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ASIAN FISHERIES SOCIETY

e-Newsletter

MESSAGE FROM EDITOR

The pandemic in spite of various efforts, continue to ravage the world affecting the livelihoods and threatening food and nutritional security of people especially those living in developing countries. Fisheries sector which has been contributing substantially to food and nutritional security, has an important role to play in coming years in meeting the challenge. The region where we are – Asia contributes 70% of global fish production, two thirds of inland fish production and over 90% of aquaculture production. Researchers, entrepreneurs, development workers, fishing and farming communities and the policy makers needs to be congratulated for this contribution. However, we need to ensure all that we do is sustainable and environmental friendly and AFS and its members have a role to play.

The pandemic has taught us many things – even though it was not possible to hold meetings, conferences, etc. physically, we can still continue conferences and meetings virtually or in a hybrid mode. This is what AFS and its sections have followed during the reporting period in organising 13 AFAF, GAF8, webinars by Fish Health Section, AFSSRN1, etc. details of which are in this issue.

Congratulations to members of 13th AFS Council which has done a wonderful job and let us welcome the 14th Council under the Presidentship of Prof. Neil Loneragan and look forward to enhanced activities of the AFS. GAF under the leadership of outgoing Chair Dr Meryl J Williams has been very active as can be seen from details in this issue and laid a strong foundation. Let us welcome 2nd executive committee of GAFS under the chairmanship of Dr Nikita Gopal.

Heartening to see AFSSRN which was dormant for many years is revitalised with organising of AFSSRN1 and many more in coming months.

Finally, I would like to request members of AFS and the industry to contribute more to the newsletter with projects being undertaken, outcomes of their research, conferences/training programs organised/ scheduled, etc. which will benefit the readers of the newsletter.

AFS is looking forward to an exciting period ahead with GAF8, DAA11 and ISAFE4 scheduled in the coming months.

Stay safe, stay healthy.

M. V. Gupta

Editor

Inside this issue:

Message From the Outgoing President

Dear AFS Colleagues,

Greetings!

Three years have passed and the two years of it were life-changing for all of us. Threats came in many forms and we are blessed to have surpassed all of those, although we are still experiencing the effects of the pandemic. For the Asian Fisheries Society and the 13th AFS Council, we started on a high note after the success of the 12th AFAF in Iloilo City, Philippines in April 2019. Excitement was high at the start of the next three years. We were in the last stage of planning for the April 2020 council meeting in Indonesia when the pandemic was announced in March 2020. Many things changed thereon.

AFS had a number of firsts. We had a moratorium on the AFS membership fee renewal in 2020. We had one face-to-face council meeting and eight online council meetings (54th to 61st) when in normal times only three face-to-face meetings are expected. The 13th AFAF was online and so was the 14th AFS General Assembly. All of these experiences taught us lessons that we have incorporated into the 2022 version of the AFS constitution.

AFS also had many to be thankful for. The Asian Fisheries Journal has improved in terms of citation, downloads, and quality of papers published. We are grateful to the editorial team headed by Prof. Mohamed Shariff for the passion and dedication to improving the journal. I would like to take this opportunity to encourage AFS members to submit manuscripts for consideration in the Asian Fisheries Science.

The Asian Fisheries Social Science Research Network (AFSSRN), a section of AFS, had its first forum, AFSRRN F1, on 24-26 November 2021. It was organized as a joint conference with the Sixth International Conference on Fisheries and Aquatic Sciences (ICFAS 6). AFSSRN partnered with the College of Arts and Sciences of the University of the Philippines Visayas in organizing the joint conference offered online. The conference provided a venue for social science researchers and scientists in fisheries and aquaculture in the region to interact and foster cooperation to advance knowledge and promote the proper use of fisheries and aquaculture social sciences research practices and results in the Asia-Pacific region.

The Fish Health Section had five successful webinars from December 2020 to 1 June 2022 attended by 1,394 participants from 94 countries. The webinars were facilitated by the Network of Aquaculture Centres in Asia-Pacific.

The Gender in Aquaculture and Fisheries Section (GAFS) successfully implemented two projects: *Dialogues in Gender and Coastal Aquaculture: Gender and the Seaweed Farming Value Chain* in India and Kenya funded by SWEDBI, and *Closing gender data gaps in aquatic food systems: A WorldFish and GAFS collaborative call. GAFS* published selected papers presented during the GAF7 and had Guest Editorial in *Gender, Technology and Development* journal (Special Issue 24(i), 2020). GAFs also had four journal article awards for young researchers to support their publication of gender journal articles.

AFS also had challenges. For 2019-2022, AFS had 668 members. By May 2022, only 335 are active: Honorary Members, 13; Permanent Active Members, 146; Full members, 176. The rest were not able to renew their membership. We are hopeful, however, that renewal and more members will come soon. We are also hopeful that with the approval of the guidelines for institutional membership, AFS will have its first institutional members soon. We had to postpone the Seventh Cage and Aquaculture in Asia in Hainan, China because the actual in-person visit to the cage farms is part of the highlights of CAA7.

AFS is looking forward to a number of conferences planned during the three years and to finally be held this year: Fourth International Symposium in Aquaculture and Fisheries Education (ISAFE4) to be hosted by the National Ping Tung University of Science and Technology in Taiwan in July 2022; 11th Diseases in Asian Aquaculture (DAA11) on 23 to 26 August 2021 in Kuching, Malaysia; 8th Global Symposium on Gender in Aquaculture and Fisheries (GAF8), in 21-23 November 2022, Kochi, India.

After 38 years, the Asian Fisheries Society remains as strong international non-profit scientific society promoting networking and cooperation between scientists, researchers, and all stakeholders involved in fisheries and aquaculture production and research and development in the Asia-Pacific region. There are many to thank for.

I would like to say thank everyone for the support to AFS for the past three years by the members of the 13th AFS council: Dr. Joykrushna Jena (Immediate Past President), Prof. Han-Ching Wang (Vice-President), Assoc. Prof. Dr. Murni Marlina Abd Karim (Secretary), Dr. Nur Leena Wong Wai Sin (Treasurer), and Members Prof. Neil Loneragan (now president of 14th Council), Prof. Atsushi Hagiwara, Dr. Ann Flemming, Dr. Achamveetil Gopalakrishnan, Prof. Liping Liu, Prof. Jin-Long Yang, Prof. Wilfredo Campos, Dr. Umi Muawanah, Prof. Hong-Thih Lai and Prof. Yu-Hung Lin. I also thank the Chairs of GAFS, Dr. Meryl Williams (2017 to 2022) and Dr. Nikita Gopal (2022 – 2025); Chair of AFSSRN, Dr. Marietta Sumagaysay (2021 – 2024), Chair of Fish health section, Dr. Agus Sunarto; and the two branches of AFS: Indian Branch headed by Dr. Joykrushna Jena and the Taiwan Branch headed by Prof. Han Jia Lin.

We are grateful to the National Cheng Kung University, Taiwan for hosting the 13th AFAF, to Prof. Han-Ching Wang and her team, to the Asian Fisheries Society-Taiwan Branch, and to all the partners and sponsors. It was a successful conference, a fitting end to the 13th Council of the AFS.

I am confident that the AFS is in good hands with a new set of Council members headed by Prof. Neil Loneragan, President of the 14th AFS Council.

Thank you.

Alice Joan De La Gente Ferrer
Outgoing President 13th AFS Council

Message from Incoming President

Greetings to all and thank you for confirming me as President of the Asian Fisheries Society at the 14th General Assembly in June 2022. It is an honour to serve AFS in this role and I look forward to working with the 14th Council of AFS over the next three years, leading into the 14th Asian Fisheries and Aquaculture Forum (AFAF) in New Delhi in 2025. At my closing message to the 13th AFAF I thanked a number of people and I would like to reiterate these thanks here: thanks to our Immediate Past President (IPP), Prof. Alice Ferrer, the IPP for the 13th Council, Dr J. K. Jena, and all members of the 13th AFS Council for their service to AFS during 2019 to 2022 – a chaotic time for all as the world faced the global COVID pandemic. Thanks also to our Executive Officer, Mrs Malathi Thanamsegaram, for handling all the logistics and helping the Council to operate smoothly.

Also, a very big thank you to Prof. Han Cheng Wang (KC) and the local organising committee for the success of the 13AFAF. Many thanks also to all the student volunteers who helped with the smooth running of the 13AFAF behind the scenes. This was the first virtual Forum of AFS in its 38 years as a society and was delivered through a combination of the Gather Town and WebEx platforms. Participants enjoyed the opportunity of "meeting" and "networking" through these platforms, and they captured some of the feel of an in-person forum. Student participation in research continued to be encouraged by AFS at the 13AFAF through the two Kanazawa Awards and >20 prizes for oral and poster presentations (see announcement of prizes at https://13afaf.tw/). Short videos of the opening and closing ceremonies are available at https://13afaf.tw. The status of these topics, gaps and future directions for research were identified at the conclusion of the conference and these provided valuable information for planning the 14th AFAF.

In addition to the AFAF meetings, AFS promotes the dissemination of science, and research collaborations and networks, by coordinating symposia on Gender in Fisheries and Aquaculture (GAF, https://www.genderaquafish.org), Diseases in Asian Aquaculture (http://www.fhs-afs.net/symposia.htm), Cage Aquaculture in Asia (https://www.afsconferences.net/category/caa/) and International Symposia on Aquaculture and Fisheries Education (https://isafe4.com.tw/home.jsp). We are fortunate to have very active sections in GAF and Fish Health as well as active branches in India and Taiwan. Another benefit to members of our society is the AFS journal which under the leadership of Editor in Chief, Professor Mohammad Shariff, has been increasing its profile and significance.

Since the 14th General Assembly, the 14th Council (https://www.asianfisheriessociety.org/council.php?id=fourteen-council-2022-2025) has had its first meeting, (#62nd since the formation of AFS), where we introduced new Councillors, elected the Treasurer (Dr Nur Leena Wong), Secretary (Dr Murni Marlina) and Vice-President (Prof. Wilfredo Campos) and established the Executive Committee (President, IPP, Vice-President, Treasurer, and Secretary) and Committee memberships for the Council (Finance, Membership, Publication, Forum and Conference Committee, Workshops and Training committees). Two working groups were also established – one on raising the profile of AFS and increasing engagement with members and our broader society; and the other on establishing a network for fisheries and fisheries management within AFS. The next Council meeting (#63) will be virtual in September 2022 and the following one, we plan to have in person, possibly in Indonesia.

Asia is a powerhouse of global fisheries, providing a large proportion of the world's seafood from both capture fisheries and aquaculture. A strong, vibrant Asian Fisheries Society will enhance the research and development needed to continue supporting the production of seafood in Asia and the world. The Vision of AFS in the 2015-2020 Strategic Plan is:

"A vibrant Asia-Pacific society of researchers and other stakeholders that is valued by
members for its ability to provide opportunities for communication, collaboration and capacity development in fisheries and aquaculture science."

The two goals in this plan are:
"Effective interaction and cooperation among scientists and technicians involved in fisheries and aquaculture R&D in Asia, that encourages and facilitates research activity collaboration, sharing of information and dissemination of research results; and
Increased awareness of the importance of fish and other aquatic resources in the region and role of science in promoting sustainable development of these resources."

The Vision and Goals of the Society in this plan are still very relevant today. I will work closely with the Council and members of the Society to realise our vision and goals and develop a new strategic plan for the coming decade. I believe that our research needs to be communicated effectively to policy makers, that young people need to be encouraged and developed to become leaders in research in Asian fisheries and aquaculture and that we need to do more to recognise and develop the role of women in fisheries and aquaculture. The meetings organised by the society include the Asian Fisheries and Aquaculture Forum (AFAF), Cage Culture in Asia (CAA), (b) Aquaculture and Fisheries Education (ISAFE), Gender in Aquaculture and Fisheries (GAF) and (d) Diseases in Asian Aquaculture (DAA) provide important platforms for achieving the vision and goals of the AFS.

In my term as President of AFS, I aim to promote research, networks and collaborations on fisheries and aquaculture throughout our region and foster the development of students and young researchers in AFS. If you have any ideas for achieving these goals, please contact AFS through our Executive Officer (Malathi Thanamsegaram malathi1813@gmail.com, or a Councillor.

Professor Emeritus Neil Loneragan
President of AFS 14th Council

GAF Section Business

In the first half of 2022, the GAF Section has been very active, including holding its election for the Second GAFS Executive Committee. In January, we released our third e-Newsletter, edited by ExeComm member Dr Surendran Rajaratnam and produced by WorldFish and the CGIAR FISH program, to whom we are grateful for the support. The Newsletter contains news of the GAF Section and activities of its members and partners, often operating under COVID-19 work restrictions. (LINK https://www.genderaquafish.org/2022/01/15/issue-3-of-the-gender-section-e-newsletter-released/).

On 8 March, to celebrate International Women's Day, GAFS released its Core Principles (Link - https://www.genderaquafish.org/wp-content/uploads/2022/03/GAFS-Core-Principles.uploaded.pdf). The Core Principles are based on growing experience and knowledge of gender and fisheries. They are designed to be used by members who represent GAFS in various forums, and also for giving depth to the GAFS Objectives enshrined in the By Laws. The Core Principles were developed by the GAFS ExeComm and membership through a consultative process.

For its first ever annual audit, undertaken by the AFS auditors, TP & Associates, GAFS ExeComm prepared its 2021 financial report, developed the 2022 annual budget and prepared historical financial statements, with the assistance of the AFS Secretariat. GAFS was given a clean audit outcome.

2022 Election for 2nd GAFS Executive Committee

Delayed by the postponement of GAF8 due to COVID-19, the GAFS Executive Committee election was held online between 9-22 May 2022, and the results announced on 26 May 2022. The election ushers in the 2nd GAFS Executive Committee, taking over from the 1st Executive Committee on 1 July 2022. The new officers are given below and their biosketches are at https://www.genderaquafish.org/second-executive-committee/:

Chair: Nikita Gopal

Past Chair: Meryl Williams

Vice-Chair: Kyoko Kusakabe

Secretary: Kafayat Fakoya

Treasurer: Arlene Nietes Satapornvanit

Election Committee Coordinator: A K M Nowsad Alam

Membership Committee Coordinator: Danika Kleiber

Constitution Committee Coordinator: Alice Ferrer

Elected members: Ann Elizabeth Fleming and Sarah Jane Harper

Newsletter Editor: to be appointed

GAF8

Postponed from April 2021, the 8th Global Conference on Gender in Aquaculture and Fisheries GAF8) will be held in Kochi from 21-23 November 2022. The latest details for GAF8 can be found on https://www.gafconference.org/.

