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ASIAN FISHERIES SOCIETY

e-Newsletter

MESSAGE FROM EDITOR

The world is going through difficult times, not seen in the last century with the havoc COVID-19 pandemic is creating. Besides economic, social and health concerns, it is also leading to food, nutritional and livelihood insecurity of populations especially in the developing world. The pandemic has impacted on the whole chain - from aquaculture/ fishing production to processing, transport, wholesale /retail marketing, employment and livelihoods. Fish being one of the cheap sources of animal protein in most low-income developing countries, is affecting the protein intake of populations. According to Global Fishing Watch, global industrial fishing activity declined by 6.5% by end of April 2020 as compared to corresponding period of the previous year which will impact the livelihood of millions of people involved in the sector. Fishers, both from marine and inland waters are facing problems in taking their produce to consumers due to lock downs/restrictions being implemented in many countries that affect the transport sector and slowing demand due to closure of markets, restaurants, etc. Due to slowing demand and lack of transport, aquaculture farmers are forced to maintain large quantities of fish in live condition which results in increased cost of production. Added to this, they are facing problems in accessing inputs such as seed, feed, medicines, ice, etc. Fish being the most internationally traded food commodity providing much needed foreign exchange to some of the developing countries and the lock downs/restrictions have resulted in decline in exports of fish and fish products and consequently production of high value species.

Women who constitute major work force in the sector, mostly involved in harvesting, processing and marketing are losing their livelihood which will have an impact on the household relations and children nutrition. Since the pandemic is going to continue for some time, research needs to be undertaken on how to minimise the impact on low-income households.

With the pandemic going to stay till vaccines are developed and made available to people – which is going to take some time, we need to learn how to live with the virus and keep ourselves safe.

M. V. Gupta

Inside this issue:

AFS PRESIDENT MESSAGE

Dear AFS Colleagues,

On New Year's Eve, we were looking forward to what Year 2020 brings. After six months, we all have experienced unprecedented changes in our lives. Not that we have not experienced calamities in the past that changed lives, but what COVID-19 pandemic has brought is grander in scale and the effects are wide-reaching and lasting to people's health, the economy, and the environment.

The COVID-19 pandemic is a health, economic, and social threat rolled into one. Countries imposed restrictions on people's mobility and work, and physical distancing to slow down the spread of the virus. In mitigating the health crisis, economies slowed down, and we learned that keeping distance means helping keep others safe. On the other hand, the terrestrial and marine ecosystems are recovering with reduced various human pressures. The contraction in economies with the accompanying positive effects in the environment is unprecedented because it is a deliberate policy action in response to the pandemic.

With restrictions in movement and work, we rediscover essentials in life and importance of food producers such as the fishers in making sure there is food on our table. The situation highlights the significance of oceans as a source of food, income, and livelihood. However, the restrictions have also affected the fisheries value chain, from catching to transporting the fish to the market.

While the restrictions that slowed down the economy have short-term beneficial effects to oceans, the long term effects may not be desirable. Businesses are closing. Workers are losing job. This situation may continue until this health crisis is over, which may happen still, next year. This will contribute to the further decline in the demand for seafood with many people not having purchasing power. Seafood demand is reeling from the closure of many restaurants and hotels, the slowdown in the tourism industry, and the restrictions faced by the export market. There are also reports of increased IUU fishing during the pandemic, taking advantage of time when the focus is on fighting the virus and so little time to fight IUU.

Can the effects of years of fishery destruction be repaired by months of ease in fishing pressure? The answer is no. It takes years. The rest period, however, demonstrates what less pressure on seas can bring. It also gives opportunity to introduce reforms or strengthen the implementation of policies that promote sustained reduction in fishing pressure. It is now, more than ever, that everyone must work together to ensure balance in fishery production and conservation. Ensuring sustainable fisheries and food and nutrition security is of prime importance especially that similar threats and disruptions are likely to happen in the future. Science, society, and policy must work together to promote and protect the rights of fishers and the future of the seas so we can also be protected.

The Asian Fisheries Society (AFS) is one with many others supporting initiatives for promoting sustainable fisheries and a more food-secure future for all of us.

The Asian Fisheries Society recognizes the difficulty that members experience in renewing their membership while restrictions are still being implemented in countries due to the COVID-19 pandemic. The 13th Council of the Asian Fisheries Society has resolved to waive the annual membership renewal dues of members (full and student) whose active membership expires this year 2020.

Stay Safe.

ALICE JOAN DE LA GENTE FERRER
President 13th AFS Council

NEWS FROM THE GENDER IN AQUACULTURE AND FISHERIES SECTION

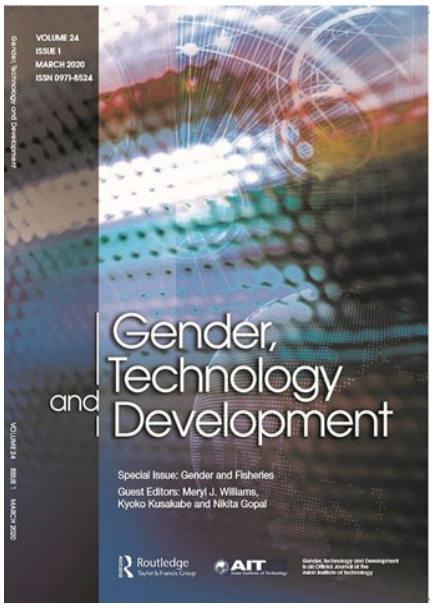
In the period of severe local and global disruptions, GAFS members have remained very active, mainly through virtual means. Many of our members have been prominent in webinars on gender and fisheries/aquaculture, and many, as teachers and researchers, have continued to deliver on their teaching commitments in very different online modes as they protect their students, partners and their families. We report here on five activities – the necessary postponement of GAF8 to a date to be advised, the publication of our final GAF7 Conference product, our survey of members' needs, how we are handling the COVID-19 disruption to the gender dialogues in seaweed farming project, and announcing the release of our second GAFS Newsletter.

On regular matters, GAFS sends out monthly e-mails called *Keeping Up to Date with GAF*, containing research updates and news items, and runs very active social media outreach via Facebook (https://www.facebook.com/AFS-Gender-in-Aquaculture-and-Fisheries-1811765552315 44/) and Twitter (@Genderaquafish). We welcome you to follow us online!

GAF8 – 8th Global conference on gender in aquaculture and fisheries

As we reported in the previous AFS e-Newsletter, this event was planned to take place on 6-9 April 2021 in Kochi, Kerala, India. The venue has not changed, but due to the COVID-19 global crisis, we are rescheduling the event and its format and will advise in due course the new arrangements. We will be taking into account the other AFS-related conference events and others outside AFS that are also being rescheduled.

Gender in fisheries special issue of gender, technology and development journal the final of our gaf7 products: special issue of *gender, technology and development* journal



In May 2020, the Special Issue of *Gender, Technology and Development* journal was released. "The new Special Issue of Gender, Technology and Development (GTD) [LINK] shows that fisheries and aquaculture are not monolithic and encompass a wide diversity with respect to regions and even within countries," said Professor Philippe Doneys, Co-Editor-in-Chief of GTD. Co-Editor-in-Chief, Professor Kyoko Kusakabe added that "strong evidence exists, however, that when women's work is made visible and valued, when they are able to speak up, be heard, make and influence choices, changes start to take place."

In the GTD Special Issue on Gender and Fisheries, seven papers and the guest editorial examine these issues. The papers are largely drawn from the many presented at the 7th Global Conference on Gender in Aquaculture and Fisheries (GAF7) on '*Expanding the Horizons of Women in Fisheries and Aquaculture*' [LINK] in 2018, co-organized by the Gender in Aquaculture and Fisheries Section of the Asian Fisheries Society, the Asian Institute of Technology and the Network of Aquaculture Centres in Asia Pacific.

The papers investigate questions about technology, innovation, organization and empowerment. In each paper, women's and men's roles, experiences, pressures and opportunities are examined from the perspectives of where they are located in particular fish value chains. See our story on the issue and its contents: https://www.genderaquafish.org/2020/05/26/latest-special-issue-of-gender-technology-development-examines-new-learnings-on-women-and-fisheries/

GAFS survey of members and interested networks need

GAFS Executive Committee has launched a survey of its members, the gender in aquaculture and fisheries (GAF) community, and those interested in gender fisheries and aquaculture. It would like to hear from individuals and organisations, including especially AFS members who may not yet be GAFS member, about what they would like to see from GAFS, including what types of actions and activities would motivate you in your work on GAF. The results of the survey will help the GAFS develop an agenda and priorities for its work in the coming years. Please tell us what you think!

Here is the link to the survey:

https://docs.google.com/forms/d/e/1FAIpQLScdDnQ2qJH0DxBvIaMjJ2j2yHXOnOIXTtYUL7o5-tqsUu7kZQ/viewform?usp=sf_link

Managing the Swedbio-gafs project *"dialogues in gender and coastal aquaculture: gender and the seaweed farming value chain"* in the period of covid-19

In the last e-Newsletter, we reported on the start of the SwedBio and GAFS project on gender dialogues in seaweed farming. Since then, our partners in the Indian Council of Agricultural Research (ICAR) through the Central Institute of Fisheries Technology and the Central Marine Fisheries Research Institute and the Kenyan Marine and Fisheries Research Institute conducted scoping studies in the field in Tamil Nadu, India, and coastal Kenya. These scoping exercises established good connections with women and women's groups and other stakeholders. After the massive disruption caused by global and local lockdowns from March onwards, however, the connections and the seaweed industry has been drastically disrupted. The project teams, therefore, have developed new approaches to maintain contacts and means of continuing the dialogues in a virtual manner when physical contact is heavily restricted, e.g., by voice, video and photographic means.

