

Round-Table Discussion: Moving Forward through Lessons Learned on Response Actions to Aquatic Animal Disease Emergencies

16–18 December 2019, FAO Headquarters, Rome, Italy

Annex 1: List of Participants and Profile

#	Name	Profile
1	<p>Victoria ALDAY-SANZ Director of Biosecurity and Breeding Programs National Aquaculture Company (NAQUA) Kingdom of Saudi Arabia www.naqua.com.sa</p>	<p>A veterinarian with an M.Sc and Ph.D. from Stirling University, Dr Alday-Sanz has worked for over 25 years on diverse aspects of aquaculture biosecurity, covering diseases, diagnostics, sanitary legislation, health management, development of SPF stocks and antimicrobial treatments. She has collaborated as an expert for international organizations such as FAO, OIE, EU, EFSA and WB as well as with the private sector such as shrimp producers, aquaculture financial and insurance companies worldwide. She carries out R&D activities for private companies and maintains links to the academic world through teaching at other institutions. She has published over 35 papers in peer-reviewed journals, over 50 articles in industry magazines, 5 book chapters, and is co-author of the CD-rom <i>Diagnosis of Shrimp Diseases</i> and editor of <i>The Shrimp Book</i>. Presently, she is the Director for Biosecurity and Breeding Programs for NAQUA and Director of National Aquaculture Biosecurity of Saudi Arabia.</p>
2	<p>Faris Mohammad ALGHAMDI Director General – Fisheries Health & Services Ministry of Environment, Water & Agriculture Riyadh, Kingdom of Saudi Arabia www.mewa.gov.sa</p>	<p>Mr Alghamdi is responsible for health and safety measures for shrimp and fish production in KSA. He is leading the biosecurity programme for the aquaculture industry in the Kingdom. He is responsible for auditing of shrimp and fish farms intending to export from KSA, providing technical support regarding health certification of aquaculture products from KSA, approving Health Certificates according to the requirements of importing countries and the approval of foreign establishments intending to export to KSA. He is also responsible for the development and implementation of the Rapid Alert System for export consignments, managing all resources and technical staff at the National Reference Lab Jeddah and Qatif Laboratory and all matters regarding aquaculture imports/exports.</p>

3	<p>J. Richard ARTHUR Aquatic Animal Health Consultant Box 1216 Barriere, British Columbia Canada V0E 1E0</p>	<p>Dr Arthur has 45 years experience in aquatic animal health, both in Canada and internationally. He contributed to the development of aquatic animal health expertise in Asia in the 1980s as advisor to the International Development Research Centre's (Canada) Fish Health Project to the Government of the Philippines, and served as Network Coordinator for the Asian Fish Health Network. He also initiated the formation of the Fish Health Section of the Asian Fisheries Society. In 1989, he became head of aquatic parasitology at the Department of Fisheries and Oceans Canada's Maurice Lamontagne Institute and began an ongoing association as an advisor and consultant to the FAO's aquatic animal health programme. He assisted with development of the Progressive Management Pathway for Aquatic Biosecurity (PMP/AB) and participated in major FAO inter-regional projects on AHPND and IMNV. He is a member of FAO's Expert Committee on Antimicrobial Residues in Aquaculture. Dr Arthur is the author/editor of more than 100 scientific papers and edited volumes dealing with aquatic animal health and fisheries parasitology, and currently specializes in risk analysis for introductions of aquatic species for aquaculture, international aquatic animal health policy and the development of national aquatic animal health strategies.</p>
4	<p>Puttharat BAOPRASERTKUL Head of Aquatic Animal Health Certification Research and Development Group Aquatic Animal Health Research and Development Division (AAHRDD) Department of Fisheries Paholyothin Rd. Jatujak Bangkok, 10900 Thailand</p>	<p>Dr Baoprasertkul is a Fisheries Biologist at Senior Professional Level and Chief of the Aquatic Animal Health Certification Research and Development Group at AAHRDD, Department of Fisheries, Thailand. She has experience in diagnostic tests for aquatic animals, disease surveillance to certify aquaculture establishments and compartments for exportation, requirements for export of live aquatic animals into importing country and aquatic emergency preparedness and response system for transboundary diseases. She has been involved in several inter-regional projects on aquatic animal health with international agencies, namely FAO, NACA, USAID-MARKET, Cefas and SEAFDEC/AQD. She was selected as a consultant for a training project on IMNV diagnosis and disease surveillance, funded by FAO. She also was invited by OIE Tokyo to speak on "Antimicrobial resistance in Aquaculture". She is also National Focal Point for ASEAN Network on Aquatic Animal Health Centres (ANAAHC), which recently developed the Regional Technical Guidelines on Early Warning System for Aquatic Animal Health Emergencies, in collaboration with SEAFDEC/AQD. Ms Baoprasertkul is the author of more than 50 scientific papers on immunogenetics in aquatic animals, disease diagnosis, disease surveillance, prudent use of veterinary medicines in aquatic food production and biosecurity in aquaculture.</p>
5	<p>Edgar BRUN Director for the Department of Aquatic Animal Health and Welfare Norwegian Veterinary Institute (NVI) Ullevålsveien 68</p>	<p>Dr Brun is veterinarian and holder of a Doctor of Science degree from the Norwegian School of Veterinary Medicine. In 2000/2001, he did a master in epidemiology at the London School of Hygiene and Tropical Medicine/Royal Veterinary College. He worked for eight years as a fish health field veterinarian and continued working at the NVI where in 2006 he became</p>

