



Chamber of  
Aquaculture  
Ghana



UNIVERSITY OF GHANA  
DEPARTMENT OF MARINE AND  
FISHERIES SCIENCES

WORLD  
AQUACULTURE  
Society



# FIRST HYBRID AQUACULTURE CONFERENCE OF WORLD AQUACULTURE SOCIETY AFRICAN CHAPTER - WEST AFRICAN REGION CONFERENCE REPORT

THEME :NEW STRATEGIES TO PROMOTE INCLUSION AND  
TRANSPARENCY IN AQUACULTURE MANAGEMENT IN WEST AFRICA.

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*" This hybrid conference is the first to be organized on the continent and it is a step in the right direction as it brings together the major stakeholders and the development partners within the industry to deliberate on better ways to promote inclusion and transparency in the management of aquaculture in West Africa "*

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Prof Francis K.E. Nunoo  
Head of Department  
Marine and Fisheries Sciences  
University of Ghana



# Opening Session

## ACRONYMS

(COA)	Chamber of Aquaculture Ghana
(WAS)	World Aquaculture Society
(AC)	African Chapter
(WAR)	West African Region
(FAO)	Food and Agriculture Organization
(GIPC)	Ghana Investment Promotion Centre
(GIZ)	Deutsche Gesellschaft für Internationale Zusammenarbeit
(WISHH)	World Initiative for Soy in Human Health (WISHH)
(SARNISSA)	Sustainable Aquaculture Research Networks in Sub Saharan African
(FCR)	Feed Conversion Ratio
(ROC)	Regional Organizing Committee
(LOC)	Local Organizing Committee
(MoFAD)	Ministry of Fisheries and Aquaculture Development
(JCA )	Joint Call for Action

## 1.0 Introduction

The Chamber of Aquaculture Ghana (COA) in collaboration with the Department of Marine and Fisheries Sciences, University of Ghana co-hosted the maiden hybrid conference of the World Aquaculture Society African Chapter West African Region (WAS AC WAR) which opened on 14<sup>th</sup> May, 2021 and ended on 16<sup>th</sup> May, 2021. The theme for the conference was “New Strategies to Promote Inclusion and Transparency in Aquaculture Management in West Africa”. This premier event brought together key stakeholders in the aquaculture industry in West Africa and other parts of the world. The conference included two (2) in-person events and twelve (12) online sessions. The in-person events took place at the Cedi Conference Centre at the University of Ghana, Legon, Accra on 14<sup>th</sup> May 2021 and 16<sup>th</sup> May 2021 for the opening and closing ceremonies, respectively.

The hybrid conference was supported by sponsors and contributors from all over the world. There was considerable support and cooperation from organizations such as Food and Agriculture Organization (FAO), Royal Norwegian Embassy-Ghana, Ghana Investment Promotion Centre (GIPC), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ Ghana), World Initiative for Soy in Human Health (WISHH), Raanan Fish Feed-West Africa, Pumptech,

Cycle Farms Limited, Asakua and Sustainable Aquaculture Research Networks in Sub Saharan Africa (SARNISSA).

The conference touched on a variety of topics relevant to the main theme, specifically aquaculture governance in West Africa, water quality and environmental protection, fish health management, women and youth in aquaculture, aquafeed development in West Africa and human rights issues in aquaculture.

### 1.1 Conference objectives

The objectives of the hybrid aquaculture regional conference were to:

- Promote “Good governance” in aquaculture management in West Africa.
- Provide a platform to discuss how aquaculture policies and practices in the West African region can be more inclusive and transparent.
- Promote inclusion and transparency in the management of aquaculture in West Africa.
- Share experiences and promote networking among aquaculture stakeholders.

## 2.0 The Conference in Numbers

The geographical and stakeholder distribution of participants in the WAS AC WAR hybrid conference was diverse and truly international in nature, with attendees coming from 47 countries across 4 continents (Table 1).

**Table 1.** Continental representation of participants in the first hybrid aquaculture conference for West Africa.

Continent	Number of Countries
Africa	22
Asia	8
Europe	11
North and South America	6

Majority of participants were from the English-speaking countries and few participants from French-speaking countries. A total of 177 participants attended the in-person events. The opening and closing ceremonies attracted 151 and 26 in-person participants, respectively. Overall, about 1342 participants including aquaculture industry players, diplomats, academics, government and non-governmental stakeholders, and students – shared expertise and broad experience,

through lively and interactive sessions both online and in-person. Percentage breakdown of stakeholder participation were:

- Industry players: 45%
- Academia- researchers, students etc:40%
- Government sector/agencies: 6%
- NGO/Stakeholders: 9%



The opening ceremony attracted nine (9) key Speakers, namely:

1. Dr Anim Somuah, Board Chairman, Chamber of Aquaculture Ghana.
2. Prof Francis K.E. Nunoo, Head of Department, Marine and Fisheries Sciences, University of Ghana.
3. Dr. Ndiaga Gueye, FAO Regional Senior Fisheries Officer.
4. Mr. Oyvind Udland Johansen, Deputy Head of Mission, Royal Norwegian Embassy, Accra, Ghana.
5. Mrs. Regina Bauerochse Barbosa, Country Director, GIZ Ghana.
6. Mr. Kwame Panim, Economist and Aquaculture Industry Player.
7. Mr. Yofi Grant, Chief Executive Officer, Ghana Investment Promotion Centre.
8. Dr. Sherif Sadek, President African Chapter of the World Aquaculture Society
9. Mr. Blessing Mapfumo, Secretary, African Chapter of the World Aquaculture Society.



The online sessions including the opening and closing sessions were streamed live on Facebook and YouTube for all the three days

of the conference. These sessions attracted 27 Speakers and 12 Moderators (Table 2).

**Table 2.** Online sessions and total number of participants for each session during the first hybrid aquaculture conference for West Africa.

Sessions	No of participant (online sessions)
Day 1	459
Day 2	446
Day 3	260

### 3.0 Conference Narrative

#### ***Day 1***

The conference kicked off with a short prayer exactly 15 minutes past 9 am at the Cedi Conference Centre at the University of Ghana, Legon, Accra. Thereafter, the Chairman of the Conference, Prof. Francis K.E. Nunoo through his opening remarks stated that “this 3-day hybrid conference on aquaculture for the West Africa Region is the first to be organized on the continent and a step in the right direction as it brings together the major stakeholders and development partners within the industry to deliberate on better ways to promote inclusion and transparency in the management of aquaculture”. He was followed by Dr. Anim Somuah, Board Chairman of the Chamber of Aquaculture Ghana who indicated that aquaculture is the more sustainable way to meet the protein needs of West Africa’s growing population and this hybrid conference created a platform that enabled all stakeholders to explore an improved means of growing the West African aquaculture sector and influence policy. All the speakers for the opening ceremony then took turns to deliver their speech on important issues that border on the promotion, inclusion and transparency in the management of aquaculture in West Africa. Refer to Annex A and Annex D for detail profile of all the Speakers and their Speeches.

## Day 2

The Second day of the conference started with a session on oral presentations from participants whose abstracts were accepted for presentation. Topics that were presented covered issues on fish health, breeding and fingerlings production, fish nutrition, and water quality. There was a presentation on a network of researchers exploring the possibility of marine aquaculture in Africa. Briefly, the first presenter, Rose Deho, investigated the pathological agents responsible for the rusty brown spots often found on Nile tilapia skin in Ghana. Her findings were that the rusty brown spots found on tilapia skin were caused by an ensemble of pathogens like bacteria (e.g., *flavobacterium*), oomycetes like *Saprolegnia*, and ascomycetes such as *Aspergillus*. Rose recommends that a thorough study of the fish production chain be conducted to identify the source of the pathogens detected. The second presenter, Oguchenuko discussed the prevalence of helminth parasites in pond raised *Clarias gariepinus* in Ogun State in Nigeria. Her findings showed that three parasites; *Diphyllobothrium latum*, *Dipylidium caninum*, and *Necator americanus* belonging to the Nematode and Cestode classes of parasites were present, and the most prevalent among the three was *D. latum* at 6.7%. Other presenters like Ameti, Lutterodt, Oluwale, Ayisi, Baah-Yeboah, Sofela, and Darias followed in this order with interesting topics that spanned from the induced spawning of catfish under varying broodstock ratio using Ovaprim, effects of feeding frequency on growth performance, water quality sample integrity and implications for aquaculture to a report from a research network that has been established to explore and promote marine aquaculture in Africa.