Group profiling at Tumbe, Kenya by Ms .Fridah Munyi. as observed during the project scoping mission. Photo: CMFRI

Women's labour in seaweed farming, Tamil Nadu, India, Photo: KMFRI

Announcing GAFS newsletter no. 2

We are pleased to release our GAFS Newsletter No. 2, full of interesting Section news and articles on events, projects and research. Do check it out online on our website! Link: https://www.genderaquafish.org/stories/

Keep in touch with GAF:

Website: https://www.genderaquafish.org/; https://www.genderequality.genderaquafish.org/
Facebook Page: https://www.facebook.com/AFS-Gender-in-Aquaculture-and-Fisheries-181176555231544/

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

In June 2019 we reported that we were planning to add more species, thanks to a new collaboration with the ICAR Central Marine Fisheries Research Institute of India (ICAR-CMFRI). To progress the collaboration, Meryl Williams met in Kochi at ICAR-CMFRI on 26 November 2019 in a meeting and video conference chaired by the Director Dr A. Gopalakrishnan. The video conference included senior experts at the Regional Centers at Mandapam Camp, Visakhapatnam and Vizhinjam Research Centres. The teams involved had been among those of ICAR-CMFRI that wrote the major 2017 book: "*Prioritized Species for Mariculture in India*" [Ref: Ranjan, R., Muktha, M., Ghosh, S., Gopalakrishnan, A., Gopakumar, G. and Joseph, I. (Eds.). 2017. *Prioritized Species for Mariculture in India*. ICAR-CMFRI, Kochi. 450 pp.]

At the November 2019 meeting, it was decided that the first step in bringing the key species profile information into AsiaPacific-FishWatch would be to commence with the biology profile pages for each of 3 species, namely Cobia (*Rachycentron canadum*), Indian Pompano (*Trachinotus mookalee*) and pink-ear seabream (*Lethrinus lentjan*),

Cobia, *Rachycentron canadum*. Source: Ranjan et al 2017

We look forward to reporting progress as this collaboration develops.

Social media: AsiaPacific-FishWatch continues to be very active on social media outreach to a growing number of followers. AFS members can keep abreast of Asia-Pacific fisheries and aquaculture news by liking our Facebook page (https://www.facebook.com/asiapacificfishwatch), and following us on Twitter (@Asiapacfish, https://twitter.com/Asiapacfish).
We welcome suggestions and contributions for AsiaPacific-FishWatch. Please contact: asiapacfish@gmail.com.

Updated information: In February 2019, we updated the status of stocks of the six tunas covered in the species pages (skipjack, yellowfin, bigeye, albacore, longtail and Pacific Bluefin tuna). See the species profiles at: http://www.asiapacfish.org/index.php/species. Our handy guide to users on where to find key information on tunas and tuna fisheries in the Western Central Pacific and Indian Oceans was updated and can be consulted at: http://www.asiapacfish.org/index.php/item/24-tracking-down-expert-knowledge-on-oceanic-tunas.
We welcome suggestions and contributions for AsiaPacific-FishWatch. Please contact: asiapacfish@gmail.com.

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

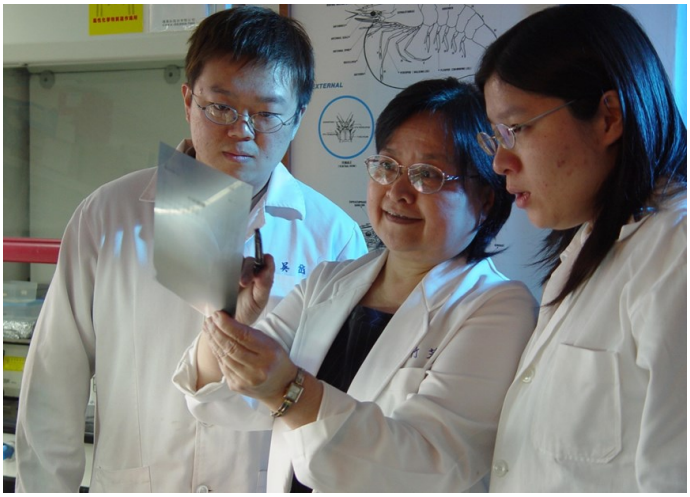
AFS BRANCHES & SECTIONS

Asian Fisheries Society Indian Branch (AFSIB)

The Asian Fisheries Society Indian Branch (AFSIB) sponsored and implemented a project on 'Marine Fisheries Improvement', which is being operated along the west coast and south-east coasts of India, i.e. in major marine fishing centers in the States of Andhra Pradesh, Tamil Nadu, Kerala, Karnataka, Goa, Maharashtra and Gujarat, and Union Territories of Puducherry and Daman & Diu. This project aims mainly at sensitizing the coastal fisherfolks and other stake holders on the need to follow the guidelines and regulations set by the respective State Governments for ensuring sustainability of the fishery resources through responsible and informed exploitation practices. It also aims at sensitizing the fishers against illegal and destructive fishing activities which come under the IUU regime as per FAO. During last six months, two Awareness such programmes were held in Vizhinjam and Neendakara in Kerala.

Asian Fisheries Society Taiwan Branch (AFSTB)

Prof. Luo Chu-Fang receives honorary award from OIE



(Prof. Luo Chu-fang is in the middle)

World famous shrimp diseases researcher, Prof. Luo Chu-fang, received honorary award from World Organization for Animal Health (OIE) in March 2020 for her outstanding contributions to the control of animal diseases and/or veterinary public health. Prof. Luo is the first Taiwanese researcher to win this OIE annual award. Prof. Luo began her work on shrimp diseases in 1994 after witnessing the havoc caused to the shrimp aquaculture industry in Taiwan by the white spot disease . She was the first few scientists to identify the pathogenic virus. Her laboratory was designated as a reference lab by the OIE. In 2015, Prof. Luo also discovered the pathogenic vibrio and its toxins, which cause acute hepatopancreatic necrosis disease (AHPND). Thanks for the great efforts of Prof. Luo, Taiwan aquaculture industry could diagnose the pathogens in the early stage and take action to prevent these infectious in shrimp industry.

(Picture: Neipu Campus of National Pingtung University of Science and Technology)

International Symposium on Aquaculture and Fisheries Education (ISAFE4)

The 4th International Symposium on Aquaculture and Fisheries Education (ISAFE4) will be held by National Pingtung University of Science and Technology on May 17-19, 2021. The online website will open on September 01, 2020. The schedule of abstract submission deadline and registration deadline will be March 31, 2021 and April 30, 2021, respectively. Please check the website for the future updates if the schedule has any rearrangement due to Covid-19 situation.

Contributed by Professor Dr. Han-Jia Lin

Asian Fisheries Social Sciences Research Network (AFSSRN)

It has long been understood that fisheries management needs social science because "managing the fisheries is managing the people". However, there is a continued priority given to natural science and technology over the humanities and social sciences in fisheries management. One of the reasons could be the poor visibility of the social scientists and their work.

In line with this, Asian Fisheries Social Science Research Network (AFSSRN) is conducting an online survey on *Social Scientists and Researchers in Fisheries and Aquaculture In the Asia-Pacific Region*. This survey is an initiative to identify social science researchers and scientists in fisheries and aquaculture in the Asia-Pacific region: to know who and where they are and what research they are doing. This is an initial step to promote effective interaction and cooperation among researchers and scientists involved in fisheries and aquaculture social sciences research. The further aims are to encourage and promote investigation and advances in knowledge of fisheries and aquaculture social sciences; give focused attention on fisheries and aquaculture social sciences problems by disseminating technical and other information on all aspects of social sciences and management; and to promote the proper use of fisheries and aquaculture social sciences research practices and results in the Asia-Pacific region.

The online survey form was released on 10 March 2020, a day before the COVID-19 pandemic was declared. It will continue to receive responses until the end of August 2020.

The link to the survey form is:
https://docs.google.com/forms/d/e/1FAIpQLSf0Vq7VRQDwb0Yx95DWdpgpaxjwwvgBkX6PhRtziOQ6Mn0CWQ/viewform

Any questions regarding this survey should be sent to Dr. Alice Joan G. Ferrer and Dr. Robert Pomeroy at afssrn.asf@gmail.com.

Information provided by: Prof. Dr Alice Joan G Ferrer

Fish Health Section (FHS)

Disease in Asian Aquaculture (DAA11)

Please be informed that the DAA11 will be postponed to 2021 due to Pandemic COVID-19. The new date is on 23 - 26 August 2021. Please checkout the updates and an announcement at DAA11's website.

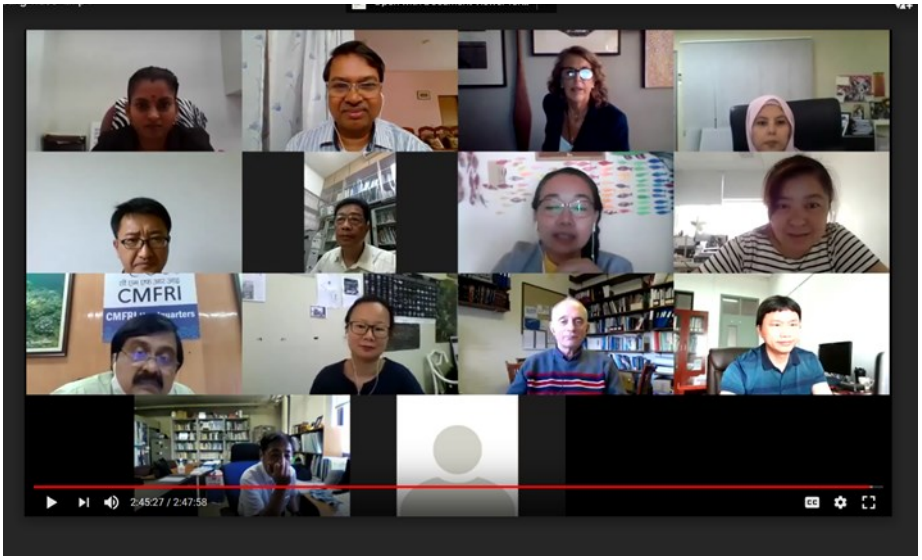


Photo during online meeting with councillors using Zoom platform

The Asian Fisheries Society 54th Council meeting was firstly planned to be organized in The Agency for Marine Affairs and Fisheries Research, Jakarta, Indonesia on 16th April 2020. However due to the pandemic COVID-19 situation, the meeting was held on Wednesday 24th June 2020 using online platform. During the meeting, 14 councillors from respective countries, Chair of Gender in Aquaculture & Fisheries Section and an Editor of Asian Fisheries Science Journal were participated. The meeting is successfully held in the duration of 3 hours.