	P.O. Box 750 Sentrum 0106 Oslo Norway	head of the Epidemiology Section and in 2018 Director for the Department of Aquatic Animal Health and Welfare. In 2010 the institute was approved as an OIE collaborating centre for epidemiology and risk assessment for aquatic animal diseases, a centre he was co-directing together with the Atlantic Veterinary College until 2017. In 2015, he was one of the initiators of the first global conference in aquatic epidemiology (AquaEpi) and in 2019, he was elected vice president of the EAFP. He has headed and participated in several research projects both nationally and through the EU, and has been a member of OIE and EFSA ad hoc groups. In 2018, he joined the first meeting of PMP/AB in Washington and has since been part of evolving the programme and its funding. He is now responsible for a Norwegian-funded programme aiming to develop competence in aquatic animal health management in Ghana.
6	Iona CAMPBELL Marine ecologist Scottish Association for Marine Science (SAMS) Oban, Argyll, PA37 1QA United Kingdom	Dr Campbell has nine years of research experience in the seaweed industry and associated interactions with the aquatic environment. She is currently working on the Global Seaweed STAR project. Her research focuses on the development of biosecurity management tools and policy strategies both for the global seaweed aquaculture industry and for national strategies in the Philippines, Malaysia, Tanzania and the United Kingdom. She has also conducted research on seaweed farms of the largest scale while living in China, in collaboration with the Yellow Seas Fisheries Research Institute. She has contributed to the European Union guidelines for sustainable aquaculture of seaweeds, and published peer-reviewed articles and book chapter on the topic of seaweed cultivation and the environment.
8	Arnaud COLLARD Leader Aquaculture Medium, Central Eastern Europe, Middle East, region MSD Animal Health sprl Clos du Lynx 5, 1200 Bruxelles Belgium	Dr Collard is a fish veterinarian graduated from the MSc of Stirling with a MBA in Valencia. He started his practice in the two largest fish farms in Africa (Tropofarms Ghana and Lake Harvest Zimbabwe) where he established vaccination protocols and developed monitoring programs for emerging diseases. Afterwards, he worked for a company specialized in biosecurity solutions (Cid Lines) as sales manager for Eastern Europe, responsible for chickens, dairy cows and pigs. He dealt with Avian influenza and African Swine fever outbreaks in partnership with local farmers and governments. He recently joined MSD as an Aquaculture leader for Benelux, Easter Europe, North Africa, Middle East and Russia. His current role is to help farmers and develop the aquaculture in the different region. He is dedicated to preserving and improving the health, well-being and performance of the fish.
9	Xuan DONG Aquatic Animal Health Specialist Yellow Sea Fisheries Research Institute (YSFRI) Chinese Academy of Fishery Sciences (CAFS)	Dr Dong currently works at the YSFRI, CAFS. He is the member of World Organisation for Animal Health's (OIE) Reference Laboratory for white spot disease (WSD) and infectious hypodermal and haematopoietic necrosis (IHHN). He has been engaged in epidemiology and biosecurity of crustaceans in China. He has hosted and participated in more than 15 research projects such as those of the National Natural Science Foundation of China. and has

	<p>Ministry of Agriculture and Rural Affairs (MARA) Qingdao, People's Republic of China http://www.ysfri.ac.cn/</p>	<p>published more than 50 papers and 6 books. He has experience in the identification of new pathogens and has engaged in the platform construction of new pathogen identification in aquatic animals. He has identified acute hepatopancreatic necrosis disease (AHPND)-causing <i>Vibrio campbellii</i> and published the whole genome of yellowhead virus 8 genotype (YHV-8). He is also the member of the Roniviridae Study Group for the International Committee on Taxonomy of Viruses (ICTV). In this Round-Table Discussion, he is interested in how to rapidly identify the pathogen and respond when aquatic animal disease emergencies occur in different countries.</p>
10	<p>Jeannine FISCHER Chargée de mission Standards Department (Aquatic Animal Health) World Organisation for Animal Health (OIE) Paris, France http://www.oie.int</p>	<p>Dr Fischer joined the OIE in the Standards Department, working on aquatic animal health in August 2019. She works closely with the Aquatic Animal Health Standards Commission, including the drafting of chapters on emergency disease preparedness and emergency disease outbreak management to be included in the <i>Aquatic Code</i>. Dr Fischer is a trained marine biologist. For almost seven years, she managed and prepared for biosecurity responses for the Ministry for Primary Industries in New Zealand, including responses to aquatic animal diseases and aquatic pests. She also developed an Aquatic Readiness Programme and worked closely with New Zealand's aquaculture industry. For six months, she managed the Readiness Programmes Team, overseeing and contributing to preparedness programmes for responses.</p>
11	<p>Patricia S. GAUNT Professor College of Veterinary Medicine Mississippi State University (MSU) 127 Experiment Station Road P.O. Box 197 Stoneville, MS 38776 United States of America</p>	<p>A diplomate of the American Board of Veterinary Toxicology, professor of aquatic animal health at MSU CVM, Dr Gaunt has over 20 years' experience as a veterinarian diagnosing diseases and prescribing medication for catfish. She works in conjunction with the MSU Extension Service in assisting farmers with catfish production. Her research focus is in aquatic pharmacology and toxicology. She conducted the pivotal safety and efficacy studies for the approval of the antibiotic florfenicol by the US Food and Drug Administration for control of mortality associated with the bacterial diseases of enteric septicemia of catfish and columnaris disease. She is a recognized authority on veterinary feed directive (VFD) orders for fish, which manages the correct use of medicated feeds to treat food fish with bacterial diseases in the United States. She is a member of the American Veterinary Medical Association's (AVMA) Aquatic Animal Health Committee and Council on Antimicrobials, which promotes antimicrobial stewardship in animals to mitigate antimicrobial resistance. She is also a member of the Clinical and Laboratory Standards Institute Working Group on Aquatic Animals, which sets guidelines to establish antimicrobial susceptibility patterns for aquatic bacterial pathogens. She has served as associate editor for the <i>Journal of Aquatic Animal Health</i> and is currently co-editor in chief. She is the author of over 70 scientific papers.</p>