The second session for Day 2 focused on water quality and environmental protection in West Africa with speakers from Ghana and Nigeria. Dr. Regina Edziyie, a senior lecturer at the Kwame Nkrumah University of Science and Technology, Ghana delivering her presentation on Water Quality Management – A Key to Sustainable Aquaculture indicated that poor water quality could have detrimental effects on fish production. Therefore, it is necessary to ensure that the culture ecosystem is functioning properly to facilitate aquaculture activities for aquaculture practitioners. She stressed that collaborative efforts between all industry stakeholders is important to ensure a sustainable aquaculture sector in the sub-region. She explained that the biology of the culture water is extremely important and goes beyond just physicochemical parameters. According to her, a change in the microbiology of the culture water leads to changes in the overall quality of the culture environment. Unfortunately, little studies and research exist on the biology of culture water to guide farmers on maintaining good culture environment for fishes.

However, she encouraged farmers to adopt effluent or waste treatment strategies to remove nutrients from waste before discharge to reduce environmental and water pollution to ensure a sustainable aquaculture industry in West Africa. She was followed by Prof. Festus Adeosun, Director for the Centre for Entrepreneurial Studies of the Federal University of Agriculture, Abiekuta Ogun State Nigeria who said that the quality of water for fish production is essential and should be of paramount concern to farmers because the fish does everything in the water. A failure to do so could result in poor growth and high FCR or at worst, a total loss of all fish in the production system. Both speakers agreed that controlling or maintaining ammonia free culture water is critical for a successful farm enterprise.

Session 3 for Day 2 focused on Aquafeed Development in West Africa with three experienced panelist in the aquafeed industry. The session started with a short presentation from Karen Veverica who has over 40 years' experience in aquaculture production of warmwater fish; 20 of them in Africa. A key issue Karen raised in her presentation was that Africa in general has many challenges that makes it difficult to produce quality aquafeed. Among these challenges were that:

- i. Most farms are small and dispersed
- ii. Middlemen collect inputs and reap much of the profit
- iii. Agricultural by-products used as raw materials for fish feed are produced by a variety of machinery many of which are old and in poor state affecting quality.
- iv. High overland transport cost.
- v. Expensive and unreliable electrical power in terms of supply and voltage.
- vi. Lack of technical expertise on extrusion technology

She proposed that to solve these challenges feed producers could be very strategic in the citing of their feed mill; combine input supply and distribution of finished product, select machinery that is not too sensitive to variations in voltage, have an action plan to continue production in cases of power outage, import expertise to manage their plant and machinery, consistently invest in staff training, and organize frequent workshops for their farmers to educate them on the benefits of good feed.

The Chief Country Officer for Cycle Farms limited in Ghana commented on the challenges of aquafeed development in West Africa. He stated that aquafeed development in West Africa faces:

- i. Inadequate quality raw materials which affects feed quality.

- ii. Lack of large-scale cultivation of crops used as raw materials thereby hindering constant supply of feed.
- iii. Lack of extension officers to monitor and supervise the production of feed.
- iv. Trade barriers inhibiting trade among member countries.
- v. Scarce technical human resources.
- vi. Multiple and duplication of licenses and permits from national, regional and districts assemblies affecting the establishment of fish feed companies.

To ameliorate these challenges, he proposed that:

- i. Governments could consider tax reductions on aquaculture feed inputs at the ports to facilitate trade among member African states.
- ii. Policy directives in the aquaculture industry should encourage the cultivation of fish feed raw materials.
- iii. Large scale raw materials farms should be encouraged by policy makers,
- iv. Governments should implement policy directives that will enable easy establishment of fish feed companies.

Later on in the Day, a Photo Competition which was a special session sponsored by ASAKUA and SARNISSA was organized. The competition was grouped into two categories thus General Category and Students Category. Many entries were received from which 12 were shortlisted from both categories. Prince Ofori Darkwah, student from the Kwame Nkrumah University of Science and Technology, Kumasi, Ghana won the students category (Photo 1) whilsts Olonode Damilola, a catfish farmer from Nigeria was the winner of the general category (Photo 2). The moderator, William Leschen used the platform to encourage all to engage in quality photography at the farm, feed mill and in any sector of the aquaculture value chain. The day ended with a session that discussed the role of the media in aquaculture development in West Africa.

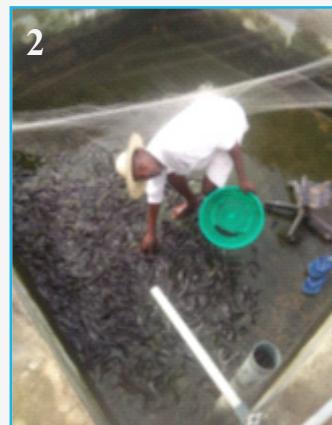


Figure 1: Photos that won the competition: Photo 1 – Teaching Assistants sorting tilapia from hapa to cage and Photo 2 - Farmer sorting catfish juveniles in a peri-urban concrete tank production system.

### Day 3

The last day of the hybrid conference started with a brief interactive session where participants were given the opportunity to reflect on issues arising from the sessions of the first two days. This was immediately followed by the first session for the day where Deaconess Faluke Adeola presented an overview of the Series one of the World Aquaculture Society/West African Region regional report on aquaculture management. She presented the 15 policies gaps which have been identified by the country consultants. She commenced her presentation with a rhetoric question that: *“Why do policy structures designed to manage small and large aquaculture projects in West Africa fail to achieve the expected result?”* Her response to this question was that *“most policies and laws governing aquaculture are imposed on practitioners and are non-negotiable with the stakeholders”*. This suggests that most policy formulations are not inclusive of the main actors in the industry and is affecting the growth of the sector. She identified the following factors as contributing to the slow growth of aquaculture in the West African Sub-region:

- i. Policy and laws developed to manage aquaculture do not regulate all aspects of the value chain. For example, there are no policies regulating fish feed in West Africa, unavailability of laboratories and extension officers to ensure, check and supervise fish feed production in the region.
- ii. In most of the Francophone countries, decrees on aquaculture activities are used instead of laws to control and regulate human actions and behaviour of farmers. Failure to go strictly to these decrees lead to sanctions and fines. On the other hand, most of the laws in the Anglophone countries in the West African region are not enforced, due to the lack of experts to monitor and ensure compliance. The ratio of extension officers to farmers is too low to ensure effective compliance. This gap inhibits the progress of the aquaculture industry in West Africa.
- iii. The environment which is the capital requirement for aquaculture production is not protected in the aquaculture law. The region lacks expertise to monitor the importation of new species from other continents into West Africa. The outbreak of new viruses and infection has been predominant in the industry these days because of indiscriminate

and deliberate importation, coupled with porous monitoring and supervision at the points of entry. The Food and Agriculture Organization's regulation on the documentation of the introduction of new species into new water bodies are not adhered to by most farmers and practitioners. Indiscriminate discharge of effluent containing imported viruses end up affecting the water bodies used for production.

- iv. Enforcement of aquaculture regulations are prescriptive. No incentive to drive the implementation process. Officials responsible to teach and educate farmers about the aquaculture regulations receive low or no incentives hence little motivation to work. The availability of basic incentives for officials to reach out to rural communities are unavailable.
- v. Long term of office for highly ranked officials responsible for aquaculture discourages new and innovative ideas on expanding the sector. This is one of the prevailing issues fighting the progress of the aquaculture industry in West Africa.
- vi. Lack of sufficient research funding is a big challenge facing the aquaculture industry. Even the few research done are sitting on shelves, and not made available to industry players. Farmers themselves lack the understanding to fund aquaculture research that will in turn benefit them.
- vii. Lack of specialist in fisheries law. Most lawyers in this part of the world prefer the oil and gas sector, land, and petroleum among others where they can get briefs to write since the aquaculture sector lacks detailed and applicable research.
- viii. Discrimination of qualified applicants for positions in the industry. Most often, people who qualify for recruitment in government administrative bodies in aquaculture industries are denied offers because they may not have any political affiliation with the government in power. This attitude does not allow professionalism in the industry at the policy and regulation level.
- ix. Where they exist, aquaculture regulations are sometimes difficult to interpret by the relevant stakeholders, cost-effective, and lack of specialized court system to handle and prosecute aquaculture offences.
- x. Unwillingness of some farmers to adopt new, environmentally friendly practices. Hence grassroot education and interaction should be encouraged.
- xi. Weak institutions make the enforcement of aquaculture regulations difficult.
- xii. Poor understanding and compliance of international aquaculture laws and regulations because of their complexity.