AFSSRN First Conference

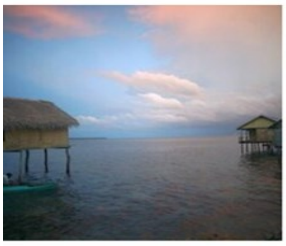
Many GAFS members took an actives part in organising, presenting and participating in the Joint International Conference Sixth International Conference for Fisheries and Aquatic Sciences (ICFAS 6) and Asian Fisheries Social Science Research Network Forum One (AFSSRN F1) from 24 - 26 November 2021. We congratulate AFSSRN on their first Forum and the election of their new Executive

GAFS Communications

GAFS continues to be very active in its outreach, through its website, its GAFS members e-mail group, the broader Genderaquafish email group, and social media outlets (Twitter and Facebook). GAFS members are receiving a monthly premium news service on GAF news items, and GAFS will release its third annual e-Newsletter later in the year.

Also, it is proposed to host a workshop or a training session during GAFS 8 which will be held in hybrid format in India on 21-23 November 2022. A proposed training on Gender Justice 101 is being considered.

Since the June 2021 e-Newsletter, the following Stories have been posted on our website. Please check them out!



- **6 November 2021: "Rocking the boat: resistance to marine conservation policies along lines of ethnicity, class and gender in the Wakatobi National Park, Indonesia" by Melody Lynch**
  https://www.genderaquafish.org/2021/11/06/rocking-the-boat-resistance-to-marine-conservation-policies-along-lines-of-ethnicity-class-and-gender-in-the-wakatobi-national-park-indonesia/
- Local Sama-Bajau do not passively accept the conservation regulations imposed upon their communities. Instead, they continue to access marine and coastal resources for their culture and livelihoods in ways that they consider to be morally fair. Despite much 'women's work' being made illegal by the protected area, and social stigmatization, the women are important providers and contributors to household livelihoods.
- 5 November 2021: "**GAF8 Webinar: "Women Work in Fisheries, Too!**"
  https://www.genderaquafish.org/2021/11/05/gaf8-webinar-women-work-in-fisheries-too/
- This webinar – "Women Work in Fisheries, Too!" – on gender and labor in fisheries was conducted to increase awareness and recommend cooperative actions that are necessary in having a gender and social inclusive approach to address labor issues in the fisheries sector.
- **26 October, 2021: "Towards a 'thick description' of gender relations: a new framework based on dried fish value chains" by Madu Galappaththi**
  https://www.genderaquafish.org/2021/10/26/towards-a-thick-description-of-gender-relations-a-new-framework-based-on-dried-fish-value-chains/
- Dried fish is considered a 'hidden' sub-sector within small-scale fisheries, and is particularly important in Asia and Africa. Women make up a significant portion of the workforce in this sub-sector. A new framework may reveal a thick description of gender relations.
- 20 October 2021: "***Reducing the Gender Gap for Women in Aquaculture in India through Targeted Affirmative Action***" by Sreeja Lakshmi
  https://www.genderaquafish.org/2021/10/20/reducing-the-gender-gap-for-women-in-aquaculture-in-india-through-targeted-affirmative-action/
- Career development and promotion for Indian women in science are important issues. Barriers to successful entry and re-entry to science or a sustainable move of a women researcher can be accomplished by providing more fellowships and funding programs for women – in other words, targeted affirmative action.
- 4 October 2021: "***GAFS Supports Shanghai Declaration***"
  https://www.genderaquafish.org/2021/10/04/gafs-supports-shanghai-declaration/

Read the Gender in Aquaculture and Fisheries Section's statement of support for the Shanghai Declaration: Aquaculture for Food and Sustainable Development.

Keep in touch with GAF

Website: https://www.genderaquafish.org/; https://www.genderequality.genderaquafish.org/

Facebook Page: https://www.facebook.com/AFS-Gender-in-Aquaculture-and-Fisheries181176555231544/

Twitter: @Genderaquafish https://twitter.com/Genderaquafish

***Contributed by**: Meryl Williams, Nikita Gopal and Kafayat Fakoya on behalf of GAFS ExeComm*

AFS SECTIONS

Fish Health Section (FHS)

The 11th Symposium on Diseases in Asian Aquaculture (DAA11)

The 11th Symposium on Diseases in Asian Aquaculture (DAA11) https://www.daa11.org/ has been confirmed to be held virtually from 23rd to 26th August 2022 in Kuching, Sarawak, Malaysia, after few postponements due to the Covid-19 pandemic. We believe under the circumstances; the virtual mode will be convenient and best option for all participants. The triennial symposium is a hub that covers core aspects of aquatic animal health including current research developments, trends, the future of the aquatic animal health industry and many more. The DAA11 will provide a forum for interaction among professionals, academicians, and experts in the fields of aquatic animal health. We welcome all researchers, business professionals, industry, and academia representatives to join and share their research findings with us at DAA11. The scientific programme of DAA11 consists of two plenaries (State of Aquaculture, and Drivers and Pathways of Diseases Emergence in Aquaculture) and six sessions (Biosecurity, Epidemiology, Diagnostics, Prevention & Control, Trends in Fish Health, and Trends in Shrimp Health). More than 150 participants have registered and 100 abstracts have been submitted to DAA11. Opening ceremony, plenaries sessions, exhibition and Malaysian Farmers Day will be held in person on the first day of DAA11 and will be streamed online. The rest of DAA11 scientific programme will be held online.

The FHS-AFS has organized the fifth and the last webinar of **"The FHS-AFS Virtual Seminars on the Path to DAA11"**. This webinar focused on significant viral diseases of finfishes, molluscs, and crustaceans, and was held virtually on 1 June 2022 in Bangkok, Thailand. Viral diseases are important limiting factors in the expansion of aquaculture. In this webinar, we are honoured to have with us three renowned experts to share their knowledge and experience of working on viral diseases of finfishes, molluscs, and crustaceans:

1. **"An overview of viral diseases in Asian sea bass (Lates calcarifer) and the research highlights" by Dr. Senapin Saengchan** of BIOTEC, Thailand.
2. **"Searching for pathogenic viruses in shellfish using next-generation sequencing" by Dr Tomomasa Matsuyama** of Japan Fisheries and Education Agency, Japan.
3. **"Infection with Decapod iridescent virus 1 (DIV 1)" by Dr Liang Qiu** of the Yellow Sea Fisheries Research Institute, P.R. China.

The webinar was attended by 229 participants from 21 countries and territories around the world. Video recordings and pdf copy of the presentations are available at FHS website
http://www.fhs-afs.net/webinar-5-viral-diseases-of-aquatic-animals.htm

Summary of "FHS-AFS Virtual Seminars on the Path to DAA11".

Webinar	Date	Topic	Speakers	Registered		Attended*	
				Participants	Country	Participants	Country
1	09-Dec-20	Parasitic diseases	4	1083	22	399	22
2	21-Apr-21	Non-infectious diseases	4	479	23	233	20
3	04-Aug-21	Fish vaccination	3	956	48	509	32
4	08-Dec-21	Bacterial diseases	3	528	26	239	20
5	01-Jun-22	Viral diseases	3	419	27	229	21
	Average		**3**	**693**	**29**	**322**	**23**
	Total		**17**	**3465**	**146**	**1609**	**115**

*Based on those who attended the webinar for at least 30 minutes.

Asian Fisheries Social Science Research Network (AFSSRN)

AFSSRN Execom, 2021-2024:

The Executive Committee of AFSSRN for 2021-2024 was organized with the election of its members on 24 November 2021 during the Network's Social Science Assembly (see December 2021 issue of e-newsletter for details). A brief organizational meeting followed where it was agreed to hold AFSSRN Execom meetings regularly on the 4th Wednesday of the 1st month of the Quarter. Following this, meetings were held on: 7 February 2022, 27 April 2022, and 7 July 2022.

AFSSRN Membership

As of 31 December 2021, the AFSSRN has a total of 165 members of which 29 are active permanent members, 38 active members, 97 members with dues and 1 honorary member.

AFSSRN Objectives in brief:

Based on its bylaws, the AFSSRN aims to"

- to promote effective interaction and cooperation among persons involved in fisheries and aquaculture social sciences research;
- to encourage and promote investigation and advances in knowledge of fisheries and aquaculture social sciences;
- to focus attention on fisheries and aquaculture social sciences problems by disseminating technical and other information on all aspects of fisheries and aquaculture social sciences and management; and
- to promote the proper use of fisheries and aquaculture social sciences research practices and results in the Asia-Pacific region.

It is planned to attain AFSSRN objectives through:

- Holding **meetings of members** to discuss broad issues and specific topics related to fisheries and aquaculture social sciences
- Holding **symposia** on fisheries and aquaculture social sciences and publishing the proceedings;
- **Compiling and disseminating proceedings, notes or abstracts** of sponsored conferences and workshops, and other relevant information;
- Holding **regular conferences/workshops/training** programs on topics of importance for fisheries and aquaculture social sciences; and
- Promoting the development and **use of standardized, internationally accepted methods** for fisheries and aquaculture social sciences research

In joint AFSSRN and GAFS General Assembly held in 2019, it was agreed to capture historical documents in an archive, establish a website, hold back-to-back conferences with GAFS, and generate a theme to give AFSSRN direction. Some of the themes identified are: impacts of fisheries development on people; acceptability and impact of new technologies; value chains (including gender); economics; governance; and how can social science contribute to the SDGs, among others

AFSSRN Committees

With these 2019 highlights as a guide for future activities and strategies, the AFSSRN 2021-2024 created committees as detailed below:

Committee	Task	Lead persons
Membership Committee	Recruitment; GA; directory of members	Ben Carmelita; Nikita Gopal, Marieta B. Sumagaysay,
Finance and Logistics	Funds/resource generation; annual Financial Report	Zarirah Zulperi, Neha Qureshi, Paul Ramirez
Publicity and Promotion	Website; social media publicity; announcements	Ben Camelita
Documentation and Publication	Compile proceedings, notes; archives; write annual reports to AFS;	Gay Defiesta
	E-newsletter; disseminate proceedings, research results; forums	Nikita Gopal, Neha Qureshi (to assist)
Linkages and networking	Collaborations (within AFS; external)	Marieta B. Sumagaysay, Nikita Gopal, Zarirah Zulperi
Committee on Events	Conferences (2024), workshops, symposia	Nikita Gopal
Research and Training	Scan of social science capacity in Asia; members capdev; one focus theme/topic	Paul Ramirez

Activities planned for 2022

It is planned to host a panel meeting of AFSSRN during the ISAFE4, focusing on the state of fisheries education in the Philippines, Malaysia and Indonesia.

Panel session title:

Future Strategy and Integration of Social Sciences in Fisheries Education

Keynote speaker:

Prof. Dr. Alice Joan Ferrer (Philippines)

Panelists:

Dr. Nikita Gopal (India)

Dr. Luky Adrianto (Indonesia)

Dr. Zafri Hassan (Malaysia)

Dr. Caridad Jimenez (Philippines

Dr. Gay Defiesta, AFSSRN

AFS BRANCHES

Asian Fisheries Society Indian Branch (AFSIB)

12th Indian Fisheries and Aquaculture Forum (12th IFAF)

The Indian Branch of Asian Fisheries Society (AFSIB) has been holding triennial Indian Fisheries and Aquaculture Fora very regularly in different parts of India since 1987.

The 12th Indian Fisheries and Aquaculture Forum was organised in Chennai during May 5-7, 2022 with the theme "Fish for Nutritional Security and Economic Sustainability". It was hosted by Tamil Nadu Dr. J. Jayalalithaa Fisheries University. Hon'ble Governor of Tamil Nadu Thiru R.N. Ravi inaugurated the forum. More than 900 scientists, researchers and fisheries professionals from different parts of India and abroad participated in the Forum.

The presentations were made under the following sections

1. Aquaculture Production
2. Fish and Shellfish Nutrition and Feed Technology
3. Aquaculture Genetics, Breeding and Biotechnology
4. Aquatic Animal Health Management
5. Aquatic Environment and Management
6. Aquatic Biodiversity, Stock Assessment and Conservation
7. Aquatic Food Safety and Quality
8. Aquatic Food processing, Product Development, Value Addition and Packaging
9. Fishing Technology and Fisheries Engineering
10. Socio-economics, Fisheries Policy, Capacity Building, Livelihood and ICTs in Fisheries

In addition, an International Symposium on "Insulating Marine Fisheries Sector in South Asia from Uncertainties: Global Experiences with Insurance", a session on Gender in Aquaculture and Fisheries (GAFS) and a Farmers meet were also held during the Forum period.

Various awards viz. Professor H.P.C. Shetty award, Professor T.J. Pandian and A.J. Matty award, Dr. Pillay Aquaculture award, Dr. M.C. Nandeesha Fish Farmer's award, Shri J.V.H. Dixitulu Extension award and Young Scientist awards were given away during the Forum.

Asian Fisheries Society Taiwan Branch (AFSTB)

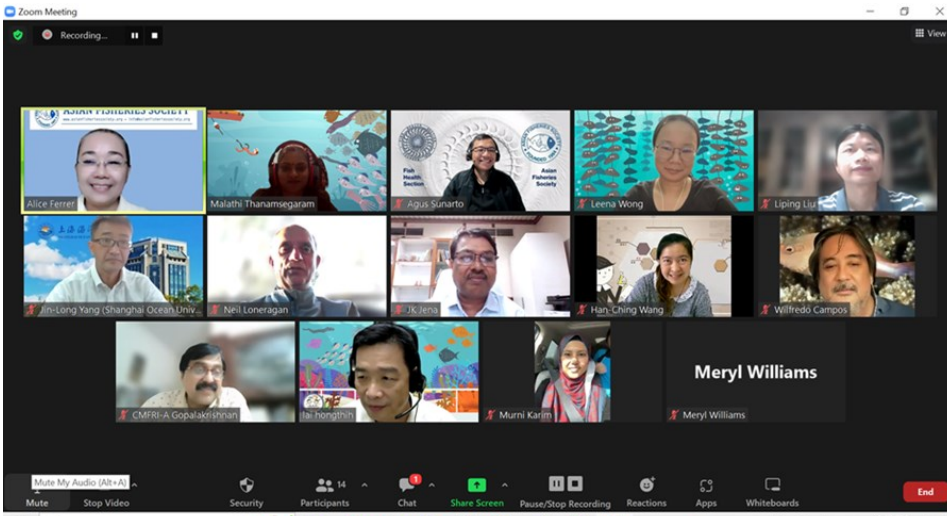
The 13th AFAF was hosted by National Cheng Kung University, and it was the second time held in Taiwan since 2001. Since the international travel is still limited due to the situation of COVID-19, the 13th AFAF is the first AFAF to be held online with virtual reality technology. Despite facing new challenges, the outstanding members of the Asian Fisheries Society were able to adapt quickly. With new technologies, we still had a very exciting and fulfilling AFAF. Of course, we still regret not being able to let everyone actually experience the beautiful scenery and friendly people of Taiwan. Looking forward to having the opportunity to host the next conference again in Taiwan without waiting too long.

