

ISSUE 25

DECEMBER 2017



## MESSAGE FROM EDITOR



Wishing all readers a Very Happy and Productive 2018.

Two major events of the Society took place since the last newsletter – 11<sup>th</sup> Indian Fisheries and Aquaculture Forum (11ifaf) in Kochi, India organised by the Indian Branch of AFS and 10<sup>th</sup> Symposium on Diseases in Asian Aquaculture in Bali, Indonesia organised by the Fish Health Section of AFS, both of which were well attended and successful. Gender in Aquaculture and Fisheries (GAF) section of AFS launched its logo and website at the 11ifaf in Kochi, India besides organising the Symposium on Gender in Aquaculture and Fisheries in India.

AsiaPacific-Fishwatch having made progress in updating information on tunas, is looking for experts to write profile of freshwater striped catfish (*Pangasius hypothalamus*). I am sure many of you will be interested to contribute to this profile. Details for interested persons are in the relevant section of this newsletter.

The newsletter also gives details of upcoming conferences related to fisheries and aquaculture.

**M. V. Gupta**

**Editor**

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## AFS PRESIDENT MESSAGE



**Dear Friends,**

My Heartfelt Greetings to All of You and Best Wishes for a Very Happy, Prosperous and Productive New Year-2018!!

As always, the preceding six months' (July-December, 2017) also remained eventful for the Society. I am happy to apprise you that **the Fish Health Section of AFS successfully organised its triennial event, the 10<sup>th</sup> Symposium on Diseases in Asian Aquaculture (DAA10)** with the theme 'Enhancing Aquatic Animal Health Research and Services through Public-Private Sector Partnerships' **in Bali, Indonesia during 28<sup>th</sup> August to 1<sup>st</sup> September, 2017. Over 400 delegates from 29 countries participated in the event. Three Satellite Workshops were also organised as back-to-back events along with DAA10.**

I deem it a great honour to inform you that, I was invited by the Japanese Society of Fisheries Science (JSFS) for participation in its 85<sup>th</sup> Commemorative Ceremony held at University of Tokyo on 21<sup>st</sup> September, 2017 and the International Symposium on 'Fisheries Science for the Future Generations' at Tokyo University of Marine Science and Technology during 22-24 September, 2017. On behalf of AFS and my own behalf, I sincerely thank and convey my gratefulness to the President of the JSFS, Prof. Katsumi Tsukamoto and other organisers for kind invitation and sponsorship, and providing opportunity in delivering a speech in the Commemorative Ceremony and presenting a paper on AFS activities in the Symposium. Dr Atsushi Hagiwara, AFS Councillor from Japan deserves special thanks for facilitating my visit.

You may be happy to note that the 3<sup>rd</sup> International Symposium on Aquaculture and Fisheries Education (ISAFE3) is scheduled to be held in Mumbai, India during 16-18 May, 2017, which would be hosted by ICAR-Central Institute of Fisheries Education (CIFE), Mumbai, India in collaboration with the Asian Fisheries Society Indian Branch (AFSIB). The event scheduled during February was postponed due to certain technical issues. Further, the 6<sup>th</sup> International Symposium on Cage Aquaculture (CAA6) has been proposed to be held at Surat Thani, Thailand during 12-15 October, 2018, which will be organised by the Chulalongkorn University, BIOTEC and Prince of Songkla University. I on behalf of the organisers cordially invite you all for participation in both the events and encouraging participation of your colleagues and friends. The project AsiaPacific-FishWatch is progressing well, and for the same, I wish to convey my profound compliments to Dr Meryl Williams for her continued support. The March, June and September Issues of the Journal of the Society, Asian Fisheries Science, have already been published as per the schedule. I would like to sincerely thank the Editor, Dr Mohamed Shariff and his Team for this great effort.

On behalf of the Society, I extend sincere thanks to the AFSIB for organisation of the 11<sup>th</sup> Indian Fisheries and Aquaculture Forum (11ifaf) in magnificent way. Dr. C.N. Ravishankar, Director, ICAR-CIFT and the Convener, and his Team deserve special appreciation. Grateful thanks are also due to Dr Meryl Williams and Dr Nikita Gopal for successful hosting of the Special Symposium on Gender in Aquaculture and Fisheries in India (GAF- India) organised by the GAF section of the AFS.

I would like to express my sincere thanks and gratitude to all the members of 12<sup>th</sup> Executive Council and esteemed Members of AFS for their consistent guidance and support at all times. Further, I sincerely wish to receive your continued advice and cooperation of all of you for achieving the set objectives of the Society.

**J.K.Jena**  
**President, 12<sup>th</sup> AFS Council**

## NEWS FROM THE GENDER IN AQUACULTURE AND FISHERIES SECTION



The Gender in Aquaculture and Fisheries Section of AFS held its first election in September and elected its First Executive Committee officers, who are:

Chair	: Meryl J Williams
Vice-Chair	: Nikita Gopal
Secretary	: Kafayat Fakoya
Inaugural Treasurer	: Arlene Nietes Satapornvanit
Election committee Coordinator	: Mohammad Nuruzzaman
Constitution Committee Coordinator	: Alice Ferrer
Membership Committee Coordinator	: Danika Kleiber
Elected Member	: Kyoko Kusakabe
Elected Member	: Indah Susilowati

A Newsletter Editor is yet to be selected to complete the ExeComm. Find out more about each of the ExeComm members on our website: <https://genderaquafish.org/gaf-section/about-us/executive-committee/>,

The Executive Committee held its first meeting on 25 November in Kochi, India, covering topics including ratification of its By-Laws, partnerships, membership, financing and the conduct of GAF7 (see below).

Our membership now stands at 78 and new memberships are coming in steadily, adding also to the AFS membership. Members who were enrolled before the end of 2017 will be recognized as Founding Members.

Here are some of the other achievements of GAFS since the June 2017 AFS Newsletter.

**Women in Aquaculture Profile.** Discover GAF, our compendium of lay language articles on key GAF topics, has been augmented with the peer reviewed “Women in Aquaculture” Profile, written by Cecile Brugere and Meryl Williams. This profile was supported by a collaborative grant from Aquaculture without Frontiers Australia. Read the profile at: <https://genderaquafish.org/discover-gaf/>. GAFS intends to gradually expand this section.

**GAF7: (7<sup>th</sup> Global Symposium on Gender in Aquaculture and Fisheries):** In August, the Gender Section decided to hold its next Global Symposium as a stand-alone event. The dates chosen were 18-20 October 2018. From a short list of potential hosts, the Asian Institute of Technology was chosen for GAF7. A first announcement has gone out (<https://genderaquafish.org/>), and abstracts and proposals for sessions are being sought. The title of GAF7 is: *Gender in Aquaculture and Fisheries: Expanding the horizons.*

### **GAFS @ 11<sup>th</sup> Indian Fisheries and Aquaculture Forum (11FAF), Kochi, India, 21-24 Nov. 2017**

GAFS used the opportunity of the 11FAF, held by the Asian Fisheries Society Indian Branch in Kochi, India, for its official Section launch, the launch of several new products, and to conduct GAF-India that was comprised of presentations, an International Workshop in partnership with the International Collective in Support of Fishworkers (ICSF), and the M.C. Nandeesh Photo Competition.

Official launch of GAF Section at 11IFAF, 21 November, Kochi. Under the chairmanship of Dr J.K. Jena, President of AFS and AFSIB, Smt. J. Mercykutty Amma, Minister for Fisheries, Harbour Engineering and Cashew Industry, Kerala officially launched the GAF Section by releasing the Logo and the design of the GAF Section website. Also formally released were two publications from the 6th Global Symposium on Gender in Aquaculture & Fisheries (GAF6) held at Bangkok, Thailand. Prof. K. V. Thomas, Member of Parliament officially released the Asian Fisheries Science Special Issue 30S (2017): *Gender in Aquaculture and Fisheries: Engendering Security in Fisheries and Aquaculture*, comprising peer reviewed papers of presentations made at GAF6. In addition, a colourful presentation book - *Art-works of School Children* - was released by the Director General, ICAR- Dr. Trilochan Mohapatra.