<p>12</p>	<p>Andrea GUSTINELLI Department of Veterinary Medical Sciences <i>Alma Mater Studiorum</i> University of Bologna Via Tolara di Sopra 50 - 40064 Ozzano Emilia (BO), Italy</p>	<p>After graduating in 2002 in Veterinary Medicine, Dr Gustinelli obtained a Ph.D. in "Epidemiology and Control of Zoonoses" in 2008 and specialized in "Animal health and animal productions" in 2010 at the Faculty of Veterinary Medicine of the University of Bologna. Since 2018, he is a <i>de facto</i> Diploma holder of the European College of Aquatic Animal Health (ECAAH). He is currently a Senior Researcher at the Department of Veterinary Medical Sciences of the University of Bologna. He has taken many professional positions in national and international research projects relating to fish pathology and in particular fish parasitology. He has taught at several advanced courses, advanced training courses and specialization schools. He is co-author of over 200 scientific publications. Since 2002 until now, he has conducted research on the pathology of aquatic animals and parasitic zoonoses, with particular attention to parasitic and bacterial pathogens of fish imported or produced in Italy, characterization of the parasitic fauna of aquatic animals resident (both wild and farmed) in Italian territory, the study of the pathogenic effects of parasites in farmed marine fish, veterinary and public health aspects linked to aquaculture in eastern Africa, and the epidemiology of fish-borne parasitic zoonoses (diphyllobothriasis, anisakiasis and opisthorchiasis).</p>
<p>13</p>	<p>Olga L.M. HAENEN Head of the National Reference Laboratory for Fish, Shellfish and Crustacean Diseases Wageningen Bioveterinary Research P.O. Box 65, 8200 AB Lelystad, The Netherlands Street address: Houtribweg 39, 8221 RA Lelystad, The Netherlands https://www.wur.nl/en/Research-Results/Research-Institutes/Bioveterinary-Research.htm</p>	<p>Dr Haenen has been Head of the National Reference Laboratory: for the Netherlands for Fish, Shellfish and Crustacean Diseases since 1985, and for Belgium: Shellfish and Crustacean Diseases. She has over 34 years experience as an all-round fish diagnostician and researcher, especially related to eels, carps/koi, tilapia, catfish, ornamental fish and marine flatfish, and risks of contact zoonosis pathogen transfer via international trade of fish. She was a member of the world advisory committee Aquatic Animal Health Standards Commission of OIE from 2009 to 2012; a member of other (inter)national advice committees and publication boards on fish diseases, for the government, fish farmers, private pond owners, veterinarians and zoos, and EC, OIE, EFSA, and FAO, since 1987; a member of the FAO book expert team "Management of Bacterial Diseases in Aquaculture", 2016-2019; and chairperson of ICES Working Group "Development of standardized and harmonized protocols for the estimation of eel quality" (WKPGMEQ), January 2015, Brussels. Dr Haenen is a professor on Healthy and safe insect farming for food and feed and an Honorary Member of the European Association of Fish Pathologists. She has published more than 75 peer-reviewed scientific papers, 4 books, and given over 300 lectures on fish diseases.</p>
<p>14</p>	<p>Bernard Mudenda HANG'OMBE Microbiology Unit University of Zambia School of Veterinary Medicine Para-clinical Studies Lusaka, Zambia</p>	<p>A microbiologist trained in Japan, Dr Hang'ombe underwent further training in diagnosis and management of fish diseases at the Aquatic Animal Health Research Institute, Bangkok, Thailand. He is involved in the investigation and diagnosis of fish diseases in Africa. Currently he is in charge of surveillance and monitoring of epizootic ulcerative syndrome in the Zambezi and Congo River basins. Furthermore, he works with commercial farms on</p>

		<p>Lake Kariba to control massive fish mortalities as a result of <i>Streptococcus/Lactococcus</i> infections in farmed tilapia. All these activities are being done in collaboration with the FAO and WorldFish. He has also been instrumental in the surveillance and monitoring of Tilapia lake virus. He has also collaborated with government institutions in other countries on their aquatic disease status and has been a resource person in meetings of training veterinarians in Africa on fish diseases. On direct involvement in fish disease outbreaks, he has been involved in the control of EUS in the Zambezi and Congo River basins through preparation of extension materials and development of applicable biosecurity frameworks for aquatic diseases to suit local situations.</p>
15	<p>Kathleen H. HARTMAN Aquaculture Program Leader USDA APHIS, Veterinary Services 1408 24th Street, SE UF Tropical Aquaculture Laboratory (http://tal.ifas.ufl.edu) Ruskin, FL 33570 United States of America</p>	<p>Dr Hartman is the Aquaculture Program Leader for USDA APHIS Veterinary Services and has been with USDA APHIS VS for over 16 years – first as an Aquaculture Epidemiologist and then as the Aquaculture Coordinator in Import/Export Services. She is stationed in Ruskin, Florida at the University of Florida, Tropical Aquaculture Laboratory. She received a Masters from the University of Maryland (fish nutrition) and both a DVM and Ph.D. (aquatic animal pharmacokinetics) from Virginia Tech. She has a courtesy Assistant Professor appointment at the University of Florida, in the Program of Fisheries and Aquatic Sciences. She is currently on the Technical Standards Committee of the American Fisheries Society-Fish Health Section and has also served on their Professional Standards Committee. She has been a certified AFS FHS Aquatic Animal Health Inspector since 2008. She is a current member and the Secretary on the board of the World Aquaculture Society (WAS) and is a Past President of the U.S. Aquaculture Society (USAS).</p>
16	<p>Jie HUANG Director General Network of Aquaculture Centres in Asia-Pacific (NACA) Bangkok, Thailand http://www.enaca.org</p>	<p>The Director General of the Network of Aquaculture Centres in Asia-Pacific (NACA), Dr Huang is an expert on aquaculture epidemiology and biosecurity. He served as a Senior Researcher in the Yellow Sea Fisheries Research Institute (YSFRI), Chinese Academy of Fishery Sciences (CAFS); as the Chief Scientist of CAFS on aquatic animal disease control; as the OIE Designated Expert of the OIE Reference Laboratories for WSD and IHNN; and as a Vice President of the Aquatic Animal Health Standard Commission of the OIE. He has conducted projects on diagnostics, epidemiology, molecular mechanisms of viral infection, and control technology for aquatic animal diseases for 29 years. He and the group in YSFRI have identified several new pathogens and reported emerging diseases in farmed shrimp in China, established a series of detection techniques for aquatic animal pathogens, identified the viral attachment protein and its cellular receptor of WSSV, developed and applied aquaculture microbiological control technologies, and have actively promoted the concept of the biosecurity system for the aquaculture industry. He had more than 150 corresponding author papers of which 46 were published in international journals, has obtained 50 patents,</p>

