ISSUE 35

DECEMBER 2022

ASIAN FISHERIES SOCIETY

e-Newsletter

MESSAGE FROM EDITOR

The year ended with a positive note, in spite of repercussions from the Covid pandemic. A number of conferences and meetings were held physically where possible and in hybrid mode where physical presence was not possible, details of which are in this report under different sections.

During the reporting period there has been change in leadership of AFS with Prof. Neil Loneragan taking charge as the President of Society (AFS) from Prof. Alice Joan Ferrer and that of Gender in Aquaculture and Fisheries section of AFS (GAFS) with Dr Nikita Gopal taking charge from the outgoing and founding Chair Dr Meryl J Williams. We are looking forward to enhanced activities during 2023 under the new leadership.

Wishing all the Members a very happy and productive 2023.

M. V. Gupta

Editor

Inside this issue:

Message From the President

Dear AFS members,

Greetings!

The second half of 2022 was a very full one for members of the Asian Fisheries Society. Following on from our first virtual forum for the 13th Asian Fisheries and Aquaculture Forum (May 31 to June 2, 2022), we have had the successful delivery of the 11th Symposium on Diseases in Asian Aquaculture (DAA11), the fourth International Symposium on Aquaculture and Fisheries Education (ISAFE4) and the 8th international symposium on Gender in Aquaculture and Fisheries (GAF8). It is a great effort from our Fish Health and Gender Sections and from all with an interest in education and particular thanks to our Taiwan Branch for organising the 13AFAF and ISAFE4. The proceedings from the joint , virtual international conference: the 6th International Conference for Fisheries and Aquatic Sciences (ICFAS 6) and the Asian Fisheries Social Science Research Network Forum 1 (AFSSRN F1), (November 24 to 26 2021), hosted by the University Philippines, Visayas, were also published in November 2022 – this marks a wonderful achievement by the organisers. AFS is also a co-organiser for the 1st International Conference on Poultry and Fish Vaccinology and Diagnosis 2023 (ICPoFiVD2023) to be held from January 17 to 18, 2023, organised by the Institute of Biosciences at the Universiti Putra Malaysia (UPM).

The 14th Council of AFS has held two virtual meetings since the 13AFAF. These meetings are held with the Branch (India and Taiwan), Section (Fish Health, Gender in Aquaculture and Fisheries), and Network heads (AFSSRN), and Editor-in-Chief of the Journal of Asian Fisheries Science, to gain a greater understanding of the activities across the breadth of AFS. As reported in the mid-year AFS newsletter, at the first meeting (#62 on June 14) 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 second Council meeting (#63 on September 22) discussed methods of payment for memberships and symposia to make this easier for people. We also received reports from the Sections and Editor-in-Chief of the Journal of Asian Fisheries Science. We are looking at revising the website for the Society and the Journal. Prior to the 2nd meeting, I was fortunate to be able to travel to UPM and meet informally with Dr. Nur Leena Wong (Treasurer), Prof. Dr. Murni Marlina (Secretary), Prof. Mohamad Shariff (Editor in Chief) and Dr. Sanjoy Banerjee (Associate Editor) and discuss: 1. How AFS might enhance its connections to fisheries and aquaculture networks in Asia; 2. The possibility of an in-person Council meeting for #63 in Indonesia; 3. Succession planning for the Treasurer, Secretary of AFS and Editor-in-Chief; and 4. The Journal – citations, submissions, publications and the website. I was also able to participate in the Australian Society of Fish Biology conference on the Gold Coast of Australia in August. The executive of ASFB is interested in establishing closer links with AFS and I will discuss this with Council at our next meeting. Planning is underway for the third meeting of the 14th Council – as noted above, we would like this to be an in-person meeting in Indonesia and hold this in the first part of 2023.

The Executive of the AFS Council is meeting on January 19 to plan Council meetings and activities for 2023, including establishing a stronger connection with students and young researchers in Asian aquaculture and fisheries. I have also been working with Budy Wiryawan and Wily Campos (Vice President) on planning an FAO regional workshop on Asian fish stock assessment in Bangkok from January 21 to 23, 2023. This will be a hybrid meeting with people from government, Universities and non-government organisations, representing 10 countries. This workshop may form the basis for establishing a network within AFS for research on capture fisheries and their assessment.

I wish all well for the start of 2023 and a happy, productive and safe year for everyone. If you have any ideas on how AFS can enhance its activities please contact us through our Executive Officer (Malathi Thanamsegaram malathi1813@gmail.com), me directly (n.loneragan@murdoch.edu.au) or a Councillor (http://www.asianfisheriessociety.org/council.php?id=fourteen-council-2022-2025).

President 14th AFS Council
Professor Emeritus Neil Loneragan

Gender Justice for Sustainable Aquaculture and Fisheries – 8th Global Conference on Gender in Aquaculture and Fisheries (GAF8)

The 8th Global Conference on Gender in Aquaculture & Fisheries (GAF8) of the GAF Section of the AFS was held from 21-23 November 2023 in Kochi, Kerala, India. The theme for GAF8 was "*Shaping the Future: Gender Justice for Sustainable Aquaculture and Fisheries*". The GAF8 was hosted by the ICAR-Central Institute of Fisheries Technology (ICAR-CIFT), Kochi and the Society of Fisheries Technologists (India) (SOFTI), Kochi. The GAF8 was organised into six thematic sessions and ten special sessions and had 198 participants from 26 countries, including 31 who took part virtually. The thematic sessions covered a wide range of topics that included Women's voice and agency; Women's work in aquaculture and fisheries; impacts of pandemics, disasters and shocks; gender justice & institutional roles; understanding women's rights; and success stories of women entrepreneurs in aquaculture and fisheries. In all 79 papers were presented in these thematic sessions, 68 orally and 11 as posters. The Special Sessions had different formats like panel discussions, paper presentations, video and photo presentations and story telling.

The GAF8 was inaugurated by the Hon'ble Governor of Kerala, Shri Arif Mohammed Khan on 20 November 2022 in a befitting function. He highlighted the situation of women in society in general and called for concerted action to find practical solutions.

The Hon'ble Governor of Kerala Shri. Arif Mohammed Khan inaugurating GAF8

The technical sessions began on 21 November 2022 and were held across three days ending with a Valedictory Session where the main recommendations were read out. The 6 Thematic Sessions were:

- Session 1: Women's voice and agency: Individual collectives, associations, platforms, institutions
- Session 2: Women's work in aquaculture and fisheries: Human rights, labour rights, occupational safety and health, exploitation, conflict
- Session 3: Pandemics, disasters and shocks: Impacts on livelihood, occupations, habitat, resources, life

- Session 4: Gender justice & institutional roles: Policy regime, roles of civil society, academia and other formal and informal institutions at local, national and global levels
- Session 5: Understanding women's rights: Tenure, resources, institutions, inputs, foods, nutrition
- Session 6: Women achievers: Success stories of women entrepreneurs in aquaculture and fisheries

The 10 Special Sessions were:

- Special Session 1: Women and the Changing Tide: Breaking the Bias in Small-scale Fisheries and Aquaculture in the context of IYAFA 2022 organised by FAO of the UN
- Special Session 2: Voices of Young Gender Researchers in Fisheries organised by ICAR-Central Institute of Fisheries Education, Mumbai, India
- Special Session 3: Gender and the Social Economy of Dried Fish organised by DFM Central, University of Manitoba, Canada

Dr Derek Johnson, Canada, introduces special Session 3

- Special Session 4: Upscaling community-based fisheries management (CBFM) and the gender dimensions in the Pacific organised by SPC (Pacific Community)
- Special Session 5: The Gender Rhetoric in Global Seaweed Sector: Women's Contribution in Seaweed Farming, Wild Harvest, Value Chain and Societal Development organised by ICAR-Central Marine Fisheries Research Institute, Cochin, India
- Special Session 6: GAF 101 Training-Workshop: Gender Analysis in Aquaculture and Fisheries Social Science Research organised by AFSSRN of the AFS
- Special Session 7: 'Women in fisheries: Shared experiences' organised by ICSF, Chennai, India
- Special Session 8: Rupture, Gendered Adaptation and the Social Economy of Small-Scale Fisheries in the Indian Ocean organised by Indian Ocean Collaboratory on Small Scale Fisheries
- Special Session 9: Working towards closing the gender data gap in small-scale fisheries with insights from the Illuminating Hidden Harvests Project organised by IHH Project of FAO of the UN, Duke University & WorldFish

Delegate from Fiji, Ms. Tarusila Veibi, telling her story in the Special Session by SPC

The winners of GAF8 awards were announced at the Valedictory ceremony on 23 November in Kochi, Kerala, India. The awards were presented by senior Indian and regional leaders in fisheries research, capacity building and industry development, who were the Guests of Honour at the ceremony.

GAF8 BEST PAPER AWARD – Arisanti Ayu Wardhani and Indah Susilowati – "*Women as Agents of Change in Turning Disaster into a Blessing with a Case Study of the Strategic project of the Steam Power Plant in Batang Regency*"

Sreepriya Prakasan receiving GAF8 Best Poster Award from Chief Guest and Chairman of the Marine Products Export Development Authority (India), Shri. Dodda Venkata Swamy IAS. On the left, Dr P. Krishnan, Director, Bay of Bengal Programme, at the back Dr George Ninan, Director ICAR-CIFT and Organising Secretary GAF8, and to the right Dr A. Gopalakrishnan, Director, ICAR-Central Marine Fisheries Research Institute. Photo: GAF8

M.C. Nandeesha GAF8 Photo Contest Awardees

As part of GAF8, the M.C. Nandeesha Photo Contest was conducted. The theme for the contest was the main theme of the Conference - "Shaping the future: Gender Justice for Sustainable Aquaculture and Fisheries". A winner's award and two appreciation awards were selected from the rich range of entries received. The award is named in honor of the late Dr M.C. Nandeesha whose tireless efforts were fundamental to initiating the series of women/gender in fisheries and aquaculture events through the Asian Fisheries Society.

M.C. NANDEESHA GAF8 **PHOTO CONTEST WINNER – Mohammad Nuruzzaman** – "*Face of a poor shrimp PL collector from Bangladesh*"
M.C. NANDEESHA GAF8 **PHOTO CONTESTAPPRECIATION** PRIZE – **Prajith K.K.** – "*A handful of happiness*"
M.C. NANDEESHA GAF8 **PHOTO CONTEST APPRECIATION** PRIZE – **Sourabh Kumar Dubey** – "*Maternal care is always a priority for her*"

GAF8 delegates

Two parallel events were also held concurrently during GAF8. A Seminar on Interventions for control of AMR: Harnessing one health knowledge organised by ICAR-CIFT & SOFTI; and another on Small-scale Fisheries: Its Global and Regional Significance organised by ICAR-CIFT in association with FAO to commemorate the IYAFA.

