

China

DIAN FANG (DR)
Associate Fellow, Department of Open water Fisheries
Freshwater Fisheries Research Centre (FFRC) of Chinese Academy of Fishery Sciences (CAFS)
No.9, Shanshui Rd East, Wuxi, Jiangsu
China

Tel: +86 510 85390025
Fax: +86 510 85390025
Email: fangda@ffrc.cn

India

AMIYA SAHOO (DR)
Scientist, Aquaculture/Fishery Science
ICAR-CENTRAL INLAND FISHERIES RESEARCH INSTITUTE (CIFRI)
Manirampore, Barrackpore,
Kolkata 700120
India

Tel: +91 33 25921190
Fax: +91 33 25920388
Email: amiya.sahoo@icar.gov.in
amiya7@gmail.com

Indonesia

WAZIR NAF'AN (MR)
Head of Planning and Budgeting Sub-Division, Program Division
Directorate General of Aquaculture-Ministry Marine Affairs and Fisheries Republic of Indonesia
Medan Merdeka Timur street, 4th Minabahari Building Ministry Marine Affairs and Fisheries
Gambir- Jakarta
Indonesia

Tel: +62 81 554 018 367
Email: wazir.nafan@gmail.com
program.baru@gmail.com

Myanmar

MOE MOE KHAING (MS)
Deputy assistant officer, Yangon Department of fisheries, Hlawgar station
Myanmar

Tel: +95 92 53696296
Email: mmoekhaing19@gmail.com

Nepal

PRABESH SINGH KUNWAR (MR)
Senior Fisheries Development Officer, Directorate of fisheries Development, Ministry of Agricultural Development
Machhapokhari, Balaju, Kathmandu
Nepal

Tel: +977 1 620 0733
+977 985 103 8987
Fax: +977 1 435 0833
Email: dofnep@gmail.com
prabeshkunwar@yahoo.com

Nigeria

JOHN OLUSEGUN BABATUNDE (MR)
Deputy Director Fisheries, Artisanal Fisheries, Federal Ministry of Agriculture and Rural Development
1 Capital Drive, FCDA Complex, Area 11
Garki – Abuja
Nigeria

Tel: +234 80 331 50343
Email: babatundejhn@gmail.com

OCHUKO JOSHUA ERIEGHA (MR)
Research Officer 1, Aquaculture and Biotech, National Institute for Freshwater Fisheries Research
Pmb 6006, New Bussa, Niger State
Nigeria

Tel: +234 70 321 32859
Email: ochukodegreat@yahoo.com
niffish@gmail.com

Pakistan

MUHAMMAD YOUNUS QUMBRANI (MR)
Assistant Director Fisheries B.17, Government of Balochistan Fisheries Department of Balochistan
New Qambraniatos Near Almumtaz Coach Transport Intercity Bus Teminal Yousif goth
Karachi
Pakistan

Tel: +33 672 042842
+33 431 11255
Email: younusqambrani@gmail.com

Philippines

ELMER SURIAGA (MR)
Aquaculturist, PFO-North Cotabato
Bureau of Fisheries and Aquatic Resources
Government Complex, Carpenter Hill
Koronadal City
Philippines

Tel: +63 83 228 1899
Fax: +63 83 228 1898
Email: bpar12hrm@yahoo.com
ilaivince@gmail.com

Sri Lanka

KULARATNE MOHOTTALA GEDARA (DR)
Senior Lecturer, Department of Economics
Faculty of Social Sciences,
University of Kelaniya
Kelaniya, 11600
Sri Lanka

Tel: +94 11 291 4488
Fax: +94 11 291 1485
Email: Kule_econ@kln.ac.lk,
kuleecon@gmail.com

Thailand

RATTHAPAT PRADISSAN (MR)
Fishery Biologist, Inland Aquaculture Research and Development Division, Department of Fisheries
Jatujak, Bangkok, 10900
Thailand

Tel: +66 2 558 0145
Fax: +66 2 558 0145
Email: ratthapatp@hotmail.co.th

Vietnam

LINH PHAM (MS)
Head, Fisheries Strategy and Policies
Vietnam Institute Fisheries Economics and Planing
No.10 Nguyen Cong Hoan Street,
Ba Diuh District, Hanoi city
Vietnam