Membership Account

Letter for renewal of membership and Permanent Active Member were issued using email to AFS members who haven't renewed their membership fees. All the members were advised to make the payment using PayPal or Telegraphic Transfer (TT).

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

OBITUARY

Professor Sena De Silva, B.Sc. Hons, Ph.D., D.Sc.

It is with great sadness that we announce the passing of Professor Sena De Silva, known to all his friends as Sena, on Wednesday 6th May 2020 in Melbourne, Australia.

Sena graduated from the University of Sri Lanka with a B.Sc. Hons in 1968, and a Ph.D. from the University of Stirling, UK in 1973. Later he was awarded the prestigious Honorary Doctor of Science from both Stirling in Scotland and Ruhuna University in Sri Lanka, in recognition of his scientific contributions to aquaculture and inland fisheries management.

During his career of some 50 years Sena worked in universities in Sri Lanka, Singapore, Scotland, and as a foundation Professor at the Deakin University, Australia. He served as the Director-General of the Network of Aquaculture Centres in Asia-Pacific (NACA), based in Bangkok, from 2007 to 2011. On his retirement, Sena continued his affiliation with Deakin University as an Honorary Professor. He remained active with regional agencies and organizations, especially in China, until his recent illness and untimely departure.

Sena was a prolific writer and researcher. He had >250 publications in refereed journals; was the senior author of numerous books and book chapters; and edited >10 workshop proceedings. He was well recognized internationally for his research in fish nutrition and inland fisheries management, as well as in aquaculture development. He served on the editorial board of several international aquaculture/fisheries journals and was the Editor-in-Chief of the journal ***Reviews in Aquaculture***, which has the third ranked impact factor among all fisheries journals. More recently, Sena had taken up consultancies in China working on Aquaculture and Fisheries with his Chinese colleagues. His final publication which he co-authored with others was "*Combined effects of fish cage culture and increased fishing pressure on wild fish assemblages in a large reservoir, Yangtze River basin, China*" which appeared in April 2020 in the Journal of Aquaculture.

During his long and highly successful career, Sena was the recipient of numerous grants from international research and development organizations. He led many inland fisheries and aquaculture projects for the Australian Centre for International Agricultural Research (ACIAR), in Sri Lanka, Malaysia, Indonesia, Vietnam, Cambodia, and Lao PDR. Sena was widely acknowledged as a gifted communicator and mentor, guiding many project staff to pursue post-graduate qualifications as part of their research.

Despite his many commitments as an academic and a researcher, Sena always had time for the Asian Fisheries Society (AFS). He was a Council Member from the founding of AFS in 1984 to 1992, and served on many of its committees. He initiated the formation of the Asian Aquaculture Nutrition Network, one of the first networks to be formed, under the banner of the IDRC in 1985, and coordinated this network for 8 years. In 1991 he took over the position of Editor-in Chief of Asian Fisheries Science journal, which he relinquished at the end of 2004. Sena made many significant contributions to the Society, and was always focussed on the future and the best way forward for the Society.

For his services to aquaculture and fisheries sciences research and development, and contribution and dedication to AFS, he was conferred the AFS ***Honorary Life Member Award*** during the 10th Asian Fisheries & Aquaculture Forum held in South Korea in April 2013.

Sena was a great friend to many AFS members, colleagues and students involved in fisheries and aquaculture. He was equally relaxed and comfortable working with scientists, academics, students and farmers alike. A collegue from ACIAR, Barney Smith, commented that "Sena was as comfortable, and in many ways happier, sitting on a stool in a local village talking to farmers and fisher folk as he was presenting at prestigious scientific gatherings. He was a remarkable man and will be missed by many". His departure will be sorely missed by all his friends and colleagues in the Asia-Pacific and other parts of the world.

The AFS family expresses its condolences to Sena's partner Thuy, ex-wife Celine, daughters Dinesha and Sabine, and grandchildren Kirin, Tara and Sunil.

By Lee Chan Lui, Chris Barlow and Meryl Williams

Can farming horseshoe crabs in RAS help the COVID-19 cause?

Horseshoe crab blood contains Limulus Amebocyte Lysate, which is used to ensure drugs, vaccines and medical devices are free from potentially deadly bacteria. Researchers hope to use recirculating aquaculture systems to culture the crabs and reduce pressure on wild fishery harvests. However, attempts to detect such bacteria in human blood using LAL have been unsuccessful so far, due to interfering factors such as cross-reactivity and inhibitors. Meanwhile, the demand for horseshoe crab blood has raised questions over the impacts of harvesting from the wild, where approximately 600,000 crabs are removed each year. Horseshoe crabs are already vulnerable due to global warming and harvesting as bait to catch eels and whelks.

To find a more efficient and potentially more conservational way to harvest horseshoe crabs and transition the typical food aquaculture space into something that produces high-end biotechnology outputs with economic potential, Kepley BioSystems, a life science start-up in North Carolina, has started experiments.

In order to facilitate LAL harvesting and maintain animal welfare, they developed a recirculating aquaculture system (RAS). The horseshoe crabs receive a special diet and periodically having blood drawn with an intravascular catheter that's surgically implanted. They found that the horseshoe crabs maintained their natural behaviour and body weight, grew consistently, survived catheter implantation and thrived for more than 12 months with a zero percent mortality rate. They also found that LAL can be extracted up to 24 times a year from horseshoe crabs that are kept in aquaculture long-term. Sufficient research and evidence also shows that horseshoe crabs can be bred and grown in captivity to replace aquaculture stock, which could potentially abolish the need to harvest them for the biomedical industry.

The team estimated that 45,000 horseshoe crabs in aquaculture would provide enough LAL for all current diagnostic needs and even help to detect endotoxins in pre-treated human blood samples. They believe that it will lead to the early, potentially life-saving detection of infectious diseases, a welcome result for patients at risk of life-threatening conditions, and in light of the coronavirus pandemic.

Anything that is going to help stymie the progression of COVID-19 will, more likely than not, require LAL to get there, said Dellinger. For example, COVID-19 vaccines and medical devices such as ventilator components will need to be validated in a batch-wise process with LAL. This will require an immediate, near-term need for large quantities of LAL to ensure that appropriate amounts reach the market as soon as possible. Dellinger and his team are also working to determine whether LAL can ascertain how sensitive a COVID-19 patient might be toward a particular antibiotic treatment if they are co-infected with a secondary bacterial infection.

Collaborative work is now underway with infectious disease epidemiologists at Duke University, the National Institute of Health (NIH), Centers for Disease Control and Prevention (CDC) and the National Science Foundation. Hopes are high that the technology will be deployed by the end of this summer for use in the coronavirus pandemic. The aquaculture approach is an innovative way of conserving horseshoe crabs in the wild while supplying the medical industry with a sustainable resource that will save human lives.

Source: https://www.aquaculturealliance.org/advocate/can-farming-horseshoe-crabs-help-the-covid-19-cause/?utm_source=Informz&utm_medium=email&utm_campaign=Informz%20email&_zs=eAbVe1&_zl=S3Rv6

2022 Year of International Artisanal Fisheries

The United Nations General Assembly has declared 2022 the International Year of Artisanal Fisheries and Aquaculture (IYAFA 2022). FAO is the agency leading the advocacy activities for the Year, in collaboration with other UN entities. Celebrating IYAFA 2022 gives important recognition to the millions of small-scale fishers, fish farmers and fish workers who provide healthy and nutritious food to billions of people and contribute to achieving Zero Hunger. The objective of celebrating IYAFA 2022 is twofold: the Year aims to focus world attention on the role that small-scale fishers, fish farmers and fish workers play in food security and nutrition, poverty eradication and sustainable use of natural resources – thereby increasing global understanding and action to support them. The celebration is also an opportunity to enhance dialogue between different actors, and not least to strengthen small-scale producers to partner up with one another and make their voices heard so they can influence the decisions and policies that shape their everyday lives – all the way from local community level to international and global fora. WHAT IS 'ARTISANAL' AND 'SMALL-SCALE'? There is no universal definition for what type of fisheries or aquaculture count as 'artisanal' or 'small-scale'. Commonly, these terms are used for describing fisheries and aquaculture that use relatively small production units with low input and output, and low levels of technology or capital investment. Fishing for sport or recreation are excluded. IYAFA 2022 will be an opportunity to showcase the potential of small-scale fisheries and aquaculture, and point to the benefits which can be gained from strengthening these small-scale sectors. FAO aims to engage with policymakers, development partners, academia, the private sector, small-scale fisheries and aquaculture organizations, and the general public. To make the most of this opportunity, it is time to think creatively, join hands and start making plans now for how to make IYAFA 2022 a memorable year. Let us give small-scale fishers, fish farmers and fish workers the attention they deserve!

The document can be downloaded at: http://www.fao.org/3/ca6973en/CA6973EN.pdf

Indonesia eyes 10.99 million tons seaweed yield in 2020

Indonesia's Ministry of Maritime Affairs and Fisheries increased seaweed production target in 2020 to 10.99 million tons, from 9.9 million tons in 2019. The ministry has prepared initiatives and strategies for the next five years to raise seaweed production which covers 60.7% of the total fishery yield in the country, Director General of Aquaculture, Slamet Soebjakto stated in Jakarta. The strategy launched by the ministry aims to assure the quality and quantity of the seaweed yield this year, as the it has been part of the country's top export commodity. According to records of FAO in 2019, Indonesia is the world's largest producer for Eucheuma or gusô (*Eucheuma cottonii*), that is commonly used as raw material for *carrageenan*, an ingredient for cosmetics, food and drinks, as well as industrial manufacturing. Indonesia also covers at least 80% of market share of seaweed trade in global market with China ranked first as top export destination for the product.