Contributed by Nikita Gopal, Chair and Meryl J Williams, Past Chair, GAFS of AFS

AFS SECTIONS

Fish Health Section (FHS)

The Eleventh Executive Committee

The Eleventh Executive Committee

2022-2025

Chairperson: Dr. Kua Beng Chu (Malaysia)
Vice-Chairperson: Dr. Pravata Pradhan (India)
Secretary/Treasurer: Dr. Eduardo M. Leaño (Philippines/Thailand)

Members:

- Dr. Agus Sunarto (Indonesia/Australia; Past Chair)
- Dr. Motohiko Sano (Japan)
- Dr. Neeraj Sood (India)
- Dr. Han-Ching Wang (Taiwan)
- Dr. Qingli Zhang (P.R. China)
- Dr. Siow Foong Chang (Singapore)
- Ms. Varinee Panyawachira (Thailand)
- Dr. Dang Thi Lua (Vietnam)

Observers:

- Dr. Jiraporn Jarungsriapisit (Thailand)
- Dr. Desrina (Indonesia)
- Dr. Stephen Pyecroft (Australia)
- Dr. Syed Shabib Hasan (India)
- Dr. Naveen Kumar B.T. (India)

Electronic Newsletter Editors:

- Dr. Neeraj Sood
- Ms. Imelda Rantty
- Dr. Naveen Kumar
- Dr. Supranee Chinabut (Advisor)
- Dr. Melba Reantaso (Advisor)

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

The 11th Symposium on Diseases in Asian Aquaculture (DAA11) with the chosen theme, 'Land of Adventure: Exploring Aquatic Animal Health for Sustainable Aquaculture was held on 23 to 26 August 2022. It was organised by the Fish Health Section of the Asian Fisheries Society and hosted by Department of Fisheries under the Ministry of Agriculture and Food Industries (MAFI) and in collaboration with the Ministry of Modernization of Agriculture and Regional Development of Sarawak (MANRED). The DAA11 was held as a hybrid event with only the opening ceremony in physical form. The opening ceremony was officiated by Sarawak Deputy Premier, Datuk Awang Tengah Ali Hassan on the 23rd of August at Borneo Convention Centre Kuching, Sarawak. Meanwhile under virtual platform, a total of 10 exhibitors participated and showcased their products under virtual exhibition. Apart from virtual DAA11 symposium and exhibition, two forums were also created on the virtual platform.

DAA11 Virtual Platform

The DAA11 was the first virtual symposium among all the DAA series since its establishment in 1990. The four days virtual symposium garnered a total of 608 participants with 580 (95.4%) attendees from 22 countries. Like other DAA series, the virtual DAA11 provided a platform for experts, scientists, members and students to exchange scientific information, establish collaborations and networking opportunities. A total of 116 scientific papers of which 43 were presented orally, 46 in 3-minute presentations (3MP) and 27 e-posters. The four-day event was conducted over eight sessions and highlighted several significant issues faced globally such as Biosecurity in Aquaculture, Epidemiology, Detection Method and Diagnostic, Prevention and Control Measures, and Fish and Shrimp Disease Management. The oral sessions were moderated by eight moderators while the 3 minutes presentation were moderated by six moderators. The student award winners for 3 categories, Best e-poster, Best Oral Presenter and Best 3 Minutes Presenter were announced during the last day of DAA11. A total of three students from each category were selected by the Awards committee. The DAA11 Student Awardee Posters were exhibited during the DAA11 Opening Ceremony. Compilation of eight scientific papers presented during the DAA11 provides various updates of fish health aspects was published under a Special Issue of Malaysian Fisheries Journal (MFJ), Issue No 2, Volume 21, 2022 (http://www.fhs-afs.net/pdf/pub/4.Special_Edition_MFJ3eb754953a.pdf).

DAA11 Attendees

The DAA11 virtual platform were accessible for registered participants within one month after the event. Our post-symposium survey for participants reported 81.8 % of the 106 virtual participants respondents expressed that the event was held successfully while 18.2% would like the future DAA event to be held in-person event which is DAA 12 that will be held India. The detail report on the DAA11 were published in November/December 2022, vol168(6), 53-56 of AQUA CULTURE Asia Pacific (AAP) Magazine(https://issuu.com/aquacultureasiapacific/docs/aq22180_aap_novdec_22_fa_web?e=28637981/94681393)

On-site crew for the virtual platform team, Department of Fisheries Malaysia in Putrajaya, the venue host for this virtual conference.

Sideline of DAA11- Farmers Day

In conjunction with DAA11, National Organizing Committee organized Farmers Day for Malaysian farmers which enables the local farmers to interact with internationally recognized fish health experts from Malaysia, Vietnam, and Thailand on issues relating to fish and shrimp health management, biosecurity and antibiotic usage. A total of 300 participants consisting of local farmers and relevant government sectors attended the event immediately after the opening ceremony of DAA11 on 23rd August 2022. A total of 13 inventors from Fisheries Research Institute showcased their R&D Innovations on Fish Health Management and Disease Control. The ebook of these product can be downloaded at http://www.fhs-afs.net/pdf/pub/3.Innovation-Booklet-DAA11.pdf. The DAA11 and Farmers Day Launch Ceremony was live-streamed through the Malaysian Fisheries Department's Facebook page (Link: https://tinyurl.com/2j5 epmvk).

R & D Innovations on Fish Health Management and Disease Control that was presented during the exhibition

Twelve Triennial General Meeting (TGM-12)

The FHS-AFS was able to conduct the virtual 12th Triennial General Meeting (TGM-12) 2022 via Zoom Platform at 16:30 Malaysian Time (MYT), UTC + 8 on 25th of August 2022. The meeting was chaired by Dr. Agus Sunarto and the FHS report 2017-2022 was presented by Dr. Eduardo Leano. The New FHS Executive Committee was appointed during the meeting which comprised of 11 members and 5 observers.

AFS BRANCHES

Asian Fisheries Society Indian Branch (AFSIB)

National Fish Farmers Day 2022

AFSIB was among the organisers of the event "National Fish Farmers Day 2022" held at the Collage of Fisheries Mangalore on 11th July, 2022. It was inaugurated by Shri S. Hangara, Hon'ble Minister of Fisheries, Ports, and Inland water transport, Government of Karnatak. Dr. Rajesh K. M., Principal Scientist (ICAR-CMFRI) and Secretary, Asian Fisheries Society, Indian Branch (AFSIB), Dr. S. M. Shivaprakash, Executive Member, Pillay Aquaculture Foundation, and Shri B. Harish Kumar, Joint Director of Fisheries, Government of Karnataka were the Chief Guests. The programme was presided over by Dr. Shivakumar Magada, Dean College of Fisheries, Mangalore. On this occasion, Fish Farmers participated from various parts of the state were felicitated by Hon'ble minister.

Hon'ble Minister of Fisheries, Ports, and Inland water transport, Government of Karnatak inaugurating the programme

Dr. Rajesh K. M., Secretary, Asian Fisheries Society, Indian Branch (AFSIB) addressing the participants

Fish Farmers felicitated during the celebration of National Fish Farmers Day 2022

Asian Fisheries Society Taiwan Branch (AFSTB)

In the second half of 2022, AFS Taiwan Branch successfully held two conferences with one theme of "Taiwan Shrimp Aquaculture Festival" which is held at the Taipei EXPO park on June 19 this year. At the first conference, shrimp aquaculture tech improvement conference, we invited many experts and important researchers, including Dr. I Chiu Liao (Academician of Academia Sinica, as known as father of tiger prawn) and Prof. Chu Fang Lo (National Chair Professor, as known as mother of shrimp aquaculture). The conference concluded with six specific suggestions for the future of Taiwan's shrimp aquaculture industry.

The festival event invited six groups of shrimp farmers from various production areas in Taiwan to promote and sell delicious Taiwanese shrimp on-site. The event had reported by many media and successfully attracted the public to review the glorious history of shrimp aquaculture in Taiwan.

Asian Fisheries Society Taiwan Branch (AFSTB)

We also held another conference during the 2022 Taiwan International Fisheries Exhibition on September 29. This conference focused on improving the technology of fourfinger threadfin aquaculture in Taiwan. This event had attracted more than 100 domestic and foreign experts from industry, government and academia and resulted in valuable suggestions to keep our current advantages of this species. We should seize the current opportunity to establish the quality standards for breeding larvae as soon as possible while taking into account sustainability and profitability, so that Taiwanese aquaculture industry can be more advanced and lead the world with technology. Conference video can be watched on Youtube (https://www.youtube.com/playlist?list=PLMR1WENvkvx_5gkKiJXCTWDvYvRaA7Md5).

4th International Symposium on Aquaculture and Fisheries Education (ISAFE4)

The 4th International Symposium on Aquaculture and Fisheries Education (ISAFE) was successfully held by the National Pingtung University of Science and Technology (NPUST), Taiwan on Oct 7-8, 2022. The organizer, Prof. Yun -Hung Lin, make great efforts to make this important conference continue during pandemic of COVID-19.

Regional Stock Assessment Workshop

The FAO will convene a "*Regional Assessment Workshop*" from 23-25 January 2023, which will bring together an identified group of regional stock assessment practitioners from across the Asian region, to review their methods and findings on the status of fisheries that they study. This workshop builds on two FAO and SEAFDEC co-organized regional training workshops on stock assessment, with the aim of obtaining an understanding of the current status and regional capacity on stock assessment and examined available data sets. This activity will be facilitated by an advisory group convened by Murdoch University, including members of the 14th Council of the Asian Fisheries Society.

"FISHING FOR LIFE"
South and Southeast Asian Conference on Small-scale Fisheries and Aquaculture
SACSFA 2022

SACSFA Declaration

We, the representatives of Sri Lanka Forum for Small Scale Fisheries, academics, researchers and civil society organisations working towards securing sustainable small-scale fisheries, from South and Southeast Asian countries, having participated virtually at the *Fishing for Life: South and Southeast Asian Conference on Small-scale Fisheries and Aquaculture 2022* (SACSFA 2022) from 19 to 20 September 2022;

Recognizing that the small-scale fisheries subsector, marine and inland, including women and men along the value chain, contribute to food security and nutrition, employment and poverty eradication, as well to the way of life and culture of coastal and riparian communities in South and Southeast Asia;

Mindful of the ethnic, religious, caste, cultural and historical diversity, colonial legacy and patterns of migration in the region, and their impact on social and economic relations, as well as the dynamic nature of small-scale fisheries;

Conscious of the degradation of the marine environment, the heightened anthropogenic threats (e.g., pollution, overfishing, etc.), injustices caused by the blue growth process, and serious natural (e.g., climate change, extreme weather events, etc.) risks facing inland and marine small-scale fishing communities;

Concerned about unregulated technological change in marine and inland fishing, cross-border conflicts from destructive fishing methods, overfishing pressures, and their adverse impact on small-scale fisheries;

Realizing how sustainable small-scale fisheries can be secured through effective legislation, regional cooperation and collaboration, strengthening community-based institutions and the protection of the human rights of small-scale fishers and fishworkers, especially to participate in decision-making processes and intra- and inter-sectoral dialogues;

Cognizant of the need to protect tenure rights and promote social development, improve safety at sea, ensure gender equality and promote resource stewardship among small-scale fishers and fishing communities;

Interested in promoting sustainable development and greater visibility of small-scale fisheries and accountability of all small-scale fisheries actors; and

Acknowledging how the implementation of the *Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication* (SSF Guidelines) in the region can enhance sustainable use and management of fisheries resources, equitable development of small-scale fishing communities, and contribute to poverty eradication.