		published 30 national and industrial standards, won 13 national and provincial awards, and trained nearly 100 doctorate and masters students.
17	David HUCHZERMEYER Aquatic Veterinary Specialist Sterkspruit Veterinary Clinic P.O. Box 951 Lydenburg 1120 Republic of South Africa Website: www.sterkspruitveterinaryclinic.co.za	Dr Huchzermeyer has been in mixed private veterinary practice in Lydenburg, South Africa since 1986 and is currently practice principal of Sterkspruit Veterinary Clinic, providing fish and crocodile consultations, diagnostics and pathology services. He is an honorary Research Associate in the Department of Ichthyology and Fisheries Science at Rhodes University, Grahamstown; an Extraordinary Lecturer in the Department of Paraclinical Sciences in the Faculty of Veterinary Science, University of Pretoria; and an Extraordinary Associate Professor in the Unit for Environmental Sciences and Management at the North West University. He has been co-presenter of training courses on biosecurity and aquatic animal diseases for veterinarians throughout Africa on behalf of OIE and FAO. He has been closely involved with the disease-free certification process required for export of trout ova and koi to EU and other world markets. Dr Huchzermeyer was part of the team from Rhodes University that first confirmed epizootic ulcerative syndrome as the cause of ulcerations in wild fish in the Chobe and upper Zambezi rivers in 2007. He has tracked the rapid spread of this exotic disease through Zambia and, as part of an FAO emergency disease investigation task force, to the northeast of the Democratic Republic of Congo.
18	Benjamin HUNTINGTON Honorary Research Fellow Institute of Infection and Global Health University of Liverpool United Kingdom	Dr Huntington cut his teeth working in clinical practice in the United Kingdom and Canada, specializing in cattle and poultry production. He then spent six years directly employed by United Kingdom poultry integrators in a general management and veterinary capacity. Here he specialized in policy design and implementation in health and welfare, biosecurity and food safety and worked across feedmills, breeding, hatching, growout, transport and processing plants. He has worked on animal health projects in partnership with government in the United Kingdom, overseas and with the FAO in Southeast Asia. During his time in industry, he was a member of a number industry boards tackling issues such as <i>Campylobacter</i> and welfare, and was the Chair of the British Poultry Council Antimicrobial Stewardship Committee.
19	Anton IMMINK Aquaculture Director Sustainable Fisheries Partnership (SFP) Stirling, Scotland. United Kingdom http://www.sustainablefish.org	Mr Immink leads the development of aquaculture improvement projects (AIPs) addressing multiple risks across production areas, particularly in shrimp in Asia. He led the development of Fish Source aquaculture methodology (https://www.fishsource.org/), which provides public information on the risks and improvement needs in farmed seafood production areas; and the SFP Framework for Sustainable Aquaculture (https://www.sustainablefish.org/Programs/Aquaculture/Framework-for-Sustainably-Managed-Aquaculture), which identifies coordinated health management as a core development need in aquaculture industries. He has partnered with major retailers and brands including Walmart, Sainsburys, Aldi and McDonalds to improve the environmental

		performance of their seafood supplies and has over 30 years' experience supporting aquaculture development in many countries across Asia and Africa.
20	Mona Dverdal JANSEN Researcher Department of Epidemiology Norwegian Veterinary Institute (NVI) Ullevålsveien 68, Pb 750 Sentrum N-0106 Oslo Norway	Dr Jansen is veterinary epidemiologist working on surveillance and control of viral diseases in Norwegian salmonid aquaculture, with infectious salmon anaemia currently being the main area of responsibility. She is involved in multiple projects on non-salmonid species, including the Fish for Development project in Ghana (tilapia), the PMP/AB surveillance pilot testing in Indonesia (<i>Penaeus vannamei</i>) and a collaboration with WorldFish on the assessment of tilapia mortality and its economic impact in Bangladesh and Egypt. She is also a member of the OIE <i>ad hoc</i> group on Tilapia lake virus.
21	Stian JOHNSEN Mission Manager Standards Department Management of aquatic animal health activities 12, rue de Prony 75017 Paris, France	Dr Johnsen has been working for the OIE in the Standards Department, since 2017 and are managing all aquatic animal health activities. This includes acting as the Secretariat for the Aquatic Animal Health Standards Commission, coordinating work between Departments and other international organisations, training of veterinarians and aquatic animal health professionals in Member Countries, as well as the drafting of chapters on emergency disease preparedness and emergency disease outbreak management to be included in the <i>Aquatic Code</i> . He is an aquatic veterinarian that has been seconded from the Norwegian Food Safety Authority to the OIE for 4 years to work on aquatic animal health. Back home, he used to do scientific work before working for the Authorities on development of aquatic animal legislation, biosecurity and contingency planning, coordination of international relations including being the OIE Aquatic Focal Point, participating in expert groups in the European Union drafting revised and new legislations, as well as taking part in bilateral relations on aquatic animals. He has worked as a national expert in the European Union.
22	Qing LI Director Division of Aquatic Diseases Prevention and Control National Fisheries Technology Extension Center (China Society of Fisheries) (NFTEC) Ministry of Agriculture and Rural Affairs (MARA) Beijing, P.R. China http://www.nftec.agri.cn/	Dr Li is a Professor, aquatic animal health management specialist, and now the Division Director of Aquatic Diseases Prevention and Control Division, NFTEC, MARA. She is also the Secretary-General of MARA's Expert Committee on Aquaculture Diseases Prevention and Control, the Secretary-General of China's Technical Standardization Committee on Aquatic Animal Epidemic Prevention, and the designated focal point in China for dealing with aquatic animal health issues related to the World Organisation for Animal Health (OIE). She also has eight years of visiting scholar and working experiences in Japan. Over the years, she has been engaged in the guidance and administrative management of aquaculture drug use, disease prevention and control, and has a thorough understanding of the situation, system, problems and relevant policies of aquatic animal diseases emergency response in China.