However, the ministry plans to increase added-value of Indonesia's seaweed by restricting export of raw seaweed and will increase exports more semi-refined *carrageenan* and refined *carrageenan* by 50% this year, as for the past years the raw seaweed export to China had reached nearly 80%.

Source: https://en.antaranews.com/news/139928/fishery-ministry-eyes-for-1099-million-tons-seaweed-yield-in-2020

China extends domain with fifth deep sea mining contract

The United Nations organisation headquartered in Kingston, Jamaica, approved the country's fifth mining contract, meaning China holds more mining claims than any other nation. China now has the right to explore and potentially exploit 238,000 square kilometres (almost the size of New Zealand) of the deep sea in areas outside national jurisdiction for cobalt, nickel, copper and other valuable minerals.

To date, the ISA has issued 30 exploration licences to multinational corporations, start-ups and state-backed companies that cover more than 1.3 million square kilometres of the seabed.

China, which has been one of the ISA's biggest financial benefactors, also signed a memorandum of understanding with the organisation to establish a joint deep sea training and research centre in Qingdao, to be operated by the State Oceanic Administration.

China's growing influence comes at a pivotal time for the ISA. The secretary-general, Michael Lodge, private mining contractors and pro-mining states are pushing to complete a "mining code" by the end of 2020 so exploitation of the seabed can commence.

The deep ocean holds what is believed to be the world's largest reserves of the metals needed to make electric car batteries, wind turbines and other technologies essential to weaning the world from fossil fuels and combating climate change. But the little-explored seabed also harbours unique ecosystems and an untold number of rare and undiscovered species whose genetic code could be the source of new medicines and other biotechnologies. Mining would directly destroy those habitats with an unknown impact on the surrounding ocean and the global climate system.

That tension between exploitation and preservation of the deep sea has been percolating for years, but it intensified at the July meeting of the ISA Council, the organisation's policymaking body. One after another, national delegations took the microphone to call for strong environmental regulations and pushed back against the 2020 deadline.

Developing nations that believe they stand to benefit financially from seabed mining – including those that are sponsoring states for mining companies and would reap taxes and fees from exploitation – are pressing for the regulations to be completed by the deadline.

On the other hand, some small South Pacific island nations whose waters are closest to areas to be mined are advocating for strong environmental protections. Countries whose economies rely on terrestrial mining – Chile, Australia, some African nations – are urging caution in proceeding with seabed mining. (The United States is not a signatory to the Law of the Sea treaty and thus is not a member of the ISA though it maintains observer status at the organisation.)

Source: https://chinadialogueocean.net/9771-china-deep-sea-mining-contract/

Chinese Vice-Premier calls for progress in pushing fishing ban

Vice Premier Han Zheng has called for solid progress in implementing a fishing ban in the Yangtze River basin, and providing a cushion for fishermen as they give up their boats and nets. China began a 10-year fishing moratorium from the beginning of this year in 332 conservation areas in the Yangtze River basin, which will be expanded to all the natural waterways of the country's longest river and its major tributaries from no later than January 1, 2021. The full-scale ban is likely to affect more than 113,000 fishing boats and nearly 280,000 fishermen in 10 provincial regions along the river, according to earlier estimations.

Han urged a thorough inventory of boats and fishermen to pave way for a "precise retirement" of boats and nets. The compensation should be handed out to the fishermen as soon as possible, he noted. Efforts must be made to relocate these fishermen and help them find new jobs, he said. Illegal fishing shall be dealt with decisively, while members of public and the media are encouraged to be vigilant about such activities, the vice premier said.

Source: http://www.xinhuanet.com/english/2020-06/29/c_139175573.htm

Indonesia considers allocating USD 69 million for fisheries, aquaculture amid COVID-19 pandemic

Indonesia's government is considering stimulus package proposal to support local fishermen, aquaculture farmers, and seafood processors hit by the outbreak of COVID-19. The package, proposed by the Maritime Affairs and Fisheries Ministry, will be worth IDR 1.02 trillion (USD 69.5 million, EUR 62.6 million) and will be comprised of social aid for fishermen and farmers. The ministry also plans to fund surveillance activities against illegal fishing in Indonesia's waters, The Jakarta Post reported on 29 May, quoting Fisheries Minister Edhy Prabowo.

"We will optimize the budget to help enable fishermen to go on fishing while also providing the farmers with seeds, broodfish and infrastructure," Prabowo said after a cabinet meeting on 28 May with President Joko "Jokowi" Widodo. Fishermen are expected to be allocated IDR 413.27 billion (USD 28.2 million, EUR 25.4 million), while aquaculture farmers may receive a fund of IDR 406.55 billion (USD 27.7 million, EUR 25 million). Meanwhile, a fund of IDR 36.07 billion (USD 2.5 million, EUR 2.2 million) would be used to assist fish processors and marketers, and IDR 106.48 billion (USD 7.3 million, EUR 6.5 million) would be allocated to combat poaching.

According to the Office of the Coordinating Minister of Maritime Affairs and Investment's Human Resource Development, Science, and Maritime Culture Deputy Safri Burhanuddin, the government plans to provide IDR 600,000 (USD 41, EUR 36.8) in cash per month for three months for fishermen and others working in the fisheries sector. State-owned fishery companies PT Perikanan Nusantara (Perinus) and PT Perikanan Indonesia (Perindo) would likely receive IDR 500 billion (USD 34.1 million, EUR 30.7 million) each from the state budget to buy more seafood products with the aim to increase demand.

Prabowo also called on banks to join the government's efforts to support aquaculture farmers with loans.
The government, through its various programs, has provided IDR 34 trillion (USD 2.32 billion, EUR 2.1 billion) to subsidize loan interests and relax loan payments for local farmers and fishermen, according to the newspaper.
As many as 3.78 million Indonesian people are expected to be pushed into poverty because of the pandemic, driving the total number people living in poverty in the country to around 30 million. Fishermen, for example, have seen their average income go down to IDR 1.5 million (USD 102, EUR 92) per month, from IDR 3 million to IDR 5 million (USD 204 to USD 341, EUR 184 to EUR 307), Burhanuddin said.

Source: https://www.seafoodsource.com/news/supply-trade/indonesia-considers-allocating-usd-69-million-for-fisheries-aquaculture-amid-covid-19-pandemic

Indonesia to allow back destructive seine and trawl nets in its waters

The Indonesian government plans to lift a ban on the use of seine and trawl nets, which marine conservationists and scientists have blamed for overfishing and damage to coastal reef ecosystems. The fisheries ministry says the move is expected to boost catches and thereby attract greater investment in the fisheries sector. Conservationists have panned the proposed lifting of the ban, calling it a step backward in efforts to develop a sustainable fisheries industry in the country. They have called instead for the fisheries ministry to focus on efforts to promote the use of sustainable fishing gear, empower small-scale fishers, and combat illegal fishing practices.

Source: https://news.mongabay.com/2020/06/indonesia-to-allow-back-destructive-seine-and-trawl-nets-in-its-waters/

Coronavirus delays hope of fishing subsidies deal

Recognising the problem of overfishing, the 164 member countries of the World Trade Organization (WTO) have been trying for more than two decades to reach an agreement on eliminating harmful fishing subsidies. Disruption caused by the pandemic makes it unlikely the WTO will reach an agreement to end harmful subsidies this year. Of the US$35 billion of public subsidies that went into supporting global fisheries in 2018, $22 billion were classed as harmful because they increased fishing capacity, largely through fuel tax exemptions.The deadline for agreeing a deal to end such subsidies, in accordance with the UN Sustainable Development Goals (SDGs), is this year. But meeting it will be highly difficult, experts agree.

Ambassador Santiago Wills of Colombia, who leads the fisheries subsidies talks at the WTO, has not yet presented a consolidated draft of the agreement. He has tried to maintain talks online, but that has proven difficult for several national delegations, slowing progress.

In a recent webinar hosted by NGO Chatham House, Wills said he was still hopeful of a deal this year but that there are "still many issues to resolve". Though coordination between delegates "has been difficult" due to the pandemic, he confirmed that the commitment of all delegations to reaching an agreement remains strong.

"Countries have come to an understanding on some areas. For example, they now agree illegal fishing shouldn't be subsidised, as well as fishing of overexploited species," he said. "But there's disagreement over definitions, such as what actually is illegal fishing or an overexploited species." "There's a wide debate now regarding what the aid packages of the Covid-19 crisis should contain. The discussion on fishing subsidies is part of that. It's an opportunity to change mindsets and paradigms," he said. "Many say we shouldn't support fossil fuel subsidies and the same can be said with fisheries. All proposals from countries now on the table include the prohibition of subsidies linked to unreported and unregulated fishing and to the exploitation of already overfished stocks.

Nevertheless, they vary on the methods of implementation and reform limits.

China, which operates the world's-largest fishing fleet, pitched a proposal last year to cap and reduce subsidies over time. The WTO rules require decisions to be made by consensus. The European Union, Japan, China, the United States and Russia spend the most on fishing subsidies.

As a result of the expansion of industrial fishing fleets over time, 90% of fish populations are fully exploited, according to the UN Food and Agriculture Organisation (FAO).

Source: https://chinadialogueocean.net/14120-coronavirus-delays-hope-of-fishing-subsidies-deal/

Asian Development Bank Calls For Sustainable "Blue Economy" To Save Our Oceans

ADB says that immediate action must be taken against the current "ocean economy" that relies on destructive fishing and pollution practices. Instead, a new "blue economy" must be built, defined by the bank as the sustainable use of ocean resources for economic growth. It is characterised by a balance between livelihoods and marine ecosystem health.

Billions of people in Asia-Pacific – particularly poorer nations and vulnerable coastline communities – depend on healthy ocean ecosystems for their incomes, food and health. Due to climate change, pollution, destructive fishing and rapid coastal urbanisation, the productivity of our oceans has become increasingly threatened.

According to ADB's 2019 ocean report, over 60% of the 8 million tonnes of ocean plastic waste comes from Asia, along with agricultural toxic pollutants and untreated wastewater. Meanwhile, global heating is causing rising sea levels, flooding and acidification, and unless immediate action is taken, we are looking at 90% of coral reefs disappearing and loss of all fish stocks within decades time.