Recommend:

Recognize the contribution of small-scale fisheries to nutrition and food security and strengthen documentation of fish production from small-scale fisheries and of other products along the value chain, and develop robust methodologies for data collection in the region;

Respect human rights, including livelihood rights of small-scale fishers, and their right to sustainably use and manage fisheries resources and ecosystems, consistent with paragraph 5.5 of the SSF Guidelines;

Promote the stewardship of small-scale fisheries through: broadscale engagement and collaboration of all stakeholders, building their knowledge and capacity, monitoring, communication, education and outreach;

Uphold a rights-based approach to small-scale fisheries development that recognizes the rights of access to resources and human rights as integral to human development;

Encourage sustainable development of small-scale fisheries for balanced social, economic, and regional development in coastal and rural areas and create new opportunities within an ecosystem approach to fisheries and regional cooperation;

Reverse all forms of discrimination against women, apply intersectionality principles (e.g., recognizing the different needs of groups and people according to age, gender, education, class, ability, etc.), develop skills, promote technological inclusion and empower women to participate in fisheries decision-making processes, especially to strengthen their contribution to economic wellbeing and to address wage disparities along the fisheries value chain. Also, promote sharing of reproductive and care work to create opportunities for women to engage in paid work;

Promote an interactive, inclusive and multi-stakeholder approach to fisheries governance going beyond the scope of conventional fisheries management, towards articulating power through the involvement of local communities, and representative organizations, by means of training and capacity building;

Strengthen vulnerability coping mechanisms, establish effective, integrated, inclusive, participatory and holistic co-management platforms, and deliver on securing fishers' rights and social development within the framework of the SSF Guidelines;

Empower fishers' and fishworkers' organizations, including fisheries cooperatives, through training and capacity building and other assistance, at the local level, to safeguard fishers' and fishworkers rights, to provide affordable access to basic social services, to promote social security, to support livelihoods, and to meet their essential needs;

Adopt "bottom up" processes as well as cross-sectoral collaboration towards realizing a balanced and equitable partnership in the implementation of the SSF Guidelines, acknowledging that fishers, fish workers and their organizations are the main drivers of bottom-up processes, and are supported by academia, NGOs and CSOs;

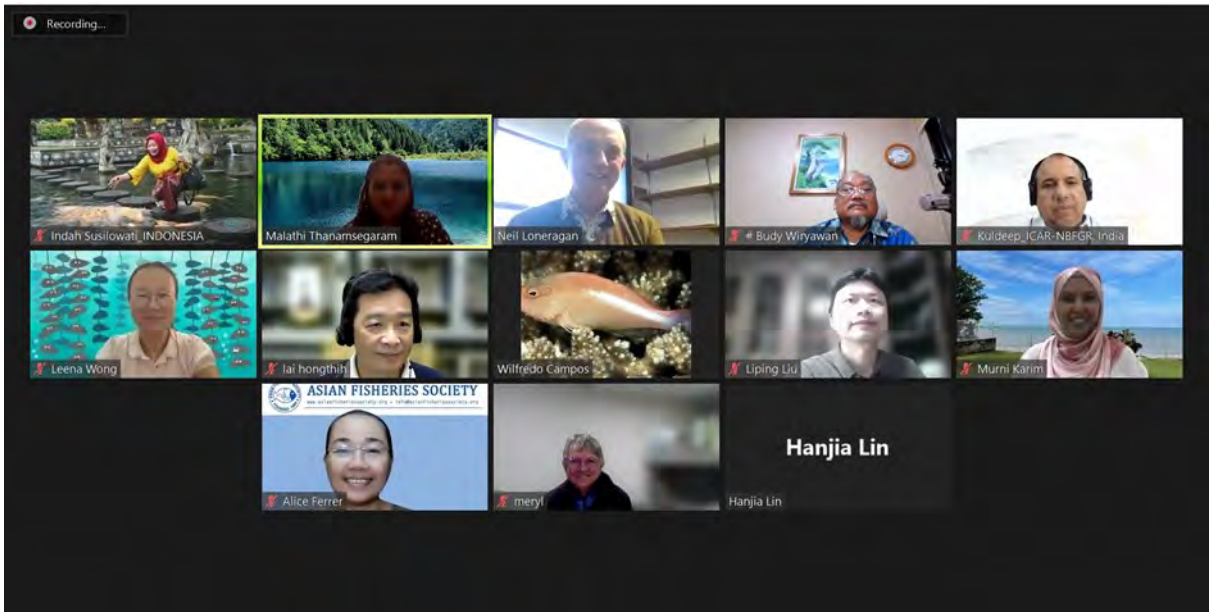
Promote consultation with small-scale fishing communities while undertaking tourism, aquaculture, industry, infrastructure developments and other activities in coastal areas that impact small-scale fisheries, protect their human rights and secure their informed consent before commencing these activities;

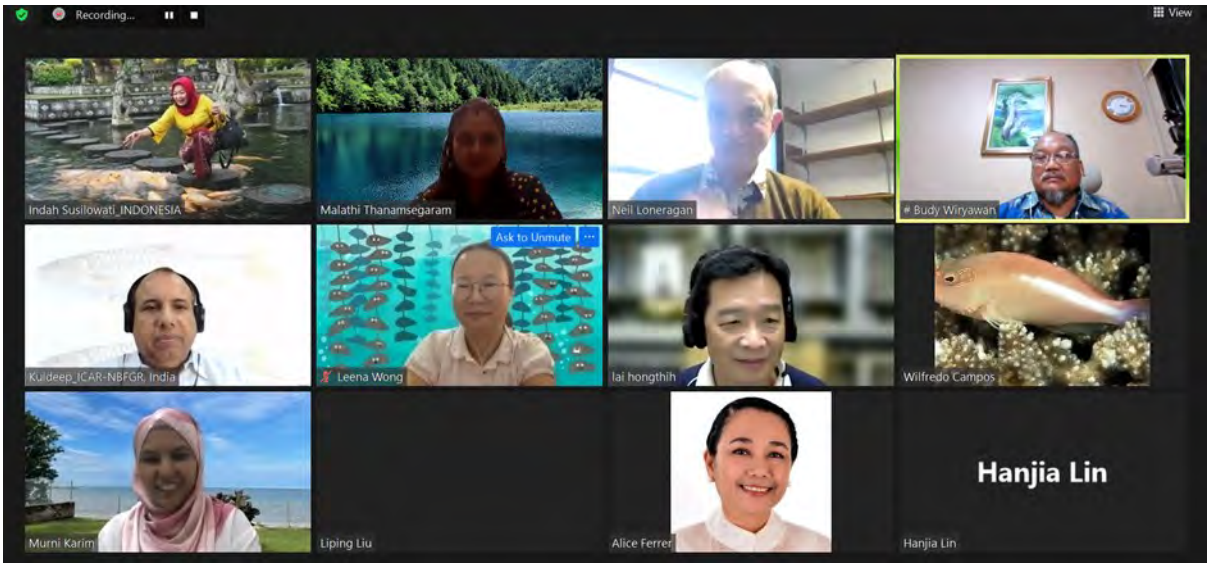
Design and innovate appropriate risk transfer tools (e.g., social insurance) and risk retention measures (e.g., social assistance) to deal with climate change and disaster events adversely impacting coastal and inland fishing communities; and

Mainstream the SSF Guidelines into relevant policies, strategies and legislation at the national and local levels, and develop national plans of action for sustainable fisheries and socio-economic development of fishing communities, as has been initiated by several countries in the region and other parts of the world (e.g., Sri Lanka, Tanzania, Malawi, Madagascar and Namibia.

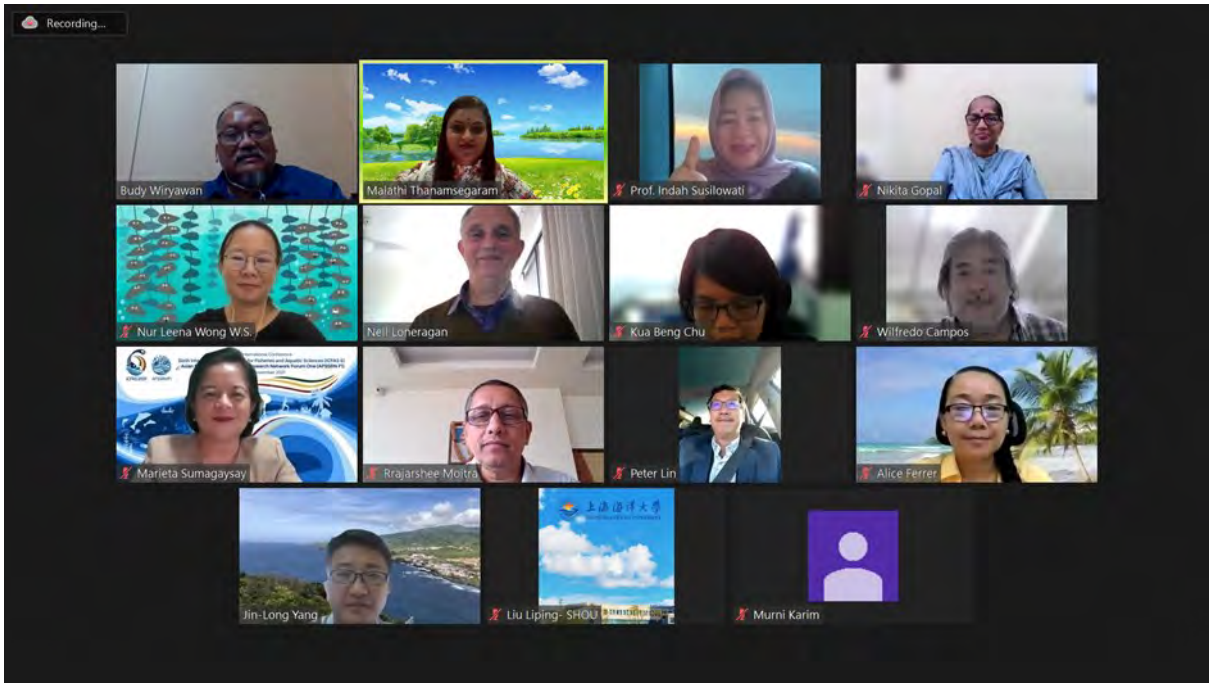
AFS SECRETARIAT NEWS

The Asian Fisheries Society 62nd Council meeting was held on Tuesday, 14th June 2022 using an online platform. During the meeting, 11 councilors from respective countries, and the Chair of Gender in Aquaculture Dr. Meryl J. Williams participated.





The Asian Fisheries Society 63rd Council meeting was held on Thursday, 22nd September 2022 using an online platform. During the meeting, 14 councillors from respective countries, the Chair of the Gender in Aquaculture & Fisheries Section, the Chair of the Fish Health Section (FHS), the Chair of the Asian Fisheries Social Science Research Network (AFSSRN), and the Editor of Asian Fisheries Science have participated.



AFS Publication

- **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 schedule and is accessible to all, including non-members.

- **AFS Journal Management**

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

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

- **Membership**

AFS has 619 members as of 31st December 2022. Of these, 313 are active members and the balance 306 members have to renew their membership. AFS encourages members to renew membership 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, Kuala Lumpur.

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

COP15: small-scale fishing and civil society organizations reject

At the UN Biodiversity Conference, or COP-15, over 20 organizations representing small-scale fishing communities and civil society signed a joint statement rejecting debt swaps as they lack transparency and give undue power to foreign organizations over the policies of marine resources management of developing and small-island states.

While recognizing that protected areas can be effective means to restore and conserve biodiversity and support coastal communities who rely on fisheries for their livelihoods and food security, the statement cautioned adopting a rushed approach to gazetting large areas of the oceans as protected areas for nature.

"Governments must therefore recognise the rights of people, including their free, prior and informed consent to any decisions that deny them access to their historical fishing grounds, in line with the FAO Voluntary Guidelines on sustainable small-scale fisheries, as proposed in the Artisanal Fishers Call to Action", the statement noted.

"Furthermore, the protection of 30% of the oceans by 2030 must not distract governments from giving more comprehensive attention to the unsustainable management of ocean economies. Merely declaring large parts of the oceans as protected zones does not guarantee the sustainable and equitable use of marine resources. Instead, COP-15 should strengthen efforts to halt the growth of socially and ecologically damaging industries, such as industrial fishing, intensive fish farming, and coastal and offshore mining.

It should seek to end the large amounts of private investments and public subsidies these sectors receive. Without this, the 30×30 target will be superficial and it will fail in its ambition," the statement added.

The full text of the statement and the list of signatories can be found at: https://www.cffacape.org/
URL: https://www.cffacape.org/

India: Produces world's first solar fishing vessel, secures global award

Travel, a solar offshore fishing vessel developed and designed by Kochi-based Electric Boats and NavAlt Solar (India), has reportedly bagged the Gustave Trouve Award and is the first-ever sea-going solar fishing vessel in the world. The prestigious awards were rewarded in memory of the French inventor, physicist, electrical engineer, and polymath Gustave Trouve. The Electric Boat Award belonged to the category of Commercial ferry and was dominated by nominations from some of the greatest boat builders from 30 nations.