Taiwan Shrimp Carnival

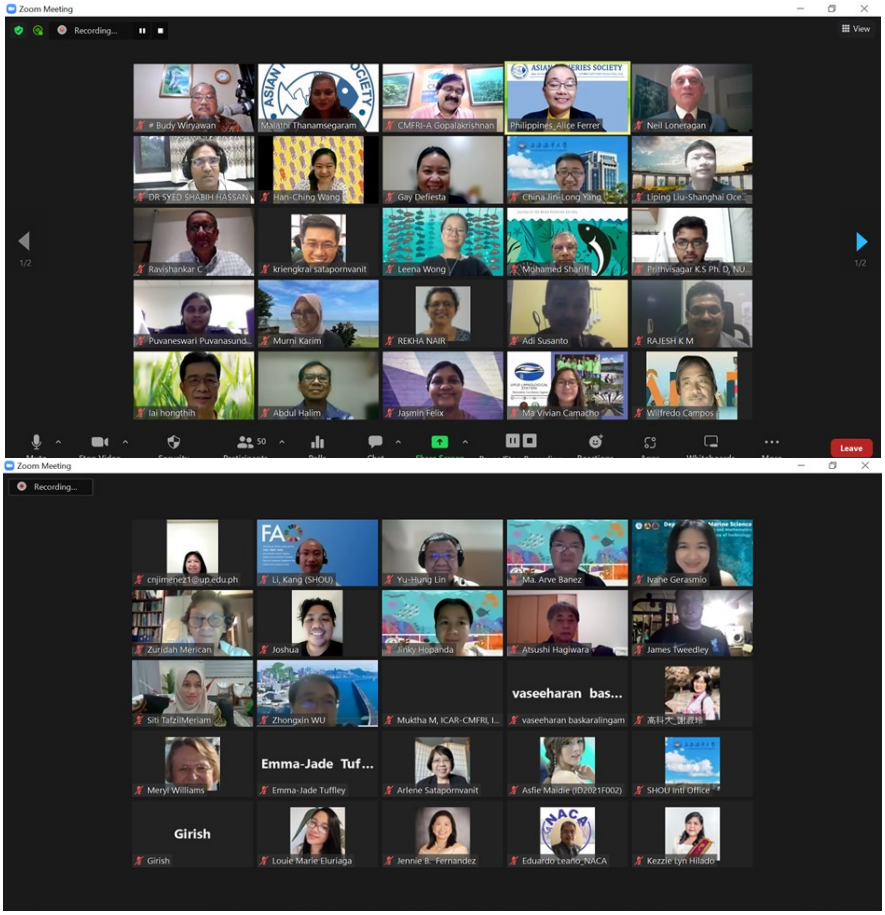
National Taiwan Ocean University an d AFS Taiwan branch held the event for the first time on June 19, 2022. Many citizens participated and enjoyed the delicious shrimp cuisines, which were provided by local shrimp farms. Dr. I Chiu Liao was invited as the VIP. He made presentation on the glorious history of Taiwan shrimp industry, including how Taiwanese developed tiger prawn artificial breeding. The event also invited six experts and scholars to put forward practical suggestions on topics such as healthy shrimp fry, sustainable shrimp feed, AI in aquaculture, resilience to infectious diseases, probiotics, and scientific standards for shrimp quality. The world shrimp industry should continue to develop in a more sustainable and stable way. And Taiwan will continue to contribute in this regard.

International Symposium on Aquaculture and Fisheries Education (ISAFE 4)

The International Symposium on Aquaculture and Fisheries Education (ISAFE) focuses on the status and development of aquaculture and fisheries education in the Asia-Pacific region. The 4th symposium (ISAFE4), a triennial event of the Asian Fisheries Society (AFS), is being organized by the National Pingtung University of Science and Technology (NPUST) and Asian Fisheries Society, Taiwan Branch in collaboration with Ministry of Education of Taiwan was scheduled during 17-18 July, 2022. However, with the objective of attracting more participants, the local organizing committee in consultation with the 14th AFS Council has decided to hold the Symposium during 7-8 October 2022, in virtual mode. The website (http://isafe4.com.tw) has been updated accordingly. We hope to see more people participating in the symposium.



The Asian Fisheries Society's 61st Council meeting was held on Friday, 27th May 2022 using online platform. Fifteen Councillors, Chair of Gender in Aquaculture & Fisheries Section, Secretary/Treasurer of Fish Health Section (FHS) and Editor of Asian Fisheries Science Journal participated.



The 14th General Assembly of the Asian Fisheries Society was held on Wednesday 1st June 2022 using online platform and was participated by 74 AFS members. The following persons were elected to the 14th Council and various committees of AFS.

AFS 14th Council (2022-2025)

No	Name	Organization	Country
1	Neil Loneragan (President)	Murdoch University	Australia
2	Alice Joan Ferrer (Immediate Past President)	University of the Philippines Visayas	Philippines
3	Wilfredo Campos (Vice President)	University of the Philippines Visayas	Philippines
4	Nur Leena Wong Wai Sin (Treasurer)	Universiti Putra Malaysia	Malaysia
5	Murni Marlina Abd Karim (Secretary)	Universiti Putra Malaysia	Malaysia
6	Jin long Yang (Member)	Shanghai Ocean University	China
7	Liping Liu (Member)	Shanghai Ocean University	China
8	Hong-Thih Lai (Member)	National Chiayi University	Taiwan
9	Han-Jia Lin (Member)	National Taiwan Ocean University	Taiwan
10	Ikuo Hirono (Member)	Tokyo University of Marine Science and Technology	Japan
11	Kuldeep Kumar Lal (Member)	ICAR-National Bureau of Fish Genetic Resources (NBFGR)	India
12	C.N Ravishankar (Member)	ICAR- Central Institute of Fisheries Education (CIFE)	India
13	Indah Susilowati (Member)	University of Diponegoro, Semarang Indonesia	Indonesia
14	Budi Wiryawan (Member)	IPB University	Indonesia

AFS WORKING COMMITTEE

Executive Committee

President: Prof. Neil Loneragan
Immediate Past President: Prof. Alice Joan Ferrer
Vice President: Prof. Wilfredo Campos
Treasurer: Dr. Nur Leena Wong Wai Sin
Secretary: Assoc. Prof. Dr. Murni Marlina Abd Karim

Finance Committee

Dr. Nur Leena Wong Wai Sin (Chair)
Prof. Liping Liu (Member)
Prof. Han Jia Lin (Member)
Dr. Kuldeep Lal (Member)

Membership Committee

Prof. Wilfredo Campos (Chair)
Assoc. Prof. Dr.Murni Marlina Abd Karim (Member)
Prof. Indah Susilowati (Member)
Prof. Ikuo Hirono (Member)
Prof. Hong Thi Lai (Member)

Publication Committee

Prof. Jin Long Yang (Chair)
Assoc. Prof. Dr.Murni Marlina Abd Karim (Member)
Prof. Indah Susilowati (Member)

Forum and Conference Committee

Dr. Ravishankar (Chair)
Prof. Indah Susilowati (Member)
Prof. Alice Joan Ferrer (Member)
Dr. Nur Leena Wong Wai Sin (Member)
Prof. Han Jia Lin (Member)

Workshops and Training Committee

Prof. Liping Liu (Chair)
Prof. Neil Loneragan (Member)
Prof. Alice Joan Ferrer (Member)
Prof. Hong Thih Lai (Member)
Assoc. Prof. Dr. Budy Wiryawan (Member)

Working groups

Raising the profile of the society and increasing engagement
Prof. Neil Loneragan
Prof. Wilfredo Campos
Dr Meryl Williams
Assoc. Prof. Dr Budy Wiryawan

Asia Pacific network for Fisheries and Fisheries Management
Prof. Neil Loneragan
Prof. Wilfredo Campos
Assoc. Prof. Dr Budy Wiryawan

Awards:

The following members of AFS received various awards:

No.	Award category	Recipients
1.	**Honorary Life Member**	Dr. Rohana Subasinghe Dr. Joykrushna Jena
2.	**Gold Medal Award**	Dr. Arlene Nietes Satapornvanit
		Professor Kyoko Kusakabe
		Dr.Nikita Gopal
		Prof. Han-Ching Wang
3.	**Merit Award**	Dr. Danika Kleiber
		Dr. Kafayat Fakoya
		Prof. Atsushi Hagiwara
		Dr.A.Gopalakrishnan
		Prof. Ann Fleming
		Dr. Umi Muawanah
		Prof. Yu-Hung Lin
4.	**Certificate of Appreciation**	Dr.Cecile Brugere
		Dr. Cornelie Quist
5	**Sponsor**	Adisseo (Elite) GeneReach (Elite) Total Nutrition Technologies (Premier) Giant Bio (Diamond)
6	**Partners**	Indian Council of Agricultural Research National Cheng Kung University University of the Philippines Visayas National Taiwan Ocean University National Pingtung University of Science and Technology ICAR- Central Institute of Fisheries Education National Chung Hsing University Bureau of Animal and Plant Health Inspection and Quarantine
7	**Supporters**	Academia Sinica National Changhua University of Education National Cheng Kung University National Chiayi University National Chung Hsing University National Ilan University National Kaohsiung University of Science and Technology National Pingtung University of Science and Technology National Sun Yat-sen University National Taiwan Ocean University National Taiwan University
8	**Kanazawa Research Fellowship**	Prithvisagar Kattapuni Suresh (Nitte University Centre for Science Education Research (NUCSER)
		Puvaneswari Puvanasundram (Universiti Putra Malaysia)

AFS Publications

AFS Newsletter

The Secretariat would like to thank all contributors for providing the materials for each issue of the AFS newsletter. We are looking forward to more articles, especially from AFS branches, sections, and members.

AFS Journal

The online manuscript submission system for the Journal of the Society, Asian Fisheries Science is already linked to the UPM 'ScholarOne' package.

The journal is now being published on a schedule and is accessible to all, including non-members.

AFS Journal Management

Editor in Chief: Prof. Dato Mohammed Shariff Din (since Dec. 2010)

Assistant Editor: Dr. Sanjoy Banerjee (since 2018-present)

AFS Membership

There are 603 members on the AFS list. Of these, 335 members are active and the rest need to renew their membership. AFS encourages members to renew and to be Permanent Active Members (PAM).

The Secretariat Office

The Secretariat is hosted in the Laboratory of Aquatic Animal Health and Therapeutics (AquaHealth), Institute of Bioscience, Universiti Putra Malaysia.

Executive Officer: Mrs. Malathi D/O Thanamsegaram (full time)

Membership Account

The username and password were remained as below:
Username: ID Number password: afs@123

NEWS

Global Seafood Trade Value Rebounds to USD 164 billion

Soaring demand for fishery and aquaculture products has positioned seafood as the most globally traded animal protein, with a trade value of USD 164 billion (EUR 155.8 billion) in 2021, increasing by a compound annual growth rate (CAGR) of more than 2.4 percent in the 10-year period 2011-2021, according to the latest seafood trade map and report compiled by Rabobank.

The "2021 World Seafood Map" found that close to half of last year's trade flowed to the European Union, the United States, and China, whose combined imports surpassed USD 80 billion. According to the analysis, the seafood trade was roughly 3.6 times the size of beef trade (the second most traded animal protein) in 2021, five times the size of the global pork trade, and eight times that of the poultry trade. It also confirmed that there were more than 55 trade flows each valued over USD 400 million a year, and an additional 19 trade flows valued between USD 200 million and USD 400 million each.

"Developing countries play a major role in seafood exports, accounting for seven of the top 10 exporters, and developed countries are increasingly reliant on developing nations for imports of high-value species, especially shrimp from India and Ecuador and salmonids from Chile," said Rabobank Seafood Analyst Novel Sharma, who co-authored the map with Rabobank Senior Seafood Analyst Gorjan Nikolik.

Seafood trade from Norway to the E.U.-27 plus the United Kingdom continued to be the most-valuable industry trade-flow, valued at over USD 8.7 billion and largely comprised of farmed salmon. In second place was the trade from Canada to the United States, valued at USD 5 billion and dominated by crustaceans (excluding shrimp), valued at USD 3.34 billion. Following closely behind with USD 3.3 billion worth of seafood trade were exports from India to the United States, driven mainly by the sale of farmed vannamei shrimp, which made up 80 percent of Indian seafood exports to the U.S. market.

U.S. seafood imports totalled USD 28.1 billion (EUR 26.7 billion) in 2021, which was USD 8.6 billion (EUR 8.2 billion) more than in 2016, while the CAGR has grown at 6 percent. Imports were led by shrimp, salmonids, crab, and lobster, which accounted for 91 percent of the total value added.

Beyond China, there is a global trend favoring higher-value seafood, according to the Rabobank study, which found the COVID-19 pandemic further strengthened already high demand for species such as shrimp and salmonids. This trend is further evidenced by the strong rebound in imports in 2021 that followed initial COVID-19 lockdowns, Rabobank said, with the growth driven by demand for shrimp, fishmeal, crab, and salmonids, all of which exhibited double-digit year-on-year growth. Together the growth in demand for the species accounted for 94 percent of the global growth in seafood imports by value, which cumulatively rose USD 2.4 billion compared to 2020, the report found.

During the pandemic, we saw higher-value proteins such as beef, shrimp, and salmonids outperform other proteins, with year-on-year growth in trade value of 16 percent, 17 percent, and 20 percent, respectively. We are also seeing unprecedented high prices for many seafood species due to challenges in international trade such as rising freight and energy costs and continued lockdowns in China.

Source: https://outlook.live.com/mail/0/inbox/id/AQMkADAwATE2MTcwLWEwODktMmNiMC0wMAItMDAKAEYAAAM32f8Sol%2bcSq6aUVyHuhkxBwA9b8q/58j4RZg2pDhsO9qIAAACAQwAAAA9b8q/58j4RZg2pDhsO9qIAAJMSHMqAAAA/

WTO Members Hopeful on Major Fish Deal Despite Exemption Push

A global deal to cut fishing subsidies could be struck at a major ministerial meeting of the World Trade Organization in June even though India in particular pushed for a major exemption, officials said on Tuesday (Jun 14). Countries spend some US$35.4 billion a year supporting their fishing fleets around the world and China is the biggest, according to a 2019 study. This has led some fish stocks to plunge and put others at risk of collapse.