The second session focussed on Human Rights Issues in Aquaculture where participants received an interesting presentation from Prof. Abdulai Salifu, Director of the Human :

Rights Research Centre in Ghana. On his presentation, "Climate Change and Aquaculture Human Security Implication in Ghana", Prof. Salifu stated that the decline in fish catch from the wild was due to a steady rise in sea surface temperature over the past 20 years. He narrates that the decline in fish catch in the sub-region presents a threat to food and nutrition security which translates into human security concerns. He therefore indicated that Aquaculture possesses an immense potential in addressing food and nutrition security, unemployment which will in a way end hunger and increase economic growth. He, however, affirmed that human rights and labour abuses exist in the fisheries and aquaculture sector. For instance, where cheap labour is scarce domestically, operators resort to migrant workers who often are limited by language barrier and without advocates, are vulnerable to labour abuse and trafficking. He stated that while the Goal 6 of the African Union Agenda 2063 is geared towards expanding the fisheries and aquaculture sector of the continent, it is important that the potential human rights impact and implication are well addressed. He ended on the note that national governments may have the primary duty to protect human rights but it is also urgent that aquaculture operators take responsibility to respect human rights in their operations. Dr Oladipo and Menyoli Emmanuel Molua presented on Environmental Protection and Aquaculture Governance in West. Mrs. Fumilola Shelika was the moderator. Dr Oladipo presented on the issue of pollution, where he stated that 'there is the need for more awareness creation on pollution control because many farmers do not know the real impact of their actions on the environment and thus their actions end up compromising the integrity of the environment. Emmanuel Menyoli presented on aquaculture governance, where he clearly stated that governance is not a person, rather a process. He went on to say that, the biggest aquaculture problem in West Africa is not lack of, it is the lack of "Good governance". He presented four principles which underlines good governance and concluded by stating that, to ensure good governance in the aquaculture industry in West Africa, decisions must be made by the rule of law and not by the opinions of policy makers.

Finally, the conference was closed by Mr Lanre Badmus, the Executive Secretary of World Aquaculture Society -West Africa Region. In his closing remarks, he reiterated the need for all stakeholders in the sub region to cooperate in order to ensure sustainable development of aquaculture in West Africa.

## 4.0 The Technology Behind the Conference

All IT services were outsourced to Iluminus Ghana Limited. Pre-conference registration was conducted online and hosted at the online registration portal of the African Chapter of the World Aquaculture Society. Participants who registered for the hybrid conference accessed the online sessions using the Zoom platform while the YouTube channel and Facebook streaming was available to all through the Chamber's YouTube channel and Facebook page, respectively. External services provided at the conference included video and photography. The conference Help Desk volunteers provided real time assistance to participants through zoom chats, WhatsApp, Twitter, email, Facebook and the COA website.

## 5.0 The Main Takeaways

This hybrid aquaculture conference was the first of its kind for West African aquaculture sector. The hybrid conference provided a platform for all stakeholders to share their experiences, network and recommend ways of improving aquaculture governance, gender empowerment, protection of aquaculture ecosystem, fish health management, access to improved seeds, feed development, aquaculture financing and capacity building for workforce engaged in aquaculture sector.

Below are the core highlights from speeches, presentations and discussions.

- West Africa governments have recognised the need to curb the huge difference in fish deficit in the sub region and to promote aquaculture as the capture fisheries dwindle.
- A lot must be done on aquaculture governance in West Africa, notwithstanding efforts made to improve on policy formulation, planning and implementation.
- Inadequate aquaculture governance is a threat to the survival of aquaculture sector in West Africa.
- Governments in West Africa must create a favourable business environment that will enable the private sector investment in strategic sub-sectors like seed production, fish feed production, fish health management and financing.
- All stakeholders in West African aquaculture sector are key players in pushing aquaculture development to the next stage.
- Gender empowerment and equality is key for sustainable development of aquaculture in West Africa.
- The ecosystem that sustains the thriving of aquaculture is under serious threat due to illegal mining, indiscriminate logging, indiscriminate sand winning from water bodies and other adverse environmental activities.
- Limited access to inputs like improved seeds and fish feeds are constraints to aquaculture development in West Africa.
- Fish health management is critical to the

survival of the aquaculture sector and there is a need to improve on disease prevention, control and monitoring.

- The West African aquaculture sector lacks reliable source of funding and needs investment to scale up production.
- Vocational skills and training in aquaculture is required to scale up aquaculture production in West Africa.
- Capacity building across the aquaculture value chain must be undertaken by research institutions, vocational centres, and universities.

## **6.0 The Next Step and Getting Involved**

This hybrid conference provided an opportunity for key stakeholders to raise and discuss a wide range of issues affecting aquaculture development in West Africa and recommended new strategies in managing West Africa aquaculture sector.

As a result of the key presentations and discussions at the hybrid conference, The World Aquaculture Society-West African Region (WAS-WAR), Chamber of Aquaculture Ghana (COA) and the Department of Marine and Fisheries Sciences of University of Ghana have produced a joint call for action (JCA), a brief document that summarizes the key recommendations for action by stakeholders in Ghana and West Africa.

## **6.1 Recommendation for Aquaculture Stakeholders in West Africa**

There is the need for all stakeholders in aquaculture to collaborate to harness the numerous opportunities prevailing in the aquaculture sector in West Africa. To achieve this, speakers and presenters at the hybrid aquaculture conference proposed the following course of action:

- Detailed policies that involve all stakeholders within the value chain should be designed to effectively respond to local aquaculture conditions instead of unworkable highly demanding aquaculture systems.
- Industry players, academia and government stakeholders should create connections that serve as linkages for exchange of information and ideas.
- All stakeholders should make deliberate effort to protect the aquaculture ecosystem that is under threat by pollution and illegal mining in our rivers and lakes.
- Technical and Vocational Institutions should introduce Aquaculture Programmes for low skilled aquaculture workers.
- Financial institutions such as commercial banks must be engaged to invest in aquaculture.
- Insurance institutions should introduce tailor-made aquaculture insurance

schemes for the sector.

- The Chamber of Aquaculture Ghana and the academia should make this aquaculture conference an annual event as this can serve as a common platform for all stakeholders to interact and deliberate on how to push the aquaculture sector in Ghana to the next stage.
- Government should consider granting import tax waiver on fish feed raw materials. This could reduce the cost of fish production, increase the volume of annual farmed fish, make farmed fish affordable to consumers and generate more domestic revenue for industry players.
- Ghana's Ministry of Fisheries and Aquaculture Development (MoFAD) should establish an Aquaculture Development Fund to scale up aquaculture development, support aquaculture research and activities in the sector.
- The Fisheries Commission in partnership with industry players should develop a course of action to curtail the disease situation that has affected aquaculture production in Ghana.
- MoFAD should prioritize domestic aquaculture development challenges and balance same with premix distribution and fish import licensing activities.
- Licensing or permit acquisition should be harmonised to make business

activities in the aquaculture sector more attractive.

## 7.0 About the Conference Organizers and Committees

The first hybrid conference was organized by the World Aquaculture Society African Chapter West African Region and jointly hosted by the Chamber of Aquaculture Ghana, and the Department of Marine and Fisheries Sciences, University of Ghana.

The Chamber of Aquaculture Ghana was established in 2019 to promote specific needs of the aquaculture sector in Ghana while ensuring sustainable growth of the industry. We do this by providing resources to our members, businesses and individuals who are actors in the aquaculture sub-sector. We advocate for improved production practices through our partnerships with businesses, communities and state agencies.