Four vessels had contested from the country, of which three were NavAlt's. Srav also secured the 'Best Electric Work Boat" title in the world, a press release mentioned. Sandith Thandassery, the CEO and founder of NavAlt, mentioned that Srav is part of the firm's iconic seagoing vessel series, which will encompass large and small fishing vessels powered by the Sun.

The tale of electric Srav began with NavAlt's wish to have quieter and cleaner oceans. Beginning with Aditya, a design and technological wonder, Sandith mentioned how they went into building ROROs, military boats, and luxury vessels. While the firm was striving to place diverse green vessels across the country, the Shell Foundation, one of the largest cleantech advocates today, came with unconditional support, he said.

The Shell discovered that solar fishing boats could significantly impact the country's fishing communities. Surveys revealed that about 250,000 fishing vessels operate on kerosene and petrol. Millions of individuals who depend on the sea and its produce count on the boats for offshore fishing – in its physical structure and unit economics.

The increasing cost of fossil fuel is a major concern for the larger community as they operate on a low margin from the catch they receive minus the cost of fuels. Srav is fascinating to ride on. It can easily host six fishermen. It has a range of 50km and is most appropriate for small fishers. The energy bill is likely less than Rs 10,000, while fossil fuels reportedly cost about Rs 3 lakh. Wear and tear will be lesser, Sandith mentioned.

Source: https://www.marineinsight.com/shipping-news/srav-becomes-the-worlds-first-solar-fishing-vessel-secures-a-global-award/

FAO Report Paints a Bleak Picture of SDG Achievements

The adverse socioeconomic impacts of conflicts, COVID-19, and climate change set back efforts to achieve the 2030 Agenda. The latest forecasts estimate that rising inflation and the impacts of the war in Ukraine could push an additional 75 million to 95 million people into extreme poverty in 2022, compared to pre-pandemic projections. The agricultural sector has borne the brunt of economic losses due to frequent natural disasters. Direct economic losses attributed to disasters amounted to USD 15.4 billion in 2020, of which USD 6.8 billion was recorded in the agricultural sector.

The report titled, 'Tracking Progress on Food and Agriculture-related SDG Indicators 2022, launched in the margins of the 77th session of the UN General Assembly (UNGA) provides detailed analyses and trends on across eight SDGs: 1 (no poverty), 2 (zero hunger), 5 (gender equality), 6 (clean water and sanitation), 10 (reduced inequalities), 12 (responsible consumption and production), 14 (life below water), and 15 (life on land). The report highlights areas of progress and areas where further effort is needed.

Source: https://sdg.iisd.org/commentary/guest-articles/fao-report-paints-a-bleak-picture-of-sdg-achievements/

Bangladesh to enhance production of Hilsa, protect indigenous varieties

Bangladesh is working to increase the production of Hilsa fish in the country which has received the Geographical Indicator (GI) tag. Fisheries Minister of Bangladesh S M Rezaul Karim said that Tiger shrimp (P.monodon) prawn has been added as a new GI product.

Production of Hilsa fish has gone up from about 300,000 metric tons in 2009 to over 565,000 tons in 2020-21. Bangladesh is exporting Hilsa to more than 52 countries in the world directly or indirectly.

Talking about the disappearing species of fish, the minister said that Bangladeshi scientists have brought back 36 species of extinct fishes to life. A live gene bank has been set up in Mymensingh which will house more than 100 species of fish to preserve their gene. Stressing upon the potential of fishery as a foreign exchange earner for Bangladesh, Minister Rezaul Karim said that projects are underway for deep sea tuna fishing.

Source: https://newsonair.com/2022/07/24/bangladesh-to-enhance-production-of-hilsa-protect-indigenous-varieties-fisheries-minister-rezaul-karim/

China's infrastructure loans are putting overseas marine habitats and locals at risk, study warns

Over the last decade, Chinese lenders have led an unprecedented overseas financing boom for an array of mega projects, including ports, power plants and roads under President Xi Jinping's transcontinental infrastructure investment plan, the Belt and Road Initiative (BRI).

But all that investment appears to be coming with a growing environmental cost, according to researchers. A new study published by the journal One Earth has detailed the risks to marine systems from China's global coastal development.

The findings suggest that some of those projects, especially ports and power plants, pose serious risks to marine biodiversity and indigenous communities in Africa and the Caribbean.

Experts from the Boston University Global Development Policy Centre, the University of Queensland, University of California Santa Barbara, and Colorado State University, studied the marine risks of 114 coastal development projects financed by China from 2008 to 2019.

The projects in the study represented one-quarter of all projects financed by the China Development Bank and the Export-Import Bank of China. They totalled nearly US$65 billion in financing commitments.

The researchers said that most of China's overseas development finance portfolio appears to have had negligible potential risks for marine systems, or at least lower risks than those considered in their study. However, they said it was likely that more coastal development projects have been financed, but have yet to be verified.

Most of the ports in the study that posed the biggest risks to marine ecosystems were in the Bahamas, Antigua and Barbuda, Cuba, Mauritania, Ivory Coast, Cameroon, Angola, Mozambique, Djibouti and Sri Lanka.

Coastal indigenous communities, particularly in West Africa, and the Caribbean, faced the greatest dangers, according to study, which noted that most development projects are located in areas that are densely populated.

The study identified 55 coastal indigenous communities whose nearby coastal waters were at risk from the negative impacts of development.

URL: https://www.scmp.com/news/china/diplomacy/article/3202301/chinas-infrastructure-loans-are-putting-overseas-marine-habitats-and-locals-risk-study-warns

WTO Fisheries Funding Mechanism now operational to assist developing countries and LDCs

A key commitment from the WTO's Fisheries Subsidies Agreement has now been made effective. Specifically, the WTO Fisheries Funding Mechanism envisioned in that Agreement is now operational and ready to accept donations to support developing and least-developed countries in implementing the WTO's new agreement to curb harmful fisheries subsidies. The WTO Secretariat formally submitted its notification outlining how the Fund will work and its estimated budget to WTO members at a meeting of the Committee on Budget, Finance and Administration on 8 November 2022.

As part of the WTO Agreement on Fisheries Subsidies adopted at the WTO's 12th Ministerial Conference last June, members endorsed the establishment of a new funding mechanism, in cooperation with relevant international organizations, to accept voluntary contributions to provide developing and least developed country (LDC) members with targeted technical assistance and capacity building for the purpose of implementing the disciplines under the Agreement.

With the Fund now operational, donors can begin making their contributions to the Fund.

"This is a meaningful step and a promise kept to our developing and LDC members," Director-General Ngozi Okonjo-Iweala said. "The activation of the Fund should provide momentum for efforts to secure the Agreement's entry into force as well as the "second wave" of negotiations on further rules for subsidies contributing to overcapacity and overfishing. Now is the time for donors to make their contributions."

"This Fund is very important for those members who need capacity building and technical assistance to better manage their fisheries and implement the disciplines in the Agreement," she said. "We have now established the concrete mechanism to provide that assistance, providing confidence that their needs will be addressed. We continue to call on members to undertake the domestic steps necessary to formally accept the Agreement so that the disciplines enter into force and begin improving ocean sustainability and benefitting those who depend on fishing."

The proposed Fund will be operated by the WTO with partner organizations to tap relevant expertise, such as the Food and Agriculture Organization (FAO) of the United Nations, the International Fund for Agricultural Development and the World Bank Group. Around US$ 20 million in contributions will be targeted over the course of the Fund's operation, with an initial starting amount of around US$ 10 million.

The landmark Agreement — the first WTO agreement with an environmental objective at its core — prohibits subsidies that contribute to illegal, unreported and unregulated fishing, as well as fishing in the unregulated high seas and in overfished stocks. The Agreement will enter into force once it has been accepted by two-thirds of the WTO's 164 members.

The Agreement also commits members to continue negotiations on outstanding issues to achieve a comprehensive agreement on fisheries subsidies by the WTO's 13th Ministerial Conference (MC13). These negotiations will aim to develop further disciplines on certain fisheries subsidies that contribute to overcapacity and overfishing along with appropriate special and differential treatment for developing and LDC members.

Source: https://www.wto.org/english/news_e/news22_e/fish_08nov22_e.htm

The quest for a fully-autonomous vertical shrimp farm

A commercial-scale, modular, stacked aquaculture system that's capable of producing between 50 tonnes of shrimp a year with minimum human intervention is set to be operational in Singapore in 2023. Created by Vertical Oceans – a startup previously called Aqualogix – the system has been developed by John Diener and co-founder Enzo Acerbi.

The prototype of the system built in Singapore and called the intelligent habitat or iHAB– has the capacity to produce 3 tonnes of shrimp a year, while he plans to upscale to a 50 tonne capacity system in the first half of 2023. It is described as "a fully autonomous, fully self-contained, multitrophic system" – which produces sea grapes as well as shrimp. And he emphasises the need to ensure a carefully managed microbial community, using metagenomics – both to optimise both the health and taste of the shrimp.

Technology – half of which is proprietary to Vertical Oceans – is also to the fore: a range of sensors control aspects such as feeding and pump speeds, while all data is fed through algorithms to improve production efficiency over time. "The net result is that we can grow shrimp in about half the time it takes them to grow in a pond environment; we can get a 30 % improvement in feed conversion, our target is an FCR of 1, but we know we can do better than that; and we actually produce a great tasting product," said Diener.

The system is also designed to be mobile, which means – amongst other things – that the iHABs can be stacked, reducing the footprint required. If the company builds the largest one they've designed, which is capable of producing 1,000 tonnes of shrimp a year, it would require less than 3,000 m2 of land. Measuring 42 m tall, it's designed to have 15 stacked layers and include a total of 700 iHABS. According to Diener, the compact nature of the systems means that they are well suited to urban areas – the urban location of their current one allows them to deliver fresh shrimp to restaurants within 4-6 hours.

We have a fresh local premium, as opposed to a

In terms of the business model Vertical Oceans not only intends to build and run their own systems, but also to provide ready-made systems for those looking to grow premium indoor shrimp – potentially through a franchise model. "The cost of going vertical is not nearly as high as you might expect and we gain a lot of energy and manpower efficiencies by having an automated and vertical system like that," he said.

As a result, Diener explains that setting up an iHAB system can be done for "a minimum ticket price of $5 million". He sees a number of options for those looking to establish one of the systems, including installing them in conjunction with a retailer – a method pioneered by Agtira, which grows salmon and vegetables right beside a Maxi ICA supermarket in Sweden.

Source: https://thefishsite.com/articles/the-quest-for-a-fully-autonomous-vertical-shrimp-farm-vertical-oceans?utm_medium=email&utm_campaign=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022&utm_content=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022+CID_9fba02dabe70088f5bd2d272fbd37b80&utm_source=Email%20marketing%20software&utm_term=The%20quest%20for%20a%20fully-autonomous%20vertical%20shrimp%20farm

The future of IMTA: Lessons from China

Professors Jianguang Fang and Zengjie Jiang, from the Yellow Sea Fisheries Research Institute explain how the volume of landings produced by mariculture in China has grown from 10,000 tonnes a year in the 1950s to over 20 million tonnes a year in 2019. This volume is dominated by shellfish production, which accounts for over 14 million tonnes and seaweed, which accounts for 25 million tonnes (2.5 million tonnes in dry weight). This, he pointed out, illustrates that China has a much greater emphasis on lower trophic, unfed species compared to most countries in the West.

Prof Fang noted that Chinese mariculture initially focused on monocultures of fish, shrimp or seaweed. From 1980 to 2000 the focus was on "polyculture or co-culture – maybe shellfish and shellfish or fish and fish". But after 2000 producers began to look towards integrated aquaculture, based around producing species of different trophic levels.