The 27-year-old trade body has not reached a major deal among its 164 members in nine years and some observers see the fish talks as the best, and possibly last, chance to do so. The Geneva-based organization has been weakened by global trade discord, COVID-19 and the crippling of its dispute settlement mechanism.

Negotiators have been working in confidential meetings in recent days to come up with a final draft of which there are only 11 undecided areas, down from more than 80 a year ago. "I could not have imagined we would move so fast a year ago. There is considerable advance and we hope we can land this," WTO Director-General Ngozi Okonjo-Iweala told a news conference.

Progress made in recent weeks includes an agreement on how the rules apply to vessels flying flags that are not their own, the draft deal showed. However, India commerce minister said a 25-year transition period was a "must have." "Without agreeing to the 25-year transition period, it will be impossible for us to finalize the negotiations, as policy space is essential for the long-term sustainable growth and prosperity of our low-income fishermen," he told fellow WTO members. China has until recently resisted efforts to curb subsidies for high-seas fishing.

An official from the European Union, a major subsidiser, said the current draft text – the eighth version circulated – represented a "landing zone. "There are certain hurdles which could probably be lifted but because they are used as a possibility to negotiate and bargain on other tables they are still kept," EU Environment Commissioner Virginijus Sinkevicius told Reuters.

One trade diplomat said he thought a fish deal was the most likely agreement to emerge from the Geneva talks. Other negotiations continue at the WTO on food security and a vaccine waiver for intellectual property rights.

URL: https://www.channelnewsasia.com/business/wto-members-hopeful-major-fish-deal-despite-exemption-push-2747106

WTO breaks a 7-year Negotiating Drought, Agrees on All Issues Including fisheries subsidies

The World Trade Organization's members cleared a package of trade deals, including pledges on health, reform and food security, struck after more than five days of hard negotiations. Representatives of the 164 countries, including India, cheered after the package was passed before Director-General Ngozi Okonjo-Iweala addressed them. For the first time subsides on overfishing, deep sea fishing and Illegal, Unreported and Unregulated (IUU) fishing were addressed through the proposed pact. "On India's instance sovereign sights on EEZ (Exclusive Economic Zones) have been firmly established. It is really a big achievement," PTI, quoting a source reported, adding that principal stakeholders who have benefited from these "historic decisions" taken by the 12th ministerial conference of the WTO are fishermen, farmers, food security, multilateralism, and trade and business, particularly digital economy and MSMEs.

Source: https://economictimes.indiatimes.com/news/economy/foreign-trade/wto-breaks-a-7-year-negotiating-drought-agrees-on-all-issues-including-fisheries-subsidies/articleshow/92270227.cms

WTO Deal on Fishing Subsidies Received With Mixture of Praise and Criticism

Representatives of ocean-focused non-governmental organizations have issued a mix of praise and criticism of an agreement struck at the World Trade Organization to prohibit subsidy support for IUU fishing and limiting fishing of overfished stocks. The accord, agreed to on 14 June, ditched several parts of the draft text presented to ministers and was characterized by WTO Director-General Ngozi Okonjo-Iweala as a "first but significant step forward" to curbing fleet overcapacity by ending subsidies for fishing on the unregulated high seas. He said the reporting requirements included in the deal will "finally shed light on the actual level of subsidies going to fishing."

Several campaign groups welcomed the deal, including the Pew Charitable Trusts, The Environmental Justice Foundation, which has extensively tracked the consequences of IUU fishing and overfishing in West Africa, also backed the deal. "For far too long, harmful fisheries subsidies have facilitated the devastation of marine wildlife, local livelihoods, and food security around the world," EJF CEO and Founder Steve Trent said in a press statement. "The use of these subsidies has meant that wealthy countries have been able to hand out funds that have directly destroyed livelihoods in poorer nations. Today, thanks to this progressive decision, we are a significant step closer to ending that deep injustice," Under the deal, WTO members cannot grant or maintain subsidies to ships and operators engaged in IUU fishing activities. Nor can WTO members offer subsidies for fishing or fishing-related activities in the high seas outside the jurisdiction of a relevant regional fisheries management organization (RFMO).

However, not all agree the deal was worth the effort. Oceana CEO Andrew Sharpless criticized "a weak agreement that fails to eliminate harmful fisheries subsidies that lead to overfishing." While the deal prevents WTO members from granting or maintaining subsidies for "fishing or fishing-related activities regarding an overfished stock," Sumaila said he would in particular like to see a ban on subsidies that can lead to overcapacity and overfishing. While WTO agreements are binding, he said he would have liked to have had a more-detailed text "naming specific types of subsidies that are known to be particularly harmful." Daniel Voces, managing director at European fisheries industry lobby Europêche, also said the agreement lacks specificity.

While the deal was primarily geared toward improving the environmental sustainability of the fishing sector, some observers believe it will also level the seafood playing field commercially. American and European fishing representatives have long complained that Chinese fisheries operate at an unfair advantage, with lower standards and less transparency around subsidies. The WTO deal establishes a voluntary funding mechanism geared toward providing technical assistance and capacity-building to developing countries, which have borne the brunt of illegal fishing by subsidized distant-water fleets from larger fishing nations. But the loophole of distant-water vessels operating under the flags of third countries, often developing African nations, is a key issue raised in negotiations that remained unsettled in the final agreement.

Source: https://www.seafoodsource.com/news/environment-sustainability/wto-deal-on-fishing-subsidies-received-with-mixture-of-praise-and-criticism

WTO Fisheries Funding Mechanism Readied to Provide Support for Ending Harmful Subsidies

Director-General Ngozi Okonjo-Iweala on 14 June 2022 introduced the WTO Fisheries Funding Mechanism, which is envisioned to support developing and least-developed countries in implementing a prospective agreement to curb harmful fisheries subsidies. "We all know that a healthy, productive, sustainable, blue economy is one where our oceans are replenished, where our fish stocks are also healthy, and where fishermen and fisherwomen who depend on such resources continue to earn a decent living," DG Okonjo-Iweala said at the event at the 12th Ministerial Conference (MC12). "Many members have told us that they need capacity building and technical assistance to better manage their fisheries and implement the disciplines that will be in the Agreement on Fisheries Subsidies. This Fund is something that will be incredibly important to help help those who need it," the DG said.

Article 7 of the draft Agreement on Fisheries Subsidies provides for the creation of the funding mechanism to provide targeted technical assistance and capacity building to help developing and least-developed country members implement the Agreement. The proposed Fund will be operated by the WTO with partner organizations to tap relevant expertise, such as Food and Agriculture Organization (FAO), International Fund for Agricultural Development, and the World Bank Group. Around $20 million in contributions will be targeted over the course of the Fund's operation, with an initial starting amount of around $10 million. The FAO said its organization is ready to work closely with the WTO and contribute expertise for areas such as the strengthening of institutional capacity, fisheries management, data collection, as well as in the fight against illegal, unreported and unregulated fishing.

URL: https://www.wto.org/english/news_e/news22_e/fish_14jun22_e.htm

Joint Analytical Cell opens new front in fight against IUU fishing

A new collaboration by three data-driven campaign groups aims to give lower-income coastal states better access to fisheries intelligence, data analysis, and capacity-building assistance in the battle against illegal, unreported, and unregulated (IUU) fishing. The collaboration was founded by the USAID-funded International Monitoring, Control, and Surveillance Network; Global Fishing Watch; a partnership between Google and the advocacy groups Oceana and SkyTruth; and TMT, a non-profit known for its detailed database of IUU-related vessels and operators. Dubbed the Joint Analytical Cell (JAC), the project aims to harness innovative technology and fisheries expertise to increase data sharing and collaboration among governments and non-state actors in the fight against IUU.

The JAC is expected to be a game-changer, as lower-income nations have struggled to battle illegal fishing in part due to a lack of access to technology and information systems. "[JAC] will set a precedent for a global shift toward greater use of open data, data analytics, and integrated technology to provide greater transparency of activities occurring in the maritime domain and strengthen fisheries monitoring, control, and surveillance efforts". "Collaboration between states, non-profits, and technology providers can help tackle IUU fishing by providing actionable data, credible intelligence, and capacity building to those that need it most, ultimately improving global fisheries management."

JAC will build on existing tools created by the founding members such as Global Fishing Watch's vessel-tracking map and related tools like its carrier vessel portal, as well as TMT's Fisheries Analytical Capacity Tool, a "fisheries intelligence management system" that has uncovered details on the movements and ownership of vessels suspected of IUU activities.

The new JAC system, which will be showcased at the second United Nations Ocean Conference taking place in Lisbon, Portugal, in June 2022, comes on the heels of the the creation of the Indo-Pacific Partnership for Maritime Domain Awareness, a similar intelligence-led initiative to assist poorer states in battling IUU. However, the two initiatives have no formal connections to each other. This was only just announced and it is still to be determined what systems and data sources will be made through that initiative.

Source: https://www.seafoodsource.com/news/environment-sustainability/joint-analytical-cell-opens-new-front-in-war-against-iuu-fishing

UN urges ambitious action to protect the oceans

The UN Ocean Conference held in Lisbon, Portuguese capital and attended by government officials, experts and advocates from 140 countries set its sights on a new treaty to protect the high seas and concluded that the world leaders must do more to protect the oceans. The 30 x 30 plan envisages 30 percent of Earth's land and oceans become protected zones by 2030.
"Biodiversity loss, the decline of the ocean's health, the way the climate crisis is going... it all has one common reason, which is... human behaviour, our addiction to oil and gas, and all of them have to be addressed," Peter Thomson, the UN Special Envoy for the Ocean, said.

Oceans produce half the oxygen we breathe, regulate the weather and provide humanity's single largest source of protein. They also absorb a quarter of CO_2 pollution and 90 percent of excess heat from global warming, thus playing a key role in protecting life on Earth. But they are being pushed to the brink by human activities.

Sea water has turned acidic, threatening aquatic food chains and the ocean's capacity to absorb carbon. Global warming has spawned massive marine heatwaves that are killing off coral reefs and expanding dead zones bereft of oxygen.
Humans have fished some marine species to the edge of extinction and used the world's waters as a rubbish dump.

Source: https://phys.org/news/2022-07-urges-ambitious-action-oceans.html

Stronger efforts against illegal commercial fishing sought for the Philippines

International advocacy group Oceana and artisanal fisherfolk are calling on the country's incoming administration to continue the reforms made in the fight against illegal commercial fishing in municipal waters to attain food and nutritional security and alleviate worsening poverty in coastal communities in the Philippines.

"While the outgoing administration has made considerable progress in efforts to restore our ocean's abundance, much still needs to be done to attain food security in the Philippines amid the global challenges affecting our climate, fuel and basic commodities. Our municipal waters can be a major source of protein again for the Filipino people. But in order to do that, the government must continue to protect our fragile marine habitats and the preferential rights of our artisanal fishers to the municipal waters," said Gloria Estenzo Ramos, vice president of Oceana, during the launch of the Atin ang Kinse campaign.

Data on marine capture fisheries annual production from the Philippine Statistics Authority (PSA) showed production at its peak with 2.4 MMT in 2010 and decreasing to 1.9 MMT in 2020, indicating a reduction of 25.7 % or 496,599 MT.

"In 2020, the Philippine Statistics Authority reported that fisherfolk were still among the poorest of Filipinos along with farmers and individuals residing in rural areas. This year, the International Year of Artisanal Fisheries and Aquaculture, we urge the government to put an end to commercial fishers' continued violation of our laws and our artisanal fisherfolk's rights as guaranteed in our Constitution and Amended Fisheries Code," said Ramos.

URL: https://www.manilatimes.net/2022/06/22/business/top-business/stronger-efforts-vs-illegal-commercial-fishing-sought/1848219

NGOs to spend $8m on fishing community in Cambodia

A group of NGOs is now working together as "Consortium for Sustainable Alternatives and Voice for Alternatives and Voice for Equitable Development" or 'CO-SAVED' with the ambition of promoting socio-economic development in the coastal fishing communities in four provinces of Cambodia.

With an $8 million grant from the European Union, CO-SAVED projects will be carried out in the coastal fishing communities of Kep, Kampot, Koh Kong, and Preah Sihanouk provinces.

The NGOs are spearheaded by US-based Heifer International whose worldwide mission is to end hunger and poverty in a sustainable way and French-founded Aide et Action, which has its vision primarily focused on ensuring access to quality education for the most vulnerable and marginalised populations, especially children, so they can take charge of their own development.

The initiative is expected to make CO-SAVED communities more resilient through local economic development with emphasis on environmental protection and improving service delivery, which will contribute to reducing poverty and inequality and give the people sustainable livelihoods.

URL: https://www.khmertimeskh.com/501094259/co-saved-to-spend-8m-on-fishing-community/

First female longliner crew sets course off Fiji

Opening career pathways and providing equal opportunities for women is the focus of a world-first initiative that has seen an all-female deck crew set off on their first fishing trip on a tuna longline vessel. This is the result of a collaboration between fishing company SeaQuest Fiji and the Pacific Islands Forum Fisheries Agency, which seeks to begin addressing some of the issues creating the sizeable gender imbalance in the Pacific tuna industry.

There are a multitude of reasons why we don't see women on fishing vessels from socio-cultural beliefs, family obligations, lack of skills and experience to attitudes to what roles women can play. The uphill battle these women have faced to be on this vessel today is a testament to their strength, determination and commitment to their training. They are an inspiration for us and for generations to come.'

What started out as an ambitious hope to train and put forward an all-female deck crew for this very first voyage, has morphed into also having two senior officers, a first officer and an engineer on board – which is an amazing achievement.
This female crewing initiative is the first phase of a project that is planned to be progressively rolled out in other Pacific countries by the Pacific Islands Forum Fisheries Agency with local partners.

Source: https://fiskerforum.com/first-female-longliner-crew-sets-course/

Bangladesh: Marine Protected Area declared in Bay

Bangladesh has declared an area totalling about 8.8 per cent of its Exclusive Economic Zone in the Bay of Bengal as Marine Protected Area as part of a recipe to maximise the use of marine resources. Foreign Minister Dr A K Abdul Momen, while delivering the country statement at the plenary session of an international conference in Lisbon on Thursday, also said the measure has been taken to eliminate 'Illegal, unreported and unregulated (IUU)' fishing in its maritime waters.