23	<p>Amedeo MANFRIN Aquatic Animal Health and welfare Specialist National Reference Laboratory for Fish, Mollusc and Crustacean Diseases – IZSVE Viale Università, 10 – 35020 Legnaro (Padova) Italy http://www.izsvenezie.it</p>	<p>Dr Manfrin is experienced in fish bacterial pathogens and vaccines production, above all, in salmonids and Mediterranean species. He is also involved in fishery and aquaculture products control and is a partner of several national and international projects on fish health, welfare, seafood safety and organic aquaculture. He is a lecturer at the University of Padova and has provided training courses preparing farmers and veterinarians for fish disease and zoonoses control. He has expertise on dealing with international (Standing Committee On Food Chain and Animal Health, OIE Aquatic Animal Diseases Working Group, Standing Committee on Animal Welfare, private expert of European Food Safety Authority, private expert of FVO – DG SANCO inspection teams on fishery products – Philippines and ornamental fish – Malaysia and Greece – Marine Aquaculture), national (Ministry of Health and Ministry of Agriculture) and local institutional authorities. Dr Manfrin has good experience in specific legislation on aquaculture and animal health conditions for minimum measures for the prevention, control and eradication of exotic and non-exotic diseases. He was a tutor in three Better Training for Safer Food (BTSF) organized in Italy and Spain in 2012, 2014 and 2015 with responsibility for the training dedicated to hygiene and official controls of aquaculture products.</p>
24	<p>Mohammed ODAIBI General Secretary Saudi Aquaculture Society King Abdul Aziz Rd, Al Murabba, Riyadh 12628, Kingdom of Saudi Arabia</p>	<p>Mr Odaibi holds a Bachelor’s degree in marine biology. His job responsibilities include serving as a Member of high-level Biosecurity Committee; a Member of the Biosecurity Technical Committee; participation in national biosecurity workshops and events; and review the Biosecurity Monthly, Quarterly and Annual Reports before their submission to Ministry.</p>
25	<p>Rafael Miguel RAFAEL Aquatic Animal Health Officer Head of Aquaculture Research Center National Fisheries Research Institute (IIP-Gaza) Mapapa, Gaza- Mozambique</p>	<p>Mr Rafael has 15 years’ experience in aquatic health in Mozambique. He contributed in creating a nucleus of aquatic animal health in the Ministry of Sea, Inland Waters and Fisheries, a body that advises government, especially the Competent Authority in all issues related to aquatic animal health. He participated in the epizootic ulcerative syndrome (EUS) project in the South Africa Development Community (SADC) region under FAO supervision. He is currently working on active surveillance of TiLV and other tilapia diseases in Mozambique.</p>
26	<p>Yuriy RUD Head of Laboratory of Biotechnology in Aquaculture Institute of Fisheries of the National Academy of Science (IF NAS) Kyiv, Ukraine</p>	<p>Dr Rud has a PhD in virology and has been a senior research associate in aquaculture since 2014. He is working in (i) molecular diagnostics of fish diseases and cell culture units (IF NAS), (ii) as national project coordinator for “Investigation of molecular and biological properties and phylogenetic characteristics of fish pathogens in Ukraine” (funded by Ukrainian Government, GA № 0116U001219) (IF NAS), (iii) in the research department of the virology unit (KNUTS), and (iv) as deputy head of UAFP and Ukraine’s Fishing industry Cluster of Innovations (UFICI).</p>

	<p>http://www.if.org.ua</p> <p>Deputy Head of the Ukrainian Association of Fish Pathologists (UAFP), Non-governmental organization Kyiv, Ukraine</p>	<p>Other affiliation: Research Department ESC Institute of Biology and Medicine Taras Shevchenko National University of Kyiv (KNUTS) Kyiv, Ukraine http://https://biology.univ.kiev.ua</p>
27	<p>Dyah SETYOWATI Head of Section of Fish Disease Control Directorate of Aquaculture Regional Development and Fish Health (DARDFH) Directorate General of Aquaculture (DGA) Ministry of Marine Affairs and Fisheries (MMAF) Jakarta, Indonesia www.kkp.go.id</p>	<p>Dr Setyowati has 16 year's experience in fish health in Indonesia. She participated in the 2013-2015 FAO project IMNV disease surveillance on Vannamei shrimp in South Lampung District, Tangerang District (Banten Province) and Banyuwangi District and is involved in the Biosecurity Pilot Project on Vannamei Shrimp Farms in South Lampung Regency. In 2019, she was involved in activities of the FAO "GCP/GLO/979/NOR: Improving Biosecurity Governance and Legal Framework for Efficient and Sustainable Aquaculture Production", which is a pilot project on surveillance of EHP disease in shrimp in Jembrana District (Bali Province). She participates as part of a team to investigate mass mortalities due to fish diseases and environmental causes, as well as on a task force to control TiLV and AHPND in Indonesia. She played an active role in the drafting of the regulations of the MMAF for the control of fish diseases, as well as the regulations of the Ministry of Marine Affairs and Fisheries concerning Aquatic Animal Welfare, and also participated in the preparation of technical guidelines for dealing with AHPND disease and for controlling antimicrobial resistance.</p>
28	<p>Aminah Al SHAIK Supervisor Biosecurity Division Saudi Aquaculture Society Ministry of Environment, Water and Agriculture Kingdom of Saudi Arabia. http://www.sas.org.sa</p>	<p>Ms Al Shaik holds a Master's degree in Marine Biology and is responsible for organizing biosecurity surveillance activities in the Kingdom of Saudi Arabia. She provides technical guidance to aquaculture projects related to animal health and immediate response to disease outbreaks. She also participates in national biosecurity workshops and events, prepares monthly and annual surveillance activity reports and participates in PCR laboratory activities.</p>
29	<p>Joselito R. SOMGA Veterinarian IV Fisheries Inspection and Quarantine Division Bureau of Fisheries and Aquatic Resources 860 Quezon Avenue, Quezon City, Philippines http://www.bfar.da.gov.ph</p>	<p>Dr Somga has been with the Bureau of Fisheries and Aquatic Resources (BFAR) since 1989 to present, working on aquatic animal health which includes diagnostic activities on fish and shrimp diseases; respond to aquatic animal disease outbreaks and fish kill investigation; implementation of SPS measures and requirements on quarantine and health certification for live aquatic animal movements. He was involved in the establishments of BFAR Regional Fish Health Laboratories and BFAR Fish Health Network. He also served as National Coordinator (2000-2002) for the FAO/NACA/OIE Project on Development of Asia Regional Technical Guidelines on Health Management for the Responsible</p>