Seaweed and shellfish made it very easy to practice IMTA. "So we now practice IMTA, a combination of the different trophic species – fish, seaweed, shellfish and abalones. In this way we can make good environmental conditions and also make the famers have a good income. This is very, very important, because if the farmers make a good income then mariculture will develop sustainably, with no income the farmers will stop that," explained Prof Fang.

Examples of IMTA in Sungo Bay

One widely practised integrated from of aquaculture is farming kelp (Saccharina japonica) in the winter and spring, then Gracilaria sp in the summer and autumn.

"Seaweed aquaculture makes very good income for the local farmers, and also a big contribution to improve the environment," said Professors Fang and Jiang.

According to a study by Professors Fang and Jiang, this enables famers to grow 1,500 tonnes (dry weight) of seaweed in a square kilometre, which removes 40 tonnes of nitrogen, 5 tonnes of phosphorous and 500 tonnes of carbon.

Reducing densities, increasing harvests

In another part of the bay, where kelp and oysters were being grown together, studies suggested that the area was being too intensively farmed, so it was decided to reduce the density of seaweed production by 33 percent and the positive impact was considerable – within five years it had led to a 30 percent increase in kelp harvests, faster growth of oysters and farmers' incomes increasing by 97 percent.

"That way the local farmers were very happy so they follow us very quickly," noted Prof Fang. The reason behind the increased production, Prof Fang explains, is that is increased the current speed and illumination increased by 20 percent and 30 percent respectively, creating better growing conditions for both oysters and kelp.

News of this "eco-farming" model has spread quickly, thanks to training programmes across northern China over the last decades. Another example of IMTA in Sungo Bay flagged up by Prof Fang consists of small cages containing Japanese sea bass, Gracilaria on longlines and Pacific oysters in lantern nets. According to the results of studies on this combination, fish faeces provide 30 percent of the nutrients required by the oysters, while uneaten feed provides an additional 5.6 percent. Access to these nutrients meant that he oyster meats were about 30 percent heavier than for those grown in a monoculture system.
Abalone, kelp and sea cucumber is another of the combinations being used in Sungo Bay, with the latter two species being grown in lantern nets off the seaweed longlines. Sea cucumbers clean the sediment off the inside of the abalone nets, improving the growing conditions, and reducing the environmental impact of the farm.

"The price of seaweed is very low. Integrated with sea cucumbers and abalone, the income of the farmers will increase a lot," explained Prof Fang. And the adoption of IMTA has had environmental, as well as economic benefits, he added. "After 60 years of intensive aquaculture in the bay, the benthic environment is still healthy," he noted.

Harvesting seaweed in Sungo Bay

Finally Prof Fang spoke about a new concept – "a combination of pond IMTA, land-based RAS and salt fields" – which is currently being trialled in Shandong Province. In this system some of the wastewater from fish-producing RAS units is then piped into intensive shrimp aquaculture ponds, then to IMTA ponds containing a variety of species, before being transferred to salt fields, which produce first brine shrimp then salt.

"It's a new idea in China. Some companies have already trialled this, but not yet very many," said Prof Fang. In the process the phosphorous and nitrogen levels in the wastewater are reduced by 31 percent and 76 percent respectively before they reach the final stage, he added.

According to Prof Fang, promising candidates for the IMTA element of these systems included Gammarus – which could eat the seaweed and feed the shrimp – and sea cucumber, which could feed off the detritus.

"In China the government control the sea, the environment, very strictly. So, if the nutrients get too high, your culture will be stopped. So, in that way, we continue to use the combination of the different IMTA," he concluded.

Source: https://thefishsite.com/articles/lessons-from-china-the-future-of-imta?utm_medium=email&utm_campaign=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022&utm_content=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022+CID_9fba02dabe70088f5bd2d272fbd37b80&utm_source=Email%20marketing%20software&utm_term=Lessons%20from%20China%20the%20future%20of%20IMTA

EUROPE'S FIRST MARKET-READY CELL-CULTURED SEAFOOD

Bluu Seafood, the lab-cultivated seafood startup, claims to be the first company in Europe to have produced market-ready products made from cultivated fish cells. Their fish fingers and fish balls contain cultivated fish cells as the main ingredient and, according to the startup, “have been enriched with plant proteins to optimise cooking behaviour and mouthfeel”. The products have reached market readiness and will soon enter the regulatory approval process. Bluu Seafood targets initial approval and market launch in Singapore by the end of 2023, as the regulatory process there is already well-defined. The company will also apply for approval in the US, the UK and the EU.

In addition to fish balls and fish fingers, Bluu Seafood has also developed first prototypes of more complex products such as fillets and sashimi. The company's products are made using animal serum- free growth media and are based on proprietary, non-GMO trout and salmon cell lines.

Founder and CEO Dr Sebastian Rakers explained in a press release: "With the completion of our first products, we can demonstrate visible and edible results after less than two years of operational work. This officially makes us the first company in Europe to produce cultivated fish. We are now working closely with regulatory agencies to clear the way for market launch and are using the time to focus on scaling." Bluu

Seafood combines cell and food technology to grow a variety of sustainable, tasty seafood products directly from animal cells without compromising animal welfare and with a significantly smaller environmental footprint than conventional fishing.

"Conventional seafood production has reached its limits as more than 90 percent of edible fish stocks are exploited to maximum levels, which poses a serious threat to marine ecosystems. With Bluu Seafood, we can make an important contribution to the supply of animal protein that allows us to manage our oceans in a way that conserves resources and hopefully also promotes biodiversity in this habitat that is so important to all of us," Rakers emphasised.

Source: https://thefishsite.com/articles/bluu-claims-europes-first-market-ready-cell-cultured-seafood?utm_medium=email&utm_campaign=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022&utm_content=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022+CID_9fba02dabe70088f5bd2d272fbd37b80&utm_source=Email%20marketing%20software&utm_term=Bluu%20claims%20Europes%20first%20market-ready%20cell-cultured%20seafood

Dutch seaweed farmers boast first offshore mechanical harvest

Netherlands-based North Sea Farmers says it has completed the world's first mechanical harvest of an offshore seaweed farm, marking an important milestone in the development of Europe's seaweed industry. The site is located some 12 km off the Dutch coast. North Sea Farmers has been growing kelp on netting hanging below a 50-metre plastic tube that was floating on the water's surface and held in place by buoys and two anchors on the sea floor.

According to the BBC, North Sea Farmers converted a fishing boat into a mechanical harvester. The boat positioned itself alongside the plastic tube and an 8-metre tall, electric-powered cutting arm moved into the water. It pulled up the tubing and sliced the long strands of seaweed from the 2-metre in width net. The seaweed was then automatically bagged and dropped onto the deck.

Seaweed lines under water

The Dutch government has proposed setting aside 400 sq km of its territorial waters in the North Sea for large-scale seaweed cultivation. © Harald Bjorgvin, Ocean Rainforest

The seaweed industry is still dominated by China and Indonesia, but Europe is hoping to capitalise on its seaweed farming potential. In 2019, Europe produced 287,033 tonnes of seaweed – around 0.8 percent of the global total. However, unlike their more established counterparts in Asia, Europe's seaweed firms harvest wild stocks. Many policymakers are hoping to change this and start farming different macroalgae species at a significant scale.

In addition to financial support from the EU (€273 million last year, with more funding expected in the future), the Dutch government has proposed setting aside 400 sq km of its territorial waters in the North Sea for large-scale seaweed cultivation. Though the move has been heralded as a potential climate resilience solution, some researchers and environmental activists aren't convinced. Marc-Philippe Buckhout from Seas At Risk, a coalition of ocean protection organisations told the BBC that he fears that seaweed has become the new green hype. A seaweed farming boom could come with potentially negative repercussions, such as crowding out other sea organisms.

"Large scale farms might be the industry's preferred way forward," he says, "but we would definitely favour smaller operations that are set in the sort of carrying capacity of the area that they're situated in."

Farmed kelp

There's a risk that farming seaweed at scale could cause phytoplankton populations to crash © GreenWave Reinier Nauta, a specialist seaweed researcher at Wageningen University in the Netherlands, shares these concerns. "One of the most important questions is the impact of algae cultivation on the nutrient balance of the sea," he explains. There's a risk that farming seaweed at scale could cause phytoplankton populations to crash. Since phytoplankton are the building blocks of the marine food chain, a decline in these organisms could be disastrous for fish, seals and porpoises further up the food chain.

Eef Brouwers, North Sea Farmers' manager for farming and technology admits that to fully determine the environmental impact of seaweed aquaculture, there will have to be much larger test farms. "We need to get to a large scale first to be able to figure out what's going on," he says.

Source: https://thefishsite.com/articles/dutch-seaweed-farmers-boast-first-offshore-mechanical-harvest?utm_medium=email&utm_campaign=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022&utm_content=Denmarks%20DIY%20aquaculture%20craze%20-%2010th%20August%202022+CID_9fba02dabe70088f5bd2d272fbd37b80&utm_source=Email%20marketing%20software&utm_term=Dutch%20seaweed%20farmers%20boast%20first%20offshore%20mechanical%20harvest

10 projects get UN funding to pursue seafood sustainability projects

The United Nations Development Program (UNDP) has funded a second cohort of 10 ocean innovators with the hop of bringing economic benefits to small-island developing states and least-developed countries.

UNDP's Ocean Innovation Challenge is part of UNDP's Ocean Promise to deliver at least 100 ocean innovations by 2030. OIC provides up to USD 250,000 (EUR 250,000) over two years to develop innovative solutions that are transformational, scalable, and replicable. Projects are chosen based on their potential tap into new technologies and approaches to end overfishing and illegal, unreported, and unregulated (IUU) fishing, contributing to the U.N.'s Sustainable Development Goal 14.

- Surrey Space Centre is using automated space-based maritime surveillance to detect "dark" ships involved in IUU fishing.
- WWF Peru will scale up the use of "TrazApp" a traceability system, to improve illegal fishing detection andtransparent fisheries management.
- ODI is focused on distant-water fishing, which is often connected to IUU and has been documented to exhaust fish stocks, particularly in the waters of low-income countries. ODI will visualize, define, and investigate the scale, form, and behavior of international and national DWF fleets within the exclusive economic zones (EEZ) of developing nations.
- SafetyNet Technologies will test effectiveness of bycatch reduction technologies in an Ecuadorian nearshore gillnet fishery.
- The MarViVa Foundation is partnering with multiple Costa Rican groups to consolidate innovative best practices in longline pelagic fisheries to reduce bycatch and capture of vulnerable species in Pacific EEZs.
- SmartFish Recate de Valor AC's value rescue model links small-scale cooperatives that adopt or maintain sustainable fishing practices to better-paying markets that value premium quality seafood.
- The international Pole and Line Foundation (IPNLF) Maldives is developing an exclusive digital market platform for women of the Maldives to let them account for their own production and sales data, receive payments directly with no middleman, and conduct final transactions online to build credit histories and access financial tools.
- The Sustainable Fisheries Partnership is fostering universal fishery identifiers as an integral part of fisheries and seafood business operations. The outcome will be a public database of fishery IDs to improve fisheries management through a more transparent flow of information.
- Yayasan IPNLF Indonesia aims to address issues in Indonesia of harvest loss due to inefficient supply chains, lack of infrastructure, and other inadequate systems. The innovation will deploy off-the-grid, solar-powered ice-making machines in remote fishing communities.
- The University of Exeter will develop a novel genetic tool to contribute to the critical sustainable management of wild stocks and stock enhancement programs. As well as work directly with fishers to transfer the attest global grow-out aquaculture technology and co-design small-scale grow-out operations for Caribbean spiny lobster.

Haoliang Xu, the director of UNDP's Bureau for Policy and Program Support, said in a statement.

Source: https://www.seafoodsource.com/news/supply-trade/undp-launches-second-cohort-of-10-ocean-innovators-to-help-sids-and-ldc

According to a report produced at the 2022 U.N. Ocean Conference, there are around 60 million people employed part- or full -time in small-scale fisheries, with around 21 percent being women. Around 600 million livelihoods rely on fisheries and aquaculture, showing "a significant need for innovations to improve fisheries management and enforcements of strict compliance to sustainability."