The Department of Marine and Fisheries Sciences was established in 1962 by a statute of the University of Ghana, however the academic programme of the department started in 1998. It is Ghana's foremost center directly concerned with marine environment research and training of fisheries scientists among her institution of higher learning. The department provides teaching towards the award of BSc, MSc/MPhil and PHD degrees in Marine and Fisheries sciences, as well as Coastal Zone Management. In addition, the department provides various specialized

short and long-term training in aquaculture and freshwater fish disease management, fisheries statistics, fish processing, marine ecosystem modelling, conservation in marinebirds, turtles, among others.

The World Aquaculture Society (WAS) is a strong representative of the global aquaculture community and has established Chapters around the globe to meet the expanding international nature of the Society and to address specific aquaculture needs in these areas. Through its diverse membership and international networks, the WAS provides leadership for enhanced international communications, collaboration, and information exchange.

African Chapter was approved and ratified, 7 November 2018. The chapter was launched at the WAS 2017 conference in Cape Town, South Africa. The process of getting a petition to form a chapter ( a document signed by focal points from within

African) was coordinated and concluded successfully. The signed petition was submitted to WAS board in July 2018. The five region according to United Nations geoscheme for Africa are, North Africa, West Africa, East Africa, Central Africa and Southern Africa.

The West Africa UN subregion includes the following countries: Benin, Burkina Faso, Cape Verde, Côte D'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo. The regional director for West African Region is Director Lanre Badmus.

The success of the first hybrid aquaculture conference in West Africa was due in no small part to the engagement of the local and regional organizing committee, the speakers, participants, sponsors, and contributors that attended the event in-person and online.



## 7.1 Regional Organizing Committee (ROC)

1. Dr. Festus Adeosun (Nigeria)	Chairman
2. Mr. Jacob Adzikah (Ghana)	Member
3. Dr. Oliver Toudji (Burkina Faso)	Member
4. Mr. Dohato B. Agbohonzo (Benin Republic)	Member
5. Mr. Menyoli Emmanuel (Cameroon)	Secretary General
6. Pietro Giula Alsaia	Member
7. Dr. Moukimou Elh Aboubakary (Niger)	Member
8. Olayinka Quadri (Nigeria)	PRO
9. Mr. William Leschen	Adviser
10. Mrs. Fumilola Shelika	Member
11. Dr. Gandega (Mauritania)	Adviser
12. Constance Enyindah (Nigeria)	Reg. Student Cod
13. Lanre Badmus (Nigeria)	Member
14. Deaconess Foluke Areola	Member
15. Dr. Charity Oche	Member

## 7.2 Local Organizing Committee (LOC)

1. Dr Collins Prah Duodu	Chairman
2. Grace Nikoi Olai	Member
3. Dr Lawerh Tetteh	Member
4. Jacob Adzikah	Member
5. Nestor Gbevlo-Lartey	Member
6. Peter Adzikah	Member
7. Francis De Heer	Member

### 7.3 Conference Planner Committee

1. Patrick Anabila
2. Prosper Akuteye
3. Wise Goodluck Datsomor

### 7.4 Student Volunteers

1. Mary Asumamba Afening
2. Joyce Precious Addae
3. Nkansah Oforiwaabigail
4. Sonia Naa Ansaa Sackey
5. Akosua Ohemaa Amakye
6. Ernestina Abbew Williams
7. Eunice Naa Adorley Allotey
8. Lucy Ama Orhin
9. Vera Selorm Tasiame

### 7.5 Abstract Review and Selection Committee

1. Dr. Collins Prah Duodu, Department of Marine and Fisheries Sciences, University of Ghana, Legon, Accra, Ghana.
2. Dr. Regina Edziyie, Department of Fisheries and Watershed Management, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

## 8.0 Annex

### A. Conference Speakers



#### **Dr Ndiaga Gueye**

(FAO Regional Senior Fisheries Officer)

Dr Ndiaga Gueye is currently Senior Fisheries & Aquaculture Officer at the FAO Regional Office for Africa, a position he has held for the past 5 years. In this capacity, he is the Secretary of the Committee for Fisheries of the Eastern Central Atlantic (CECAF) and the Committee for Inland Fisheries and Aquaculture for Africa (CECAA).



#### **Øyvind Ueland Johansen**

Councilor and Deputy Head of Mission,  
(Royal Norwegian Embassy, Ghana)

Øyvind Ueland Johansen is the Minister Councillor and Deputy head of Mission at the Royal Norwegian Embassy , Ghana. He holds Master of Political Science from University of Oslo. He has worked in Maputo , Mozambique, Santiago de Chile, Rio de Janeiro, Brazil and Bogota , Colombia.



#### **Regina Bauerochse Barbosa**

(Country Director, GIZ Ghana)

With over 35 years' experience in international cooperation and development, Mrs. Regina Bauerochse Barbosa was appointed Country Director of GIZ Ghana in January 2020. Prior to her appointment as Country Director, Mrs. Bauerochse Barbosa was the global head of Corporate Security at the GIZ headquarters in Germany. She worked in other leadership roles as Regional Director of GIZ's West Africa ; Regional Director of GIZ's Mediterranean and Middle East Divisions; and as Country Director in El Salvador.



#### **Dr Gustavo Ramirez-Paredes**

Aquaculture Business Manager  
(CEVA Ridgeway Biologicals, UK)

He is a Doctor of Veterinary Medicine graduated from the National Autonomous University of Mexico, his dissertation was on local red tilapia population Pargo UNAM Obtained a PhD on Aquatic Veterinary Studies from the Institute of Aquaculture University of Stirling in Stirling Sacotland UK working on fish (tilapia) franciselliosis was a postdoctoral researcher at the Institute of Aquaculture University of Stirling working in collaboration, as a research visitor, with the OIE Center for Emerging Aquatic Animal Diseases in England "Cefas".



#### **Dr Kofitsyo S. Cudjoe**

(Norwegian Veterinary Institute)

Senior Adviser - Fish Health & Welfare | Seniørrådgiver –  
Fiskehelse & Velferd.

Focal Point Aquaculture – Fish for Development Ghana

Dr Kofitsyo Cudjoe, a product of University of Ghana and Norwegian Veterinary School, graduated in MSc Animal Science and PhD Microbiology respectively. He worked as research scientist at the Norwegian Food Research Institute before joining Dynal Biotech as developmental researcher, senior researcher and research manager.



#### **Mrs. Patricia Uwhereaka**

Consultant on Food processing/Entrepreneurship. Corporate Membership-Nigeria British Chambers of Commerce, NBCC; Nigeria America Chambers of Commerce, NACC; Fisheries Society Of Nigeria, FISON; Nigeria Small Scale Industrialist; Nigerian Chambers of Commerce, Industry, Mines and Agriculture, NACCIMA; Has attended several Courses and Conferences in Nigeria and Abroad on Fish Processing, Packaging and Management .Former Vice President of African Women Fish Processors and Marketers, AWFISHNET.



#### **Mr. Yofi Grant**

Chief Executive Officer  
(Ghana Investment Promotion Centre)

Yofi Grant is a renowned Ghanaian investment banker with over 30 years of extensive work experience in banking and finance. Having served in various capacities in corporate finance, credits, marketing, and investment banking, Mr. Grant has broad knowledge and exposure in the African financial markets and has cultivated strong relationships with international private equity funds, portfolio investment managers and brokerage funds. He was responsible for the development and implementation of AAF SME Fund LLC, one of the largest agriculture funds in Sub-Saharan Africa, and helped them achieve their first close of US\$30million.



#### **Dr Samuel Duodu**

(University of Ghana)

Dr. Samuel Duodu is a Microbiologist trained in Norway. All his post-PhD training has been focused on aquatic bacteriology. He has been part of the aquatic bacteriology group, Norwegian Veterinary Institute, Norway from 2007-2014. His primary area of expertise includes pathogen diagnostics and antimicrobial resistance. Dr. Duodu has played central roles in several projects both as a researcher and as a consultant on fish health. He is a senior lecturer at the Department of Biochemistry, Cell and Molecular Biology, University of Ghana.