During his deliberations, the Foreign Minister attached importance to marine science for "eradicating poverty, contributing to food security, conserving the world's marine environment and resources, helping to predict and respond to natural and anthropogenic events and promoting sustainable development of the oceans and seas". Bangladesh also announced new actions aimed at ensuring safe ship recycling by 2023 and is the first amongst developing countries to take initiative to ban manufacture of single-use plastic shopping bags, the FM said.

Source: Southasia news alert

Nature study finds silicon-shelled diatoms dissolve more slowly, causing them to sink

Believed to be less susceptible to the effects of ocean acidification, marine diatoms could struggle to form silica-based shells, new research shows. A study in the May 25, 2022 issue of *Nature* indicates that ocean acidification, a process triggered by the uptake of excessive amounts of carbon dioxide (CO_2), is a greater threat to marine diatoms than previously believed.

Researchers from GEOMAR Helmholtz Centre for Ocean Research Kiel in New Zealand and the University of Tasmania say that diatoms, linked an overarching analysis of various data sources with Earth system modelling.
They discovered that the silicon shells dissolved more slowly than those of calcifying organisms like oysters and corals, which use calcium carbonate to form their shells. Globally widespread, diatoms use silica– a compound of silicon, oxygen and hydrogen – as a building material for their shells.

Dissolving more slowly causes diatoms to sink to deeper layers of the ocean before they are chemically dissolved and converted back into silica, removing a key nutrient from upper light-flooded layers, where it is needed to form shells. This causes a decline in diatoms, which are the basis of many marine food webs and act as a biological carbon pump that transports CO_2 into the deep ocean for long-term storage.

Source: https://www.globalseafood.org/advocate/ocean-acidification-poses-a-greater-threat-to-marine-diatoms-study/?utm_campaign=The%20Advocate&utm_medium=email&_hsmi=215634628&_hsenc=p2ANqtz-8xckdJgqDsqdItJu9Ebc0E4dOK7k7BXMIUMNRrpaIC3BsXn6zH_J-nWDT8Asz9hr_a6-0ra6zmigtuH669M6PxXMR8wg&utm_content=215634628&utm_source=hs_email

Norway and FAO to help strengthen aquaculture and fisheries in Sri Lanka

The FAO with financial assistance from the Norwegian Agency for Development Cooperation (Norad) is providing technical support to develop fisheries and aquaculture in Sri Lanka. More than 50% animal protein requirements of Sri Lankans are obtained through fish consumption. However, the fishery industry in Sri Lanka is experiencing challenges due to the increase in fuel prices, production costs and prices of fish. Rising fish prices have negatively impacted the affordability of fish and fisheries-related products, particularly for low-income groups.

"Finding ways of reducing fish loss and waste and reducing production costs by introducing energy-efficient fishing vessels and use of alternative energy sources has been a challenge," said Jayantha Chandrasoma, Secretary to the State Ministry of Fisheries.

The FAO-Norad global collaboration will work with the Ministry of Fisheries on three focus areas in Sri Lanka: develop capacities to implement robust Port State Measures to combat illegal, unreported and unregulated (IUU) fishing; increase the resilience of the fisheries and aquaculture sector to climate change; and reduce food loss and waste along the fisheries value chain in Sri Lanka. The project will support policymakers and management experts, trade and industry experts, fishers, fish farmers and fish workers. It is aimed at enhancing the socio-economic development of the fisheries and aquaculture sector through the responsible use of fisheries resources.

Source: https://www.globalseafood.org/advocate/norway-and-fao-to-help-strengthen-aquaculture-and-fisheries-in-sri-lanka/?utm_campaign=The%20Advocate&utm_medium=email&_hsmi=215634628&_hsenc=p2ANqtz-9VdyJEVKEtD3QQpHIVHfqgboVW4iyprQxG4qeciph8JKwZI-sZljNJj1_7TbLk7oNagRVtAR_2r_y1U6XucBw1jqCLoSg&utm_content=215634628&utm_source=hs_email

Fishermen in Thailand to petition against catching of inedible, immature fish

A group of small-scale fishermen, from 23 provinces campaigning to end to the destructive catching of inedible and immature fish which, they claim, will wipe out fish stocks in the Thai waters.

The group plans to sail up the Chao Phraya river to parliament, arriving on June 8th, World Oceans Day, to submit their petition, addressed to the government and to parliament, to push for the enforcement of the Fisheries Act B.E. 2558 (2015), which sets the size of fish that can be caught legally, to preserve immature fish and other marine species.

President of the Federation of Small-scale Fisher-folk Association blamed the overfishing of immature fish and other marine species by large-scale fishermen, to supply the animal feed industry, for the destruction of fish stocks in Thai waters, depriving small-scale fishermen of the means to make a living.

He claimed that the commercial fishing industry was given 82% of the fishing quota, while small-scale fishermen, who collectively own about 50,000 fishing vessels, were given just 18%He said that, even if small-scale fishermen are allowed to fish every day, they still cannot match the capacity of the commercial fishing fleets, which are equipped with trawling nets and other modern fishing devices.

He also said that small and large-scale fishermen must practice sustainable fishing, which must include an end to the catching of inedible or immature fish, to ensure that there continue to be fish in the waters.

URL: https://www.thaipbsworld.com/fishermen-to-petition-against-catching-of-inedible-immature-fish/

Relief For Fishermen In Indo-Pacific As Quad Reveals Plan To Curb China's Illegal Fishing Industry

The Quad group of nations are scheduled to unveil an initiative to curb illegal fishing in the Indo-Pacific region, the Financial Times reported. The people involved in preparing the draft said that China was responsible for 95% of illegal fishing in the Indo-Pacific. Under the initiative, the nations will connect existing surveillance centers in Singapore, India and the Pacific and develop a tracking system for illegal fishing from the Indian Ocean and south-east Asia to the South Pacific. The official said that the US and its partners can now monitor illegal fishing even when fishing boats have turned off the transponders which are used to track maritime vessels.

Several think-tanks, researchers and people involved in the fishing trade from all over the world have highlighted the menace of the illegal Chinese fishing trawlers, the largest perpetrators of illegal fishing.

A paper titled 'Sink or Swim: The Future of Fisheries in the East and the South China Sea' by the International Forum For Right And Security (IFFRAS) pointed out China was the worst offender in the 2021 IUU Fishing Index. The IUU Fishing Index maps illegal, unreported and unregulated fishing in 152 coastal countries and found that Chinese illegal fishing trawlers were the biggest perpetrators.

Source: https://www.news18.com/news/world/relief-for-fishermen-in-indo-pacific-as-quad-reveals-plan-to-curb-chinas-illegal-fishing-industry-5227999.html

The vital roles of blue foods in the global food system

Blue foods are "vital" to the global food system, but are often left out of food system analyses, policies and investments, according to a scientific paper published in *Global Food Security*.

The study highlights how blue foods – fish, invertebrates, algae, and aquatic plants play a central role in food and nutrition security for billions of people, with the blue food economy acting as the cornerstone of the livelihoods, economies, and cultures of many coastal and riparian communities. Moreover, blue foods often have smaller environmental footprints than many other animal -source foods.

Despite the unique value, the study claims that blue foods are "generally ignored" in food system discussions and decision-making. Compared to terrestrial agriculture systems, blue foods receive limited attention in development assistance outside of Asia and also tend to be left out of food system policymaking at the national level.

This paper offers three recommendations for realizing the potential of blue foods in sustainable, healthy, and just food systems: (1) Bring blue foods into the heart of food system decision-making; (2) Protect and develop the potential of blue foods to help end malnutrition; and (3) Support the central role of small-scale actors in fisheries and aquaculture. Recognition of the importance of blue foods for food and nutrition security constitutes a critical justification to preserve the integrity and diversity of aquatic species and ecosystems.

Source: https://www.sciencedirect.com/science/article/pii/S2211912422000281

US certifies countries and fisheries for wild shrimp imports

The United States has certified 37 countries, 13 fisheries in seven other nations, and Hong Kong as having shrimp-harvesting practices that protect sea turtle populations, according to the U.S. State Department. The State Department's findings were published last week in the Federal Register and publicized in a press release issued Monday, 16 May, 2022. The determinations means wild-caught shrimp from those countries are eligible to be imported into the U.S.

The countries certified include Argentina, the Bahamas, Belgium, Belize, Canada, Chile, Colombia, Costa Rica, Denmark, the Dominican Republic, Ecuador, El Salvador, Estonia, Fiji, Gabon, Germany, Guatemala, Guyana, Honduras, Iceland, Ireland, Jamaica, Mexico, the Netherlands, New Zealand, Nicaragua, Nigeria, Norway, Oman, Panama, Peru, Russia, Sri Lanka, Suriname, Sweden, the United Kingdom, and Uruguay.

The additional fisheries that were certified are based in Australia (Northern Prawn Fishery, the Queensland East Coast Trawl Fishery, the Spencer Gulf, and the Torres Strait Prawn Fishery), France (French Guiana), Italy (giant red shrimp), Japan (shrimp baskets in Hokkaido), Malaysia (Kelantan, Terengganu, Pahang, and Johor), Spain (Mediterranean red shrimp), and South Korea (mosquito nets).

"For nations, economies, and fisheries not listed above, only shrimp harvested from aquaculture is eligible to enter the United States," the State Department's Bureau of Oceans and International Environmental and Scientific Affairs stated in the Federal Register on 13 May.

Russian seafood imports are currently banned as a result of sanctions implemented after Russia invaded Ukraine in March 2022. Since 1991, the United States has banned the import of wild shrimp unless the fisheries have been certified as having adopted regulatory practices comparable to the U.S. in terms of protecting sea turtle populations. Nations can also be exempt if their shrimp fishery does not threaten sea turtle habitats while shrimp are harvested. The State Department said that six of the seven marine turtle species are considered either endangered or threatened under the Endangered Species Act.

"The U.S. government is currently providing technology and capacity-building assistance to other nations to help them meet the standard for certification under Section 609 and to contribute to the recovery of sea turtle species," the State Department said. "The U.S. government also encourages legislation like Section 609 in other nations to prevent the importation of shrimp harvested in a manner harmful to protected sea turtles."

Source: https://www.seafoodsource.com/news/supply-trade/us-certifies-countries-and-fisheries-for-wild-shrimp-imports

Student company creates device to rescue fishermen

A student company from the University of Technology and Applied Sciences in Sohar has created a device which can help in rescuing fishermen trapped on the high seas.

Called Etienne, the device can be installed on fishing boats, which sends a distress signal in case of an emergency to the concerned authorities who can then actively engage in rescuing the fishermen. Aiman bin Abdullah al Hosani, one of the students of the company, told ONA that the device gets activated in the event of the boat encountering specific problems.

Certified by the Ministry of Commerce, Industry and Investment Promotion (MoCIIP), the device incorporates advanced satellite communication technologies allowing communication from anywhere on Earth. It also includes sensors for water leakage. MoCIIP has also granted the company an intellectual property certificate for Etienne.

"Apart from an automated response in case of the two emergency situations specified, the device also has an emergency button to send a distress message followed by the location of the boat to the competent authorities if need arises," Hosani said.

He informed that the company started manufacturing and installation of the device in June of 2021. "It is designed for small marine fishing boats and pleasure boats to ensure safety and security in the sea."
The device went through several stages of testing and trials before the final product was manufactured.

Source: https://www.muscatdaily.com/2022/05/22/student-company-creates-device-to-rescue-fishermen/

Kiribati to open one of world's largest marine protected areas to commercial fishing

The Kiribati government has announced it will open up one of the world's largest marine protected areas to commercial fishing, citing economic benefits to its people. The Phoenix Islands Protected Area (PIPA) spans 408,250 sq km (157,626 sq miles) – an area about the size of California – and was created in 2006 with the entire area declared a "no-take" zone in 2015. Kiribati, which has an EEZ larger than the size of India, catches 700,000 tonnes a year of tuna. More tuna is caught in Kiribati's waters than in the waters of any other nation in the world.

In a press statement, the office of the president of the Kiribati government confirmed it was opening the protected zone citing the huge economic cost to Kiribati, a developing nation, of the ban. Kiribati government said that when it established PIPA it was assured it would be able to recoup the revenues lost from fishing licences, which make up more than 70% of Kiribati's total annual revenue, but that this had not eventuated.

The statement also reiterated the Kiribati government's commitment to conservation efforts by investing in marine and biodiversity protection and promoting climate resilience.

Source: https://www.theguardian.com/world/2021/nov/16/kiribati-to-open-one-of-worlds-largest-marine-protected-areas-to-commercial-fishing

Can plastic-eating bacteria help with fisheries' and aquaculture's plastics problem?

In October 2021, researchers at Japan's Nara Institute of Science and Technology published findings on a bacterium that can degrade petroleum-based plastics and produce more biodegradable ones. The bacterium *Ideonella sakaiensis* converts poly (ethylene terephthalate) (PET) plastics into highly biodegradable poly(3-hydroxybutyrate) (PHB). This could provide a new approach not only for PET recycling but also for the sustainable production of biodegradable plastics.

However, Japan's findings on plastic-eating bacteria aren't new. In March 2020, German scientists collected soil from a brittle plastic waste site in Leipzig and discovered a bacterium that degrades some of the chemical building blocks of polyurethane.

"The bacterium, *Pseudomonas* sp. TDA1, attacks the chemical bonds that make polyurethane and uses them as a carbon, nitrogen and energy source," Dr. Hermann Heipieper of the Helmholtz Centre for Environmental Research in Leipzig, Germany, told the *Advocate*. "We discovered how it could metabolize certain chemical compounds for energy and have conducted other experiments to learn more about its capabilities. The bacterium will help us degrade plastic, but it will not solve the plastic problem. We have to stop plastic pollution in the first place."

The discovery of the common soil fungus *Aspergillus tubingensis* is also drawing attention. A group of researchers found that the fungus, discovered at a waste disposal site in Pakistan in 2017, uses its enzymes to feed on the surface of polyurethane, causing surface degradation and scarring.

Could these discoveries be welcome news for fisheries and aquaculture? Plastic is used extensively in offshore cages, fishponds (pond liners) and shellfish farming. Up to 20% of plastic at sea comes from marine-based sources like aquaculture, fishing or shipping. If left unmanaged, aquaculture and fisheries pollution can have detrimental implications.

Source: Responsible Seafood Advocate, 16 May 2022

Indonesia's fishing industry faces downturn amid push for higher productivity

Indonesia's fish stock has declined in the past five years as more of the country's waters are now fully exploited, according to new government data.