**Smt. J. Mercykutty Amma, Kerala Minister of Fisheries, launching the GAF Section logo on 21 November at 11IFAF in Kochi, India.**

*GAF-India at 11IFAF.* The Symposium on Gender in Aquaculture and Fisheries in India (GAF-India) was a successful event. It featured 23 presentations, including 2 invited presentations, 6 posters and the Special Workshop on Challenges in the implementation of the Voluntary Guidelines on the Small - Scale Fisheries of FAO in South Asia. An award winning film, "The Women of Petatan" by Carmen Pedroza, was also shown, and a scientific Write-Shop "Writing a Gender Research Paper: tips from editors and reviewers", was also conducted. Prior to the event, the M.C. Nandeesh Photo Competition attracted 68 entries from all over India, each illustrating the photographer's interpretation of the theme (an activity, issue, event picturing gender equity in Indian aquaculture and fisheries), the quality of the photograph and an appropriate caption. The competition was judged by popular online voting and by a small team of GAFS. All the photos can be viewed at: <https://genderaquafish.org/events/gaf-india-november-kochi-india/m-c-nandeesh-photo-competition-entries/>.



**First prize photo: Women participate in fish harvesting (From aquaculture pond Tripura, India), by Vikash Kumar, ICAR-Central Inland Fisheries Research Institute, Barrackpore, Kolkata, West Bengal.**

In conjunction with GAF-India, ICSF led an International Workshop on Challenges in the Implementation of the Voluntary Guidelines on Small Scale Fisheries (SSFVG) of FAO in South Asia.



**Presenters and some of the participants of the International Workshop on Challenges in the Implementation of the Voluntary Guidelines of FAO in South Asia, 24 November, GAF-India, 11IFAF, Kochi, India.**

The full list of presentation, poster and photo prize winners from GAF India are as below:

#### **Best Student Presentations**

**1st Prize:** B.M.R.L. Basnayake and D.M. De Silva – “Gendered Timeline of the Market Landscape of the Fisheries Industry in Sri Lanka.”

**2nd Prize:** Asha S. Karunaratne, I.C. Hettiarachchi and D.A.M. De Silva - "Gender Sensitive Value Chain Selection: Fish, Banana and Cinnamon, Which Provide Best Opportunities for Women?"

#### **Best Student Posters**

**1st Prize:** Mrudula, K.M., P.K. Sajeenamol, Jiswin Joseph, M.V. Neelima, Bindu J., S Sreejith, Sajesh, V.K., and Nikita Gopal. - "Traditional Fish Recipes of Fisher Households and Their Significance."

**2nd Prize:** Manju Lekshmi N., Archana G., Saly N. Thomas and Leela Edwin - "Rural Women Participation in Pre and Post-Harvest Operations of Stakenet (Estuarine Set Bag) along Aroor Fishing Village, Alappuzha, Kerala."

#### **Asian Fisheries Society Indian Branch: Prof. M.C. Nandeesh Gender Justice & Equality Award 2017**

Dr Meryl J Williams, Honorary Life Member, Asian Fisheries Society, "In recognition of her pioneering and sustaining efforts towards drawing international attention and developing impacting interventions in gender justice and equality in the Asian Aquaculture and Fisheries sector."

## **M.C. Nandeesh Photo Competition**

**1st Prize:** Vikash Kumar, Scientist, ICAR-Central Inland Fisheries Research Institute (ICAR-CIFRI), Barrackpore, Kolkata. Photo: *Women participation in fish harvesting (From aquaculture pond Tripura, India)*.

**2nd Prize:** Ranjan Manna, Principal Scientist, ICAR-Central Inland Fisheries Research Institute, Barrackpore, Kolkata. Photo: *Equal contributor: Catching fish using gill net from a river in Indian Sundarban.*

**3rd Prize:** Deepjyoti Baruah, Senior Scientist, ICAR-Directorate of Coldwater Fisheries Research, Nainital, Uttarakhand. Photo: *Women in Assam fishing for food security.*

**Highly Commended:** Pradip Kumar Mahato, Graphic artist. Photo: *Mending Lives Together*. Description: *The photo was taken at a fishing harbour in West Bengal, India, where men and women were found sharing responsibilities in mending fishing nets.*

**Highly Commended:** Tabrez Nasar, Dean, Institute of Livelihood Research and Training. Photo: *Male entrepreneurs from Meghalaya learning from women entrepreneurs in Jharkhand, India.*

**Highly Commended:** Renju Ravi, Marketing Assistant, National Institute of Fisheries Post Harvest Technology and Training (NIFPHATT), Foreshore Road, Ernakulam, Kerala. Photo: *More than equality, striving for a livelihood.*

**Highly Commended:** Suvra Roy, Scientist, ICAR- Central Inland Fisheries Research Institute, Barrackpore. Photo: *Women participation in sorting and grading of fishes after catch (from coastal region of Sundarbans).*

**Highly Commended:** Neelkanth Mishra, CEO, Centre for Aquatic Livelihood -Jaljeevika, Pune. Photo: *Netting Destiny: Hidden faces of women in fisheries.*

**GAFS communications:** GAFS has very active outreach through our website, the Genderaquafish and GAFS e-mail groups, and by other social media outlets. In 2017, our website, which is currently be revitalised, was viewed more than 25,000 times by more than 10,000 different visitors.

**Website:** <http://genderaquafish.org/>

**Facebook Page:** <https://www.facebook.com/AFS-Gender-in-Aquaculture-and-Fisheries-181176555231544/>

**Twitter:** @Genderaquafish <https://twitter.com/Genderaquafish>

***Contributed by Meryl Williams, Nikita Gopal and Kafayat Fakoya***

## ASIA PACIFIC-FISHWATCH NEWS

We are pleased to report on two activities in AsiaPacific-Fishwatch and to call for applications for expert writers for the profile of the striped catfish (*Pangasius hypophthalmus*).

**Updating information:** The first activity is the annual updating of the status of stocks of the six tunas covered in the species pages (skipjack, yellowfin, bigeye, albacore, longtail and Pacific Bluefin tuna). The updates will be online by the end of February 2018. At the same time, the remaining pages on bigeye and albacore tuna production and markets are being completed and sent for review. This will make a complete and authoritative set for these 6 important species of tuna (species profiles at: <http://www.asiapacfish.org/index.php/species>).

In addition, a handy guide to users on where to find key information on tunas and tuna fisheries in the Western Central Pacific and Indian Oceans was updated and can be consulted at: <http://www.asiapacfish.org/index.php/item/24-tracking-down-expert-knowledge-on-oceanic-tunas>.

**Social media:** The second activity has been our social media outreach to a growing number of followers. AFS members can keep abreast of Asia-Pacific fisheries and aquaculture news by liking our Facebook page (<https://www.facebook.com/asiapacificfishwatch>), and following us on Twitter (@Asiapacfish, <https://twitter.com/Asiapacfish>).

**Call for expert writers:** AsiaPacific-FishWatch is calling for applications from experts who are interested in writing the species profile pages for the first aquaculture species to be covered, the striped catfish (*Pangasius hypophthalmus* (Sauvage, 1878)). The pages will be: (1) Quick Facts, (2) Sustainability, (3) Production, (4) Supply Chains and Markets, (5) Environment and Climate, and (6) Biology. An amount of USD 1,500 will be provided, on completion, of each page.

The yellowfin tuna pages serve as a partial model for the profile pages, but adaptations to the structure of some pages will be made to allow for the fact that striped catfish is primarily an aquaculture species. The yellowfin tuna pages can be viewed at <http://www.asiapacfish.org/index.php/species/item/18-yellowfin-tuna>. Style sheets are also available.

After drafting, each page will be sent to suitable reviewers, and the writers will be expected to make the necessary changes.