#### **Mr. Kwame Pianim**

(Economist and Industry player)

Mr. Pianim has diversified work experience in the international arena and in the private and public sectors of the Ghana economy. He served as an Economic Research Officer of United New York from 1964 to 1970, Acting Principal Secretary Finance and Economic Planning from 1970 to 1972, Deputy Managing Director of Ghana Aluminum Products Limited, Tema; Chief Executive of Ghana Cocoa Marketing Board from 1978 – 1979.



#### **Dr Edgar Brun**

Director for Fish Health and Welfare  
(Norwegian Veterinary Institute)

Dr. Edgar Brun is Director for the department of Aquatic Animal Health and Welfare at the Norwegian Veterinary Institute. He has training in veterinary medicine and a PhD from the Norwegian School of Veterinary Medicine, and has been working with diseases in aquatic animals, primarily salmon, for the last 30 years.



#### **Shelika Funmilola**

A seasoned and highly energetic entrepreneur of over 7years. Her venture into entrepreneurship started with fashion designing and trading in adore fabric back in university days. It comes as surprised that after a short career of 6years in several industries, from oil servicing, media and advertising and banking, she resolve for entrepreneurship which was her first love when she saw an opportunity to provide value in the Aquaculture value chain. Today she is the Chief operating officer of Gef's smoked edibles a fishing processing and trading company and also the current president African women fish processors and traders network (Awfishnet Nigeria) where she is responsible for promotion fish policies on processing and trading



#### **Karen Veverica**

(Auburn, USA)

Karen Veverica recently retired as director of one of the world's largest fisheries/aquaculture university-owned research stations, located at Auburn University, Alabama, USA. She has over 40 years' experience in aquaculture production of warmwater fish; 20 of them in Africa. She has led USAID-funded projects in Rwanda (10 years), Kenya (3.5 years) and Uganda (3.5 years) and has spent several years of short term work in a total of 22 African countries. She works part-time with ASA/WISHH to advise fish farms and feed mills in Senegal, Ghana and Nigeria and does other consulting and volunteer work in both Africa and Asia.



**Jennifer Sodji**  
(President, Ghana Aquaculture Association)

Graduate In Masters In Business Administration & has being In Aquaculture since 2012, has been on the government board on Aquaculture from 2017 till 2020. Has played a key role in the industry to increase the food chain and also play a key role in aiding the government to supply dams with fingerlings to enable us preserve our lakes and increase the livelihood of our fellow Ghanaians in the sector. She has being the President of the Ghana Aquaculture industry since 2015 till date, which has seen a lot of challenges, she and her team of executives in collaboration with farmers outlined the major problems facing the industry, which is presented to every minister that comes into office. Jennifer as a farmer started with 2 cages in 2012 and ended with 180 cages by 2015 and has seen enormous growth of the industry during her time at the same time lots of problems. Jennifer has in-depth knowledge on Aquaculture and throughout her stay in the industry she keeps insisting on the fact that is a business that needs to be managed and not handled like a house affair, based on this management she saw growth in her business.



**Dr. Regina Edziyie**  
(Lecturer, KNUST Ghana)

Regina is currently a senior lecturer in the Department of Fisheries and Watershed Management, KNUST, Kumasi. Her research interests include water quality and plankton ecology in aquaculturesystems, wastewater management, aquatic toxicology, aquatic ecology, culture of 'newure species, and environmental education. Regina holds a BSc. in Natural Resources Management (Fisheries) from KNUST, an MSc. in Aquaculture/Fisheries from the University of Arkansas at Pine Bluff, USA, an MSc. in Applied Geography (Water Resources) and a PhD in Environmental Sciences from University of North Texas,



**Prof. Adeosun Festus Idowu**  
Director, Centre for Entrepreneurial Studies

Prof. ADEOSUN Festus Idowu was born in 28<sup>th</sup> may 1968 to the family of Mr. and Mrs. Adeosun Samuel Olufemi, in Abeokuta South Local Government Area of Ogun State in Nigeria. Prof. Adeosun attended St. Luke Primary School (1974-1979) and Lisabi Grammar School (1982-1986) so also he attended Federal University of Agriculture Abeokuta (1988-1992). A lecturer, Researcher, and a Professor at the Federal University of Agriculture Abeokuta Ogun State, Nigeria, West Africa.



**Chris Goldblatt**  
(Executive Director [www.fishreef.org](http://www.fishreef.org))

I have spent 35 years on and under the water in every part of the globe. I have made my living from the sea in various capacities and I understand the ocean on an intimate level. My vast exposure to the ocean and related issues has allowed me to see aspects of man's best relationship with the ocean leading far into the future. I founded The Fish Reef Project ([fishreef.org](http://fishreef.org)) where we disrupt the convention by driving home direct action ocean health projects that have guaranteed and measurable results.



**Wisdom Abodakpi**  
(Chief Country Officer, Cycle Farms)

**Israel Yusuf**  
Doctor Fish Agric Consult  
Israel Yusuf, a livestock and aquaculture expert with over 14 years of experience in the industry has rapidly built a reputation for innovation in the aquaculture and livestock industry. He is a graduate of Animal Health from College of Agriculture and Israel Yusuf, a livestock and aquaculture expert with over 14 years of experience in the industry has rapidly built a reputation for innovation in the aquaculture and livestock industry. He is a graduate of Animal Health from College of Agriculture and



**Emmanuel Ofosu**  
(Aller Aqua Ghana)

An Agribusiness and Sales and Marketing expert for the past 30 years spanning various sectors of the Ghanaian economy. Emmanuel championed the establishment of Aller Aqua Ghana Limited and its inauguration in 2017. Our mainstay in the industry is to offer quality feed for the aquaculture industry in Ghana. Aller Aqua Ghana Limited offers Tilapia and Catfish Feed for the sub-region.



**Blessing Mapfumo**

Blessing Mapfumo is a Zimbabwean national currently based in South Africa. He is an International Fisheries and Aquaculture Advisor with over 15 years work experience, mostly in Sub-Saharan Africa. He has become a multidisciplinary technical expert but with special interest in fish trade and aquaculture development. Blessing is well connected to and has been instrumental in the formation of several networks and associations in fisheries and aquaculture in Africa.



**William Leschen**

(SARNISSA African Aquaculture Network)

Over 25 years' practical experience working in the commercial, government and research based sectors of aquaculture in the UK and overseas. Project management experience in interdisciplinary aquaculture research, development and commercial projects throughout Africa, Asia, Caribbean, Pacific and Europe. He specializes Sub Saharan African and South Asian aquaculture production systems and value chains, small scale business development. Peri-urban and rural aquaculture development, aquatic animal health, integrated and waste water aquaculture systems.



**Mr. Francis De Heer**

He is an Information Studies graduate of the University of Ghana, has been writing for a number of international livestock publications for some years, specializing in aquaculture. He is the coordinator of Fish Expo West Africa, a platform dedicated to maximizing increased production and patronage of aquaculture products.



**Hauwa Ajuma Salifu**

Key Expert In Biosecurity And Diseases In Aquaculture – AESA - Agriconsulting Europe SA KE in the project: "Egypt - Improving the Marine Aquaculture value chain through technical assistance and the delivery of the required supplies"(NPCU/AFD/SASME/QCBS/03/2017) funded by the EU through the Agence Française de Développement (AFD)for the Ministry of Agriculture and Land Reclamation (MALR) of Egypt.



**Prof. A.B. Salifu**

(Human Security Research Centre, Ghana)



**Mr. Emmanuel Menyoli Molua,**

Senior Biodiversity Consultant.  
(Norwegian Council for Africa)

I am a Senior Biodiversity Consultant. Currently, I am a member of the Norwegian Council for Africa/Department of Climate Change and the Environment, formerly Senior Consultant to the Regional Delegation of Fisheries, Southwest Region Cameroon, Consultant at Omfrontiers International, Secretary-General at the West African Region of the World Aquaculture Society, West African Region, and more.



### **Dr. Oladipo Opadokun**

Consultant to Agro-processing, Productivity, Enhancement and Livelihood Improvement Support Project (APPEALS) and Business Innovation Facility (BFI). He is also a Facilitator at workshop on Flood control using pen culture system and so many other organizations.