In recognition of the significant role of small-scale fisheries, fish farmers, and the seafood sector, 2022 was declared by the United National General Assembly, the International Year of Artisanal Fisheries and Aquaculture.

"Small-scale fishers don't have the latest technology, much-needed finance, and access to international markets. UNDP aims to address this gap by identifying innovative approaches to ocean restoration and protection – helping to boost livelihoods and advance the blue economy," U.N. Assistant Secretary General Haoliang Xu, the director of UNDP's Bureau for Policy and Program Support, said in a statement.

Source: https://www.seafoodsource.com/news/supply-trade/undp-launches-second-cohort-of-10-ocean-innovators-to-help-sids-and-ldc

International food animal solutions company FAI Farms (FAI)

New York, USA. (Dec. 12, 2022) – international food animal solutions company FAI Farms (FAI) has launched an online application for fish farmers around the world in an effort to improve welfare and profitability, beginning with tilapia farms. The company is now seeking partners in the hatchery, farming and processing sectors.

Working with scientists and farmers in Brazil, Thailand and China, FAI has developed a farmer-led bottom-up approach to improve fish welfare and profitability. FAI's free to use Tilapia Welfare App operationalizes scientifically validated welfare indicators for health, environment, behaviour and nutrition. This allows farmers' own observations to help determine what good welfare for tilapia looks like.

The Tilapia Welfare App integrates well-established animal welfare science into farmers' daily routines. The app monitors progress, identifies improvement opportunities and provides real-time insight to users, supported by online training in multiple languages.

"We are now looking for partners – farmers, production companies, hatcheries and processors – who want to trial the app and start assessing their fish in order to improve welfare, production outcomes and profitability. Our experience is that assessments kickstart a positive spiral of improvements," said Murilo Quintiliano, FAI Director. Through real-time feedback the Tilapia Welfare App helps tilapia farmers achieve win-win improvements for the benefit of farmers and animals alike. It is designed to be applied by farmers at the hatchery, farm and slaughter stages in any part of the world.

The mobile app can be used as a farmer self-assessment, or as a second- or third-party assessment tool, and results can be shared with customers and stakeholders, including certification bodies. The app monitors progress, identifies improvement opportunities and provides real-time insight to users, supported by the free e-learning suite.

To learn more, and to sign-up to trial the app, visit mytilapia.farm

Contact:

Øistein Thorsen
Oistein.thorsen@faifarms.com
+1 347 330 9926

More Than 100,000 People Die Annually Across Global Fishing Sector, New Research Shows

More than 100,000 fishing-related deaths occur each year, a new study finds. Nearly 300 fishers die each day—a much higher estimate than all previous assessments—according to research from the FISH Safety Foundation (FSF) commissioned by The Pew Charitable Trusts. The significant death toll disproportionately affects low-income fishers—including children forced into labor—and is predominantly driven by dangerous working conditions and unsafe vessels.

The FSF identified several factors responsible for fisher mortality, including poverty; geopolitical conflict; overfishing; illegal, unreported and unregulated (IUU) fishing; and climate change. IUU is a significant driver, particularly as the demand for fish protein increases globally. Industrial illegal operators cut corners and ignore safety rules while contributing to the overexploitation of highly profitable catch. This in turn drives what has been identified as "IUU by necessity," in which small-scale, artisanal fishers are driven to break rules or take part in unregulated, dangerous activities as it becomes more difficult to find fish. These conditions are exacerbated by climate change and the changing distribution of fish stocks.

"While fishing can be inherently risky, the harsh reality is that many of these deaths were and are avoidable. With 3 billion people reliant on seafood and the demand expected to rise, stronger policies are urgently needed to keep fishers safe, including ones that address the true drivers of these deaths," said Peter Horn, a project director with Pew's international fisheries project, which is focused on ending and preventing illegal fishing.

Eric Holliday, chief executive of FSF, said, "It has been widely speculated that fisher mortality estimates have undercounted and hidden the danger of fishing. Our analysis is the first of its kind and conclusively shows that a lack of transparency in the fishing industry endangers lives by obscuring the full picture of what occurs on vessels or at fishing grounds, making it difficult for governments to set effective policies to improve safety. While we may never be able to pinpoint an exact number of fisher deaths, this should serve as a wake-up call to governments, telling them that in order to save lives, urgent action—informed by better reporting and sharing of mortality data—is needed."

By reviewing publicly available data and by cross-referencing it with investigative journalism and news articles, social media, and private communications with government officials and others, the study authors were able to provide the most complete picture to date of the number of fishing-related fatalities worldwide.

But even with all these available tools, data gaps remain, and the total number is nearly impossible to quantify. Insufficient and inaccurate data has made it difficult for decision makers to implement necessary policy changes that ensure the safety of industrial and subsistence fishers at international, state and local levels.

Based on the study results, Pew urges action on multiple fronts. Domestically, more needs to be done to implement fisher safety measures and address key drivers. Given the disproportionate levels of fatality in low-income communities, financial support and capacity building are urgently needed. Internationally, improved data collection, transparency and information-sharing efforts will help governing bodies better understand the problems fishers face, more accurately quantify additional risks presented by IUU fishing and adopt policies for stronger vessel safety measures.

There are also existing regulatory frameworks available that are designed to stop illegal fishing and protect fishers. Specifically, countries should ratify and implement the Cape Town Agreement, adopted by the International Maritime Organization in 2012, which sets safety standards for the construction and design of fishing vessels; implement the FAO Agreement on Port State Measures, which works to prevent illegally caught fish from entering the seafood supply chain; and continue implementation of the 2007 ILO Work in Fishing Convention C188, which sets standards for living conditions onboard vessels at sea. Member States of regional fishery management organizations should also set clear policies that strengthen efforts to fight IUU fishing and overfishing.

"Fortunately, there are a number of tools available that can help stop industrial IUU and overfishing and improve safety concerns in one of the world's most dangerous professions," Horn added. "While not addressing all the issues, they clearly demonstrate intent to tackle this problem. International authorities must also prioritize counting these deaths. Only with a clearer picture of what is happening on the water can officials know when—and where—stronger action is needed. This study should be a clarion call to international authorities, national governments and fisheries managers around the globe, to be accountable for addressing their piece of the problem. Fishers should no longer be dying in the dark, and governments can no longer ignore the severe human injustices and inequities resulting from insufficient action on IUU fishing, overfishing and climate change."

Source: https://www.prnewswire.com/il/news-releases/more-than-100-000-people-die-annually-across-global-fishing-sector-new-research-shows-301666895.html

ADB and ABIS sign $16 million agreement to support fish farming in India

The Asian Development Bank (ADB) and ABIS Exports India Private Limited (ABIS) entered into an agreement to subscribe to non-convertible debentures for $16 million (in equivalent Indian rupee), to enhance food security in India by supporting the construction of a micro fish feed plant and by training up to 6,000 farmers in climate-resilient fish farming practices as well as financial literacy.

Specialized micro fish feed is a new product in the Indian market and is smaller in size than standard feed, making it suitable for more species of fish. It also floats on the water surface for longer, enabling the feed to be completely consumed by the fish rather than sink and be wasted while also increasing feed efficiency and reducing water pollution.

"Fisheries are crucial to India's nutrition and food security and provide income and jobs for more than 28 million fish farmers across the country's aquaculture value chain," said ADB's Private Sector Operations Department Senior Investment Specialist Tushna Dora. "Our assistance to ABIS delivers much-needed innovation and efficiencies in feed inputs, which will support increased production while improving rural livelihoods through training of farmers and targeted investments in local manufacturing."

As a sustainability-linked and blue-debt facility, this financing signifies ADB's and ABIS's commitment to climate change mitigation and adaptation, water conservation, ocean health, and the promotion of farmers' capacity building. This is ADB's first private sector sustainability-linked financing, with adjustments in pricing when pre-defined sustainability targets are met. Targets include emissions reductions, water conservation, and farmer training. The sustainability-linked financing received an independent second-party opinion, consistent with industry principles.

Training in climate-smart fish farming practices and financial literacy through a $500,000 technical assistance (TA) grant will enhance the climate resilience of fish farmers. The TA will also address gaps in access faced by women farmers to aquacultural information and training.

"We are delighted to start this partnership with ADB. ADB's support is a vote of confidence for ABIS and validates our commitment to reduce carbon emissions, improve water conservation, and provide increased farmer extension services," said ABIS Export Managing Director Bahadur Ali. "At the core of our mission are the farmers and their livelihoods coupled with achieving our highly ambitious environmental, social, and governance targets."

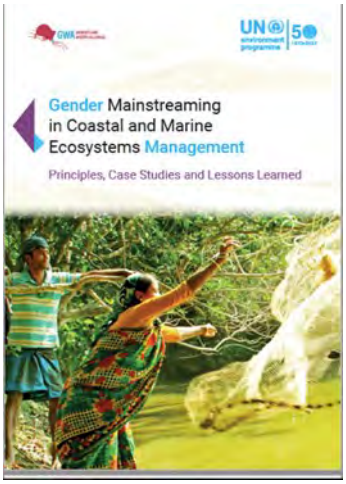
Food security is a priority for ADB, which recently announced plans to provide at least $14 billion over 2022–2025 to ease a worsening food crisis in Asia and the Pacific, while improving long-term food security by strengthening food systems against the impacts of climate change and biodiversity loss. Direct support to farmers and agribusinesses in the region is key to this initiative, with an expected $3.5 billion from ADB and $5 billion in cofinancing to be provided to the private sector. The debt facility to ABIS is part of this direct support to the private sector.

ABIS is the flagship operating company of the Indian Broiler group, which also has operations in poultry, poultry-feed, dairy, edible oil, and hospitality. All the group's products are sold under the ABIS brand name, with the company active in 26 states in India. Together with its affiliates, it has over 8,000 employees. ABIS is committed to reducing carbon emissions, improving water conservation, and providing increased farmer extension services.

Source: https://www.devdiscourse.com/article/business/2272850-arogya-world-announces-2022-healthy-workplaces

NEW PUBLICATIONS

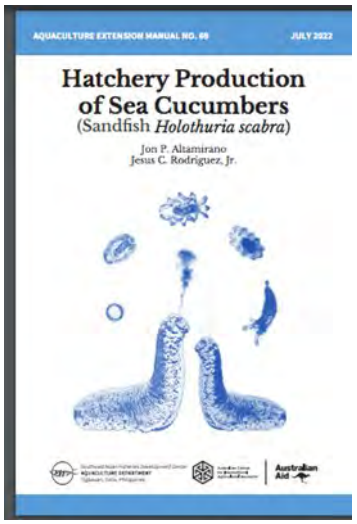
Gender Mainstreaming in Coastal and Marine Ecosystems Management: Principles, Case studies and Lessons learned



This publication of the UN Environment Programme (UNEP) and Gender and Water Alliance (GWA) released on World Oceans Day - 8th June 2022, seeks to explore and document the different ways men and women in coastal areas and small island developing states use and manage coastal ecosystems and their services, through 10 case studies from Fiji, Micronesia, Bangladesh, India, Indonesia, Kenya, Zanzibar, The Gambia and Ghana, Mexico and Barbados.