Applicants must be:

Have up to date knowledge on striped catfish (*Pangasius hypophthalmus*) in Asia-Pacific production and global markets able to write in English to a very high standard capable of delivering the draft(s) by 30 April 2018

Applicants can apply to write one or more of the profile pages, depending on their areas of expertise. The successful applicants will be expected to compile reference material and provide copies of all material to an online repository of material for review and future use.

In the application, please indicate your experience relevant to the writing tasks, which profile webpages you are applying to write, and any other relevant supporting material.

Applications are to reach [asiapacfish@gmail.com](mailto:asiapacfish@gmail.com) by **10 February 2018**.

We welcome suggestions and contributions for AsiaPacific-FishWatch. Please contact: [asiapacfish@gmail.com](mailto:asiapacfish@gmail.com).

**Contributed by: Meryl J Williams, interim Director AsiaPacific-FishWatch <http://asiapacfish.org/>**

## AFS BRANCHES

### Indian Branch

#### 11<sup>th</sup> Indian Fisheries and Aquaculture Forum

During the period the Asian Fisheries Society Indian Branch (AFSIB) in collaboration with the ICAR - Central Institute of Fisheries Technology (CIFT), Kochi, Kerala, organized its triennial event, the 11<sup>th</sup> Indian Fisheries and Aquaculture Forum (11ifaf), with the theme “*Fostering Innovations in Fisheries and Aquaculture - Focus on Sustainability and Safety*” in Kochi during 21-24 November, 2017. Over 1100 distinguished scientists, technocrats, policy makers, members from financial institutions, NGOs, students, farmers and entrepreneurs from all over the country and overseas participated in the Forum. The Forum was inaugurated by the Hon’ble Vice President of India Shri M. Venkaiah Naidu. Dr J. K. Jena, Chairman, AFSIB welcomed the delegates and participants and briefed about the importance of the Forum. The other dignitaries present on the dais and spoke on the occasion were Mr P. Sathasivam, Hon’ble Governor of Kerala; Mrs J. Mercykutty Amma, Hon’ble Minister for Fisheries, Harbour Engineering and Cashew Industry, Government of Kerala; Dr K.T. Jaleel, Minister for Local Administration, Government of Kerala; Dr K.V. Thomas, Hon’ble Member of Parliament, Ernakulam and Dr T. Mohapatra, Secretary, DARE and DG, ICAR. Dr C.N. Ravishankar, Convener, IFAF and Director, CIFT proposed Vote of Thanks.

The Hon’ble Vice President of India Shri M. Venkaiah Naidu called upon fishery scientists and policy makers to draw upon a future outlook, focusing on judicious use of the fishery resources by reducing losses and value addition and supplementing the ever increasing need for fish through modern aquaculture technologies and diversification of the products. The Abstract Book and the Souvenir of the 11ifaf were released by the Hon’ble Vice President. The Inaugural Function was followed by the presentation of awards of AFSIB in which Awards of AFSIB viz., the AFSIB Gratitude Awards, AFSIB Lifetime Achievement Awards, Prof. H.P.C. Shetty Award and Gender Justice & Equity Award; and several other awards by different Societies viz., SOFTI Biennial Award, Dr. T.V.R. Pillai Award, Shri J.V.H. Dixitulu National Award and PFGF Awards were presented to the recipients.

The Technical Sessions of the Forum started with Keynote address by Dr. Mohan Joseph Modayil, Former Chairman, AFSIB. The Technical Sessions were held under 10 different themes, which covered all aspects of fisheries and aquaculture. About 270 oral presentations were included under different sessions and around 300 posters were also presented. The Lead presentations were made by eminent experts from India and also from other countries like the Australia, Canada, China, Japan, Indonesia, Kuwait, Sri Lanka, Thailand and USA, A total of 95 eminent personalities from India and abroad Chaired and Co-chaired the different technical sessions.

Three parallel events, viz., 1) Special Symposium on ‘*Gender in Aquaculture and Fisheries in India (GAF- India)*’ was organised by the GAF Section of the AFS; 2) “*The Regional Dialogue on ‘Management of Highly Migratory Fish Species in the Bay of Bengal*’ was organized by the Ocean Partnership Project - Bay of Bengal (OPP-BoBP); and 3) ‘*Forging a New Frontier: Increasing Seafood Consumption in India*’ was organized by the Association of International Seafood Professionals, as part of the 11ifaf. An ‘Aquaculture and Seafood Processor Conclave’ was also conducted during the event. As a part of Forum, an Exhibition was organised to showcase the innovations in fisheries and aquaculture sectors along with advanced agricultural technologies and products.

Over 50 organizations/private enterprises participated in the Exhibition. The Plenary Session of the Forum was held on 24<sup>th</sup> November, 2017, which was presided by Dr J.K. Jena. The AFSIB Young Scientist Awards and the Best Paper Presentation Awards under Oral and Poster categories were also presented during this session besides others.

## Election of New Office Bearers of AFSIB

The General Body Meeting of Asian Fisheries Society Indian Branch (AFSIB) was held on 23rd November, 2017 at Kochi, Kerala during the 11ifaf and following New Office Bearers were elected for the period 2017-2020.

**Chairman** : Dr. J. K. Jena  
**Vice Chairman** : Dr. A. Gopalakrishnan  
Dr. B.A. Shamasundar  
**Secretary** : Dr P. Keshavanath  
**Treasurer** : Dr. Girisha S. K  
**Members** : Dr. P. K. Pradhan  
Dr. G. Jeyasekaran  
Dr. Satyen Kumar Panda  
Dr. Mridula Rajesh



Hon'ble Vice President inaugurating 11ifaf



AFSIB Award Ceremony



Presentation – Technical Session



Poster Sessions at the 11ifaf

## FISH HEALTH SECTION OF AFS (FHS)

The FHS/AFS Executive Committee for the period 2017-2020 was elected during the Eleventh Triennial General Meeting (TGM-11) held in Bali, Indonesia during 28 August - 1 September 2017 in conjunction with the Tenth Symposium on Diseases in Asian Aquaculture (DAA10).

Advisors	: Rohana Subasinghe, Melba B. Reantaso, Supranee Chinabut
Chairperson	: Agus Sunarto (Indonesia/Australia)
Vice-Chairperson	: Kua Beng Chu (Malaysia)
Secretary/Treasurer	: Eduardo Leaña (Thailand/Philippines)
Members	: Phan Thi Van (Vietnam), Motohiko Sano (Japan), P.K. Pradhan (India), Han-Ching Wang (Taiwan), Liang Yan (P.R. China), Siow-Foong Chang (Singapore), Varinee Panyawachira (Thailand), Gerald Misol, Jr. (Malaysia)
Observers:	: Dang Thi Lua (Vietnam), Benjaporn Somridhivej (Thailand), Imelda Rantty (Malaysia), Dewi Syahidah (Indonesia), Partho Pratim Debnath (Bangladesh) FHS Electronic
Newsletter Editors:	: Supranee Chinabut (Advisor), P.K. Pradhan, Neeraj Sood, Dewi Syahidah

### **10<sup>th</sup> Symposium on Diseases in Asian Aquaculture (DAA 10)**

DAA10 was organized in Bali, Indonesia during 28 August to 1 September, 2017. A total of 402 participants from 29 countries attended the Symposium in Bali. There were 9 Keynote/ Invited presentations, 72 Oral presentations and 43 Elevator pitch presentations. In addition, there were 107 posters. On sidelines of DAA10, four satellite workshops, NACA's Meeting of the Asia Regional Advisory Group on Aquatic Animal Health; Tilapia Lake Virus meeting by WorldFish; OIE Koi Herpes Virus Twinning Program by National Research Institute of Aquaculture (Japan) and Centre for Freshwater Aquaculture (Indonesia); and a shrimp farmer night by Shrimp Club of Indonesia were also organized. To commemorate the excellent organization of DAA10, a gala dinner along with traditional cultural programme was arranged at Anvaya Beach, Bali on 31st August 2017.