## **B. Conference Moderators**



### **Dr Samuel Addo**

Sam holds a Bachelor's degree in Zoology (UG), a Master's degree in Fisheries Science (UG) and a Doctorate in Aquaculture (Auburn). He is a Senior Lecturer in the Department of Marine and Fisheries Sciences, University of Ghana, Legon. His expertise is in aquaculture with major interests in the application of nutraceuticals in the control of fish health, ecotoxicology and fish ecology. He has received some training in aquaculture production and fish health from the E.W. Shell Fisheries Center, Auburn, USA, Can Tho University, Vietnam and National Fisheries University, Japan among others.



### **Deaconess Foluke Areola**

(Economist and Industry player)

Foluke Omotayo Areola, a Seasoned Fisheries Professional, Consultant, Administrator, Facilitator, is the First Federal Director of Fisheries Quarantine in Nigeria, First Female Acting Federal Director of Fisheries & Aquaculture and First Female Acting Federal Director of Fisheries of the Federal Ministry of Agriculture and Rural Development (FMARD), Nigeria. Aquaculture and First Female Acting Federal Director of Fisheries of the Federal Ministry of Agriculture and Rural Development (FMARD), Nigeria.



### **Dr Lawerh Tetteh**

Research Director  
(Chamber of Aquaculture Ghana)

Dr. Issaka Lawerh Tetteh is a co-founder of the Chamber of Aquaculture Ghana and serves as the Research Director of the organisation. He holds a PhD in Management & Organisation and provides consultancy services for organisations both in Ghana and abroad. He is also an advocate for sustainable aquaculture practices in Ghana.



### **Nestor Gbevlo-Lartey**

Operations Director  
Chamber of Aquaculture

Nestor is the Operations Director of the Chamber of Aquaculture. He was one of the members who conceptualized the need for the chamber and has been implemental in its operations to date. Being a dynamic and assertive entrepreneur, he projects his experience into effective communication and goal-oriented leadership. He is currently leading the implementation of diverse projects by the chamber and was very instrumental in the successful deployment of this conference.



### **Carlo Corradinno**

(Fish Vet, International consultant)

Researcher in the project "Risk analysis, biosecurity and food safety along the supply chain of fishery and aquaculture products" based in the Istituto Zooprofilattico Sperimentale del Lazio e della Toscana "M. Aleandri" (IZSLT). Fields of interest: Risk assessment in food safety Development of phage therapy for IZSLT Gap analysis and definition of research agenda in Europe regarding fish health and welfare Scientific writing.



### **Prof. Benjamin Betey Campion**

(Lecturer ,KNUST)

Benjamin Betey Campion is an Associate Professor at the Department of Fisheries and Watershed Management of the Kwame Nkrumah University of Science and Technology, Ghana. Prof. Campion has for the past 15 years been teaching and conducting research in ecology, natural resources management, conflict management and climate change in relation to fisheries, aquaculture and the coastal environment. He is not only a researcher, but has extensive experience working with fishermen and fishmongers in Ghana on livelihood and development.



### **Shadrack Amponsah**

He holds a Ph.D. in Agricultural Machinery Engineering from the Kwame Nkrumah University of Science and Technology-where he had earlier graduated with an M.Sc. in Agricultural Machinery Engineering and a B.Sc. in Agricultural Engineering. Dr. Amponsah has varied research interests such as the evaluation of agricultural machinery and equipment, farm structures and machinery/equipment fabrication and currently enrolled as a research scientist at the CSIR-Crops Research Institute.



### **Prof. Adewolu Morenike A.**

Adewolu Morenike Adunni is a Professor of Fish Nutrition and Aquaculture in the Department of Fisheries, Lagos State University, Lagos Nigeria. She obtained her B.Sc. in Biology at the University of Ilorin. Her Master's degree in Fisheries Management and Ph.D. in Fisheries both at University of Ibadan. She joined the prestigious Lagos State University in November 1984 as an assistant Lecturer and rose through the ranks and became a Professor of Fish Nutrition and aquaculture in October 2009.



### **Luke Tafadzwa Mupingashato**

Tafadzwa is an International Trade Economist with exposure in the Information Technology and Services, Public-Private sector, Energy Sector, Mining Sector, Banking Sector, and Stock Trading Sector. He holds a Bachelor of Commerce in Economics from Midlands State University and a Master of Commerce in Financial Economics from Great Zimbabwe University and currently pursuing a PhD in Economics with the University of Witwatersrand.

## C. Conference Program

# FIRST HYBRID AQUACULTURE CONFERENCE FOR THE WEST AFRICAN REGION

Theme: "New strategies to Promote Inclusion and Transparency in Aquaculture Management in West Africa".

14-16 May, 2021

In-person venue: Cedi Conference Center, University of Ghana Legon

**14 MAY 2021 – DAY 1**

TIME	SESSION	SPEAKER	MEDIUM
<b>8:30-9:00 am</b>	<b>Registration</b>		
	<b>Opening Session</b> <b>Moderator:</b> Dr Winnie Sowah		
<b>9:00-9:05 am</b>	Welcome Address by the Chamber of Aquaculture (COA) Ghana	Dr Anim Somuah (Chairman, COA Ghana)	
<b>9:05-9:15 am</b>	<b>Remark</b> by the Chairman for the Conference	Prof. Francis K.E. Nunoo (Head of Department, Marine and Fisheries Sciences, University of Ghana)	
<b>9:15-9:35 am</b>	<b>Message by the Food and Agricultural Organization (FAO):</b> Sustaining Aquaculture Development in West Africa – the role of Stakeholders	Mr Ndiaga Gueye (FAO Regional Senior Fisheries Officer)	
<b>9:35-9:55 am</b>	<b>Message by the Norwegian Embassy in Ghana:</b> Fish Health and Transparency in Aquaculture.	Øyvind Ulland Johansen (Councilor and Deputy Head of Mission, Royal Norwegian Embassy, Ghana)	
<b>9:55-10:15 am</b>	<b>Message by GIZ Ghana:</b> Promoting Inclusion in the Aquaculture Sector for Sustainable Growth and Economic Development.	Regina Bauerochse Barbosa (Country Director, GIZ Ghana)	
<b>10:15-10:35 am</b>	<b>Message by Industry:</b> Opportunities and Constraints in the West African aquaculture Sector.	Mr. Kwame Pianim (Economist and Industry player)	
<b>10:35-10:55 am</b>	<b>Presentation:</b> Ghana's Investment Climate in Aquaculture	Mr. Yofi Grant (Chief Executive Officer at Ghana Investment Promotion Centre)	
<b>10:55-11:05 pm</b>	<b>Solidarity message</b> by the World Aquaculture Society African Chapter President	Dr. Sherif Sadek (WAS AC President)	
<b>10:05-12:00 pm</b>	<b>Coffee Break - Online Session</b>		
<b>12:00-2:00 pm</b>	<b>Session 1:</b> Fish Health and Diseases – History, Status, and Lessons for the Future. Introductory Speakers followed by Q&A/ Planery. <b>Moderator:</b> Dr Samuel Addo <b>Sponsor:</b> WISHH,	<b>Dr Samuel Duodu</b> (University of Ghana) <b>Dr Gustavo Ramirez-Paredes</b> (Aquaculture Business Manager, CEVA Ridgeway Biologicals, UK) <b>Dr Edgar Brun</b> (Norwegian Veterinary Institute) <b>Dr Kofitsyo S. Cudjoe</b> (Norwegian Veterinary Institute)	<b>Zoom, Facebook, Youtube</b>
<b>02:00-03:30 pm</b>	<b>Session 2:</b> Women and Youth in Aquaculture – Redressing the gender imbalance: The way forward Introductory Speakers followed by Q&A/ Panel discussion <b>Moderator:</b> Foluke Areola	Shelika Funmilola  Jennifer Sodji  Mrs. Patricia Uwhereaka	

TIME	SESSION	SPEAKER	MEDIUM
03:30-04:30 pm	<b>Session 3-Speed Meeting:</b> Sponsors Seminar  <b>Moderator:</b> Dr Lawerh Tetteh	All sponsors	Zoom, Facebook, Youtube
04:30-05:30 am	<b>Session 4:</b> Regenerative Aquaculture in West Africa Introductory Speaker(s) followed Q&A <b>Moderator:</b> Dr Winnie Sowah	Chris Goldblatt	