The latest data released by the fisheries ministry earlier this month put Indonesia's estimated fish stock at 12 million metric tons, down almost 4 per cent from the 12.5 million metric tons estimated in 2017. The data also showed that 53 per cent of the country's 11 fisheries management areas, known as WPPs, were now deemed "fully exploited," indicating that more stringent monitoring is required, up from 44 per cent in 2017. Marine observers say the figures are cause for concerns, especially in light of the fisheries ministry's plan to increase production at a time when more of the fisheries areas are already fully exploited.

One major plan by the ministry is to reopen the country's fishing grounds to vessels funded by foreign investors, which were previously blamed for depleting fish stocks over the course of several years. The ministry also aims to designate some areas for fishing industry, and others for nursery grounds.

URL: https://www.eco-business.com/news/indonesias-fishing-industry-faces-downturn-amid-push-for-higher-productivity/

More than one disaster a day looming without action on risk reduction, UN warns

Human activity and behaviour is contributing to an increasing number of disasters across the world, putting millions of lives in danger, together with a wide range of social and economic gains over recent decades, a new UN report published on Tuesday warns.

The Global Assessment Report (GAR2022), released by the UN Office for Disaster Risk Reduction (UNDRR) ahead of Global Platform on reducing risk, reveals that between 350 and 500 medium to large-scale disasters took place every year over the past two decades. The number of disaster events is projected to reach 560 a year – or 1.5 each day, statistically speaking – by 2030.

The GAR2022 blames these disasters on a broken perception of risk based on "optimism, underestimation and invincibility," which leads to policy, finance and development decisions that exacerbate existing vulnerabilities and put people in danger. "The world needs to do more to incorporate disaster risk in how we live, build and invest, which is setting humanity on a spiral of self-destruction," said Amina Mohammed, UN Deputy Secretary-General, who presented the report at the UN headquarters in New York.

"We must turn our collective complacency to action. Together we can slow the rate of preventable disasters as we work to deliver the Sustainable Development Goals (SDGs) for everyone, everywhere." The report entitled, Our World at Risk: Transforming Governance for a Resilient Future, found that the implementation of disaster risk reduction strategies, as called for in the Sendai Framework for Disaster Risk Reduction agreed in 2015, had reduced both the number of people impacted, and killed by disasters, in the last decade.

However, the scale and intensity of disasters are increasing, with more people killed or affected, in the last five years, than in the previous five.

URL: https://news.un.org/en/story/2022/04/1117022?utm_source=UN+News+-+Newsletter&utm_campaign=7594fc9b80-EMAIL_CAMPAIGN_2022_04_27_12_02&utm_medium=email&utm_term=0_fdbf1af606-7594fc9b80-107475426

Aquaculture Stewardship Council updates shrimp standard to include freshwater

The Aquaculture Stewardship Council (ASC) has released two new updates in its shrimp standard with the goal of broadening the reach of the program. ASC is an independent, not-for-profit organization that was co-founded in 2010 by the World Wildlife Fund (WWF) and the Sustainable Trade Initiative (IDH) to manage certification of responsible fish farming across the globe. The ASC's shrimp standard is a certification process to ensure responsible farming that encourages seafood producers to minimize key environmental and social impacts of shrimp aquaculture, include challenges to biodiversity of neighbouring ecosystems, full traceability in wild fish in feed, measurement of pollution, minimization of disease outbreaks, restricted use of antibiotics, and prohibition of forced labour or child labour.

A revised version of the shrimp standard has been released that includes new updates and requirements to recirculating aquaculture system (RAS) farms and the addition of new shrimp species. The revision adds four new genera of freshwater species – *Cherax, Procambarus, Astacus, and Macrobrachium* – so that 99 percent of globally farmed shrimp are covered by the scope of the standard.

The addition of these species allows freshwater crayfish and freshwater shrimp farmers to now work towards ASC's requirements for responsible farming, according to ASC Director of Standards and Science Michiel Fransen. "This revision spreads the potential positive impact of ASC by enabling more farmers to apply for certification, which requires both environmental and social responsibility," Fransen said in a press release. "ASC's shrimp standard now includes almost all global shrimp production within its scope. Given the benefits of certification – to farmers, workers, the environment, and local communities – that can only be a good thing."

URL: https://www.seafoodsource.com/news/aquaculture/asc-updates-shrimp-standard-to-include-freshwater-species

Our Ocean Conference closes with USD 16.35 billion pledges

The seventh Our Ocean Conference generated 410 commitments worth USD 16.35 billion across the issue areas of climate change, sustainable fisheries, sustainable blue economies, marine protected areas, maritime security, and marine pollution. Convening in a small island developing State (SIDS) for the first time, the conference underscored the critical importance of a healthy ocean to SIDS and to Indigenous Peoples and local communities (IPLCs) who rely on the ocean as a primary source of sustenance.

Co-hosted by Palau and the US, the conference addressed the theme, 'Our Ocean, Our People, Our Prosperity.' It brought together more than 600 representatives from governments, the private sector, intergovernmental organizations, academia, and non-governmental organizations (NGOs).

The conference featured panels on six areas of action. The panel on 'Creating Sustainable Blue Economies' focused on "blue recovery" from the COVID-19 pandemic towards ocean economies that are sustainable, equitable, and resilient, and explored opportunities for a "blue stimulus." A total of 89 commitments worth USD 5.7 billion were made for sustainable blue economies – the largest amount of all action areas.

The conference also recognized the role of Indigenous and youth leadership in protecting the ocean. "Our ancestral life-giving ocean is the world's last, and greatest, defence against climate change," stated youth delegate Kalani Reyes, founder of Deep Pacific Collective of Pacific Peoples. "We must work together, across generations to protect the ocean."

Our Ocean Conference 2022 contributed to the advancement of multiple SDGs, most notably SDG 14 (life below water), SDG 13 (climate action), and SDG 17 (partnerships for the Goals). SDG 14 is one of the five Goals that the UN High-level Political Forum on Sustainable Development (HLPF) will review progress on in July.

URL: http://sdg.iisd.org/news/our-ocean-conference-closes-with-usd-16-35-billion-in-pledges/

One Ocean Summit: States pledge €4 billion to fight plastic pollution at sea

For three days, experts, activists and politicians from 42 countries – including 20 heads of state, including non-European ones – joined forums and workshops to discuss a range of issues that impact ocean life. A total of €4 billion will be allocated by 2025 from the French, German and Spanish national banks, together with the European Investment Bank (EIB) to develop the "Clean Oceans Initiative" to combat plastic pollution, according to the so-called "Brest Commitments" adopted at the end of the One Ocean Summit on 11 February, 2022, where they also agreed to create a global coalition preserve high seas biodiversity.

Preserving the high seas, beyond 200 nautical miles from national coasts and thus not under any state jurisdiction, is one of today's most significant challenges participants acknowledged. In this regard, European Commission President Ursula von der Leyen announced the launch of a "global coalition" – which includes 27 EU countries and 16 non-EU countries – to conclude the treaty on the sustainable use of the high seas and the protection of its biodiversity. Fourteen countries also announced measures to strengthen the fight against illegal fishing, such as improving controls in landing ports and mobilising national navies to monitor illegal fishing.

More countries also joined the coalition that aims to "protect 30% of the world's land and sea by 2030", which was created at the One Planet Summit of January 2021, meaning there are now 84 states that have joined this alliance.

The work initiated by this unprecedented summit should enable progress to be made on the "high seas management framework", particularly at a meeting in New York in March 2022, to adopt the agreement before the end of the year.

Source: https://www.euractiv.com/section/energy-environment/news/quatre-milliards-pour-la-lutte-contre-la-pollution-plastique-des-oceans/

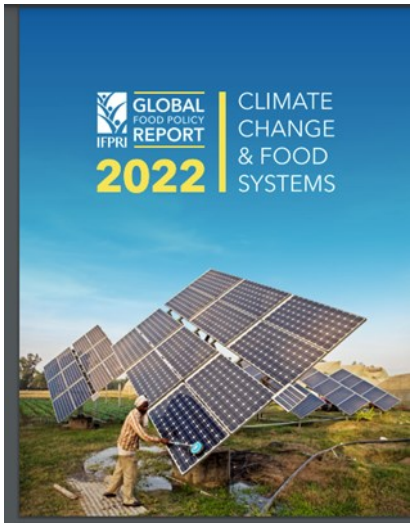
Research breakthrough in spawning Round Scad (*Decapterus macrosoma*)

The Southeast Asian Fisheries Development Center, Aquaculture Department (SEAFDEC/AQD) in Tigbauan, Iloilo, Philippines made a scientific breakthrough in successfully spawning the round scad (*Decapterus macrosoma*) in captivity, marking a critical milestone towards farming the fish, locally known as galunggong. Round scad is considered a staple fish in the Philippines with over 202,000 metric tons harvested by commercial and municipal fisheries in 2020 according to government statistics. This might lead to a long-term solution to the perennial shortage of round scad (*Decapterus* spp.), known as the "poor man's fish" in the Philippines.

Source: www.enaca.org

NEW PUBLICATIONS

Climate Change and Food Systems: Global Report 2022



The 2022 Global Food Policy Report highlights key insights from across food systems and regions and recommends policy reforms and investments that can accelerate a sustainable transformation of our food systems.

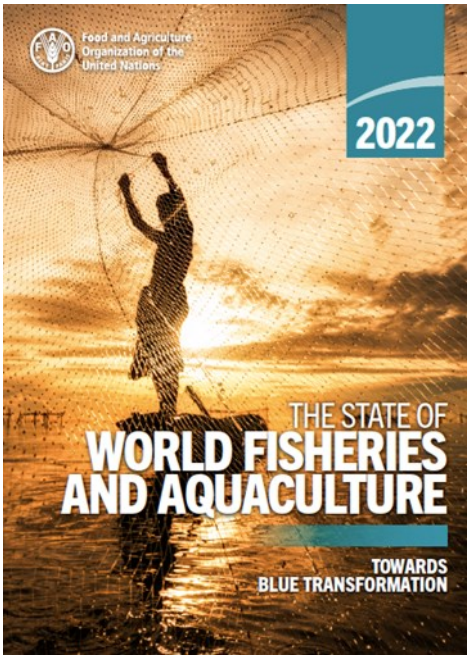
Full report (189 pages) can be downloaded from: https://ebrary.ifpri.org/utils/getfile/collection/p15738coll2/id/135889/filename/136101.pdf

FAO's new publication on the SSF Guidelines

FAO's new publication entitled "*Involving the People – Democratizing the implementation and monitoring of the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication*" says there is need to "take back voluntary guidelines which were officially approved as an international instrument in June 2014, to the community"; demystify their contents; assess with the community what indicators will be utilized to evaluate the progress of implementation; and think through with them the nature of tools to be used for this purpose. Basically, the call is for a democratization of the implementation and monitoring of voluntary guidelines, making them by, for and of the community.

The 182 page publication can be downloaded from: https://www.fao.org/3/cb8058en/cb8058en.pdf

The State of World Fisheries and Aquaculture (SOFIA) 2022 report

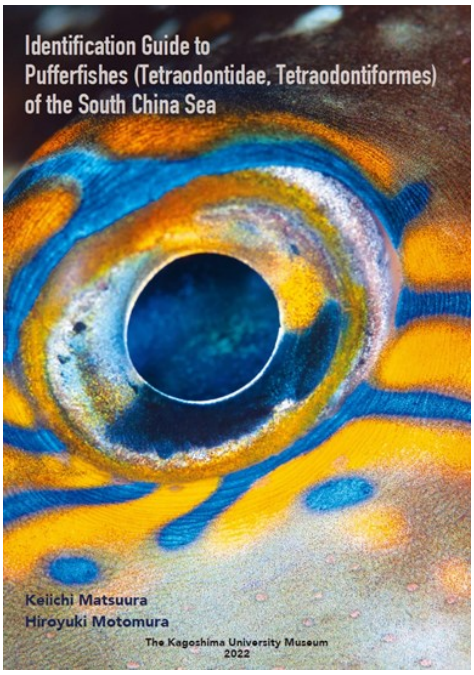


The State of World Fisheries and Aquaculture (SOFIA) is a flagship report of the FAO, which analyses the status of global stocks as well as trends in fisheries and aquaculture at a global and regional level. SOFIA is a critical reference for governments, policymakers, academics and others in the fisheries and aquaculture sector. The focus of the 2022 edition is on Blue Transformation, a visionary strategy designed to enhance the potential of aquatic food systems and sustainably feed the world's growing population while protecting the environment.

Launching of 2022 edition coincided with the launch of the Decade of Action to deliver the Global Goals, the United Nations Decade of Ocean Science for Sustainable Development and the United Nations Decade on Ecosystem Restoration. It presents how these and other equally important United Nations events, such as the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022), are being integrated and supported through Blue Transformation.

Report could be downloaded from: https://www.fao.org/3/cc0461en/cc0461en.pdf

Identification Guide to Pufferfishes of South China Sea



The book "Identification Guide to Pufferfishes (Tetraodontidae, Tetraodontiformes) of the South China Sea" authored by Drs. Keiichi Matsuura (National Museum of Nature and Science) and Hiroyuki Motomura (The Kagoshima University Museum) was just recently published (1 February 2022) by The Kagoshima University Museum. The book includes detailed morphological descriptions and taxonomic keys to 9 genera and 46 species of pufferfishes commonly caught and sold in markets around the South China Sea and serves as an important reference for ichthyologists as well as food safety authorities working to prevent food poisoning in the region. This book was published with support from the JSPS Core-to-Core Collaborative Research and Education Project in Southeast Asia for Sustainable Use of Marine Ecosystems (CREPSUM) Program involving scientists from Japan, Indonesia, Malaysia, Philippines, Thailand and Vietnam.