In order to transition to a more sustainable "blue economy", ADB announced several financial initiatives amounting to US$5 million over the next five years. These include "blue bonds" that will invest in coastal pollution projects, circular economy, green ports and marine renewable energy in order to generate new jobs and stimulate sustainable economic growth in ocean-dependent Asian communities.

ADB will also launch sustainability-linked loans to provide finance with the achievement of environmental targets, ocean risk insurance, and payments for ecosystem services (PES), which monetises the benefits of marine management and protection.

Source: https://www.greenqueen.com.hk/asian-development-bank-sustainable-blue-economy-to-save-our-oceans/

FAO sees Mekong as biggest source of global inland fish catch

FAO has ranked the Mekong Basin as the world's most important hydrologic region or river basin for freshwater fish catches. In its latest State of World Fisheries and Aquaculture report, the FAO said that Mekong Basin accounted for 15.2 percent of the global inland fish catch and 50% of the global catch came from the Mekong and six other basins. The Mekong Basin spreads across Cambodia, China, Laos, Myanmar, Thailand and Vietnam. Some of the world's largest inland fisheries come from basins or river systems that are facing severe threats from anthropogenic and natural environmental pressures.

The report said global catches from inland waters have increased steadily year on year reaching more than 12 million tonnes in 2018 which is the highest level recorded.

China accounted for the biggest share of catches from inland waters in 2018 followed by India, Bangladesh, Myanmar and Cambodia. The FAO's twice-yearly Food Outlook said capture fisheries production was expected to fall 2.0 percent to about 90 million tonnes. Production from aquaculture is forecast to drop 1.4 percent to around 83 million tonnes.

Source: https://www.khmertimeskh.com/50733940/fao-sees-mekong-as-biggest-source-of-global-inland-fish-catch/

NGO coalition Make Stewardship Count eyeing MSC during new review process

Make Stewardship Count, an international watchdog group, has vowed to observe the Marine Stewardship Council's (MSC) review of its global fishery certification standard closely, to see what comes of what the group identified as "critical changes needed" to the certification body's blue eco-label.

MSC released a list of 16 topics it aims to cover in the latest Fisheries Standard Review, including requirements for ghost gear, low trophic species, shark finning, and endangered, threatened, and protected (ETP) species. Public engagement for the review begins during the week of 15 June, 2020.

Make Stewardship Count, which is comprised of over 90 NGOs and experts dedicated to driving "urgently needed improvements to the MSC standard and certification process," has issued a list of what it calls "required improvements" backed by research and analysis conducted by non-government organizations and academics.

The group has urged the MSC to ensure several requirements to better its standard and process, including ensuring the full ecological impacts of a certified fishery are assessed and improved and fisheries are not wasteful of marine lives and resources; ensuring the entirety of the certified fishery methods, gear, and catch are sustainable, and that all "main species" of a catch are managed equally to the target species; ensuring that MSC-certified fisheries do not destroy seafloor biodiversity, and that the MSC standard is consistent with internationally accepted fisheries management standards; ensuring the sustainability claim of MSC-certified fisheries is evidence-based and transparent with the data used for decision-making in assessment and audit of fisheries; ensuring condition-based certification is resolved prior to recertification; ensuring the certification assessment and audit process are impartial; and ensuring the MSC proactively upholds the scientific rigor and goals of the program.

In a recent paper, Make Stewardship Count said it had concerns about a perceived lack of transparency and clarity in its engagement with stakeholders, according to Cat Dorey, an independent fisheries advisor and co-author of the report.

"Stakeholders need to know their engagement is valued, and how certification decisions are reached. Failure to insure adequate clarity and transparency will only increase an already high level of stakeholder discontent. It is imperative that these workshops do not take place behind closed doors, and all outcomes need to be shared publicly for further consultation," Dorey said. The coalition added that "MSC stands to lose significant public confidence as a result of the certification body's lack of attention to a number of critical issues." The coalition fears that the pace of the MSC review will not keep up with the rapid environmental changes that certified fisheries are confronting," it said. "Any revisions to the Standard will not be released until 2022 at the earliest, and will not be fully implemented by all certified fisheries until March of 2035, according to the timeline provided by the council."

"While we appreciate that the MSC has processes to follow, climate change will wait for no one and extinction is irreversible," Dorey said. "Change must come much faster if we want to see healthy marine environments, and indeed a habitable planet in the future!"

Source: https://www.seafoodsource.com/news/environment-sustainability/ngo-coalition-make-stewardship-count-eyeing-msc-during-new-review-process

WTO Rules Chair issues draft consolidated text on fisheries subsidies

The chair of the Doha rules negotiations has issued a draft consolidated text for expediting the negotiations on disciplines on IUU fishing, overfished stocks, and overfishing and overcapacity. At a heads of delegation (HoD) meeting on 25 June 2020, conducted in both physical and virtual formats, the chair, Ambassador Santiago Wills of Colombia, said that he wants to conclude an agreement by the end of this year on the proposed disciplines on IUU fishing, overfished stocks, and overfishing and overcapacity, as set out in his consolidated draft text.

The Chair issued two restricted and "confidential" draft texts – RD/TN/RL/126/Add.1 and RD/TN/RL/126. He made several preliminary remarks on the elements contained in the draft consolidated text. Ambassador Wills suggested that he has included language from India's comprehensive proposal while omitting the proposals from the ACP Group, the African Group, and the least-developed countries (LDCs), said a trade envoy, who asked not to be quoted. The chair introduced "differentiation" for availing special and differential treatment (S&DT) among developing countries in the disciplines for overcapacity and overfishing, the trade envoy said.

However, the chair has not mentioned the term special and differential treatment in the draft consolidated text even though it was clearly spelt out in the United Nations Sustainable Development Goal 14.6, said another trade envoy, who asked not to be quoted. The text seems to be tilted in favour of countries such as China, the United States, the European Union, Japan, and Korea among others, whose industrial-scale fishing had caused the global depletion of fish stocks, the trade envoy said.

Commenting on the chair's draft consolidated text, trade envoys said that the language on overfishing and overcapacity is basically the same as compared to his earlier draft in February that was rejected by members. According to the trade envoy, "there are a lot of problems on the scope definitions in the draft consolidated text," as there is no clarity on whether members define subsidies as specific subsidies or horizontal subsidies. The text also does not include any language on several institutional issues, particularly the dispute settlement mechanism for disputes that are likely to arise from these disciplines, the trade envoy said.

More worryingly, the chair's intent to expedite negotiations in order to reach an agreement by the end of the year without taking into consideration the worsening Covid-19 pandemic in developing countries does not augur well, as capital-based officials will find it difficult to participate, the trade envoy suggested.

Source: https://twn.my/title2/wto.info/2020/ti200624.htm

COVID-19 leads to possible food crisis in Cambodia

In Cambodia, where a large part of the economy is dependent on fisheries and agricultural food processing, COVID-19 has deeply impacted the industry resulting in reversing the developments related to SDG 8 of decent work and economic growth with respect to its farmer community, especially along the Mekong basin.

Cambodia's agriculture sector is responsible for generation of more than 20% of its GDP and employs around 30% of the population. Its position on the Global Food Security Index is below average at 90 out of 113 countries. After the Mekong River crisis, around 45,000 hectares of rice farms were damaged creating a debt crisis for poor farmers. Consumers on the other side of the spectrum have been hit hard by lack of food supplies, rise in prices of staple foods and a halt in income caused due to COVID-19.

The failure of last monsoons and the presence of Chinese dams in the Northern part of the basin have unleashed drought-like conditions leading to poverty and food insecurity. It has affected farmers growing rice on their fields as well as the fishermen, who reported a fall in fish volume by 60-70% due to the drought-like conditions in the Mekong Basin.

This would affect income equalities and food supply-chains for the larger public in Cambodia, Lao, Vietnam, Myanmar and Thailand. Secondly, due to the pandemic, unemployment and price rises will result in income shortages. Prices of staple foods in areas like Siem Reap have been estimated to have shot up by 33.33% in Cambodia. This will impact the demand due to inability of the buyers to pay for the food items like rice and fish.

As countries strive to be more self-sufficient and reduce import-dependency by promoting local supply chains, the Mekong River Basin could be heading towards post-COVID-19 food insecurity.

Source: https://www.khmertimeskh.com/50739118/covid-19-leads-to-possible-food-crisis-in-cambodia/

A new community-based project in Thailand is turning discarded fishing nets into face shields and disinfectant bottles to help during the COVID-19 crisis

Thailand has one of the world's largest fishing industries, but is also one of the top marine plastic polluters. A new community-based project is paying small-scale fishermen 10 baht (32 cents) per kilogram of discarded nets, or about every one or two, to recycle them into items from push sticks to face shields and disinfectant bottles.

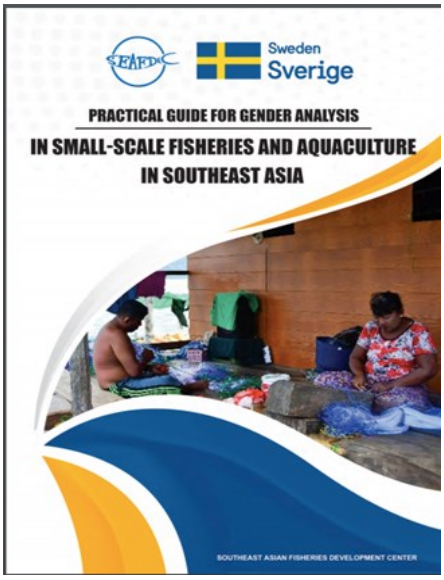
With 50,000 small fishing vessels and 10,000 commercial ships, Thailand has one of the world's largest fishing industries, and is also one of its top marine plastic polluters. About 74% of sea turtles and 89% of dugongs stranded on the beaches between 2015 and 2017 had been injured by nets left or lost in oceans, official Thai figures show. About 640,000 tonnes of fishing nets end up in the ocean globally every year, becoming "ghost gear," the United Nations says.