### **Triennial General Meeting of FHS**

The Triennial General Meeting-11 was held on 29 August 2017 at Anvaya Beach Resort, Bali, Indonesia. The meeting was attended by 33 FHS members, and was facilitated by the current Chairperson, Dr. Phan Thi Van. The Secretary's Report which summarizes the activities of the section from 2014 to 2017, as well as the Financial Report wherein FHS account is being maintained at NACA, were presented by the current Secretary/Treasurer Dr. Eduardo Leaña. The next host of the DAA (Malaysia) was also announced during the meeting.

### **Recognition Awards**

On the sidelines of DAA10, the Fish Health Section of the Asian Fisheries Society presented Recognition Awards to the following senior members for their unselfish support and guidance to the mission of the Fish Health Section; Celia R. Lavilla-Pitogo (Philippines), Chadag Vishnumurthy Mohan (India/Malaysia), Chu-Fang Lo (Taiwan), Donald V. Lightner (USA), Ikuo Hirono (Japan), Indrani Karunasagar (India), James Richard Arthur (Canada), Kamonporn Tonguthai (Thailand), Kishio Hatai (Japan), Leong Tak Seng (Malaysia), Melba Reantaso (Philippines/Italy), Mohd. Shariff (Malaysia), Rohana Subasinghe (Sri Lanka), Sandra Adams (Scotland), Supranee Chinabut (Thailand), Takashi Aoki (Japan), Timothy W. Flegel (Thailand)



**Asian Fisheries Society - Executive Officer has attended DAA10 in Bali, Indonesia.**

### **11<sup>th</sup> Symposium on Diseases in Asian Aquaculture (DAA11)**

The 11th Symposium on Diseases in Asian Aquaculture (DAA11) in 2020 will be held in Kuching, Sarawak, Malaysia. DAA11 is another platform for sharing knowledge and experience in improving, promoting and expanding aquatic animal health. We like to welcome businesses, academia, researchers and students from across the globe to discuss and share expertise on current research development, trend and future direction of aquatic animal health industry. Hope to see you all there with family and friends.

## **ASIAN FISHERIES SOCIAL SCIENCES RESEARCH NETWORK (AFSSRN)**

With the objective of promoting effective interaction and cooperation among persons involved in living aquatic resources social science research, AFS is in the process of reactivating the Asian Fisheries Social Sciences Research Network (AFSSRN) section of AFS. Prof. Alice Joan G Ferrer of University of Philippines Visayas and Vice-President of AFS has kindly consented to coordinate the network. Members of AFS who are interested in membership of AFSSRN can enrol themselves in the network by sending a message of interest to Executive Secretary of AFS at [Info@asianfisheriessociety.org](mailto:Info@asianfisheriessociety.org)

## UPCOMING CONFERENCES ORGANISED BY AFS & BRANCHES/NETWORKS

### 3rd International Symposium on Fisheries Education (ISAFE3)

The 3<sup>rd</sup> International Symposium on Fisheries Education (ISAFE3) is being organized by Asian Fisheries Society (AFS) along with Indian Fisheries Association (IFA) and ICAR-Central Institute of Fisheries Education (CIFE) and is scheduled for 16 to 18 May, 2018 at CIFE, Mumbai, India. The Symposium will discuss issues highlighted during ISAFE2 held at Shanghai Ocean University, Lingang City, China and ongoing issues pertaining to the fisheries education in the Asia Pacific region. ISAFE3 will provide a common platform for interaction among educationists, researchers and students to discuss and frame strategies for accommodating issues like climate change and sustainable production in fisheries education. Further, harmonizing fisheries education across the AP region will enable easy mobility of students leading to wider job opportunities. This will make the sector attractive for young talent, promote technology and entrepreneurship development. It is expected that the deliberations during the Symposium will provide a direction to fisheries education for a sustainable 'blue economy'.

**Venue:** CIFE, Off Panch Marg, Versova, Mumbai – 400061

**Date:** 16<sup>th</sup> to 18<sup>th</sup> May 2018

#### Thematic Areas

- Fisheries education for sustainable aquaculture
- Harmonizing course curricula in AP region for better job opportunities
- Entrepreneurship development among fisheries professionals
- Attracting and retaining youth in the sector
- Addressing climate change and environmental concerns through fisheries education

**Last date for submission of Abstract:** 31<sup>st</sup> March 2018

**Last date for online registration:** 30<sup>th</sup> April 2018

**Contact:** The Director & Convenor (ISAFE3), ICAR-CIFE, Versova, Mumbai – 400 061.

**Email:** [convenor@isafe3.cife.edu.in](mailto:convenor@isafe3.cife.edu.in)

**Website:** <http://isafe3-cife.edu.in/>

### 11<sup>th</sup> Symposium on Diseases in Asian Aquaculture (DAA11)

The 11<sup>th</sup> Symposium on Diseases in Asian Aquaculture (DAA11) in 2020 will be held in Kuching, Sarawak, Malaysia. DAA11 is another platform for sharing knowledge and experience in improving, promoting and expanding aquatic animal health. We like to welcome businesses, academia, researchers and students from across the globe to discuss and share expertise on current research development, trend and future direction of aquatic animal health industry.

### 2017 Annual Meeting of China Society of Fisheries Held in Nanchang, China

Jointly hosted by China Society of Fisheries and Jiangxi Society of Fisheries, 2017 Annual Meeting of China Society of Fisheries was held in Nanchang, China during Nov 8-10, 2017 with the theme 'Driving via Innovation, Developing in Green Way'. The meeting was attended by more than 600 participants, including scholars, researchers and students from more than 40 universities and institutes in China. Prof Dong Shuanglin, Ocean University of China, Prof Liu Shaojun, Hunan Normal University, Research Fellow Wang Lumin, East China Sea Fisheries Research Institute, Chinese Academy of Fishery Sciences, Research Fellow Shen Zhixin, Fishery Machinery and Instrumental Research Institute, Chinese Academy of Fishery Sciences delivered keynote speeches respectively.

Prof Huang Shuolin, as Immediate past president of Asian Fisheries Society (AFS) was invited to deliver a speech during the opening ceremony. A brief introduction on AFS was delivered in his speech. On behalf AFS, Prof Huang welcomed participants to join AFS and take part in 12th AFAF to be held in the Philippines in 2019.



### The World Food Prize

The World Food Prize Foundation established by Father of Green Revolution and Nobel Laureate, Dr Norman Borlaug, is seeking nominations for 2018 prize. The US\$ 250,000 World Food Prize, the foremost international award and considered as Nobel prize in Food and Agriculture recognizes the accomplishments of individuals who have advanced human development by improving the quality, quantity, or availability of food in the world.

Nominations are sought of an individual or individuals having demonstrated exceptional achievement in any field involved in enhancing food production and distribution and increasing food availability and accessibility to those most in need.

Any academic or research institution, private or public organization, corporate entity, or governmental unit may submit a nomination for The World Food Prize until 1 May 2018.

For details please visit: [www.worldfoodprize.org](http://www.worldfoodprize.org).

## Bangladesh formulates fisheries development plan

Bangladesh Fisheries and Livestock Minister Narayan Chandra Chanda on Monday said the government has formulated a plan of action for sustainable management of fisheries resources in the Bay of Bengal.

With the participation of the stakeholders short, medium and long term plans of action have been formulated for sustainable management of the fisheries resources at the Bay of Bengal, the Minister told a press conference in his ministry's conference room here.

He said a new horizon of capturing deep and light water fishes has been opened by identifying new fisheries areas with 1,18,813 square kilometers of water boundary at the Bay of Bengal. The fisheries research and survey ship - RV Mean Sandhani -has already identified 176 fish species, 13 species of shrimp and 14 other species of crustaceans and Mollusks, a large phylum of invertebrate animals in the sea, he said, adding that the survey is being continued since December 24 of 2016.

Bangladesh has already been included as a 'pilot country' in the blue growth of economy, he said.

Source: Samudra news alerts.

## Indian Center develops mobile App to help fishers

Soon, skippers of an estimated 38,000 fishing vessels registered in the south Indian state of Kerala will be required to use a newly developed mobile phone application to communicate their vessel movement and crew details to the government when they leave the harbour and return to port.