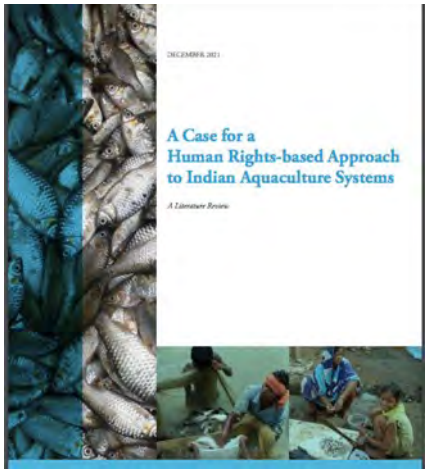
The report can be downloaded from: https://www.unep.org/resources/report/gender-mainstreaming-coastal-and-marine-ecosystems-management-principles-case

Hatchery Production of Sea Cucumbers



The manual covers consolidated methods, practical protocols and good practices in sea cucumber breeding based on research and development undertaken by SEAFDEC Aquaculture Department. The manual covers Broodstock selection, collection and conditioning; Natural food (microalgae) cultivation; Spawning stimulation and fertilized eggs management; Larval rearing and settlement; and Harvesting of early juveniles, packing and transport.

The manual can be downloaded from: https://repository.seafdec.org.ph/bitstream/handle/10862/6336/6336-AltamiranoJP2022-AEM69.pdf?sequence=2&isAllowed=y

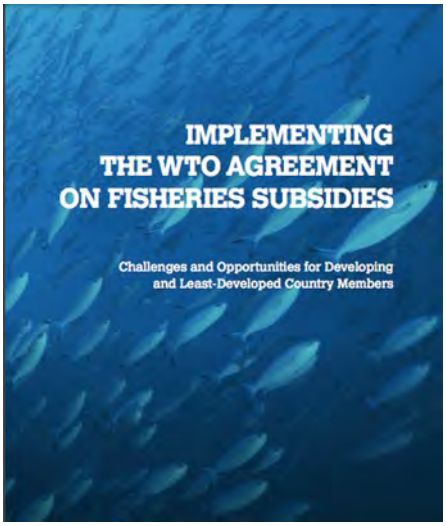


A Case for a Human Rights-based Approach to Indian Aquaculture Systems

This publication is outcome of a national workshop on the SSF Guidelines and Women in Fisheries organised by the International Collective in Support of Fishworkers (ICSF) Trust. With gender equality and equity being one of the seven pillars of the United Nations International Year of Artisanal Fisheries and Aquaculture 2022 (IYAFA), the national workshop facilitated in building a platform of women in fisheries to promote gender equality and equity, to recognize livelihood space and to improve the participation of women in decision making processes through various discussions.

This 87 page report can be downloaded from: https://www.icsf.net/wp-content/uploads/2022/05/930.ICSF219.pdf

Implementing the WTO Agreement on Fisheries Subsidies: Challenges and Opportunities for Developing and Least-Developed Country Members



The WTO Agreement on Fisheries Subsidies, adopted at the 12th Ministerial Conference, marks a major step forward for ocean sustainability by prohibiting harmful fisheries subsidies, which are a key factor in the widespread depredation of the world's fish stocks. Implementing the new disciplines will present challenges for many developing country members, especially least-developed countries. This report prepared by the World Trade Organisation examines existing bilateral and multilateral assistance in support of sustainable fisheries, including how this may help countries meet obligations under the new Agreement.

The document can be downloaded from: https://www.wto.org/english/res_e/booksp_e/implementfishagreement22_e.pdf

Documentary Film "Unseen Faces Unheard Voices: Women and Aquaculture"

The documentary film *Unseen Faces, Unheard Voices* showcase the impacts of the boom in aquaculture on women in the floodplain regions of the Indian coastal state of West Bengal. Shot in the remote villages, the film makes a pitch to policy makers, researchers and institutions to adopt a gender inclusive and a precautionary approach to actualise sustainable development in the sector.

The 21 minute documentary film can be downloaded from: https://www.icsf.net/resou21rces/unseen-faces-unheard-voices-women-and-aquaculture-purba-medinipur-west-bengal/?utm_source=mailpoet&utm_medium=email&utm_campaign=publication-news-alert_20

Human Development Report 2021-2022

The latest flagship UN report on human development titled "Uncertain times, Uncertain lives: Shaping our future in a transforming world", warns that multiple crises are halting progress on human development, which is going backwards in the overwhelming majority of countries. Human development has fallen back to its 2016 levels, reversing much of the progress towards the Sustainable Development Goals which make up the 2030 Agenda, the UN's blueprint for a fairer future for people and the planet.

Full report can be downloaded from: https://news.un.org/en/story/2022/09/1126121?utm_source=UN+News+-+Newsletter&utm_campaign=ad9069decd-EMAIL_CAMPAIGN_2022_09_09_12_46&utm_medium=email&utm_term=0_fdbf1af606-ad9069decd-107475426

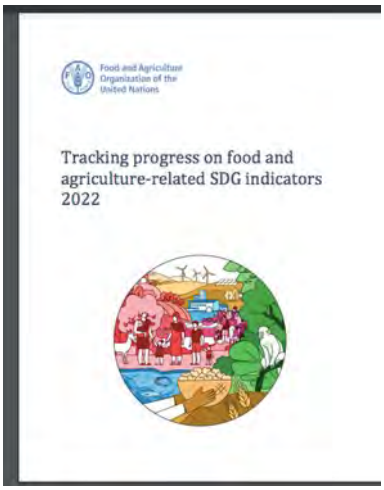
Blue Transformation - Road Map 2022-2030: A vision for FAO's work on aquatic food systems

This roadmap for Blue Transformation aligns with the 2021 Declaration for Sustainable Fisheries and Aquaculture of the Committee on Fisheries (COFI) of the Food and Agriculture Organization of the United Nations (FAO) and FAO's Strategic Framework 2022–2031. It focuses on the elements that would maximize the contribution of aquatic food systems to the Sustainable Development Goals (SDGs).

The 40 page document can be downloaded from: https://www.fao.org/3/cc0459en/cc0459en.pdf

Tracking Progress on Food and Agriculture-related SDG Indicators 2022

The report titled, 'Tracking Progress on Food and Agriculture-related SDG Indicators 2022, launched in the margins of the 77th session of the UN General Assembly (UNGA) provides detailed analyses and trends on across eight SDGs: 1 (no poverty), 2 (zero hunger), 5 (gender equality), 6 (clean water and sanitation), 10 (reduced inequalities), 12 (responsible consumption and production), 14 (life below water), and 15 (life on land). The report highlights areas of progress and areas where further effort is needed.

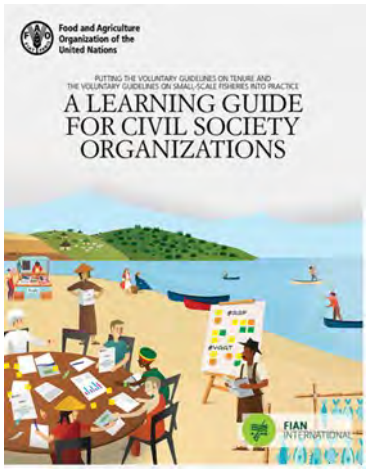


The 179 page report can be downloaded from: https://www.fao.org/3/cc1403en/cc1403en.pdf

Baffling Shades of Blu: Addressing the impacts of the Blue Economy on small-scale fisheries in Latin America

The report can be downloaded from: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.icsf.net/wp-content/uploads/2022/10/930.ICSF224_Latin_America_Blue_Economy.pdf

A Learning Guide for Civil Society Organisations



The Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security (hereinafter VGGT) and the Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication (hereinafter SSF Guidelines) are two internationally agreed instruments that can be used by different actors to improve the governance of tenure of land, fisheries and forests as well as to improve the socioeconomic conditions of small-scale fishers and fishworkers, with the aim to contribute to the progressive realization of the human right to food.

The 155 page report can be downloaded from: https://www.fao.org/3/cc0295en/cc0295en.pdf

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.

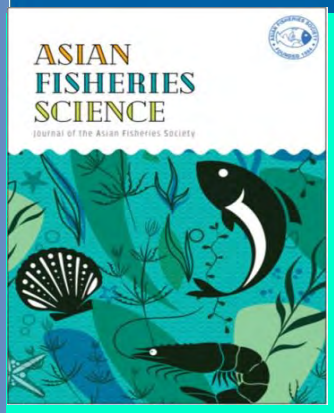
Membership is open for all!

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 3) : ASIAN FISHERIES SCIENCE JOURNAL

Asian Fisheries Science



Latest Articles

Asian Fisheries Science 35 (3) 2022

E-ISSN: 2073-3720

Transcriptome Sequencing and Analysis of Male Fourfinger Threadfin, Eleutheronema tetradactylum (Shaw, 1804)

V. Vinodha, A. Kalarani, R. Moses Inbaraj

https://doi.org/10.33997/j.afs.2022.35.3.001

Fourfinger threadfin, Eleutheronema tetradactylum, is one of the country's most popular table fish species in India. The present study attempted to understand the expression of genes that facilitate sex determination, sex differentiation and gonadal maturation. From 82,072 transcripts, 50,943 were predicted by comparing them to proteins. A total of 41 genes involved in sex determination and sex differentiation, spermatogenesis, steroid receptors in testis, steroidogenesis and gonadotropin-releasing hormone (GnRH) regulation are reported for the first time in E. tetradactylum.

Diet Supplemented With Purslane, Portulaca oleracea Linnaeus, 1753 Resolves Bisphenol A Impact on North African Catfish, Clarias gariepinus (Burchell, 1822)

Hoda Mohamed Lotfy Abdallah, Sahar Nasr Mohamedy, Abdallah Said Hamed, Mohamed Ahmed Bakry, Magda Nemat Abdelal, Soad Mekawy

https://doi.org/10.33997/j.afs.2022.35.3.002

Bisphenol A (BPA) is one of the world's most widely used synthetic compounds. Since BPA is a suspected xenoestrogen and oxidative stressful agent, its potential hazardous impacts were evaluated on the health and the reproductive status of the male North African catfish, Clarias gariepinus. Ninety mature male fish were divided into six groups; Group 1 & 4 fed basal diet (control), Group 2 & 5 diets supplemented with 3% purslane, Portulaca oleracea powder, and Group 3 & 6 diets supplemented with 5% purslane powder. Group 4, Group 5, and Group 6 were exposed to 50 µg.L-1 BPA for 14 days. Group 4, exposed to 50 µg.L-1 BPA, showed a significant increase in the luteinising hormone, 17β estradiol, and malondialdehyde levels, with a decrease in the testosterone, superoxide dismutase, and catalase concentrations. Simultaneously, there were elevated liver and kidney markers with severe degenerative changes in the testes, liver, and kidney. Dietary supplementation of purslane powder returned the measured parameters to their normal values. Interestingly, purslane in the non-BPA treated groups raised the testosterone and 17β estradiol over the control values. It is suggested that purslane could be used in aquaculture and cultivated near polluted water areas.

Global Review and Analysis of the Presence of Microplastics in Fish
Golam Kibria
https://doi.org/10.33997/j.afs.2022.35.3.003

This review provides an account of fish species contaminated with microplastics (MPs) across the globe. A total of 887 fish species were found contaminated with MPs based on MPs in the gastrointestinal tract/GI. The most MPs contaminated fish species found were marine and demersal species. Globally 45% of fish ingested MPs with an average concentration of 5.93 MPs particles per fish species. China had the highest number of fish species contaminated with MPs. Because of MPs contamination, seafood fisheries, and the livelihoods of people associated with fishing, aquaculture, and seafood business, can be threatened. It may also increase health risks to seafood fish consumers since there is a probability that high risks pollutants adsorbed in MPs can be transferred to humans via the food chain.

Report of a Fish Kill Due to a Dinoflagellate Bloom in Perak and Penang, Malaysia
Roziawati Mohd Razali, Nurin Izzati Mustapa, Wan Norhana Md. Noordin, Masazurah A. Rahim, Kieng Soon Hii, Po Teen Lim, Chui Pin Leaw, Harman Muhd-Farouk, Ku Kassim Ku Yaacob
https://doi.org/10.33997/j.afs.2022.35.3.004

A fish kill incident was reported at the marine fish culture areas north of Perak and south of Penang, Malaysia. Seawater samples showed dominant microalga Margalefidinium fulvescens. The physical parameters of seawater from affected sites were within the Malaysian Marine Water Quality Standard (MMWQS) for aquaculture. However, slightly higher levels of nitrate, phosphate and ammonia were noted at several stations. Although the exact cause of the bloom was undecided, it could be due to nutrient discharge along the coasts, which also concurred with the transition phase of the northeast to the southwest monsoon.