In addition to tackling Thailand's stubborn pollution problem, the project offers a rare all-domestic solution to a global challenge. Thai design company Qualy is buying most of the fishing nets being collected by EJF. Its recycling and manufacturing operations are based in Thailand, unlike similar projects in other countries that ship nets abroad for recycling.

The Thai government has welcomed the initiative. "Any efforts to remove the nets from the ecosystem is welcome," said Ukkrit Satapoomin, the Director of Thailand's Office of Marine and Coastal Resources Conservation. EJF said the project had collected more than 1.3 tonnes of used nets since a pilot phase two months ago, and plans to expand it to all seaside provinces by year-end. "Local communities are very environmentally-conscious already, but they just need helping hands from other sectors."

Source: https://www.weforum.org/agenda/2020/07/thailand-coronavirus-covid19-recyling-innovation-supplies-ocean

NEW PUBLICATIONS



Practical Guide for Gender Analysis in Small-scale Fisheries and Aquaculture in Southeast Asia

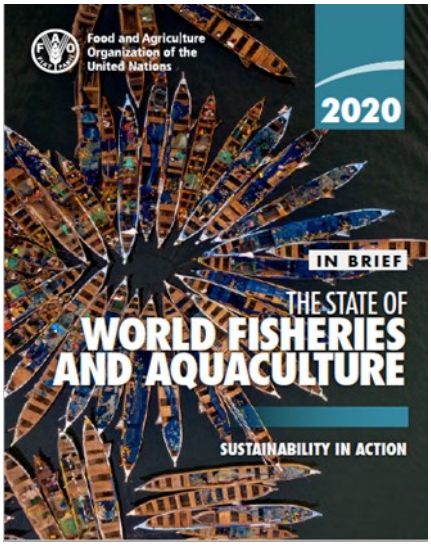
The report can be downloaded from:

http://repository.seafdec.org/bitstream/handle/20.500.12066/6149/Gender_practical_guide.pdf?sequence=1&isAllowed=y

Latest issue of ICF's newsletter on gender and fisheries, dated April 2020, can be downloaded from:

https://www.icsf.net/images/yemaya/pdf/english/issue_60/355_Yemaya%2060_ICSF_May2020.pdf

The State of World Fisheries and Aquaculture 2020



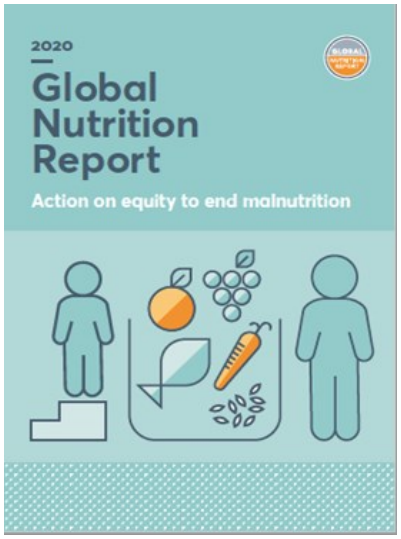
The 2020 edition of The State of World Fisheries and Aquaculture has a particular focus on sustainability. This reflects a number of specific considerations. First, 2020 marks the twenty-fifth anniversary of the Code of Conduct for Responsible Fisheries (the Code). Second, several Sustainable Development Goal indicators mature in 2020. Third, FAO hosted the International Symposium on Fisheries Sustainability in late 2019, and fourth, 2020 sees the finalization of specific.

The 224 page report can be downloaded from http://www.fao.org/publications/sofia/2020/en/

28 page "in brief" report of the State of World Fisheries and Aquaculture 2020 can be downloaded from: http://www.fao.org/3/ca9231en/CA9231EN.pdf

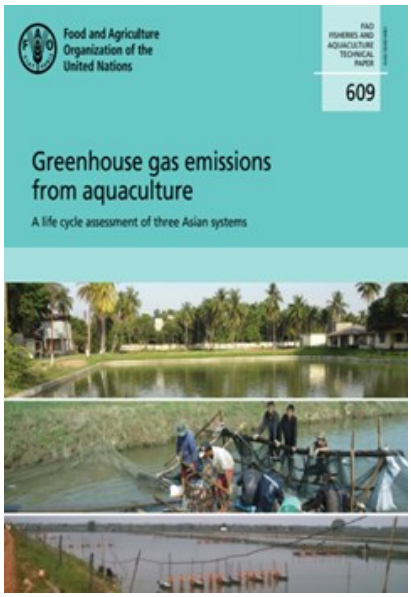
ADDENDUM TO THE STATE OF WORLD FISHERIESAND AQUACULTURE 2020 SUMMARY OF THE IMPACTS OF THE COVID-19 PANDEMIC ON THE FISHERIES AND AQUACULTURE SECTOR

The document can be downloaded from: http://www.fao.org/3/ca9349en/CA9349EN.pdf



Global Nutrition Report 2020

The report can be downloaded from: https://globalnutritionreport.org/reports/2020-global-nutrition-report/



Green House Emissions from Aquaculture

The publication can be downloaded from

http://www.fao.org/3/a-i7558e.pdf?fbclid=IwAR1LeOawlTqA9Lac7OZhKve5GEj7LUP4keBPbPO-9zABTFNinAqyyQwdyv8

The Yemaya No.60, April 2020: Supplement -Turning Points: A Decade of Change for Women in Fisheries - Q & A

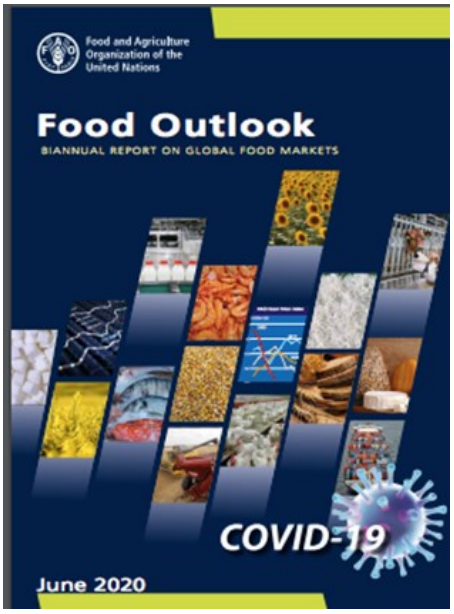
The Yemaya Supplement, Turning Points: This supplement is an effort to understand and identify the main factors affecting the change for women in fisheries over the decade -- the causes that have shaped their role, both positively and negatively.

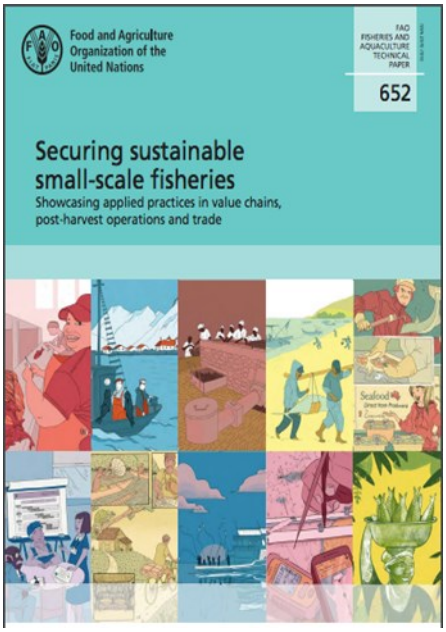
The supplement can be downloaded from: https://www.icsf.net/images/resources/Publication_Alerts/docs/91685599.pdf

Food Outlook: Biannual Report on Global Food Markets

The report contains a section on assessment of markets for fish and fish products.

The report can be downloaded from: http://www.fao.org/3/ca9509en/CA9509EN.pdf





Securing sustainable small-scale fisheries: Showcasing applied practices in value chains, post-harvest operations and trade

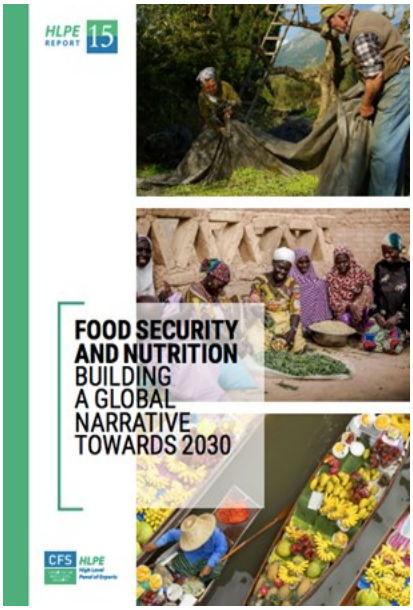
The report can be downloaded from:
http://www.fao.org/3/ca8402en/CA8402EN.pdf

GLOBAL COVID-19 SITUATION REPORT: UPDATE FROM INFOFISH

The report which details COVID-19 and its impact of fisheries, can be downloaded from: http://infofish.org/v3/images/pdf/situation%20report.pdf

FOOD SECURITY AND NUTRITION BUILDING: A GLOBAL NARRATIVE TOWARDS 2030

The report can be downloaded from: http://www.fao.org/fileadmin/user_upload/hlpe/2020._Global_Narrative/HLPE_2020._FSN__building_a_Global_Narrative_towards_2030.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**.

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SYNOPSIS OF PAPERS VOLUME 33 (ISSUE 1) : ASIAN FISHERIES SCIENCE JOURNAL

Isolation of Hyaluronic Acid from Yellowfin Tuna *Thunnus albacares* (Bonnaterre, 1788) Eyeball

ANGELECA SUMOGOD, LODA NACIONAL, MAE GRACE NILLOS, ENCARNACION EMILIA YAP

https://doi.org/10.33997/j.afs.2020.33.1.001

Isolation of hyaluronic acid (HA) from yellow fin tuna eyeball through standardization of the different steps in HA isolation revealed that the highest yield and purity was achieved withdraw material pre-treated with acetone, formaldehyde, and sodium acetate solution prior to water extraction and incubation of the mixture for 24 h. The optimum conditions for HA isolation were through the use of 3 % cetylpiridinium chloride: 3M NaCl concentration for recovery and fractionation and a 1:3 mL.mL-1 supernatant: ethanol ratio for alcoholic precipitation. The findings could help maximise the benefits of the tuna processing waste and open a new opportunity for production of a valuable bioactive compound from natural source.