Tel: +84 24 383 45674
Fax: +84 24 383 45674
Email: vifep@vifep.com.vn
thuylinh_vifep@yahoo.com

5.2 List of Student Participants from Nha Trang University

No	Full name	Gender	Nationality	E-mail
1.	CHARLES NYANGA	M	Zambia	charles.nyanga@gmail.com
2.	EWUMI AZEEZ FOLORUNSO	M	Nigeria	ewumia@yahoo.com
3.	FARSHAD ALAM CHOWDHURY	M	Bangladesh	farshadchy@gmail.com
4.	TOMAS NDATITANGINALUKAKU	F	Namibian	tomastangi@gmail.com
5.	OLUOWO ELOHOR FREEMAN	M	Nigerian	hallabigfreeman@gmail.com
6.	MOHOTTI MUDIYANSELAGE DULANI SHIWANTHIKA DHARMASIRI	F	Sri Lankan	shiwanthika.dharmasiri@gmail.com
7.	SINGHALAGE SHANIKA SHRIMANI WERALUGOLLA	F	Sri Lankan	shani.weralugolla@gmail.com
8.	GREGORY ROBERT MORRIS	M	Liberian	morrisgregoryr@gmail.com
9.	SOTH SOBOT	M	Cambodian	sobothjupiter@yahoo.com
10.	ERIC T.S. PATTEN	M	Liberian	Ericpatten1984@gmail.com
11.	AFURE WHYTE OLUOWO	M	Nigerian	afurewhyte@gmail.com
12.	MATOVU BAKER	M	Ugandan	matker2010@gmail.com
13.	DO THI NGOC AN	F	Vietnamese	dongocan51tp3@gmail.com
14.	NGUYEN Y VANG	M	Vietnamese	vangny@ntu.edu.vn
15.	TRAN VAN HAO	M	Vietnamese	haotv@ntu.edu.vn
16.	MAI THI CAM HUYEN	F	Vietnamese	mtchuyen@pou.edu.vn

5.3 List of Recourse Persons

Professor Sena S De Silva PhD, DSc (Stirling), Hon. DSc (Ruhuna) Honorary Life Member, World Aquaculture Society Honorary Life Member, Asian Fisheries Society Editor-in-Chief, Reviews in Aquaculture Honorary Professor	School of Life & Environmental Sciences Deakin University Victoria Australia **Email:** sena.desilva@deakin.edu.au	
Professor Upali S. Amarasinghe B.Sc. (Kelaniya), M.Sc. (Wales), Ph.D. (Ruhuna), D.Sc. (Bangor) FI Biol, C Biol, FNASSL Senior Professor	Department of Zoology & Environmental Management University of Kelaniya Kelaniya GQ 11600, Sri Lanka **Tel:** +94 (0)11 290 3397 **Fax:** +94 (0)11 291 4479 **Email:** pali54@gmail.com zoousa@kln.ac.lk	
Professor Liu Jiashou Professor	Institute of Hydrobiology - Chinese Academy of Sciences No. 7 Donghu South Road, Wuchang District, Wuhan, Hubei Province China **Email:** jsliu@ihb.ac.cn	
Dr Einar Hjorleifsson Senior Scientist	Marine Research Institute Skúlagata 4, 101 Reykjavík, Iceland **Tel:** +855 17 92 98 99 **Fax:** +885 23 215 470 **Email:** einar.hjorleifsson@gmail.com	
Dr Yuan Derun Programme Officer	Sustainable Farming System Programme Education and Training Programme **Network of Aquaculture Centres in Asia-Pacific (NACA)** PO Box 1040 Kasetsart Post Office Bangkok 10903, Thailand **Tel:** (66-2) 561 1728 **Fax:** (66-2) 561 1727 **Email:** yuan@enaca.org	