		Movement of Live Aquatic Animals and National Project Coordinator (2014-2016) to FAO Interregional Technical Cooperation Programme on Reducing and Managing Risks of Acute Hepatopancreatic Necrosis Disease.
30	Mwansa SONGE Head, Aquatic Animal Health Department of Veterinary Services Central Veterinary Research Institute Lusaka, Zambia	Dr Songe is head of Aquatic Animal Health in the Department of Veterinary Services, Ministry of Fisheries and Livestock in Zambia. She has a PhD in Aquatic Medicine from the Norwegian University of Life Sciences. Dr Songe is interested in planning for and/or launching response actions to aquatic animal disease emergencies, which are enhanced by the rate at which the aquaculture subsector is developing in Zambia. Growth is expected to further be stimulated in the next few years through support from the African Development Bank-funded project, the Zambia Aquaculture Enterprise Development Project (ZAEDP). This expansion could favour the spread of disease and creates the need for specialists to take a pro-active approach towards aquatic animal health management. Zambia is going through the exciting phase of starting to formulate a National Strategy for aquatic animal health (with the technical support from FAO). “Emergency Preparedness and Contingency Planning” will be one of the important elements of the strategy and therefore, this is the perfect time for her to interact with, learn from, and share notes with those that have experience in emergency response actions to aquatic animal disease emergencies.
31	Rohana P. SUBASINGHE Consultant Futurefish 16 I, Iconic Residencies 110 Parliament Road, Rajagiriya Sri Lanka	Dr Subasinghe has over 35 years of international experience in aquaculture development and aquatic animal health management. He developed, led and implemented the FAO's aquatic animal health programme for many years. He served as a Senior Fisheries Officer at FAO and spearheaded the FAO's aquaculture development programme until he retired at the end of 2015. He has continued his involvement with the FAO's aquatic animal health programme, and assisted the development of the Progressive Management Pathway for Aquatic Biosecurity (PMP/AB). Currently he is attached to WorldFish and leads an aquaculture development programme in Nigeria. Dr Subasinghe has authored many publications on aquaculture and aquatic animal health. He is a pioneering member and a past-chairman of the Fish Health Section of the Asian Fisheries Society. He is currently the president of the Asia-Pacific Chapter of the World Aquaculture Society, and is also a honorary life member of WAS.
32	Kathy (Feng-Jyu) TANG-NELSON Aquatic Animal Health Specialist Arizona, United States of America	Dr Tang-Nelson is an Aquatic Animal Health Specialist residing in the Arizona, with specific interests in the role of diagnosis for rapidly responding to the emergence of aquaculture diseases. She is currently a research affiliate of the Yellow Sea Fisheries Research Institute in Qingdao, P.R. China and previously (1997 to 2017) was a member of the research faculty at the University of Arizona. She has authored over 70 peer-reviewed publications on diseases of aquatic species and developed molecular diagnostic protocols, such as quantitative PCR and in situ hybridization, for the detection of the major shrimp pathogens.

		<p>She was recognized as an expert by the OIE on a number of shrimp diseases, and participated in an OIE-twinning project between the United States of America and Indonesia, which trained Indonesian researchers in diagnosis of shrimp diseases and aided them in setting up a functional diagnostic laboratory of high standards. Recently, she participated in the FAO-supported workshops focused on tilapia lake virus, providing training to researchers in Southeast Asia and Africa. Her latest interest, and work with the FAO, includes publishing the <i>Shrimp infectious myonecrosis strategy manual</i>, which provides key information for national policy-makers, producers and other stakeholders with regard to the development of disease contingency plans.</p>
33	<p>Anna TOFFAN National Reference Laboratory for Fish Diseases Aquatic Animal Virology Unit OIE Reference Laboratory for Viral Encephalo-Retinopathy Istituto Zooprofilattico Sperimentale delle Venezie (IZSVE) Viale dell'Università 10, 35020 Legnaro (Padova), Italy www.izsvenezie.it</p>	<p>Dr Toffan is veterinarian currently managing the Aquatic Animal Virology Unit hosted at the National Reference Centre for Fish, Molluscs and Crustacean Diseases. She graduated in Veterinary Medicine in 2002 and attended the Doctoral school in Public Health and Comparative Pathology. In 2005, she also earned the specialization in “Breeding, hygiene, pathology of aquatic species and control of derived products” Since 2010, she has been working at the National Reference Centre for Fish, Molluscs and Crustacean Diseases at IZSVE in the group led by Dr Giuseppe Bovo until 2011 and now by Dr Giuseppe Arcangeli, involved in research, diagnostic and capacity-building activities. In 2016, she was appointed OIE expert for the OIE Reference Laboratory for Viral Encephalopathy and Retinopathy, located at the IZSVE. Dr Toffan’s research interests are mainly focused on the diagnosis and control of viral diseases of freshwater and marine species. Her research is particularly focused on the pathogenesis of viral diseases and the development of safe and efficacious vaccines in the above-mentioned species. she is involved in several national and European-funded research projects having fish viruses as main topic.</p>
34	<p>Phan Thi VAN Director Research Institute for Aquaculture 1 Dinh Bang Tien Son, Bac Ninh, Hanoi Viet Nam</p>	<p>Dr Van is the Director of Research Institute for Aquaculture No. 1 and Associate Professor of Vietnam National University of Agriculture under the Ministry of Agriculture and Rural Development in Viet Nam. She has 25 years of work experience in aquaculture, with a focus on aquatic animal health, environment and good aquaculture practices. She has been used as an expert by FAO, UNDP, OIE and others, both inside and outside Viet Nam (Asia, Europe, Africa and the Caribbean). She was chairwoman of the Fish Health Section (2014-2017) of the Asian Fisheries Society and a member of the National Task Force for Shrimp Disease during the first occurrence of AHPND in Viet Nam. She has also led a number of national and international projects on aquatic animal diseases.</p>
35	<p>Jing WANG OIE Asia-Pacific Food Science Building 5F The University of Tokyo 1-1-1 Yayoi, Bunkyo-Ku</p>	<p>Dr Wang joined the OIE Regional Representation for Asia and the Pacific in May 2017 as a Regional Veterinary Officer. Her major responsibilities include organization of capacity-building training, aquatic animal and AMR related activities. She has been involved in aquatic animal activities since she joined OIE RRAP and helped to contribute to</p>