Antioxidative Activities and Lactic Acid Bacteria Composition of Fermented Frigate Tuna *Auxisthazard* (Lacepéde, 1800) at Different Salt-fish Ratios

RHESSA GRACE GUANGA ORTIZO, ENCARNACION EMILIA YAP, MAE GRACE NILLOS, SHARON NONATO NUNAL

https://doi.org/10.33997/j.afs.2020.33.1.002

The antioxidative activities and lactic acid bacteria (LAB) composition of fermented frigate tuna at different salt-fish ratios (w/w), (1:3), (1:4), (1:5), (1:6) and fermented at ambient temperature were investigated. In general, 1:5 salt-fish ratio had favourable LAB composition with a wide range of LABs and high LAB counts. Also, 1:5 salt-fish ratio had favourable scavenging activities coupled with an increasing degree of hydrolysis (DH) during fermentation. Results showed increasing activities during the fermentation process, making it a potential source of antioxidants for industrial uses. Additionally, the LABs in 1:5 salt-fish ratio indicates its usefulness as a viable source of LAB for applications in other fermented products as starters and a possible functional food product that could benefit consumers.

Fillet Quality of Asian Seabass *Lates calcarifer* (Bloch, 1790) Grown in Monoculture and Coculture Systems in Freshwater Earthen-ponds

THANAPON YOOYEN JAMJUN PECHSIRI, THANYA PANRITDAM, THAWEEDET CHAINAPONG,

https://doi.org/10.33997/j.afs.2020.33.1.003

The effects of monoculture and co-culture systems on Asian seabass fillet composition, fatty acid profile, and chemical taste taint were investigated. Fish from the co-culture system with Asian seabass and Nile tilapia (T2) had significantly higher protein level, eicosapentaenoic acid and significantly lower fat content. In terms of chemical taste taint, T2 had significantly lower 2-methyl-isoborneol than monoculture, as well as an absence of geosmin in T2. Seabass from the monoculture system had significantly higher total fatty acid content. Thus using co-culture system in freshwater earthen ponds, with a feeding interval of 2 days, results in an improved fillet quality of Asian seabass.

Evaluation of Different Drying Methods on Shelf-life Quality of Mrigal *Cirrhinus mrigala* (Hamilton, 1822)

NEETA PRADHAN, MADHAV KUMAR SHRESTHA, SUNILA RAI, DILIP KUMAR JHA, SHYAM KISHOR SAH

https://doi.org/10.33997/j.afs.2020.33.1.004

Solar and hybrid-solar drying methods along with the smoking and sun-drying methods for shelf-life quality of mrigal were investigated. After drying and storage for 30 days, there was no significant decrease in the crude protein content of fish in all the drying methods except in hybrid-solar dried fish. The crude fat content decreased significantly in all the drying methods except in smoke-dried fish. The pH value, free fatty acid and total bacterial plate count were within the permissible range in all the drying methods. Smoking and hybrid-solar drying methods were selected for further testing to verify the quality of the dried fish stored for 90 days in two mountain districts of Nepal. The results of 90 days storage experiment were similar to the previous results of smoking and hybrid-solar dried fish for 30 days storage. The study suggests that mrigal fish dried by smoking and hybridsolar drying methods are safe to consume for 90 days.

Reduced Reproductive Capacity in *Moina micrura* Kurz, 1875 Exposed to Toxic *Microcystis* spp.

ADIBAH SHAKRI, FATIMAH MD. YUSOFF, INTAN SAFINAR ISMAIL, TATSUKI TODA

https://doi.org/10.33997/j.afs.2020.33.1.005

The impacts of two toxic *Microcystis* spp. on a tropical cladoceran, *Moina micrura* population growth studies and chronic bioassays were assessed using *Microcystis aeruginosa, Microcystis viridis*, and, *Chlorella vulgaris*. Both *Microcystis* spp. Negatively affected *M. micrura*. The population growth rate of *M. micrura* fed with *C. vulgaris* was 0.51 day -1 , while growth rates were negative when fed with *M. aeruginosa* and *M. viridis*. In the chronic bioassay, the exposure of *M. micrura* to *M. aeruginosa* resulted in delayed production of *M. micrura*'s first batch of offspring. This study showed that exposure of *M. micrura* to both toxic *Microcystis* spp. reduced the population density, fecundity, total offspring production and longevity of *M. micrura* compared to those fed with *C. vulgaris*. 3

Growth Performance of Asian Clam *Corbicula fluminea* (Müller, 1774) Fed with Different Feeds in Laboratory Scale Culture System

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A sixty days feeding trial was conducted on the growth performance of Asian clam *Corbicula fluminea*, restricted to pedal-feeding in response to different diets; 1) fermented soy pulp (FSP), 2) treated quail dung (TQD), 3) chemical fertiliser (NPK) and 4) control group. NPK exhibited the highest growth for shell length whereas fermented soy pulp indicated the highest growth performance by weight. The length-weight relationship demonstrated negative allometric growth for all treatments except for the control, while low Fulton's body condition factor (K) was observed in all treatments. The daily organic matter consumption was the highest for TQD, followed by NPK, FSP and control. These findings suggest that both NPK and FSP could be utilised to promote higher growth performance of C. *fluminea*.

Economic Performance and Capacity Utilisation in Vietnamese Purse Seine Fishery

THI HONG NGA CAO, ARNE EIDE, CLAIRE W. ARMSTRONG, KIM LONG LE

https://doi.org/10.33997/j.afs.2020.33.1.007

This study identifies differences in vessel efficiency amongst purse seiners in Vietnamese fishery. Deterministic data envelopment analysis (DEA) assessed the relative capacity utilisation of each vessel, and double bootstrap DEA was adopted to overcome some of the drawbacks of nonparametric DEA. The study was based on a survey of costs and earnings from 52 purse seiners, revealing an average vessel profit margin of 11 %. By adopting double bootstrap DEA while assuming variable returns to scale, mean capacity utilisation was found to be 0.72. This indicates that to sustain the current catch levels, expected inputs should be reduced. The study shows that vessel size, fishing experience, and family size of skippers, all are factors affecting the capacity utilisation.

A Framework for Managing Illegal, Unreported and Unregulated Fishing in ASEAN

WEN CHIAT LEE, K. KUPERAN VISWANATHAN

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In this paper, a framework incorporating economics, social and institutional drivers for addressing IUU fishing is presented. The economic rents from fishing are among the main drivers contributing to IUU fishing. The Food and Agriculture Organization, International Maritime Organization, and regional bodies plan of action are examined for effectiveness in reducing IUU fishing. Approaches for reducing the economic rent or profit from IUU fishing are developed, and directions for reducing IUU fishing through the RPOA are suggested. The suggestions include improved registration of fishing vessels, preventing entry of illegal fish products and most importantly, developing comanagement of fisheries and improving monitoring at landing sites. In addition, governments in ASEAN countries must work in tandem with the stakeholders involved such as fishers, fisher agencies or associations to exchange information for reducing IUU fishing.

SYNOPSIS OF PAPERS VOLUME 33 (ISSUE 2) : ASIAN FISHERIES SCIENCE JOURNAL

The Reproductive Biology of *Pachypterus khavalchor* (Kulkarni, 1952) in the Panchaganga River of the Western Ghats, a Biodiversity Hotspot in India

SACHIN M. GOSAVI, SANJAY S. KHARAT, SANDIP D. TAPKIR, PRADEEP KUMKAR

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Pachypterus khavalchor is a rarely studied but highly exploited catfish inhabiting the Krishna River system of India. Fish collected from the Panchaganga River showed the male-female ratio of 1:1.02 and females were comparatively larger than the males. Males matured at smaller sizes as compared to females. The gonadosomatic Index indicated that the breeding season for *P. khavalchor* is from April to August, whereas the hepato-somatic Index and stomach fullness index showed that both males and females have similar seasonal reproductive patterns and feeding behaviour.

Institutional Robustness of Culture-based Fisheries in Perennial Reservoirs of Sri Lanka

K.B.C. PUSHPALATHA, MOHOTTALA G. KULARATNE, U.S. AMARASINGHE

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The utilisation of irrigation reservoirs for culture-based fisheries (CBF) is a recent development in Sri Lanka. The trends in CBF development in five reservoirs to identify the robustness of institutional arrangements in the rural fisheries organisations (RFOs) for the sustainability of CBF showed enabling features for implementing CBF through community participation. After the introduction of CBF, fish species composition in the landings changed with the occurrence of stocked species in the landings, resulting remarkably in elevated fishers' income. The CBF management options of RFOs in two reservoirs were at high compliance levels of Ostrom's modified design principles, where fishers enjoyed increased mean annual income after introduction of CBF. Economic gains of RFOs due to increased levels of compliance with design principles through improving leadership qualities and empowering fishers for management decision-making would, therefore, ensure the sustainability of CBF.

Value Chain Analysis of the Horse Mussel *Modiolus metcalfei* (Hanley, 1843) Fishery in Iloilo, Philippines

KAENT IMMANUEL UBA, HAROLD MONTECLARO, MARY MAR NOBLEZADA-PAYNE, GERALD QUINITIO, JON ALTAMIRANO

https://doi.org/10.33997/j.afs.2020.33.2.003

The exploitation of horse mussels in the Philippines has been going on for decades, yet effective fisheries management remains hindered by the poor understanding of the fishery. Mapping of the value chain used data gathered through fisherfolk interviews, key informant interviews, and field observations showed the collectors, processors, retailers, and ambulant vendors are the key players in the fishery. While both men and women may engage in marketing, the majority of men are involved in the collection while women do the processing. The collector-cum-ambulant vendor benefits the most while the actor who benefits the least in this value chain is the processor. Upgrading strategies at every node of the value chain along with its enabling strategies are proposed to improve the income of key actors and maximise the economic benefits from the horse mussel fishery.