Mr Simon Wilkinson Programme Officer	Information and Communication Programme **Network of Aquaculture Centres in Asia-Pacific (NACA)** PO Box 1040 Kasetsart Post Office Bangkok 10903, Thailand **Tel:** (66-2) 561 1728 **Fax:** (66-2) 561 1727 **Email:** simon@enaca.org	
Dr Pham Quoc Hung Associate Professor Director	Institute of Aquaculture Nha Trang University 02 Nguyen Dinh Chieu Nha Trang, Khanh Hoa Vietnam **Tel:** + 84.258.222 0816 **Email:** phamquochung@ntu.edu.vn	
Dr Nguyen Lam Anh	Institute of Aquaculture Nha Trang University 02 Nguyen Dinh Chieu Nha Trang, Khanh Hoa Vietnam **Email:** anhnl@ntu.edu.vn	
Dr Bui The Anh	Department of Science, Technology and environment Ministry of Agriculture and Rural Development Vietnam **Email:** anhbt.khcn@mard.gov.vn	

5.4 List of Supporting Staff and Student Assistants

NETWORK OF AQUACULTURE CENTRES IN ASIA-PACIFIC

Secretariat Address:	**Mailing Address:**
Suraswadi Bldg., Department of Fisheries Kasetsart University Campus Ladyao, Chatuchak, Bangkok 10900 Thailand Tel: (66-2) 561 1728 Fax: (66-2) 561 1727	PO Box 1040 Kasetsart Post Office Bangkok 10903, Thailand

WIRATEE UDOMLARP (MS)	Administrative & Finance Officer	wella@enaca.org
LYNNE PHOTHIMON (MS)	Secretary	lyn@enaca.org
SAOWANEE ROJANEE (MS)	Cashier	kae@enaca.org

NHA TRANG UNIVERSITY

University Address:	**Institute of Aquacultrue Address:**
02 Nguyen Dinh Chieu, Nha Trang, Khanh Hoa, Vietnam	Floor 3, B1, Nha Trang University Campus **Tel:** + 84.258.247 1396 **Fax:** + 84.258.383 1147

LE MINH HOANG (Dr)

Institute of Aquaculture
Nha Trang University

Tel: +84 905 465 811
Fax: +84 905 465 811
Email: hoanglm@ntu.edu.vn

VU TRONG DAI (Mr)

Institute of Aquaculture
Nha Trang University

Tel: +84 935 700 674
Fax: +84 935 700 674
Email: daivt@ntu.edu.vn

NGUYEN THI KIM ANH (Ms)

Institute of Aquaculture
Nha Trang University

Tel: +84 905 986 835
Email: kimanhnt1@gmail.com

NGUYEN THI THUY LINH (Ms) Msc student Training course assistant	Institute of Aquaculture Nha Trang University **Tel:** +84 1674 372 922 **Fax:** +84 1674 372 922 Email: thuylinh55ntts@gmail.com	
VO THI XUAN (Ms) Msc student Training course assistant	Institute of Aquaculture Nha Trang University **Tel:** +84 976 145 253 **Fax:** +84 976 145 253 **Email:** xuanvo2910@gmail.com	
LUONG DINH DUY (Mr)	Department of external affairs Nha Trang University **Tel:** +84 905 170 615 **Fax:** +84 905 170 615 **Email:** duyld@ntu.edu.vn	
LE ANH MAI HAN (Ms)	Department of external affairs Nha Trang University **Email:** hanlam@ntu.edu.vn	

6 Collaboration Institutions

6.1 The United Nations University Fisheries Training Programme in Iceland

The UNU-FTP (http://www.unuftp.is/) was established in 1998 through a tri-lateral agreement between the United Nations University, the Icelandic Ministry for Foreign Affairs, and the Marine Research Institute of Iceland.

The UNU-FTP operates in collaboration with academic institutions, private fishing companies, governmental institutions and research firms. Our Icelandic partner institutes including the University of Iceland, Matís Food Research, the University of Akureyri, the Marine Research Institute, and Holar University, represent a diverse assortment of expertise in field of fisheries.

The UNU-FTP works with many international and regional bodies on strengthening institutional capacity in fisheries.