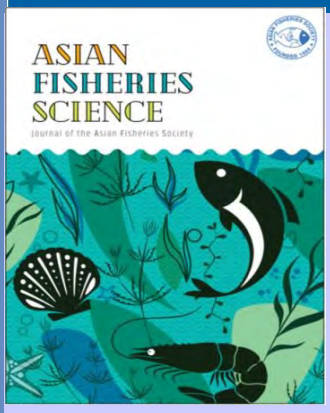
Effects of Black Soldier Fly, Hermetia illucens, Larvae Incorporated Feed on Histomorphology, Gut Microbiota and Blood Chemistry of Cultured Fishes: A Review
Maniyangamage Kasun Chathuranga Priyadarshana, Chaminda Niroshan Walpita, Hettipala Arachchige Darshanee Ruwandeepika, Manjula Priyantha Sumith Magamage
https://doi.org/10.33997/j.afs.2022.35.3.005

The black soldier fly, Hermetia illucens, larva, has been identified as a reliable protein source for fish meal replacement. Many studies have revealed the growth and microbiological impacts of H. illucens larvae as a protein source in finfish culture. This study reviews the effects on histopathology, haematology and gut-microbial properties of finfish fed diet incorporated with H. illucens larvae. A review of different finfish species tested up to 100% inclusion of H. illucens larvae meal in their diets revealed mixed results in blood chemistry, gut microbiota, and gut histology. Most studies stated common positive effects such as reduced plasma cholesterol, increased microbial diversity, and increased intestinal absorption up to 50% incorporation level. Despite the possibility of incorporating H. illucens larvae meal without any negative impacts on some carnivore fish species, most studies disclosed adverse effects beyond 50% fish meal replacement due to high chitin and crude fat levels in H. illucens larval diets.

New Techniques for Underwater Video Photography of Line Fishing and Their Application in Shark Depredation Studies
Peter Graham Coulson, Nicholas D.C. Jarvis, Gary Jackson
https://doi.org/10.33997/j.afs.2022.35.3.006

There is an increasing need to understand the interaction of marine fauna with line fishing, particularly in regions where shark depredation has become an increasing issue. The dynamic nature of the fishing requires underwater filming techniques that can move with the fishing activity and capture high-resolution footage. In the case of shark depredation, the development of deterrent devices speciidentification of fish and shark species and recorded any avoidance behaviours of sharks in response to the fically designed for use while line fishing will require underwater footage. Two new and inexpensive mounting systems were developed, enabling a range of "action" cameras to be attached to fishing lines to capture underwater footage while line fishing. Using these mounting systems with GoProTM cameras, high-resolution video was obtained during line fishing trials in which the effectiveness of shark deterrents was investigated. The video footage enabled the presence of deterrents.

SYNOPSIS OF PAPERS VOLUME 35 (ISSUE 4) : ASIAN FISHERIES SCIENCE JOURNAL



Latest Articles

Asian Fisheries Science 35 (4) 2022

E-ISSN: 2073-3720

Effects of Artificial Shelters on Survival Rates and Growth Performances of Scalloped Spiny Lobster, Panulirus homarus (Linnaeus, 1758), Reared in Floating-Net Cages

MOCHAMAD AMIRI, LAILA MUSDALIFAH, MUHAMAD AMIN

https://doi.org/10.33997/j.afs.2022.35.4.001

The present study aimed to assess the effects of artificial shelters on the survival rate and growth performances of the scalloped spiny lobster, Panulirus homarus. Wild-caught puerulus stage scalloped spiny lobsters were randomly allocated into floating cages provided with four different shelters; i) polyvinyl chloride (PVC), ii) nylon net, iii) cement sack and iv) no shelter as a control and cultured for 10 weeks to measure mortality and growth. Artificial shelters significantly affected lobsters' survival rate and growth performances. The survival rate of lobster in the control group observed on week 2 was only 62%, while the survival rate in all treatments (with shelter) was 76 to 82%. After 10 weeks culture period, the mean survival rate was only 28% in control, significantly lower than all treatments. Similarly, the absolute growth and specific growth rate of lobsters reared with the artificial shelters were significantly better than that of lobsters in the control group. The best growth was from lobster reared with a nylon net, followed by cement sack and PVC pipe.

Gill Monogeneans of African Tetra, Brycinus kingsleyae (Günther, 1896), From the Nyong River: Biotope, Distribution and Site Selection

Ivan Ndongo, Michel Thierry Onana Ngono, Jeannette Tombi

https://doi.org/10.33997/j.afs.2022.35.4.002

The African tetra, Brycinus kingsleyae, is a commercial fish species in artisanal fisheries in Southern Cameroon. Although the gill monogeneans of this fish species have been described, no ecological research has been done on this component community. The analysis of their gill filament number indicated that the gill system of B. kingsleyae is heterogeneous because this factor varies with the length of the fish and depends on the gill arch. The studied guild consisted only of core species: Annulotrema combesi, A. maillardi, A. nyongensis, A. bouixi, and Characidotrema regia. The number of gill filaments and the parasitic load increased with the fish length, indicating that larger hosts provide a greater diversity of niches for parasites. Monogenean species exhibit various occupation patterns of gill arches, sectors, zones and gender differences in parasitological indices. This study reveals that the host length and sex, filament number, gill arch, sector and zone are largely responsible for structuring the studied component community.

Spatiotemporal Profile of Skeletal Development in Bonylip Barb, Osteochilus vittatus (Valenciennes, 1842)

Saila Rachma, Madihah Madihah, Sony Heru Sumarsono

https://doi.org/10.33997/j.afs.2022.35.4.003

In this study, the cartilage and bone formation in the larva and juvenile of the bonylip barb, Osteochilus vittatus, is described in detail for the first time. The cartilage and bone development were observed from 1 to 30 days post-hatching (dph) by alcian blue and alizarin red S staining. Freshly hatched fish larvae had not undergone either chondrification or ossification. The cartilage was observed at 1 dph, marked with Meckel's cartilage, ethmoid plate, and pectoral fin, as the pre-larva had a standard length (SL) of 5 mm. At 5 dph (SL of 5.6 ± 0.55 mm), 3 to 4 pairs of basidorsal and basiventral were observed. The cartilaginous development ended at 26 dph as the SL reached 14.3 ± 0.57 mm. The ossification started at 20 dph (SL of 9.24 ± 0.68 mm) and was marked with opercle and cleithrum. At 26 dph, as the post-larvae length 14.3 ± 0.57 mm, dentary, pterotic, and parasphenoid were ossified. Juvenile fish at 30 dph (SL of 21.2 ± 3.9 mm) showed completed ossification processes in the cranium and vertebrae.

Age and Growth of Nile Tilapia, Oreochromis niloticus (Linnaeus, 1758), From Koka Reservoir, Ethiopia

Kiyar Jemal, Degsera Aemro

https://doi.org/10.33997/j.afs.2022.35.4.004

The age and growth of Nile tilapia, Oreochromis niloticus, in Koka Reservoir, Ethiopia, were studied based on 981 sagittal otoliths. The age of fish was determined based on number of translucent zones counted in the otoliths. Seasonal records on the macrozones at the edge of otoliths and relative marginal increments suggested that two translucent macrozones associated with biannuli were formed each year, one from January to February, and another one from June to July. The observed ages of O. niloticus from Koka Reservoir ranged from 1 to 6.5 years. The von Bertalanffy growth parameters (sexes combined) were; asymptotic length (total length), $L\infty = 35.6$ cm, growth rate constant, $K = 0.37$ year-1, theoretical age at zero-length, $t0 = -0.42$ years and the growth performance length, $\varphi' = 2.67$. It could be concluded that the growth of O. niloticus in Koka Reservoir is within the range mentioned in Ethiopian lakes.

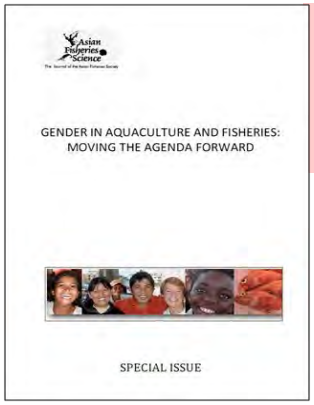
Population Genetic Structure of Silver Croakers, Pennahia argentata (Houttuyn, 1782), in the Gulf of Thailand Based on Cytochrome Oxidase Subunit I Gene Sequences

Verakiat Supmee, Juthamas Suppapan

https://doi.org/10.33997/j.afs.2022.35.4.005

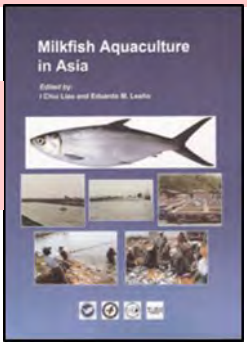
In the present study, silver croaker samples were collected along the coast of the Gulf of Thailand and analysed for genetic variation based on nucleotide sequences in the cytochrome oxidase subunit I gene (510 bp). Of these, 33 haplotypes were examined, and 21 were singleton haplotypes, indicating a historical pattern of large female effective population sizes (female reproductive success). An analysis of molecular variance (AMOVA) and pairwise FST analysis showed that the geographic barrier did not affect the genetic structure of the silver croakers in the Gulf of Thailand. The minimum spanning network and phylogenetic tree revealed that the silver croaker population in the Gulf of Thailand separated into two haplogroups. Various methods to examine demographic history showed that the silver croaker population in the Gulf of Thailand had expanded. This study's findings can guide the management of silver croaker populations in the Gulf of Thailand to conserve genetic diversity.

AFS PUBLICATION FOR SALE



AFS Member: USD15

Gender in Aquaculture and Fisheries: Moving the Agenda Forward
MERYL J WILLIAMS, MARILYN PORTER, POH SZE CHOO, KYOKO KUSAKABE, VEIKILA VUKI,

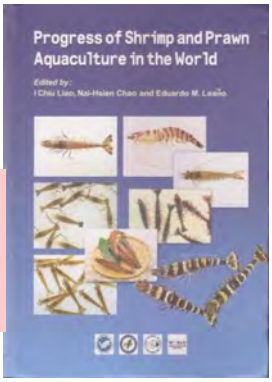


AFS Member: USD25

Milkfish Aquaculture in Asia

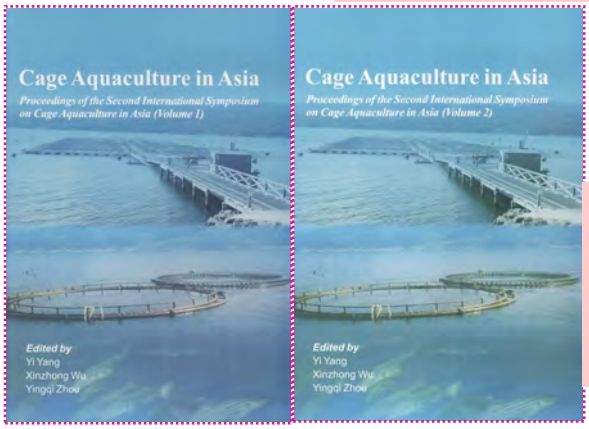
AFS Member: USD10

Integrated Technologies for Advanced Shrimp Production



AFS MEMBER: US$55

Progress Of Shrimp and Prawn Aquaculture in the world



AFS Member: USD70

Cage Aquaculture in Asia: Proceedings of the Second International Symposium on Cage Aquaculture in Asia (Volume 1 and Volume 2)