	Tokyo 113-8657 Japan	implementation of the regional programme relating to aquatic animal diseases. Prior to joining the OIE, she served at the China Animal Disease Control Center for several years as Assistant Professor, focusing laboratory diagnosis of animal diseases as well as laboratory quality management. From 2013-2015, she was seconded to the Veterinary Bureau, Ministry of Agriculture, P.R. China, where she gained knowledge on disease control and preparedness for emerging disease.
36	Qing WANG Director, Laboratory of Aquatic Disease Control and Prevention Pearl River Fisheries Research Institute (PRFRI) Chinese Academy of Fishery Sciences (CAFS) Ministry of Agriculture and Rural Affairs (MARA) Guangzhou, People's Republic of China Email: wangqing@prfri.ac.cn ; sunny_929@163.com Tel: +86 13450438588 (Mobile) http://www.prfri.ac.cn	Dr Wang is an expert on aquatic viral disease control and Director of the Laboratory of Aquatic Disease Control and Prevention, PRFRI, CAFS. In 2008, she graduated from Sun Yat-sen University and joined PRFRI. Since then, she has been working in the Laboratory of Aquatic Disease Control and Prevention for 11 years. During 2013-2015, she was invited to visit the OIE KHV Reference Laboratory in the Friedrich-Loeffler-Institut (FLI) for three months, communicating research experience on KHV diagnosis. Thereafter, she worked as a visiting scholar in the College of Veterinary medicine, Oregon State University for one year on research on KHV latency infection. Her research focuses on epidemiological surveillance, risk assessment, and vaccine development for freshwater fish viral diseases, especially grass carp reovirus, koi herpesvirus, iridovirus, and so on. Her team has established more than 20 fish cell lines for viral isolation, 10 diagnostic kits for viral detection and inactivated or oral vaccines against grass carp reovirus, published 81 papers and had 13 invention patents authorized.
37	David VERNER-JEFFREYS Principal Microbiologist Antimicrobial Resistance Programme Lead Centre for Environment, Fisheries and Aquaculture Science (Cefas) Weymouth Laboratory, Barrack Road Weymouth, DT4 8UB Dorset, United Kingdom	Dr Verner-Jeffreys is an aquaculture health expert who has worked for Cefas, based at their Weymouth Laboratory, since 2003. He obtained his PhD from the University of Glasgow in 2000. Before joining Cefas, he worked in Hawaii for the Oceanic Institute, helping the development of rearing programmes for tropical marine finfish and shrimp species. His main areas of expertise are in aquatic animal diseases, leading investigations into unexplained mortalities and, more fundamentally, the biology of the major bacterial pathogens of fish and shellfish. He has a strong interest, and provides advice to industry and the UK Government, on the risks associated with antimicrobial resistance (AMR) in aquaculture pathogens and reservoirs of AMR in the aquatic environment. This includes leading FAO International Reference Centre for AMR (UK). For the meeting, he can share Cefas's experience of leading emergency disease responses in aquaculture operations, both nationally and internationally (through the OIE Collaborating Centre for Emerging Aquatic Diseases that Cefas leads).

38	<p>Hao ZENG Director, Aquaculture Division Bureau of Fisheries Administration (BFA) Ministry of Agriculture and Rural Affairs (MARA) Beijing, People's Republic of China http://www.moa.gov.cn/</p>	<p>Dr Zeng is an aquatic animal health management specialist and Director of the Aquaculture Division in BFA, MARA. He joined MARA in 2002, and in 2005, started his work in BFA on aquaculture and specifically aquatic animal health management. He has been engaged in administrative management and policy research for prevention and control of aquatic animal epidemics in P.R. China for many years, and has participated in the formulation and revision of relevant laws, regulations and standards of aquatic animal epidemic prevention, such as the animal epidemic prevention law, the administrative measures for animal quarantine, and the administrative measures for practicing veterinarians. He is mainly responsible for the formulation and implementation of the annual national aquatic animal epidemic monitoring plan, organizing and guiding the handling, prevention and control of emergent major aquatic animal epidemics, and reviewing the aquatic animal epidemic information reported by P.R. China to OIE. He is also responsible for the implementation of the quarantine system for aquatic fry production areas in China and participates in the compilation and approval of the bulletin on the health status of aquatic animals in China and other important monographs on aquatic animal epidemic prevention.</p>
39	<p>Peter Akpe ZIDDAH Aquatic Animal Health Specialist Fisheries Commission P. O. Box GP 630, Accra, Ghana</p>	<p>Dr Ziddah received a DVM and M.Sc. in Veterinary Medicine from Kishinev Veterinary Institute (Moldova Agricultural University) in 1987; a Certificate in Tropical Veterinary Medicine from the same institute in 1990; and an M.Sc. in Aquatic Veterinary Sciences from the University of Stirling in 1997. He worked for the Veterinary Services of the Ministry of Food and Agriculture from 1987–1998. His work schedule including examination of animals and checking their health status, treating animals, conducting post-mortem examinations, educating animal owners on sanitary and nutritional measures, educating the public on zoonotic diseases etc. In 1998, he was seconded to the Fisheries Commission where he established the Fish Health Unit. He established the presence of various pathogens in the aquatic environment, which led the development of the Ghana Aquatic Animal Health Policy to guide development interventions in the aquaculture industry. In 2017, he provided information that enabled Ghana to ban the importation of ornamental fishes to prevent the introduction of TiLV. In 2014, the industry experienced an incidence of <i>Streptococcus agalactiae</i> 1a and 1b, which was contained through the use of an autogenous vaccine. Currently, ISKNV has been found and measures are being adopted to improve biosecurity on farms and introduce immunization.</p>
40	<p>Qingli ZHANG Director, Division of Marine Aquaculture Animal Disease Control and Histopathology Yellow Sea Fisheries Research Institute (YSFRI)</p>	<p>Dr Zhang is a professor and the Director of the Division of Marine Aquaculture Animal Disease Control and Histopathology, YSRDI, CAFS. He received his Ph.D. in marine biology from the CAFS in 2007, and devoted himself to the investigation of emerging diseases of maricultured animals and the development of novel diagnostic techniques for mariculture pathogens. He identified two novel nodaviruses, covert mortality nodavirus</p>