International and regional partners of the UNU-FTP include:

- Food and agriculture organization (FAO)
- World Bank
- Secretariat of the Pacific Community (SPC)
- The Commonwealth Secretariat
- Caribbean Regional Fisheries Mechanism (CRFM)
- Network for Aquaculture Centers in Asia - Pacific (NACA)

The United Nations University Fisheries Training Programme offers applied postgraduate-level training in various areas of the fisheries sector for practicing professionals in less developed countries. As an interdisciplinary programme, the UNU-FTP draws expertise from both academia and the fishing industry to provide fellows with a holistic and meaningful perspective on fisheries in their home countries.

Each year, the UNU-FTP offers a 6-month training course in Iceland. The 6-month training course runs from September to February, and is divided into three parts; the introductory course, the specialization line, and the individual research project.

In addition, the UNU-FTP develops short courses that are carried out in cooperation with institutions in our partner countries, often utilizing the expertise of our former fellows.

The UNU-FTP also offers scholarships to those former fellows who have completed the 6 month training course and wish to continue their post-graduate education at an Icelandic university.

6.2 The Network of Aquaculture Centres in Asia-Pacific

The Network of Aquaculture Centres in Asia-Pacific (https://enaca.org/) is an intergovernmental organisation that promotes rural development through sustainable

aquaculture and aquatic resources management. NACA seeks to improve the livelihoods of rural people, reduce poverty and increase food security. The ultimate beneficiaries of NACA are farmers and rural communities.

NACA implements development assistance projects in partnership with research centres, governments, development agencies, farmer associations and other organisations. NACA supports technical exchange, capacity building, institutional strengthening and policies for sustainable aquaculture development and aquatic resource management.

The network is coordinated and administered by a Secretariat based in Bangkok. NACA policy is determined by its Governing Council, consisting of member government representatives, which meets annually to articulate needs and set priorities. The NACA work plan is developed by a Technical Advisory Committee, formed from independent technical experts. The work plan is implemented by a network of research centres in collaboration with governments, donor agencies, farmer associations and NGOs.

Government membership of NACA is via accession to the NACA Agreement, an international treaty. The agreement also provides for associate membership by intergovernmental organisations and donor agencies. Current member governments are Australia, Bangladesh, Cambodia, China, Hong Kong SAR, India, Indonesia, I.R. Iran, Korea (DPR), Lao PDR, Malaysia, Maldives, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand, Vietnam.

The core of NACA is a collaborative network of aquaculture research centres distributed throughout the region. Participating centres share their expertise and facilities for mutual benefit, to avoid duplication of effort and to maximise return on limited R&D resources. The network is also underpinned by five Regional Lead Centres, which serve as support hubs for others in the network.

Research centres that wish to formalise their participation in the network may do so via MOU with the Secretariat. Please write to info@enaca.org for more information about the process.

The mandate of NACA is addressed through five interlinked thematic work programmes that support sustainable aquaculture and aquatic resource management, policy development and inter-governmental cooperation in the region. These are:

- Sustainable Farming Systems.
- Aquatic Animal Health.
- Genetics and Biodiversity.
- Food Safety, Quality and Certification.
- Emerging Global Issues.

Three additional cross-cutting programmes facilitate and support implementation of the thematic work programmes:

- Education and Training.
- Gender.
- Information & Communications.

The work plan is implemented through the development of collaborative projects and activities by partners in the network, addressing issues of common or regional interest. Individual projects draw heavily on the personnel and facilities of participating centres. Projects are essentially implemented by the centres with the Secretariat acting as a coordinating body.

NACA also works in close cooperation with FAO, international donor agencies and other regional and international organisations in implementing the work plan.

6.3 Nha Trang University

Nha Trang University is one of the first 20 higher education institutions of Vietnam accredited by the National Accreditation Council. Currently Nha Trang University is offering five doctoral degree programs, 12 master's degree programs (including one international Master's program on Marine Ecosystem-based Management and Climate Change), 30 undergraduate degree programs, and 15 associate degree programs. We also offer various short courses for professional developments or exchange programs for both domestic and international students.

The University now has a staff body of about 700 members with over 100 doctors and 300 masters, of which over 40% obtained their degrees in developed countries. We enroll 3.700 new students across all levels yearly. Our student body consists of more than 1.000 graduates and 15.000 undergraduates.