**15 MAY 2021 – DAY 2**

TIME	SESSION	SPEAKER	MEDIUM
<b>Online Session</b>			
09:00-9:05 am	<b>Session 1:</b> Oral presentations  <b>Moderator:</b> Prof. Benjamin Betey Campion		Zoom, Facebook, Youtube
09:05-9:20 am	<b>Title:</b> Investigating pathological agents associated with the rusty-brown spots on farmed Nile tilapia ( <i>Oreochromis niloticus</i> Linnaeus, 1758) in Ghana  <b>Q&amp;A</b>	<b>Deho, R.E.A.</b> , Duodu, S., Wiafe- Kwagyan, M., & Addo, S	
9:20-9:35 am	<b>Title:</b> Prevalence of Helminth parasites in pond raised <i>Clarias gariepinus</i> in Odeda local government area in Ogun State, Nigeria  <b>Q&amp;A</b>	<b>Oghenochuko, O.M.</b> , Adigun, A.O., & Ezeri, G.N.O.	
9:35-9:50 am	<b>Title:</b> Induced breeding of the African catfish ( <i>Clarias gariepinus</i> Burchell, 1822) under varying broodstock ratios using Ovaprim  <b>Q&amp;A</b>	<b>Ameti, S. Kennedy</b>	
9:50-10:05 am	<b>Title:</b> Evaluation of Nile tilapia <i>Oreochromis niloticus</i> , (Linnaeus 1758) fingerling production at the Aquaculture Demonstration Centre in Ghana  <b>Q&amp;A</b>	<b>Lutterodt, J.B.</b> , Sowah, W., Duodu, C.P., & Addo, S.	
10:05-10:20 am	<b>Title:</b> Age and growth of the Reticulate Knife fish, ( <i>Papyrocranus afer</i> Gunther, 1868) an emerging ornamental fish in Nigeria  <b>Q&amp;A</b>	<b>Oluwale, F.V.</b> , Ugwumba, A.A.A., & Ugwumba, O.A.	
10:20-10:35 am	<b>Title:</b> Effects of feeding frequency on growth performance of juvenile Bagrid catfish <i>Chrysichthys nigrodigitatus</i>  <b>Q&amp;A</b>	<b>Ayisi, C.L.</b> , Debra G., & Alhassan, E.H.	
10:35-10:50 am	<b>Title:</b> Water quality sample integrity and implications for aquaculture development and practice  <b>Q&amp;A</b>	<b>Baah-Yeboah, D.</b> , Edziyie, R., & Duodu, C.P.	
11:05-11:20 am	<b>Title:</b> Water exchange method affects feed consumption and feed conversion in <i>Clarias gariepinus</i> raised in small plastic tanks.  <b>Q&amp;A</b>	<b>Sofela, S.O.</b> , Veverica, K.L., & Akinleye, A.A.	

Zoom, Facebook, Youtube

TIME	SESSION	SPEAKER	MEDIUM
11:35-11:50 am	<b>Title:</b> AFRIMAQUA: Research Network for Sustainable Marine Aquaculture in Africa <b>Q&amp;A</b>	Darias, M.J., Adingra, A., Amian,A.F., Amon, N., Bettarel,Y., Ble,M.C., Bolton, J., Bouvier, T.,Christison, K, Coyne, V., Cucchi, P., Cyrus, M., Dago, D.N., Deme,M., Diadhiou, H.D., Diallo, A.,Diedhiou, F., Djadj, E.L.G., Facknath, S., Fall, J., Fouche,C., Fouilland, E., Geffroy, B., Karamoko, D., Konan, S.,Kouadio-Ngbesso, N.	
		Leboulanger,C., Lignot, J.-H., Limbu, S.M., Macey, B.M., Mbengue, M., Mirera, D.O.,Moroh, J.-L.A., Mukami, M., Nazurally, N., Ndao, M.S., Ndao,P.D., Ndiaye, W.N.,Ndjaula,H.O., Ndour, I., Niane, A., Okuku, E., d'Orbcastel,E.R., Sene, M., Shoko, A.P., Soungue, A., Thiaw, M., Tine, M., Tjipute, M., Wainaina, M., Wairimu, E., Yao, L.A.	Zoom, Facebook, Youtube
12:00-01:30 pm	<b>Session 2:</b> Water Quality and Environmental Protection in West Africa Aquaculture Introductory Speakers followed by Q&A/ Panel discussion <b>Moderator:</b> Shadrack Amponsah <b>Sponsors:</b> Pumptech	Dr. Regina Edziyie (Lecturer, KNUST Ghana) Prof. Adeosun Festus Idowu (Director, Centre for Entrepreneurial Studies, Federal University of Agriculture, Abeokuta, Nigeria)	
01:30-03:30 pm	<b>Session 3:</b> Aquafeed Development in West Africa Introductory Speaker(s) followed by panel discussion <b>Moderator:</b> Prof. Adewolu Morenike A	Karen Veverica (Auburn, USA) Wisdom Abodakpi (Cycle Farms Ltd Ghana) Emmanuel Oforu (Aller Aqua Ghana)	
03:30-04:30 pm	<b>Special session:</b> Photo competition awards <b>Sponsors:</b> ASAKUA, SARNISSA	William Leschen	
	<b>Session 4:</b> The role of the media in Aquaculture development in West Africa <b>Moderator:</b> Luke Tafadzwa Mupingashato	Mr. Francis De Heer	

**16 MAY 2021 – DAY 3**

TIME	SESSION	SPEAKER	MEDIUM
<b>Online Session</b>			
12:00-1:30 pm	<b>Session 1:</b> Presentation of Regional Reports <b>Moderator:</b> Nestor Gbevlo-Lartey	Deaconess Foluke Areola	Zoom, Facebook, Youtube
01:30-02:30 pm	<b>Session 2:</b> Human Right Violations in Aquaculture <b>Moderator:</b> Carlo Corradini	Hauwa Ajuma Salifu Prof. A.B Salifu (Human Security Research Centre)	Zoom, Facebook, Youtube

TIME	SESSION	SPEAKER	MEDIUM
02:30-03:30 pm	<p><b>Session 3:</b> Aquaculture Governance in West Africa; principles, challenges and the way forward</p> <p>Introductory Speakers followed by Q&amp;A/ panel discussion</p> <p><b>Moderator:</b> Funmilola Shelikai</p>	Emmanuel Menyoli (Senior Biodiversity Consultant)  Dr. Oladipo Opadokun	Zoom, Facebook, Youtube
03:30-04:30 pm	<p><b>Closing ceremony:</b> Key points from the conference and plans to follow:  English speaker followed by Francophone speaker</p> <p>The closing remarks/ Vote of thanks</p> <p>Moderator:</p>	Blessing Mapfumo Jacob Adzikah Wisdom Abodakpi Lanre Badmus - Director Dr Collins Prah Duodu	In-person streamed live on Zoom, Facebook, Youtube





#### D. Feedback from conference participants via zoom chat platform

09:53:03 From John Alosias to Everyone : I really share the concern related to risk-taking (@FAO-representative speaker). And I'm also hoping that financial institutions accept to take the risk to invest in aquaculture (and other points raised) and do more to raise aquaculture profile in the region.

10:01:29 From William Leschen to Everyone : Dear Jacob and colleagues - congratulations also to your Norwegian speaker - This is the best opening speech by him I have heard for many years in the opening ceremony of an aquaculture conference - really relevant to Ghana Nigeria and many of the other West African countries as they develop and commercialise their aquaculture - Many congratulations to him ! and you !!!!

10:42:42 From Wisdom Abodakpi to Everyone : Great speech from the panel and kudos to the team for such a brilliant panel members.

10:49:13 From Godfred Tetteh Lartey Gberbie to Everyone : Nutrition, Employment, food Security, right slot. let us work it out, funding must be made available for the industry, Ghana is trailing.

10:52:25 From Emmanuel Onyia to Everyone : I think Ghana and Ghanaians have done well for themselves based on the data the presenter is churning out. The question is what is Ghana doing differently from other countries in the sub-region (especially Nigeria)

11:24:04 From Fred Pappoe to Everyone : Very relevant and practical speeches by the resource

persons. Extremely useful event. Well done Chamber of Aquaculture for putting this up

11:26:00 From FAO - Lionel Dabbadie to Everyone : Congratulations Dr Lanre Badmus and all organizers, this is really an excellent and very conference.