	<p>Chinese Academy of Fishery Sciences (CAFS) Ministry of Agriculture and Rural Affairs (MARA) 106 Nanjing Road, Qingdao 266071 People's Republic of China http://www.ysfri.ac.cn/</p>	<p>(CMNV) and movement disorder nodavirus (MDNV) from farmed shrimp, and proved CMNV's prevalence in Asia and Latin America, as well as CMNV's cross-species transmission in marine fishes, and revealed the patho-ecological characteristics of CMNV. He established the rapid and highly sensitive detection technology platform for aquaculture animal pathogens, developed on-site rapid and highly sensitive detection kits for more than 20 kinds of aquatic animal pathogens, and applied more than 10 000 kits in P.R. China. He organized the China-ASEAN Aquatic Animal Proficiency Testing Technology Training Course, the China-Southeast Shrimp Disease Diagnostic Technology Training Class in 2015-2016, and promoted on-site rapid detection technology and kits in North Africa and Southeast Asia including Egypt, Malaysia, Indonesia, the Philippines and so on.</p>
41	<p>Snjezana ZRNCIC Croatian Veterinary Institute Laboratory for Fish and Molluscs diseases Savska 143, 10000 Zagreb, Croatia</p>	<p>Dr Zrncic has more than 30 years' experience in aquatic animal health, mostly in Croatia and neighbouring countries. After PhD education at the Veterinary Institute in Zagreb, Croatia, she established the Laboratory for Aquatic Animal Diseases at the Croatian Veterinary Institute, a national diagnostic institution. She has experience with diagnostics of EU-listed diseases and cooperated closely with the CVO in managing the outbreaks of viral hemorrhagic septicaemia, infectious hematopoietic necrosis and koi herpesvirus disease. Along with listed diseases, she is an expert in diagnostics and management of diseases of Mediterranean fish species. From 2013-2015, she worked as FAO expert for diagnostics in TCP/RER/3402 Assistance to Western Balkan Countries for Improving Compliance to International Standards on Aquatic Animal Health, prepared the <i>West Balkan Regional Aquatic Animal Disease Diagnostic Manual</i> and participated in FAO activities on Strengthening capacities, policies and national action plans on prudent and responsible use of antimicrobials in fisheries (FMM/RAS/298). Currently, she is serving as the General Secretary of the European Association of Fish Pathologists. She has published about 100 papers and is currently participating in two EU-funded projects, H2020 MedAID and Interreg Italy-Croatia AdriAquaMed, both dealing with the improvement of health management of Mediterranean fish species.</p>
42	<p>Magnus Sverre PETERSEN Higher Executive Officer Section for Knowledge Programmes The Knowledge Bank Norwegian Agency for Development Cooperation Postal address: P.O. Box 8034 Dep, 0030 Oslo, Norway Office address: Bygdøy allé 2, 0257 Oslo, Norway</p>	<p>Dr Petersen has been working for the Norwegian Agency for Development Cooperation in the Fish for development program since 2018. In this position, he worked mostly within Norway's support for aquaculture in our development cooperation. Also, part of the responsibilities in the program, is how to harness Norwegian institutional competence to the benefit of developing countries. This is often done bilaterally by providing technical assistance and capacity building to national authorities for managing fisheries and aquaculture sectors, but also through multilaterally, such as in the UN-system. Prior to that he worked with development cooperation at the Royal Norwegian Embassy in Kathmandu.</p>

		He also worked as a journalist covering new technology in the Norwegian aquaculture sector. He is an aquaculture biologist by training.
43	Rosa Federica GRASSI Specialist in Maritime Law and Economics Partner of L'Equipaggio Snc, Responsible for International Relations, Quality Control and HACCP Team Management	Ms Grassi has a Masters in Maritime Law and Economics from the University of Pescara and she is specialized in International Business Development Processes. Since 2006, she has been responsible for international trade and quality control of an import-export frozen seafood products company, directly overseeing quality and output of fish products in overseas operations in Europe, Peru, South Korea, China, Vietnam, India and Australia. She is a member of the Technical-Scientific Committee of the Italian National Association of Seafood Companies (ASSOITTICA) advising the Association on matters relating to production, processing, packaging, marketing, labelling, quality, hygiene and safety of seafood and aquaculture products, as well as on EU and national legislation. She has collaborated with the University of Pescara and the Chamber of Commerce, Industry, Crafts and Agriculture of Pescara (Italy) as a Seminar tutor on the 'Common Fisheries Policy in the European and global context'. She is a consultant with NISEA Soc Coop arl, a research cooperative specialized in socio economic study and research initiatives on fisheries and aquaculture, examining fish processing companies and reporting on EU regulations in the fishery sector, as well as on marine litter. She is currently working on 'fishing for litter' project named 'Catch & Clean'.
44	Etienne BONBON Senior Veterinary Advisor EMC-AH / Animal Health Service Food and Agriculture Organization of the United Nations Viale delle Terme di Caracalla SN 00153 Rome, ITALY	Dr Bonbon is senior veterinary advisor to the FAO Animal Health Service, Emergency Management Centre for animal health. He received his Veterinary Medicine diploma in 1987 and master's degree in human and animal epidemiology in 1991. Primarily a private practitioner in rural areas, he's been a Veterinary Public Health Inspector in the French Ministry of Agriculture since 1991. From 1992 to 2017, he was successively: - Deputy Director of Veterinary Services in continental France (1992-94) and in Martinica (1994-96); - Head of the Export Unit at General Directorate for Food, Paris (1996-2000); - Regional Veterinary Attaché for the Near and Middle East, Beirut (2000-04) and then for Northern Asia, Beijing (2004-07); - Seconded Expert to the European Commission in Directorate General for Health and Consumers, Animal Health Unit, Brussels (2007-12); - Head of the Communication Unit of the World Organisation for Animal Health (OIE) and Advisor to the Director General of the OIE, Paris (2012-14); - Seconded to the European External Action Service at the Delegation of the European Union to the OECD, UNESCO and OIE, Paris (2014-17). He has been President of the Terrestrial Code Commission of the OIE since 2015, after having been Vice-President between 2009 and 2015.

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