The National Informatics Centre (NIC), Kerala, has developed the Android-based mobile phone application to help the Fisheries Department keep an active tab on vessels and fishers venturing out to sea.

The lack of crucial information on fishing operations in territorial waters had temporarily blind-sided the State's search and rescue operations in the immediate aftermath of cyclone Ockhi. M. Tajudeen, Deputy Director, Marine Department, said the department would issue free Android phones to seafarers, if necessary. The project would cover boat owners. It would be linked to insurance coverage and State assistance to ensure compliance. He said satellite navigational equipment, NAVIC, now being tried out on fishing boats to plot their relative position on the country's seaboard, would be used to help enhance the range of the mobile phones carried by fishers up to 1,500 km.

The app has been configured to receive as text messages critical information relayed by the government to NAVIC sets. It would notify fishers about weather conditions, wind speed, wave height, visibility, the location of shoals, deep sea traffic, international shipping channels and sea borders. The second phase of the scheme envisaged a two-way communication between fishers and State and Central marine control rooms. The government has requested the ISRO to enable NAVIC sets to help fishers relay information to the mainland. It will help the security agencies know if any foreign power has detained an Indian vessel or if a boat is forced to seek safety in a different harbour.

The NIC has already created a national database of 280,000 registered fishing vessels in nine maritime States and four Union Territories. The State will link it to the scheme. The Navy, Coast Guards, Marine Police, and national security agencies are the other stakeholders.

Source: Samudra News Alerts

## UN declares 2022 as year of artisanal fisheries and aquaculture

The United Nations General Assembly (UNGA) on 5 December 2017 approved two observances, both related to fishing and unanimously supported by FAO's member states and invited FAO to serve as lead agency for both.

The annual resolution on sustainable fisheries had the General Assembly proclaiming 5 June as the "International Day for the Fight Against Illegal, Unreported and Unregulated Fishing".

The UN also declared 2022 as the International Year of Artisanal Fisheries and Aquaculture, which will help focus attention on the small-scale fishermen and women who comprise 90 per cent of the world's fisheries work force.

UNGA Resolution A/72/L.12, dated 22 November 2017, "proclaims the year beginning on 1 January 2022 the International Year of Artisanal Fisheries and Aquaculture, invites the Food and Agriculture Organization of the United Nations to serve as lead agency for the Year, in collaboration with other relevant organizations and bodies of the United Nations system, and stresses that the cost of all activities that may arise from the implementation of the present paragraph, above and beyond activities currently within the mandate of the implementing agency, should be met from voluntary contributions."

## 3<sup>rd</sup> World Small-scale Fisheries

The 3rd World Small-Scale Fisheries Congress (3WSFC), which will be held in Chiang Mai, Thailand, during 22-26 October 2018, is now calling for abstracts.

The 3WSFC is a transdisciplinary forum for anyone interested in small-scale fisheries to participate in a discussion about the future of the world's small-scale fisheries. The congress aims to facilitate interaction, information sharing, cross-fertilization of ideas and networking opportunities for participants. Thus, it will follow a dynamic format with activities organized around five theme days: science, community, policy, field, and action.

Abstracts can be submitted in three formats: individual papers, team papers or special sessions. Priorities will be given to abstracts that align closely with the main theme of the congress, 'Transdisciplinarity and Transformation for the Future of Small-Scale Fisheries'.

The deadline for abstract submission is 15 February 2018.

For more information about the congress and the call, please visit the 3WSFC website at <https://toobigtoignore.wixsite.com/3wsfccongress>.

## NEW PUBLICATIONS

### Yemaya, ICSF Trust's Newsletter no. 54 on Gender and Fisheries

The International Collective in Support of Fishworkers Trust (ICSF Trust) has released the latest edition of Yemaya, its newsletter on gender and fisheries.

Yemaya No. 54, dated May 2017, features articles from India, Mexico and two analytical articles on SDG 5, while the editorial comment focuses on the significance of Sustainable development Goal 5 (SDG 5 Achieve gender equality and empower all women and girls). Meryl Williams in her article on Gender equal fisheries looks at what are the challenges we are facing in the path of achieving gender equality in fisheries and what should our priorities be?

Kyoko Kusakabe in her article identifies key priorities and challenges that lie in the path of achieving gender equality targets particularly in the high-poverty and increasingly resource-scarce context of Southeast Asian fisheries. Nikita Gopal in her article on seafood processing in Kerala (India) describes how the labour shortage has improved working conditions for women in seafood processing. From Mexico comes a piece that describes the key role women plays for generations in the running of large fish markets in Mexico.

A profile of Metty, from the Vembanad estuarine system in Kerala, India narrates the story of how fishing has been a mainstay for over four decades to her and the group. The What's New, Webby? column presents the recent initiative of CCRN website which uses an interactive map of the world to place spotlight on the amazing diversity of community efforts globally that are linking conservation and local livelihoods. The Q&A session with Ujjwala Patil, President of MMKS' Women's wing by Priyanka Mangela shows how the initiative of women's wing in mapping the existing fish markets in Mumbai and to include them in the Development Plan was useful.

The Milestones presents the Entebbe Declaration which states that women in African artisanal fisheries must claim full protection and equal representation and leading positions within the artisanal fisheries professional organizations, as well as equal participation in decision making processes for policies that affect their livelihoods.

Yemaya No. 54 can be accessed at: <https://www.icsf.net/en/yemaya/article/EN/54.html?limitstart=0>

### Handbook on Gender Equitable Small-scale Fisheries

FAO has published a handbook in support of the implementation of the voluntary guidelines for securing sustainable, small-scale fisheries in the context of food security and poverty eradication.

The publication can be downloaded: from: [www.fao.org/3/a-i7419e.pdf](http://www.fao.org/3/a-i7419e.pdf).

### Handbook on Intensive farming of White Shrimp

World Aquaculture Society (WAS) has published the book "*Design and Operation of Super-Intensive Biofloc-Dominated Systems for Production of White Shrimp (Litopenaeus vannamei)*" by Tzachi M Samocha, David I Pragnell, , Terrel R Hanson, Granvil D Treeca, Timothy C Morris, Leandro F Castro and Nick Staresinic.

For details visit [www.was.org](http://www.was.org)

## UPCOMING CONFERENCES

### **Aquafeed Extrusion**

Short course for aquafeed professionals scheduled for 5 February 2018 in Abu Dhabi.

For details visit: <http://events.r20.constantcontact.com/register/event?oeidk=a07eew5ab3bf3fe0fd4&llr=t8bt66bab>

### **Training in tilapia farming**

Short one day training course in tilapia seed production and farming at AIT, Bangkok.

For more details visit: <http://aarm-asialink.info/activities.html>

### **Responsible Aquaculture Development for Food Security and Economic Progress**

This short course is offered by Wageningen Center for Development Innovation, Wageningen, Netherlands during 26 February to 16 December 2018.

For details visit: [https://www.wur.nl/en/Expertise-Services/Research-Institutes/centre-for-development-innovation/short-courses/Short\\_courses\\_2018/CDIcourse\\_aquaculture\\_2018.htm](https://www.wur.nl/en/Expertise-Services/Research-Institutes/centre-for-development-innovation/short-courses/Short_courses_2018/CDIcourse_aquaculture_2018.htm)

### **International Conference on Marine Science and Aquaculture 2018**

This conference is scheduled for 14-16 March 2018 in Kota Kinabalu, Sabah, Malaysia.

For details visit: <http://www.ums.edu.my/ipmbv2/icomsa/>

### **Aquafeed Horizons Asia**

This one day conference is being organised at BITEC, Bangkok, Thailand on 27 March 2018.

For details visit: <http://feedconferences.com/>

### **Aquafeed Extrusion Technology (Europe)**

This three day training course is offered at As, Netherlands during 23-25 April, 2018.

For details visit: <https://fie.com.au/events/aquafeed-extrusion-norway>

### **10<sup>th</sup> International Abalone Symposium**

The 5 day symposium is being organised during 8-12 May 2018 in Xiamen, China.