The book is downloadable at this site:
https://www.museum.kagoshima-u.ac.jp/staff/motomura/dl_en.html

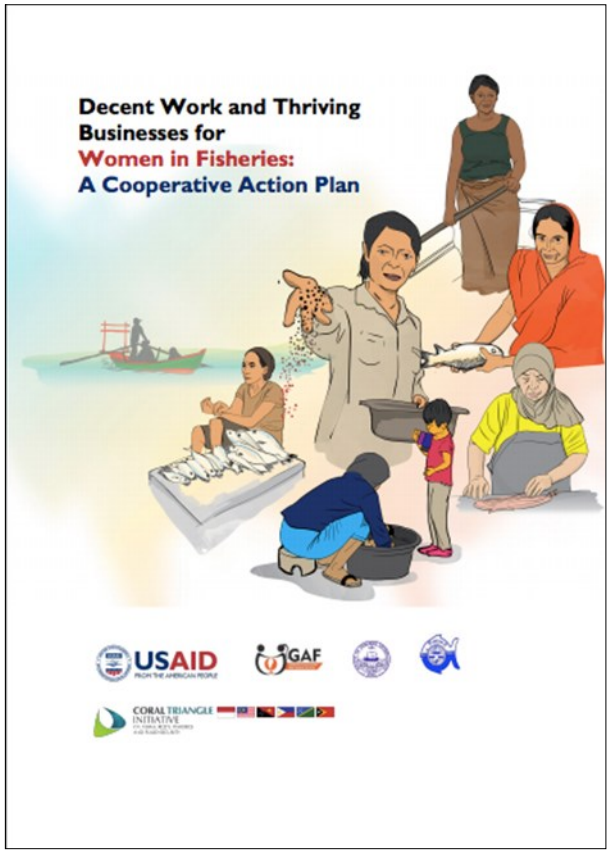
FAO Reviews of Aquaculture now available online

FAO Reviews of Aquaculture have been published online at the FAO website, including the six Regional Reviews and a Global Synthesis, which were developed and published in conjunction with the Global Conference on Aquaculture Millennium +20 (GCA+20). The publications are linked below. Video presentations of the reviews, including expert panel discussions and question and answer sessions, are also available from the GCA+20 website.

These reviews can be downloaded from the dedicated FAO website or directly at the links below.

- Global Aquaculture Synthesis
- Regional Review of Aquaculture in Asia and the Pacific
- Regional Review of Aquaculture in Europe
- Regional Review of Aquaculture in Latin America and the Caribbean
- Regional Review of Aquaculture in the Near East and North Africa
- Regional Review of Aquaculture in North America
- Regional Review of Aquaculture in Sub Saharan Africa

Decent Work and Thriving Businesses for Women in Fisheries: A Cooperative Action Plan



The Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society collaborated with the USAID Sustainable Fish Asia Local Capacity Development Activity to develop an action plan to recognize the women working in fisheries and to ensure decent work and an enabling environment for women's businesses to thrive. The document titled, Decent Work and Thriving Businesses for Women in Fisheries: A Cooperative Action Plan, was launched on June 24, 2022 and can be found here: LINK

Document can be downloaded from: https://www.rti.org/brochures/women-fisheries-cooperative-action-plan

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.**

Kindly renew your membership dues using online payment system at **http://www.asianfisheriessociety.org/join.php** or

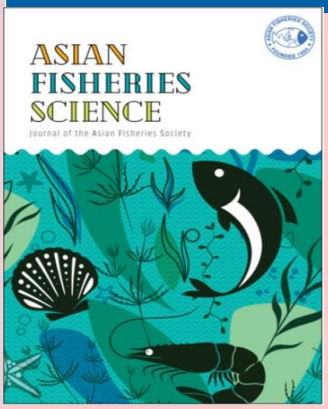
you may also request the membership form from Secretariat via **info@asianfisheriessociety.org**.

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

SYNOPSIS OF PAPERS VOLUME 35 (ISSUE 1) : ASIAN FISHERIES SCIENCE JOURNAL



Latest Articles

Asian Fisheries Science 35 (1) 2022

E-ISSN: 2073-3720

Toward Systematic Breeding of Asian Sea Bass, *Lates calcarifer* (Bloch, 1790), in Malaysia: Status, Challenges and Prospects for Future Development

SHAHARAH MOHD IDRIS, WAN NORHANA MD NOORDIN, FATIN OSMAN MANAH, AZHAR HAMZAH
https://doi.org/10.33997/j.afs.2022.35.1.001

Asian sea bass, *Lates calcarifer* (Bloch, 1790), is one of the most farmed marine fish in Malaysia since the 1970s and is predominantly cultured at present. Although it has been farmed for some time, there is no systematic breeding programme in place. Local hatcheries rely heavily on wild and imported broodstock. However, imported stocks do not guarantee improved quality and even increase the chances of introducing pathogens into the country. Availability of superior breeding stocks, efficient dissemination and control of seed production could greatly assist in increasing Asian sea bass production. This paper presents the status of Asian sea bass production, its culture history in Malaysia and the current broodstock development programme implemented by the Fisheries Research Institute, particularly in the 11th Malaysia Plan from 2015 to 2020. In brief, broodstock from Malaysia, Thailand and Indonesia were used as base population and were mated using full diallel method to produce cohorts. Three pairs of the selected broodstock were used for each cross and spawning performance was evaluated. The growth performances of the first generation (F1) offsprings were assessed in different culture systems. Physico-chemical water quality parameters such as dissolved oxygen, temperature, pH and salinity were maintained at optimal levels during all stages of the experiment. Results indicate that the growth performance of F1 improved by more than 60 % in terms of weight gain compared with the base population. The project demonstrated the benefits of using selective breeding to enhance the production of Asian sea bass.

Combating Illegal, Unreported and Unregulated (IUU) Fishing and Removing Yellow Card From European Commission (EC): Vietnam's Determined Actions

TO VAN PHUONG, ROBERT S. POMEROY
https://doi.org/10.33997/j.afs.2022.35.1.002

Illegal, unreported and unregulated (IUU) fishing activities have negatively impacted Vietnam fisheries. As a result, the European Commission (EC) issued a yellow card warning in October 2017. This paper examines how Vietnam has responded to the EC's recommendations to address the yellow card. The analysis used a mix of documents analysis and online group discussion approaches. Although Vietnam has made considerable efforts to halt IUU fishing and clear the yellow card, the results are still insufficient to remove the yellow card. However, the yellow card has brought about positive signals for Vietnamese fisheries management. It is also an opportunity for the national marine fisheries sector and fishers communities to be more responsible in fishing. Institutional and legal regulations have been refined to be in line with international rules and enormously improved the enforcement capacity of the fisheries management system for fishers to end the situation of fishing vessels engaged in illegal fishing in the waters of Vietnam and other countries. Recommended actions to address the yellow card include finalisation of the fisheries guidance decrees in line with obligations to combating IUU fishing, more robust sanctions, strengthening the monitoring, control and surveillance (MCS) system, information dissemination and education of the fisheries law and relevant regulations, and apply an electronic catch documentation and traceability (eCDT) system.

Molecular Characterisation and Reporter Gene Assay of the Three GnRH Isoforms and Two GnRH Receptors of a Clupeiform Fish, Japanese Sardine, *Sardinops sagax melanostictus* (Temminck & Schlegel, 1846)

SANNY DAVID PACHECO LUMAYNO, KOHEI OHTA, AKIHIKO YAMAGUCHI, MICHIYA MATSUYAMA
https://doi.org/10.33997/j.afs.2022.35.1.003

The gonadotropin-releasing hormone (GnRH) is an important gene involved in fish reproduction and its action is mediated by GnRH receptor (GnRHR). Numerous GnRH-GnRHR studies have already been published in many teleost orders but information on reproduction-related genes for Clupeiformes is limited. To acquire a better understanding on the reproduction of Clupeiform fish species, GnRH isoforms and GnRHR paralogues of Japanese sardine, *Sardinops sagax melanostictus* (Temminck & Schlegel, 1846) were sequenced. Three GnRH isoforms (named as jsGnRH1, jsGnRH2, and jsGnRH3) and two GnRHR paralogues (named as jsGnRHR1 and jsGnRHR2) were isolated in the brain and pituitary of Japanese sardine. Based on phylogenetic analysis, jsGnRH1, jsGnRH2, and jsGnRH3 grouped into GnRH1, GnRH2, and GnRH3 forms, respectively, while jsGnRHR1 and jsGnRHR2 clustered into Type 2b and Type 1c receptors, correspondingly. The reporter gene assay showed high binding affinity of jsGnRHR1 to all three GnRH synthetic decapeptides, whereas jsGnRHR2 responded best to jsGnRH2 only. Clustering of jsGnRH1and jsGnRHR1 to other teleost GnRH1 and GnRHR2b, respectively, and activating the calcineurin/NFAT signalling pathway, suggests that these two genes are likely involved in fish reproduction.

Management Strategy Evaluation for the Common Spiny Lobster, *Palinurus elephas* (Fabricius, 1787), Stock in Tunisia

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The common spiny lobster, *Palinurus elephas* (Fabricius, 1787), fishery in Tunisia has been overexploited. This species is currently managed by temporal closures, minimum legal sizes of landings, and the prohibition of catching berried females. This study aims to develop management procedures (MPs) based on the surplus production model to set total allowable catch (TAC) as a management action for the common spiny lobster. Ten MPs ranging from conservative to more relaxed management procedures were evaluated within a management strategy evaluation (MSE) framework. Several scenarios of the operating model were considered to account for uncertainties. Five performance measures were used to evaluate MPs to identify the management strategies that can achieve the prespecified management objective of recovering the stock size as a priority and ensuring high and stable catches. The results of the MSE showed that the conservative management strategies with the highest control points performed well in terms of management objectives with a probability of biomass exceeding the reference point of higher than 90 % but yielded in the lowest catches. On the other hand, relaxed threshold-based management strategies failed in achieving management objectives with 20 % probability of being below the limit reference point. These MSE results also highlighted the trade-off between conservation and catch performance objectives and showed that some moderate management strategies balanced these objectives efficiently.

Growth Enhancing Effects of Squid By-Product Hydrolysate in Plant Protein-Based Diet Fed to Black Tiger Shrimp, *Penaeus monodon* Fabricius, 1798

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The present study evaluated the potential of squid by-product hydrolysate as fishmeal replacement in the plant-based diet of juvenile black tiger shrimp, *Penaeus monodon* Fabricius, 1798. Five experimental plant protein-based diets were formulated containing squid by-product hydrolysate to replace fishmeal at 0, 25, 50, 75 and 100 %. These experimental diets were fed to triplicate groups of *P. monodon* for 8 weeks. Results revealed that 25 % fishmeal replacement with squid by-product hydrolysate resulted in growth enhancement, attributable to increased feed intake and gut lactic acid bacteria proliferation. The shrimp fed with 100 % replacement level exhibited a similar growth response with the control group. Protein retention was not affected by the fishmeal replacement levels, but lipid retention was found higher in all treatments with squid by-product hydrolysate than the control. Digestive protease activity decreased with increasing levels of hydrolysate while α-amylase and lipase activities were not affected. Hepatopancreas histology showed thatB-cells dominated the control group while R-cells proliferated with increasing inclusion of dietary squid by-product hydrolysate. These results collectively indicate that fishmeal could be totally replaced with squid by-product hydrolysate and 25 % fishmeal replacement could promote the growth of juvenile *P. monodon*.

Standardisation of Weaning Protocol for Larvae of *Clarias magur* (Hamilton, 1822)

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Clarias magur (Hamilton, 1822) is a highly priced commercially important species targeted for aquaculture diversification in India and South-East Asian countries. Weaning from live to formulated feed during larval rearing is critical for successful seed production. Hence, the present study aimed to standardise the effective weaning age to achieve high growth and survival of C. *magur*. The 4 days post-hatch (dph) larvae with mean initial length and weight of 7.4 ± 0.83 mm and 4.97 ± 0.35 mg, respectively, were selected, and 2100 larvae were randomly stocked into 21 plastic tubs (100 larvae per tub) for six weaning treatments (W4, W7, W9, W11, W13 and W15 dph) and the control in triplicates. The study was conducted for 21 days and 4 to 24 dph. All larvae in the treatments groups were fed *Artemia* nauplii *ad libitum* and a weaning diet fed to apparent satiation according to W4 to W15 schedules. The control group larvae were fed with *Artemia* nauplii alone. Results revealed that final length and weight, weight gain per cent, daily weight gain and specific growth rate were significantly ($P < 0.05$) higher in the *Artemia* nauplii fed control group followed by W15 dph larval group. The survival rate was significantly ($P < 0.05$) higher for W15 larvae, followed by the control group. The present study indicates that the ideal protocol for C. *magur* larval fed with *Artemia* nauplii from 4 dph for weaning to formulated diet was at 15 dph until 24 dph for good growth and survival rates.

Stock Assessment and Overexploitation Risk of Small Pelagic Fish in Fisheries Management Area 715 of Indonesia

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This study presents updated stock assessments and risk analyses of overexploitation for the aggregate small pelagic fish complex and the dominant genus of the complex, *Decapterus*, for improving the management of the small pelagic fishery in Fisheries Management Area (FMA) 715. The analyses herein used non-equilibrium biomass dynamics models with available data on annual catch and catch per unit effort for 2005 to 2016. Fishing effort was standardised into the number of 20-meter length overall purse-seine vessels. The analyses show that the maximum sustainable yield (MSY) of the aggregate fish was about 121,600 tonnes, caught by 876 purse-seiners, while the MSY of the mackerel scad, *Decapterus macarellus* (Cuvier, 1833), was about 67,900 tonnes, caught by 805 purse-seiners. Since the mackerel scad and the aggregate fish stocks have been overexploited, a rebuilding strategy would be necessary to restore the stocks to a level capable of producing MSY (BMSY). After achieving the BMSY, it is recommended that a target reference point be implemented for the catch level with the maximum overexploitation risk level of 50 % in 10 years. The catch level meeting this requirement for mackerel scad would equal 80 % of its MSY, which could be achieved by controlling fishing effort at 427 purse-seiners. At this effort level, the fishery would produce 95,800 tonnes of aggregate fish catch with 54,300 tonnes of mackerel scad. These reductions in fishing efforts will be needed to maintain the future sustainability of the fish stocks in FMA 715.

Impact of Short-Term Salinity and Turbidity Changes on Hatching and Survival Rates of Japanese Sea Cucumber, *Apostichopus japonicus* (Selenka, 1867), Eggs

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https://doi.org/10.33997/j.afs.2022.35.1.008

The increased frequency and intensity of extreme rainfall events attributed to global climate change could lead to changes in salinity and turbidity levels in coastal waters which may negatively impact the survival of organisms, particularly during the early developmental stages. In this study, the influences of salinity and turbidity on the early life stage of Japanese sea cucumber, *Apostichopus japonicus* (Selenka, 1867), were studied in a series of small-scale laboratory experiments. During the first half of the experiments, *A. japonicus* fertilised eggs were exposed to various levels of salinity stresses (34: control, 30, 26, 22, 18, 14 PSU) for a single period of 3 h. In the second half of the experiments, following the same duration as the first experiment, fertilised eggs were exposed to different levels of turbidity, 0 (control), 100, 300, 500, and 700 NTU. The results showed that the hatching and survival rates significantly decreased as salinity dropped. As for turbidity, there were significant adverse effects on hatching and survival rates of *A. japonicus*. This study shows that short-term low salinity and high turbidity influenced events could potentially reduce larvae survival of *A. japonicas*. These factors could affect the robustness of future adult populations.