Induced Spawning of Giant Trevally, Caranx ignobilis (Forsskål, 1775) using Human Chorionic Gonadotropin (hCG) and Luteinising Hormone-releasing Hormone Analogue (LHRHa)

MARIA THERESA MERCENE MUTIA, FREDERICK BUENSALIDA MUYOT, MYLEEN LUNA MAGISTRADO, MYLA CELEMEN MUYOT, JANET LUCITO BARAL

https://doi.org/10.33997/j.afs.2020.33.2.004

The giant trevally was induced spawned using human chorionic gonadotrophin (hCG), (b) luteinising hormone-releasing hormone analogue (LHRHa), and carp pituitary extract (CPE). Successful spawning was achieved in LHRHa- and hCG-injected fish. Fertilisation rate was significantly higher in LHRHa treatment than hCG treatment. Mean spawned eggs, hatching rate and mean larvae produced were not statistically different between hCG and LHRHa treatment. This is the first recorded captive breeding of giant trevally in the Philippines and an initial step towards developing the seed production technology for this new aquaculture species.

Modelling Compliance in Small-scale Fisheries: A Case Study from the Sultanate of Oman

IBRAHIM ABDULLAH AL-QARTOUBI, HUSSEIN AL-MASROORI, SHEKAR BOSE

https://doi.org/10.33997/j.afs.2020.33.2.005

Artisanal fisheries sector has received little attention despite extensive research in fisheries compliance. A total of 397 artisanal fishers were interviewed using face-to-face questionnaires and stratified random sampling in an attempt to understand the social and economic factors impacting the compliance level. Two types of logit economic models were used to evaluate violation decisions made by artisanal fishers. In general, the extended economic model generated better results than the basic deterrence model using primary probabilities. Demographic factors, legitimacy variables and biological factors were found to play key roles in violation decisions, unlike moral norms which had no impact. The study provides empirical support for the theory that potential profits, ethical standards, legitimacy, and social impact are the key variables for encouraging compliance in the artisanal fisheries sector. In the light of current operational challenges in terms of human and institutional capacity and inadequate financial and logistical resources, a heterogeneous approach to the fisheries management program is recommended.

Influence of Nitrogen Cycle Bacteria on Nitrogen Mineralisation, Water Quality and Productivity of Freshwater Fish Pond: A Review

IPSITA PAUL, ASHIS KUMAR PANIGRAHI, SUBHENDU DATTA

https://doi.org/10.33997/j.afs.2020.33.2.006

Nitrogen is one of the prime influential macronutrients which directly stimulate the productivity of pond ecosystems. Application of excess nitrogen in the form of fertiliser may cause deterioration of water quality by accumulation of toxic nitrogenous compounds such as ammonia and nitrite. Over-stimulation of nitrogen beyond a pond's assimilatory capacity may be detrimental to the aquatic organisms and needs special attention to keep water quality conducive for fish growth. The present review focused on nitrogen biogeochemistry of aquaculture ponds with issues on use of nitrifiers as bioaugmentors for management of aquatic resources and use of essential micronutrients to a certain limit to enhance the efficacy of nitrifiers for increasing productivity.

Size Matters: A Review of Live Feeds Used in the Culture of Marine Ornamental Fish

MATTHEW HILL, ANGELO PERNETTA, NEIL CROOKS

https://doi.org/10.33997/j.afs.2020.33.2.007

The marine ornamental fish trade generates over USD1.5 billion annually and continues to increase. The limiting factor in marine ornamental fish production is the requirement for appropriately sized live food as a first feed. This review considers the current usage of live feeds, including Artemia, rotifers, copepods, and ciliates and discusses the advantages and disadvantages of each when used to culture marine ornamental fish. Live feeds currently used often exceed the gape size of species at the onset of exogenous feeding, resulting in limited commercial success. Future developments focussing on novel and existing live feeds used within the industry for these valuable species are explored. These developments will enable aquaculture, rather than the exploitation of wild populations, to meet future demand and will encourage progress in the aquaculture of marine ornamental fishes.

Barriers to Climate Change Adaptation: Insights From the Sundarbans Mangrove-based Fisheries of Bangladesh

MD. MONIRUL ISLAM, MD. ASADUR RAHMAN, BIJOYA PAUL, MAKIDUL ISLAM KHAN

https://doi.org/10.33997/j.afs.2020.33.2.008

Adaptation to climate change in mangrove-based fisheries is confronted by multiple barriers on which studies are limited. This study identified barriers to climate change adaptation faced by fishing communities dependent on the Sundarbans mangroves. The study also explored the possible linkages among the different barriers for the adaptation to climate change and ways to overcome them. This study identified six categories of barriers: natural, social, institutional, financial, technological and informational. Some of these barriers are inter-related and overlapped with one another directly or indirectly and hampered the climate change adaptation in complex ways. This research provides a range of measures to help mitigate and overcome the barriers including mitigation of climate change, proper education and awareness-raising, enforcement of fisheries rules and regulations, reconsideration of fishing ban in the Sundarbans, favourable credit systems, reduction of fees for collecting natural resources from the Sundarbans and technological development.

Digestibility of Diets Micro-supplemented with Whole *Chlorella vulgaris* Beijerinck, 1890 in Hybrid Red Tilapia (*Oreochromis mossambicus* × *O. niloticus*)

MUHAMMAD AHMAD TALBA, MOHAMED SHARIFF, YONG MENG GOH, FATIMAH MD. YUSOFF

https://doi.org/10.33997/j.afs.2020.33.2.009

Microalgae are rich in carotenoids, immunomodulating metabolites and other nutrients suitable as fish feed. The present study aimed at investigating digestibility of diets micro-supplemented with whole *Chlorella vulgaris* at different inclusion levels in hybrid red tilapia. The result showed that micro-supplementation of C. *vulgaris* at 1 %, 3 %, and 5 % inclusion levels significantly improved the apparent digestibility coefficient values for dry matter (36.24, 38.83, and 40.62, respectively) and protein (78.52, 78.79, 80.51, respectively) which was also associated with an increase in the micro-supplementation level. The result of the present study showed the ability of hybrid red tilapia to digest diets micro-supplemented with whole C. *vulgaris* at different inclusion levels.

Population Dynamics of Nile Tilapia, *Oreochromis niloticus* (Linnaeus, 1758) (Teleostei, Cichlidae), in Some Irrigation Reservoirs of Sri Lanka

K.V. SANDUN N. BANDARA, P.A.D. AJITH KUMARA, UPALI S. AMARASINGHE

https://doi.org/10.33997/j.afs.2020.33.2.010

Oreochromis niloticus exhibits differences in demographic parameters across the 10 reservoirs studied, resulting in inconsistencies in optimal fishing strategies. The length-converted catch curves gave reliable estimates of total mortality. Exploitation rates of the 10 populations ranged from very low to very high values. From the relative yield-per-recruit analyses, it was apparent that in some reservoirs, long-term fish yields can be optimised using gillnet mesh sizes of 7.6 cm, while optimal long-term fish yields in other reservoirs could be achieved by increasing the permissible gillnet mesh size above the legal mesh size of 8.4 cm. Hence, the gillnet mesh regulations in the Sri Lankan reservoir fishery should not be uniform but reservoir-specific. Accordingly, site-specific management options, which are defined in consultation of resource users are necessary for implementation in reservoir fisheries of the country.

Obituary: Professor Sena S. De Silva (1946–2020)

UPALI S. AMARASINGHE, ROHANA SUBASINGHE

https://doi.org/10.33997/j.afs.2020.33.2.011

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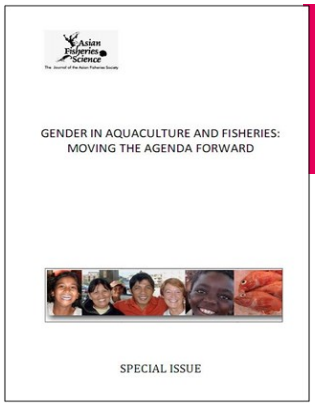

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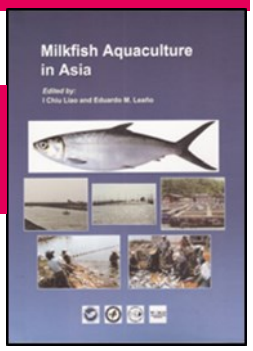

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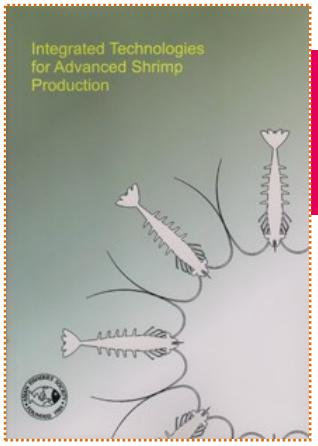

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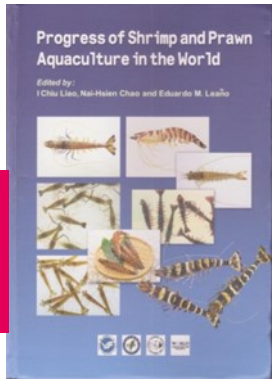

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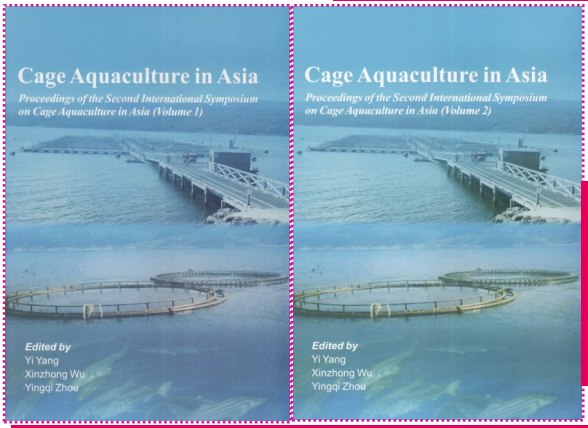

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