For details visit: <http://www.ias2018.com/en/index.html>

### **3<sup>rd</sup> International Symposium on Aquaculture and Fisheries Education**

Scheduled for 16-18 May, 2018 in Mumbai, India.

For details visit: <http://isafe3-cife.edu.in/>

### **11<sup>th</sup> Global Summit on Aquaculture and Fisheries**

Scheduled for 24-25 May 2018 in Osaka, Japan.

For details visit: <https://aquaculture.global-summit.com/>

### **10<sup>th</sup> Euro-Global Summit on Aquaculture and Fisheries**

Scheduled for 28-29 May in London, UK

For details visit: <https://aquaculture-fisheries.conferenceseries.com/europe/>

### **5<sup>th</sup> International Conference on Fisheries and Aquaculture**

Scheduled for 23-24 August 2018 in Colombo, Sri Lanka.

For details visit: <https://aquaconference.com/>

### **4<sup>th</sup> Fisheries and Aquaculture Conference (FAC 2018)**

Scheduled for 21-23 August 2018 in Kunming, China.

For details visit: <http://www.engii.org/conference/FAC2018/>

### **Aqua 2018**

Scheduled for 25-28 August 2018 in Montpellier, France.

For details visit: <https://www.was.org/meetings/default.aspx?code=Aqua18>

### **8<sup>th</sup> International Symposium on Aquatic Animal Health**

The symposium is scheduled for 2-6 September, 2018 in Charlottetown, Prince Edward Island, Canada.

For details visit: <https://isacah2018.com/>

### **9<sup>th</sup> International Conference on Fisheries and Aquaculture**

Scheduled for 17-19 September, 2018 in Vancouver, Canada,

For details visit: <https://fisheries.conferenceseries.com/>

### **7<sup>th</sup> Global Symposium on Gender in Aquaculture and Fisheries**

Scheduled for 18-20 October, 2018 in Bangkok, Thailand.

For details visit: <https://genderaquafish.org/>

# AFS MEMBERSHIP RENEWAL NOTICE

**Dear AFS Members:**

**Thank you all AFS Members for your ongoing commitment and support towards the Society!**

**The Secretariat has started to update the Members details in database.**

**Therefore, the Secretariat requests all AFS members to update their membership dues and contact information, to the Secretariat via email at [info@asianfisheriessociety.org](mailto:info@asianfisheriessociety.org)**

**Kindly renew your membership dues using online payment system at <http://www.asianfisheriessociety.org/join.php> or you may also request the membership form from Secretariat via [info@asianfisheriessociety.org](mailto:info@asianfisheriessociety.org).**

**Membership is open for all!**

**Please apply your membership at <http://www.asianfisheriessociety.org/join.php>.**

**If you have any question, kindly email us at [info@asianfisheriessociety.org](mailto:info@asianfisheriessociety.org)**

# SYNOPSIS OF PAPERS VOLUME 30 (ISSUE 3) :

## ASIAN FISHERIES SCIENCE JOURNAL

### **Impacts and Importance of Introduction of Culture-based Fisheries in Three Medium Sized Perennial Reservoirs in Sri Lanka**

**K.B.C. PUSHPALATHA, JAYANTHA CHANDRASOMA, W.A.J.R. FERNANDO and K. D. SANJEEWA**

The impact of the introduction of culture-based fisheries in three reservoirs, namely Amparawewa, Hambegamuwa and Aluthdiulwewa, was assessed. Introduction of culture-based fisheries resulted in significant increases in fish production in all three reservoirs. Stocking of Nile tilapia *Oreochromis niloticus* (Linnaeus 1758), catla *Catla catla* (Hamilton 1822), rohu *Labeo rohita* (Hamilton 1822), mrigal *Cirrhinus mrigala* (Hamilton 1822) and freshwater prawn *Macrobrachium rosenbergii* (De Man 1879) in these reservoirs resulted in positive monetary gains. Culture-based fisheries provided livelihoods for 55, 77 and 37 villagers in Amparawewa, Hambegamuwa and Aluthdiulwewa, respectively. Gross income generated from culture-based fisheries in these three reservoirs was 88.9 %, 68.1 % and 50.6 % of that of downstream paddy cultivation. Profits earned through culture-based fisheries in the three reservoirs were 133.2 %, 129.4 % and 86.3 % respectively compared to paddy cultivation. Introduction of culture-based fisheries in these reservoirs resulted in increased availability of fish in rural areas, enhanced food security, more livelihood opportunities and strengthening of the rural economy.

### **Vertical Distribution of Ark Shell Arcidae Species Larvae along Axial Transects in Sendai Bay, Northeastern Japan**

**DAISUKE SUGIURA, KYOHEI INOMATA and KOICHI SASAKI**

The vertical distribution of ark shell Arcidae species larvae at successive developmental stages was investigated monthly from August to October 2009 along axial transects in Sendai Bay located along the Pacific coast of northeastern Japan where the ark shell *Anadara broughtonii* (Schrenck 1867) is the dominant arcid species. Younger larvae (early and mid-umbo stages) were typically distributed in the surface near the shore with salinity <33 psu. Older larvae (late umbo and competent stages) were distributed at the bottom far from the shore with salinity >33 psu. Surface axial distributions of younger larvae were marginally affected by the river discharge volume, tidal height and southerly wind strength. The younger and older larvae were distributed closer inshore and further offshore than the main habitat of the adults, respectively. Therefore, younger larvae were first transported inshore and moved upward to the surface layer, and then transported offshore, increasing their distribution depth. The results indicate that ark shell larvae ontogenetically change their swimming behaviour to increase their distribution depth. Their axial distribution patterns may be explained by the different flow patterns among the layers of the water column in Sendai Bay.

### **Technical Efficiency of Municipal Fisherfolk in Maasim, Sarangani Province, Philippines: A Stochastic Frontier and Data Envelopment Approach**

**LARRY N. DIGAL, HAZEL SHAYNE I. RAMIL, SHEMAIAH GAIL P. PLACENCIA and CAROL Q. BALGOS**

This study assessed the level of technical efficiency of 284 selected municipal fisherfolk in Maasim, Sarangani Province, Philippines. The primary data on tuna landings per trip, effort days per trip, crew size, fishing ground distance, engine horsepower and operating cost per trip were analysed using stochastic frontier analysis (SFA) and data envelopment analysis (DEA). The results show that the average technical efficiency of Maasim fisherfolk using the SFA and DEA approaches were 0.57 and 0.43, respectively. Using Tobit regression, hypothesised factors affecting technical efficiency of these fishers such as their socio-demographic profiles, attributes of the vessels and factors associated with fishing operations were considered. Among these determinants, the technical efficiency model indicated that age of the boat, engine horsepower, crew size, effort days, fishing ground distance and choice of unloading port affect the technical efficiency of Maasim fishers.

## **Shell Morphology and Anatomy of the Philippine Charru Mussel *Mytella charruana* (d'Orbigny 1842)**

**DOMINIQUE PONSARAN MEDIODIA, SHEILA MAE SANTANDER DE LEON, NATHANIEL CLAN AÑASCO and CARLOS CLEMENTE BAYLON**

A study on the shell morphology and internal anatomy of the charru mussel *Mytella charruana* (d'Orbigny 1842) in the Philippines was conducted. Sampling sites in Bataan, Cavite, and Pangasinan were chosen based on the occurrence and abundance of the mussel. This study is the first to reveal that *M. charruana* can be uniquely distinguished from other mussels based on the presence of a curved pallial line aside from its black-purplish colour. It has a dark orange foot with brownish pigmentation which can extend a considerable distance. This and other parts of the internal anatomy did not differ from other mussel species. Charru mussel was found in waters with a wide range of salinity (3.85–25.96 ppt), dissolved oxygen (2.07–7.09 mg.L<sup>-1</sup>), pH (7.51–8.07) and total dissolved solids (4.45x10<sup>3</sup>–26.28x10<sup>3</sup> mg.L<sup>-1</sup>). The ability to inhabit a wide range of physico-chemical conditions indicates potential invasive characteristics.