11:29:25 From Royd Mukonda to Everyone : Congratulations WAS west Africa. we are looking from Zambia

11:30:17 From Emmanuel Mensah to Everyone : We look forward for the conference in 2023

12:22:17 From Larry Schaefer to Everyone : Most of the diseases are a result of a poor quality environment for the fish. Lack of proper circulation and filtration and the removal of the nitrates.

12:33:02 From David Scarfe to Everyone : Veterinarians, vet students and para-veterinarians (vet techs/nurses) interested in future e-learning to ensure a well-trained aquatic veterinary workforce may like contact support@i-pave.org.

We will provide you on how to subscribe to i-PAVE News & Updates, and request you complete a short survey to provide us with information on what aquatic veterinary issues are important to you.

09:09:16 From William Leschen to Everyone : Good morning from a cloudy Scotland Thank you for the day yesterday Enjoyed the opening ceremony especially the talks from the Ghanaian Fish farmer and also Norwegian diplomat - Also enjoyed the fish health session congrats to Samuel and Gustavo for your Ghana related informative talks - Great to see and hear private sector representation in this conference and pity the people at the ministry and govt were too busy to send at least one person to talk and represent themselves at the opening ceremony - This Im sure noted not just by Ghanaian colleagues but those round the world - Great to hear this presentation on specific fish health issue to Ghana - from young Ghanain researcher - more power to your elbow !!

10:00:05 From Lionel Dabbaudie to Everyone : If you need the latest FAO figures, you can check the SOFIA publication available in all UN languages here: <http://www.fao.org/documents/card/en/c/ca9229en/>

10:01:14 From Lionel Dabbaudie to Everyone : and raw data here: <http://www.fao.org/fishery/statistics/en>

13:08:45 From Kofitsyo Cudjoe to Everyone : In terms of environmental protection, the pollution of major river bodies in Ghana due to illegal gold mining activities pose a major problem to aquatic life. I mentioned in the previous session the danger posed to the Volta Lake by nutrition pollution by aquaculture practitioners in addition to the already high level of organic sediments. Another major concern is the effect of escapees from farms into the wild, knowing that there is hardly any effective regulation of what farmers do in their attempt to improve the growth rates of the stock. Escapees can destroy the biodiversity in the Lake. Any thoughts about how this looming problem can be addressed for the benefit of our fisherfolk?

13:26:18 From Belinda Agyei to Everyone : My question is: Do farmers really trust the system? If the level of mistrust in the government and regulatory bodies is so high, how do you ensure these myths are duly dealt with to facilitate information/data sharing among farmers and governing bodies

14:31:45 From Karen Veverica to Everyone : poorly stored fish meal is even more dangerous. Good quality fish meal should be used for other things but it is frequently used by fish feed formulators to make up for problems in formulation.

14:47:57 From Tunde Musa to Everyone : what supports are provided by the government in terms of import tax, bilateral trades and providing stimulating environment?

15:21:50 From Karen Veverica to Everyone : Careful about bringing in other species. they can bring in even more diseases than what you have now and harm local species diversity.

16:59:11 From Kwame Apprentice Fish Farmer to Everyone : Absolutely important that public education happens regarding the benefits of consuming locally farmed fish, and as Francis says and advocates, the media is a very critical tool and aid in this regard.

17:05:31 From Collins Duodu to Everyone : In most of our media space, you only hear about aquaculture or fish farming only when there is a problem. There is a general lack of mainstream media (TV, Radio, and Print) content on fish farming or aquaculture. How can we get media houses to give coverage to aquaculture?

17:20:20 From Karen Veverica to Everyone : Media often functions on press releases. So if you have a strong fish farmers association you can put out press releases.

16:08:51 From Evans Okharu to Everyone : This conference is all encompassing. A wonderful conference indeed. Even the students are put into consideration

16:19:47 From Jorge Manuel to Everyone : Good afternoon to all participants. The conference was very educational and well organized. Congratulations to all of us for making this far and exchange knowledge with transparency and honesty. From Jorge Manuel, Chemical Engineer from Angola.

16:26:40 From Kester Odioko to Everyone : I want to appreciate the organisers and all participants of this wonderful conference. Great topics and suggestions have been bez it is my suggestion that those in influential positions in the different countries carry the messages from this conference to the Government, because most of these suggestions and recommendations can't be implemented without the support of the government. There should also be a platform where researchers both young and old, practitioners can exchange ideas and if possible to researches together and share informations on trainings, fellowships and scholarships that are available with his members.

16:28:41 From Lionel Dabbaudie to Everyone : That was a very interesting conference, so many lively discussions and excellent ideas emerging. You did the most out of these new communication tools with this hybrid conference, and I am very happy to learn that you will now organize it on an annual basis. Maybe a suggestion for the next edition: trying to get some of the young entrepreneurs who are making the future of aquaculture and are emerging everywhere in Africa to share their experiences. Of course also, live interpretation in various languages could open the geographical scope. I am sure that some of my friends in French-speaking West Africa like Sidiki Keita, ANAG CEO could have brought a lot of insights. But once again, that was an excellent event and full success. Congratulations!

## E. Conference Photos



# Conference Photos

## F. Links to Conference Videos on YouTube

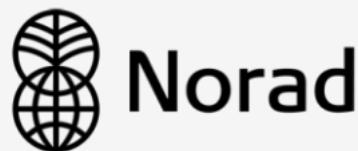
1. Opening Ceremony – <https://www.youtube.com/watch?v=kaUbp30qVq8&t=1285s>
2. Day 1: Session 1 – <https://www.youtube.com/watch?v=pOUcGSZdqHs>
3. Day 1: Session 2 – <https://www.youtube.com/watch?v=XviTrWCm6Sw>
4. Day 1: Session 3 – <https://www.youtube.com/watch?v=V2SQw3QBUUM>
5. Day 1: Session 4 – <https://www.youtube.com/watch?v=nSMIZ8ywkGM>
6. Day 2: Session 1 – <https://www.youtube.com/watch?v=VUJUAKgAUtU&t=2582s>
7. Day 2: Session 2 – <https://www.youtube.com/watch?v=9VECKQER-Vk>
8. Day 2: Session 3 – <https://www.youtube.com/watch?v=TJCRApxIt-4>
9. Day 2: Session 4 – <https://www.youtube.com/watch?v=d3H72rqCJ-o>
10. Day 3: Session 2 – <https://www.youtube.com/watch?v=jBQK6OXnouM>
11. Day 3: Session 3 – <https://www.youtube.com/watch?v=zv1vaGheIY0&t=186s>
12. Closing Ceremony – <https://www.youtube.com/watch?v=pzO4PYDqEzs>

## G. Links to Media Reportage

The following are some links to media reports on the conference:

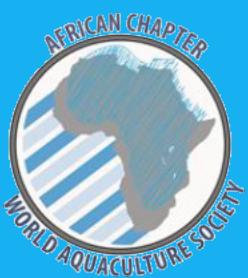
1. <https://www.myjoyonline.com/gipc-hints-of-5-years-tax-holidays-for-aquaculture-investors/>
2. <https://m.youtube.com/watch?v=rb3sDIWS5V4> (Starts at time: 1:09:43)
3. <https://agriktoday.com.gh/2021/05/22/diverse-environmental-activities-pose-major-threats-to-the-survival-of-the-aquaculture-sector-regina-bauerochse/>
4. <https://www.ghanaweb.com/GhanaHomePage/business/Diverse-environmental-activities-pose-threats-to-the-survival-of-aquaculture-sector-Regina-Bauerochse-1267567>
5. <https://www.ghanaweb.com/GhanaHomePage/business/Improve-on-sector-policies-for-Aquaculture-growth-Kwame-Panim-1267438>
6. <https://agriktoday.com.gh/2021/05/21/improve-sector-policies-for-aquaculture-growth-kwame-panim/>
7. <https://thebftonline.com/18/05/2021/poor-policies-hampering-fisheries-sector-kwame-pinain/>

## H. Conference Sponsors



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