In terms of research, Nha Trang University has also made considerable achievements, especially in regard to fisheries. The University has implemented many small and large research projects on aquaculture techniques, aquatic animal diseases, food technology, fisheries economics and management of fishery resources, fishing, shipbuilding and so on. Hundreds of articles are published in domestic and international journals annually. The University's research applications and technology transfer have brought about meaningful contribution to the socioeconomic development of the local province and the country as well.

About us

Nha Trang University constantly expands the scale of training, upgrades infrastructure, improves training programs and updates teaching and learning methods. We maintain close relationships with businesses, production factories, and manufacturers in Khanh Hoa and coastal provinces particularly and also nationwide for feedbacks about training quality, labor demands, needs for new knowledge and skills, needs of technology transfer and so on.

In compliance with the process of development and integration of the country, Nha Trang University continuously seeks new cooperation as well as reinforces existing collaborations with international partners. The collaborative relationships focus on improving the capacity of the University through joint training, scientific research, exchange of scientific information, professional development, and building infrastructure and facilities. Nha Trang University is now the partner of over 40 international organizations, universities and institutes in many countries such as Norway, Denmark, France, Iceland, Germany, Portugal, Russia, Czech Republic, China, Japan, India, Canada, USA, Australia and other countries in the ASEAN.

Nha Trang University
02 Nguyen Dinh Chieu St, Nha Trang, Vietnam
www.ntu.edu.vn *+84 58 2471303* *dea@ntu.edu.vn*

NHA TRANG UNIVERSITY

ASSOCIATE DEGREES (1)

1. Heating & Refrigeration Technology
2. Electrical and Electronic Engineering
3. Mechatronic Engineering
4. Aquatic Product Processing
5. Environment Technology
6. Tourism Management
7. Business Administration
8. Information Technology
9. Accounting
10. Civil Engineering
11. Navigation
12. Food Technology
13. Aquaculture
14. Trade Business
15. Biotechnology

BACHELOR DEGREES (2)

1. Fishing Technology
2. Navigation
3. Automotive Engineering
4. Machine Engineering
5. Mechanical Engineering
6. Mechatronic Engineering
7. Electrical and Electronic Engineering
8. Civil Engineering
9. Heating and Refrigeration Technology
10. Information Technology
11. Information System Management
12. Ship Engineering
13. Environment Technology
14. Biotechnology
15. Food Technology
16. Accounting
17. Agricultural Economics
18. Business Administration
19. Tourism Management
20. Trade Business
21. Aquatic Product Processing
22. Finance - Banking
23. English Language
24. Aquaculture
25. Aquatic Resource Management
26. Fish Pathology
27. Chemical Technology
28. Postharvest Technology
29. Fisheries Management

MASTER'S DEGREES (3)

1. Aquaculture
2. Fishing Technology
3. Postharvest Technology
4. Aquatic Product Processing
5. Biotechnology
6. Food Technology
7. Mechanical Engineering
8. Engineering Dynamics
9. Agricultural Economics
10. Business Administration
11. Marine ecosystem management and climate change (international program in English)
12. Development Economics

DOCTORAL DEGREES (4)

1. Aquaculture
2. Fishing Technology
3. Aquatic Product Processing
4. Engineering Dynamics
5. Postharvest Technology

- *Nha Trang University (NTU), founded in 1959, formerly known as University of Fisheries, main campus in Nha Trang, is training over 20,000 undergraduate students, master's students, and doctoral students at 21 Faculties, Institutes, and Research Centers.*
- *NTU is a public multi-disciplinary institution with over 55 years of experience in undergraduate and graduate training.*
- *NTU is a leading university in fisheries sector in the country. It was among the first 20 universities of Vietnam that were accredited by MOET.*
- *NTU has a staff body of over 700 members with 100 professors, associate professors and Ph.D.s, over 300 masters (over 40% graduated from developed countries), and over 100 faculties are taking Ph.D. and master's programs (60% studying abroad).*

Address: 02 Nguyen Dinh Chieu, Nha Trang, Khanh Hoa Email: daotao@ntu.edu.vn Website: www.ntu.edu.vn Phone: (+84) 58-3831148 Fax: (+84) 58-3831147

www.enaca.org