## **Effect of Age on the Spermatological and Fertilisation Parameters of Common Carp *Cyprinus carpio* (Linnaeus 1758) Brooders Cryopreserved at Three Dilution Ratios**

**JUDITH BETSY, STEPHEN KUMAR and THILAK JAWAHAR**

The influence of age of common carp brooders on the spermatological and artificial parameters of cryopreserved milt was evaluated at three dilution ratios viz. 1:40, 1:80 and 1:120. Milt was collected from 6, 12 and 18 months old brooders of common carp, *Cyprinus carpio* (Linnaeus 1758) and diluted and cryopreserved at the three dilution ratios using freshwater fish saline as extender and dimethyl sulfoxide (DMSO) as cryoprotectant (90:10). Motility duration, fertilisation and hatching rates were studied for the different treatments. Observations were made once every 15 days for 60 days after which artificial fertilisation was attempted. Brooders that were 12 months old exhibited the highest post-thaw motility duration (60.33±1.52 s), fertilisation rate (87.6±1.52 %) and hatching rate (57.3±4.1 %) when cryopreserved milt was used at 1:40 dilution ratio. The difference in the values between age groups of brooders, dilution ratios and cryopreserved and fresh milt was statistically significant (p<0.05).

## **Oxidative Stress in Muscle Tissue of the Freshwater Fish *Pseudotroplus maculatus* (Bloch 1795): a Toxic Response from Exposure to Fullerene (C<sub>60</sub>) Nanoparticles**

**N. SUMI AND K.C. CHITRA**

The consequences of fullerene nanoparticles on the induction of oxidative stress in muscle tissue of the freshwater fish *Pseudotroplus maculatus* (Bloch 1795) were examined. The study showed that exposure to fullerene at 0.1 mg.L<sup>-1</sup> for 24, 48, 72 and 96 h had the potential to induce oxidative stress in muscle tissue of the fish. The activities of antioxidant enzymes such as superoxide dismutase, catalase and glutathione reductase decreased significantly (p<0.05) after 72 and 96 h of exposure. However, the levels of hydrogen peroxide and lipid peroxidation increased significantly (p<0.05) after 72 and 96 h of treatment in muscle tissue. The activities of acid and alkaline phosphatase enzymes in muscle tissue showed significant (p<0.05) reduction at the end of 72 and 96 h of exposure to fullerene. The findings provide good evidence that fullerene nanoparticles induce oxidative stress in the muscle tissue of fish. The changes in the phosphatase enzymes indicate that fullerene also alters the metabolic processes in the fish muscle tissue.

# SYNOPSIS OF PAPERS VOLUME 30 (ISSUE 4) :

## ASIAN FISHERIES SCIENCE JOURNAL

### **Technical Efficiency of Handline Fishers in Region 12, Philippines: Application of Data Envelopment Analysis**

**LARRY N. DIGAL, IVI JAQUELYN T. ASTRONOMO, SHEMAIAH GAIL P. PLACENCIA AND CAROL Q. BALGOS**

Handline fishing, a common method of catching tuna in the Philippines, is considered to be more environmentally sustainable than other fishing methods. However, handline fishers are challenged by efficiency issues due to overcapacity of fishing and declining stock. Using Data Envelopment Analysis, the study aimed to measure the technical efficiency of the handline industry in General Santos City. The factors that influence the efficiency of handline fishers were identified. Results showed that there was a large gap between the best and least performing vessels with a varied spread of scores, and there was a large number of inefficient vessels. Factors affecting the efficiency appeared to be the number of fishing trips per year, the number of days at sea, radio cost, and consumption costs. Berthing days and gasoline cost were also found to be approaching significance in affecting efficiency. The results indicate the diversity of input mixes among fleets. Aside from being less profitable, these handline fleets contribute to unsustainability. Thus, choosing the ideal set of inputs is critical.

### **A Meta-analysis Approach toward Fish Meal Replacement with Fermented Soybean Meal: Effects on Fish Growth Performance and Feed Conversion Ratio**

**ROMI NOVRIADI**

A meta-analysis approach was used to quantify the effect of replacing dietary fish meal (FM) with fermented soybean meal (FSBM) on the final weight and feed conversion ratio (FCR) of fishes. The impact of 14 studies was examined with 53 comparisons between fishes fed with various inclusion levels of FSBM and control treatments. The FSBM inclusion levels of 8 % to 60 % resulted in mean effect size of -3.75 [95% confidence interval (CI) -4.49 to -3.01] for final weight and 1.26 [95% CI 0.58 to 1.94] for FCR. The FSBM inclusion level greater than 40 % tends to decrease the final weight of fish compared to the control. Meanwhile, inclusion of FSBM at 15 % to 44 % improves the FCR of the diet, while that higher than 44 % produces an inconsistent result. The present study contributes to the FM replacement debate by presenting numerical values and providing strong conclusions compared to the common narrative reviews about partial or total replacement of FM with FSBM.

### **White faeces syndrome caused by *Vibrio alginolyticus* and *Vibrio fluvialis* in shrimp, *Penaeus monodon* (Fabricius 1798) - multimodal strategy to control the syndrome in Sri Lankan grow-out ponds**

**KAWUDUGAMA RALALAGE PRASANNA SANDARUWAN KUMARA AND MANGALIKA HETTIARACHCHI**

The white faeces syndrome (WFS) has caused an additional mortality of 20–30 % and total rejection of harvest of the tiger shrimp *Penaeus monodon* (Fabricius 1798) in Sri Lanka. The occurrence of WFS in relation to *Vibrio* count in culture water; isolation, identification and confirmation of the causative *Vibrio*; antagonism assay of a locally isolated strain of *Bacillus subtilis* against the pathogens; and the possibility of controlling WFS by a multimodal strategy were investigated. White faeces syndrome was first observed at the 7th week of post stocking when mean total *Vibrio* count (TVC) in culture water was  $3.1 \pm 0.17 \times 10^3$  CFU mL<sup>-1</sup>; by the 12th week mean percentage occurrence of WFS was  $45.0 \pm 1.07$  %. The major causative pathogen is a strain of *V. alginolyticus* while a strain of *V. fluvialis* (accession numbers KU 891054 and KX 361118 respectively) also contributes. *Bacillus subtilis* showed profound inhibitory activity against both *Vibrio* species. The tested multimodal strategy (involving proper disinfection of culture water, zero water exchange and the use of a locally isolated strain of *B. subtilis* as a bioremediator and a probiotic) could successfully control WFS in grow-out ponds of *P. monodon* in Sri Lanka.

## **Abundance and distribution pattern of two common Loliginid squids, *Uroteuthis (Photololigo) chinensis* (Gray 1849) and *Uroteuthis (Photololigo) duvaucelii* (d'Orbigny 1835), in the lower part of the Gulf of Thailand**

**RASHEDUL ISLAM, SIRIPORN PRADIT, SUKREE HAJISAMAE, PERMSAK PERNGMAK, MITHUN PAULI, JULKER NAIM AND HISHAM FAZRUL**

The study assessed the distribution pattern of two loliginid squid species, *Uroteuthis (Photololigo) chinensis* (Gray 1849) and *Uroteuthis (Photololigo) duvaucelii* (d'Orbigny 1835), at different depths along the lower part of the Gulf of Thailand sampled by bottom trawl during April to July 2015. Water temperature, salinity, pH, dissolved oxygen, conductivity and transparency were simultaneously measured. The average abundance, weight and density for *U. (P.) chinensis* were  $32.7 \pm 37.9$  individuals.hr<sup>-1</sup>,  $2.1 \pm 1.7$  kg.hr<sup>-1</sup> and  $1,268.8 \pm 1,370.3$  individuals.nm<sup>-2</sup> and for *U. (P.) duvaucelii* were  $13.6 \pm 17.3$  individuals.hr<sup>-1</sup>,  $0.3 \pm 0.3$  kg.hr<sup>-1</sup> and  $554.5 \pm 755.0$  individuals.nm<sup>-2</sup>, respectively. It was found that depth affected weight and density of both species combined (ANOVA,  $p < 0.05$ ) and *U. (P.) chinensis* (ANOVA,  $p < 0.05$ ), but not for *U. (P.) duvaucelii*. The study fills the gap in scientific information on the species and provides scientific data for their proper management.