Improved Design Fixed Stake Trap With PVC Poles and Suitable Mesh Size Net Enables Sustainable White-Spotted Spinefoot, *Siganus canaliculatus* (Park, 1797) Fisheries in Luwu District, South Sulawesi

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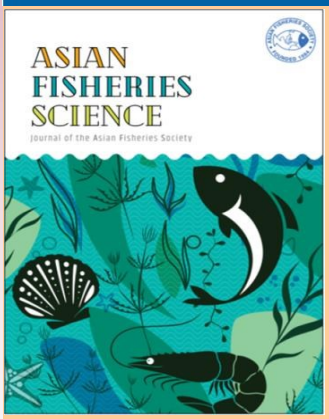
The traditional fixed stake trap made typically of wooden poles and thinly interwoven bamboos walls have been used for generations as fishing gear in coastal regions of South Sulawesi Province, Indonesia. In the 1980s, bamboo slats were replaced with nets of various mesh sizes as they became readily available, and currently, in the research area, no bamboo is used. Each unit of the wooden structure is made of around 300 poles that must be replaced three to four times annually and is becoming difficult due to the scarcity of wood and the high cost. Thus, this research aims to provide a feasible solution using PVC pipes and a suitable size mesh net for sustainable fisheries management of white-spotted spinefoot, *Siganus canaliculatus* (Park, 1797). The study was done in Karang-karangan village located on the coast of Luwu Regency where white-spotted spinefoot is the main fishing livelihood activity of fishers. The mesh size of the net used was 2.60 cm, and the results showed that the newly designed fixed stake trap unit made of PVC has been durable for the last 2.2 years and is expected to last at least 5 years. Compared to the traditional wood structure, there are no barnacles attached to the PVC pipes. The net size used allows smaller fish below 8.6 cm in length to escape, thus making white-spotted spinefoot fisheries sustainable. The estimated cost of using wood for 5 years is IDR60 million (USD4200), while PVC only requires around IDR15 million (USD1050).

Asian Fisheries Science



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Immune Status of Bighead Catfish (*Clarias macrocephalus* Günther, 1864) Crossbreeds Between Wild and Domesticated Strains and Their Response to Challenge With *Aeromonas hydrophila*

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Aeromonas hydrophila is a major pathogen causing septicemic disease and high mortality in cultured bighead catfish, *Clarias macrocephalus* Günther, 1864. Crossbreeding for enhanced disease resistance may help alleviate the infection. This study aimed to evaluate the crossbreeding effects of bighead catfish from three broodstock sources, including one domesticated strain (Can Tho - CT) and two wild strains (Ca Mau - CM and Hau Giang - HG), on the innate immune response. Eight diallel crosses (excluding HG × CT) were reared in tanks for 100 days to the juvenile stage for use in this study. Forty-five bighead catfish juveniles of similar sizes, 4.5–6.1 g, were sampled from each cross to evaluate the immune response and stress indicators. Thirty fish from each cross were challenged with *A. hydrophila*. The results showed that innate immune responses of domesticated CT strains were higher than wild strains (HG and CM). Higher values of white blood cells, phagocytic activity, and lysozyme activity were observed in CT × CT and CT × CM crosses. These crosses had significantly lower cortisol levels and lower mortality rates of 40 % (CT × CT) and 43.3 % (CT × CM) after being challenged with *A. hydrophila* compared to the other crosses. The results demonstrate that domesticated CT strain and crossbreeding between CT and CM wild strains could improve the innate immune system and resistance to *A. hydrophila*. The innate immune responses of the domesticated CT strain were higher than wild strains (HG and CM).

Generalised Additive Model Improves Estimates of *Vibrio* Species Abundance in *Penaeus vannamei* Boone, 1931 Biofloc Production System

ANGEL QUEENEE DAYTIC DEQUITO, VALERIANO JR CORRE, ELFRED JOHN ABACAN
https://doi.org/10.33997/j.afs.2022.35.2.002

Environmental factors influence the abundance of *Vibrio* species in shrimp culture systems. Prediction of the abundance of presumptive *Vibrio* species can help prevent the occurrence of bacterial diseases as this will provide insights about when and which environmental factors to manage. In this study, the parametric linear regression model (LRM) and negative binomial model (NBM), and semiparametric generalised additive model (GAM) were used to identify correlations and predict changes of *Vibrio* abundance with physicochemical and biological water parameters. Water parameters were recorded from three 300 m^2 biofloc ponds stocked with *Penaeus vannamei* Boone, 1931, at 500 individuals.m^{-3} over four culture run periods. Each culture run lasted for 16 weeks. Imputed data were initially subjected to univariate analysis and Pearson's correlation analysis. The abundance of presumptive *Vibrio* species was found to be highly correlated with alkalinity, pH, and phytoplankton density. GAM performed best among the three models based on Akaike's information criterion (AIC), having the smallest value of 5,743.222 compared to 6,572.014 and 5,857.997 values for ordinary LRM and NBM, respectively. It also had the largest deviance explained statistic with 41.2 % of the deviance reduced by including the predictors compared with ordinary LRM and NBM with only 16.04 % and 14.5 % deviance reduced, respectively. GAM introduced flexibility that predicts the dependent variable better in terms of statistical significance than LRM and NBM. It is important to consider using a semiparametric modelling approach as a tool for aquaculture management.

Stock Status of Whitespotted Bambooshark, *Chiloscyllium plagiosum* (Anonymous [Bennett], 1830) in Sabah, Malaysia, Using Yield-Per-Recruit and Spawning Per-Recruit Analyses

SUPAPONG PATTARAPONGPAN, SUKCHAI ARNUPAPBOON, ABDUL HARIS HILMI BIN AHMAD ARSHAD, TAKASHI FRITZ MATSUISHI
https://doi.org/10.33997/j.afs.2022.35.2.003

Whitespotted bambooshark, *Chiloscyllium plagiosum* (Anonymous [Bennett], 1830), is a major shark species caught in waters off Sabah, Malaysia. Despite the massive landing amount, its biological and stock status information is limited. In 2015–2016, the elasmobranch data collection was conducted in Southeast Asia, including Sabah. A yield-per-recruit (YPR) and spawning-per-recruit (SPR) analyses were performed to assess this data-deficient species' stock status. The growth parameter, average maximum length, $L\infty$, and growth rate, K, for males and females were 81.13 cm and 0.21 $year^{-1}$, and 84.30 cm and 0.18 $year^{-1}$, respectively. Limit and target biological reference points, maximum fishing mortality and fishing mortality corresponding to 10 % of YPR slope (Fmax and F0.1, respectively) for YPR, and fishing mortality corresponding to 20 % and 30 % of spawning stock remained (F20 % and F30 %, respectively) for SPR, were calculated. The results suggest neither growth nor recruit overfishing was occurring. Monitoring and surveillance of existing management measures are necessary to ensure sustainable utilisation of the stock.

Antibiotic Susceptibility Profiles of *Aeromonas hydrophila* Isolates From Aquaculture Farms and Response to Potential Antibacterial Plant Extracts

LUA T. DANG, HANH T. NGUYEN, YEN T. PHAM, HANH M.T. TRUONG
https://doi.org/10.33997/j.afs.2022.35.2.004

Aeromonas spp., which inhabits freshwater and marine water bodies, can be responsible for the diseases and mortalities of many different cultured fishes. In this study, the antibiotic susceptibility profiles of 20 *Aeromonas hydrophila* strains isolated from diseased freshwater fish cultured in the Red River Delta, Vietnam were categorised as non-wild-type (non-WT) strains or were resistant to at least one antibiotic. Also, in-vitro antibacterial activities of extracts from two local plants against several antibiotic-resistant *A. hydrophila* strains were done to screen for potential bio-antibiotic materials. The antibiotic susceptibility results showed that 25 % of bacterial strains were resistant to 3–9 antibiotics, 35 % to 2 antibiotics, and 10 % to one antibiotic. Both plants, rose myrtle seed, *Rhodomyrtus tomentosa* Hassk, 1842, extract and fermented garlic, *Allium sativum* Linnaeus, 1753, supernatant, showed inhibitory activities against antibiotic-resistant *A. hydrophila* strains. Furthermore, the *R. tomentosa* extract and the fermented *A. sativum* supernatant exhibited significant antibacterial effects to several *A. hydrophila* strains, namely *A. hydrophila* CEDMA17.021, CEDMA17.002, CEDMA17.008, and CEDMA17.009 resistant to two or more antibiotics. This study demonstrated multiple resistant profiles of *A. hydrophila* strains to different antibiotics and the inhibitory activities of *R. tomentosa* extract and the fermented *A. sativum* supernatant against antibiotic-resistant *A. hydrophila* strains. Hence, this study indicates the potential use of bio-antibiotics derived from plants to manage *Aeromonas*-related infections.

Identification of *Phalacronotus bleekeri* (Günther, 1864) (Siluridae) From the Mekong Delta, Vietnam and Use of Morphological Analysis to Separate Populations

MATINE CHHORN, THUY-YEN DUONG
https://doi.org/10.33997/j.afs.2022.35.2.005

This study identified *Phalacronotus* to species level and examined its morphometric variation among three collection localities, and between sexes, in the Mekong Delta, Vietnam. Specimens were collected from local markets and fishers, including An Giang (n = 36) and Can Tho (n = 36) in the Hau River and Tien Giang (n = 30) in the Tien River for morphological measurements and DNA barcoding analysis. Eight mitochondrial cytochrome oxidase subunit I (COI) sequences of *Phalacronotus* sp. shared 99.6 ± 0.23 % similarity with five GenBank (GB) P. bleekeri sequences and differed by 7.6 % to 13.3 % from seven GB *P. apogon* sequences. The Vietnamese specimens of *Phalacronotus* were similar to *P. bleekeri* in number of anal fin rays (75–80) and the shape of the upper jaw teeth. Thus, the COI sequences and these morphological characteristics indicate that *Phalacronotus* sp. samples collected in the Mekong Delta are *Phalacronotus bleekeri* (Günther, 1864). Morphometric characteristics differed between populations in 15 of 19 indices ($P < 0.05$) and between females and males in three characteristics relating to the belly. Head characteristics, body depth, and caudal peduncle depth were the main parameters contributing to the inter-population variation. Based on size-adjusted data, 96.7 % of specimens were correctly classified from the Tien Giang population, while 27.8 % and 33.3 % were misclassified between the Can Tho and An Giang populations, respectively. These results indicate that morphometric parameters of *P. bleekeri* varied mainly between populations in the two Mekong River tributaries

In Vitro Antibacterial Activity of Tropical Plant Extracts Against Fish Pathogens in Vietnam

TRAN THI MY DUYEN, NGUYEN TRONG TUAN, TRAN THI TUYET HOA
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Crude methanol extracts of 43 Vietnamese plants were screened in vitro for their antibacterial activity against three common freshwater fish pathogens, including *Aeromonas hydrophila*, *Edwardsiella ictaluri* and *Streptococcus agalactiae*. The agar disc diffusion method was used to evaluate the antibacterial activity, followed by minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) were determined using the broth dilution method. Among the 43 plants screened, eight plant extracts (*Bouea oppositifolia*, *Wedelia chinensis*, *Terminalia catappa, Punica granatum*, *Sonneratia caseolaris*, *Sonneratia ovata*, *Ludwigia hyssopifolia* and *Phyllanthus urinaria*) exhibited wide-spectrum antibacterial activity to all three common freshwater fish pathogens. Six plant extracts (Ageratum conyzoides, Alpinia galanga, Borassus flabellifer, Abutilon indicum, Eupatorium odotatum, and *Scoparia dulcis*) might be good candidates for the prevention of co-infection of *E. ictaluri* and *S. agalactiae* in tilapia whereas *Muntingia calabura* and *Camellia sinensis* could be applied to striped catfish to combat *E. ictaluri* and *A. hydrophila*. Through MIC and MBC determination, *L. hyssopifolia*, *A. galanga*, *Ageratum conyzoides* extracts showed a bactericidal activity to *A. hydrophila*, *E. ictuluri* and *S. agalactiae*, respectively, while the other extracts could prevent the growth of tested bacteria. The screening results suggested the potential application of plant extracts as alternative therapeutic agents against bacterial infections in aquaculture.

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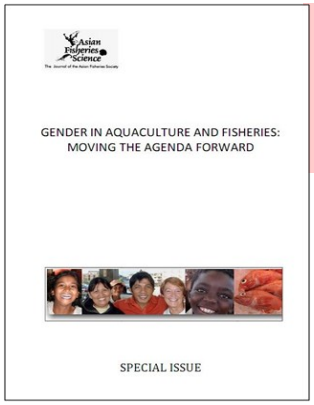

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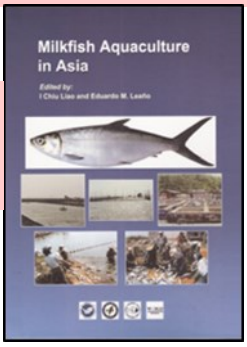

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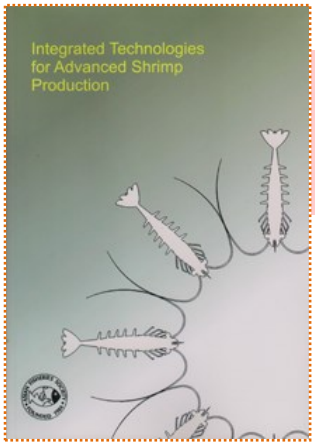

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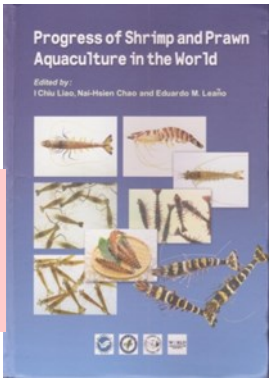

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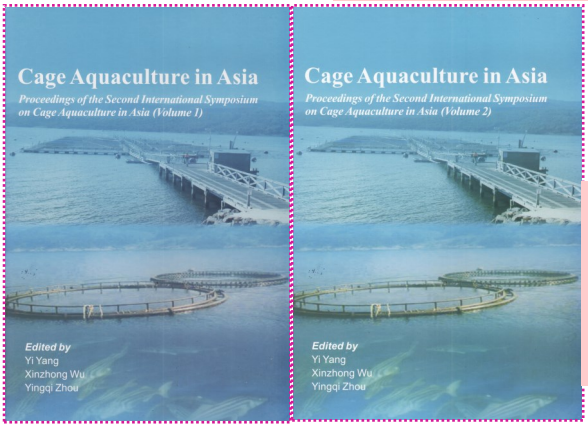

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