## **Reproductive Biology of the Ayu *Plecoglossus altivelis* (Temminck and Schlegel 1846) from its Southernmost Distribution Range**

**TRAN HAU DUC, NGUYEN HUNG PHUC AND NGUYEN HUAN XUAN**

The ayu *Plecoglossus altivelis* (Temminck and Schlegel 1846), an annual and amphidromous fish, is generally distributed in the islands of Japan and along the Asian continental coast. Recently, it has been found in two rivers of northern Vietnam and the Tien Yen River is the southernmost distribution range of this species. The morphology of the Vietnamese ayu has been examined; however, its reproductive biology is poorly known. This study attempts to describe the fecundity and egg size of the fish from this river. Gonadosomatic index (GSI) of the female ayu (160.0–194.7 mm standard length, SL) was 19.7–25.9 %. The number of eggs ranged from 33,548 to 45,114. Egg size ranged from 0.1 to 1.5 mm, with an average diameter of 0.8–0.9 mm. The GSI of the male ayu (153.3–194.7 mm SL) was 2.5–8.3 %. The present findings indicate that the ayu in its southernmost distribution area could spawn at least twice a year, with the breeding period between November and February. This study provides reproductive data on the species, contributing to the conservation of endangered ayu populations in Vietnam.

## **Ecological Impacts of Fishing Gears in Thailand: Knowledge and Gaps**

**WICHIN SUEBPALA, RATANA CHUENPAGDEE, CHAROEN NITITHAMYONG AND THAMASAK YEEMIN**

Knowledge on ecological impacts of fishing, especially small-scale fishing, is ly poor, hampering implementation of an ecosystem approach to fisheries (EAF). The same is true in Thailand where fisheries sustainability is a major concern. As a first step towards EAF, a comprehensive literature review was conducted to assess the current state of the knowledge on ecological impacts of common fishing gears used in Thailand. Of the 134 documents found, about 70 % were technical reports produced by the Department of Fisheries of Thailand, focusing largely on trawl fisheries, particularly otter board trawls. Impacts from trawling are mostly reported in terms of amount of trash fish and undersized/juvenile economic fish. Impacts of fishing gears on marine mammals and sea turtles are reported, but only qualitatively. Little is known about discards. Information on habitat damage is limited although a few studies qualitatively describe impacts of seine nets, trawls, dredges, and push nets on seagrass beds, coral reefs and benthic community. The study reveals that a major gap exists in the understanding of ecological impacts of fishing gears in Thailand which needs to be addressed in order to implement EAF.

## Estimation of EU's import demand for yellowfin tuna sourced from Asian countries: Implications to the Philippine tuna industry

MIKO MARIZ CASTRO, JON MARX P. SARMIENTO, PEDRO ALVIOLA IV AND LARRY DIGAL

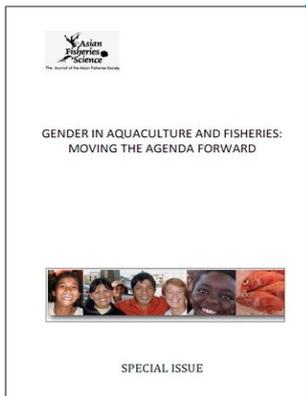
Consumers' interest in conservation of marine resources is influencing their purchasing behaviour towards fishery products. As a major market, the European Union (EU) has promoted sustainable use of tuna resources with Asia emerging as one of its largest exporters. Using data from Eurostat, the study estimated an Almost Ideal Demand System (AIDS) model for imported yellowfin tuna from China, Philippines, Taiwan, Thailand, South Korea and Indonesia. The findings suggest that the demand for yellowfin tuna from these countries, especially China, will increase as the EU's aggregate income increases. The cross-price elasticities imply that yellowfin tuna sourced from Asian countries are net substitutes relative to other yellowfin tuna producing countries that are exporting to the EU, except the Philippines and China. Thus, yellowfin tuna imports from China will continue to dominate the yellowfin tuna trade between EU and Asia. The study also found that yellowfin tuna imported from the Philippines has the lowest expenditure elasticities and the estimated trend has been decreasing. The Philippine yellowfin tuna industry must therefore pursue efforts to reduce the cost of compliance to EU standards while exploring new markets.

## Factors Related to Nesting Sites of *Oreochromis niloticus* (Linnaeus 1758; Cichlidae) in Irrigation Reservoirs, Sri Lanka

K.V. SANDUN N. BANDARA and UPALI S. AMARASINGHE

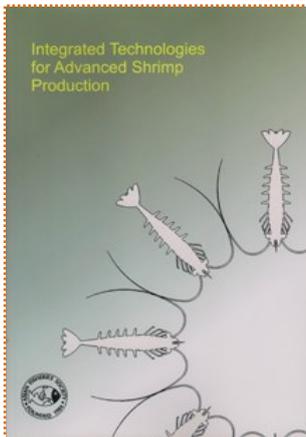
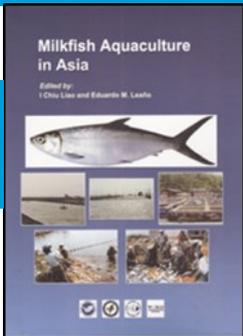
Nesting sites of *Oreochromis niloticus* (Linnaeus 1758) were studied in 10 irrigation reservoirs in Sri Lanka between April 2014 and April 2016 to understand the influencing factors. The optimal nesting depth and nest diameter varied across reservoirs. Nest density ( $ND$ ) was negatively related to slope of the littoral area (in degrees) according to  $ND = -0.070 \text{ Slope} + 0.536$  ( $R^2 = 0.415$ ) and positively to water turbidity ( $Turb$  in NTU) according to  $ND = 0.033 \text{ Turb} + 0.083$  ( $R^2 = 0.598$ ). The optimal nesting depth ( $NDP_{opt}$  in cm) was also negatively related to turbidity as  $NDP_{opt} = -5.133 \text{ Turb} + 154.660$  ( $R^2 = 0.509$ ). Mean relative reservoir water level fluctuation [ $RRLF = (\text{Mean reservoir level amplitude} / \text{Mean depth}) \times 100$ ] had a significant negative relationship with  $ND$  according to  $\ln ND = -1.185 \ln RRLF + 5.231$  ( $R^2 = 0.518$ ). As hydrological regimes in reservoirs are mainly influenced by irrigation requirements, effective dialogue between multiple users of reservoirs to achieve a win-win situation could be adopted to optimise fish yield.

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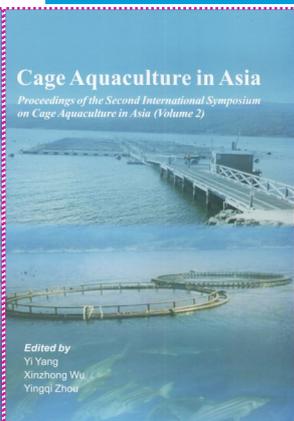
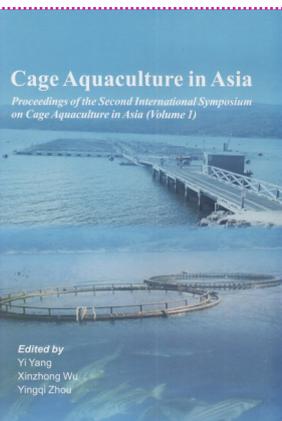
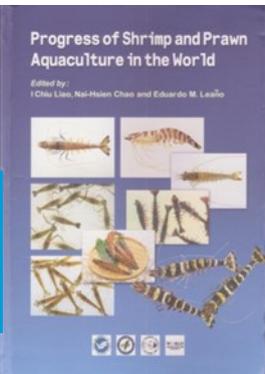
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