

# WOAH Collaborative Centre Reports Activities 2025

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## CENTRE INFORMATION

<b>*Title of WOA Collaborating Centre</b>	Epidemiology Aquatic Animal Diseases (Europe)
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<b>*Name Director of Institute (Responsible Official):</b>	Dr. Gun Peggy Strømstad Knudsen
<b>*Name (including Title and Position) of Head of the Collaborating Centre (WOAH Contact Point):</b>	Dr. Saraya Tavornpanich, Senior researcher
<b>*Name of the writer:</b>	Dr. Maria Fernanda Serrano De La Cruz

## TOR 1 AND 2: SERVICES PROVIDED

1. Activities as a centre of research, expertise, standardisation and dissemination of techniques within the remit of the mandate given by WOA

Category	Title of activity	Scope
Training, capacity building (true)	Fish for Development program – Ghana	<ul style="list-style-type: none"> <li>• Providing training in outbreak investigation in the Ghanaian aquaculture industry, and develop routine notifications/alert and response procedures as part of the overall aim of building capacity and knowledge in health management and epidemiology of aquatic animal diseases for Fishery Commission/Competent Authorities in Ghana. (funded by Norwegian Government)</li> <li>• Joint Workshop to initiate the development of a Contingency Plan for Aquatic Animal disease outbreaks tailored to Ghana's aquaculture industry. Involving the Aquatic Code chapters related with biosecurity, emergency preparation, epidemiological surveillance, outbreak investigation, risk assessment and welfare</li> </ul>
		<ul style="list-style-type: none"> <li>• Farmer's Perceptions Workshop in Colombia, organized by ICA (The Colombian Veterinary Authority) and the Norwegian Veterinary Institute, with support of the university of Nariño to research barriers to the implementation of specific biosecurity</li> </ul>

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Aquatic animal diseases (true)	Fish for Development Project - Colombia	measures among rainbow trout farms in La Cocha Lake, Colombia. The workshop The aim was to explore farmers' perspectives, underlying reasons for non-adoption, perceived importance of biosecurity practices, and farmer-suggested solutions • The research study "Characterization of Knowledge, Attitudes, and Biosecurity Practices among Rainbow Trout ( <i>Oncorhynchus mykiss</i> ) with producers in La Cocha Lake, Nariño" was finished. This bachelor's thesis was supervised by the university of Nariño and NVI. The study provided an overview of the status of biosecurity measures implemented by farms in La Cocha Lake. The data are being used as the basis for further analysis, including a risk factor assessment and the development of a tool for the biosecurity evaluation in the farm level.
Veterinary medicinal products (true)	Fish for Development project Ghana	<ul style="list-style-type: none"> <li>• Workshop to identify areas that would underpin the development of guidelines for the use of aquaculture chemicals and drugs in Ghana.</li> </ul>
Training, capacity building (true)	Fish for Development program - Colombia	<ul style="list-style-type: none"> <li>• Providing training, advice and reference material to increase the capacity of the Colombian veterinary Authority- The Colombian Agricultural Institute-ICA in the diagnosis, prevention, control, and surveillance of aquatic animal diseases. (funded by Norwegian Government) • A Tabletop simulation exercise was organized in Colombia by ICA (The Colombian Veterinary Authority) and the Norwegian Veterinary Institute (NVI), to test the Contingency Plan for Aquatic Animal Disease Outbreak. This exercise aimed to identify strengths, limitations, and opportunities for improvement while assessing the ICA's capacity and preparedness to manage and recover from aquatic animal disease emergencies. • Following this exercise a comprehensive review and enhancement of the contingency plan and its instructions will be conducted prior to its formal adoption, ensuring the final document is fully aligned with the entity's operational needs.</li> </ul>

## TOR 3: HARMONISATION OF STANDARDS

2. Proposal or development of any procedure that will facilitate harmonisation of international regulations applicable to the main focus area for which you were designated

Proposal title	Scope/Content	Applicable Area
Quantification of aquaculture biosecurity measures	Development and implementation of tools for quantification of aquaculture biosecurity measures	Training and Education Health Management
Contingency plan Aquatic Animal Diseases for Ghana	Development of the Contingency Plan for Aquatic Animal Diseases, Outbreaks for Ghana, following the Aquatic Code chapters related with biosecurity, emergency preparation, epidemiological surveillance, outbreak investigation, risk assessment and welfare.	Training and Education Health Management Animal Production

3. In exercising your activities, have you identified any regulatory research needs\* relevant for WOA?H?

Yes

### Research need 1

**Please type the Research need:** • Aquatic Animal Disease Emergency preparedness at international, national and local levels, including the development of contingency plans, simulation exercises, and complementary workshops on outbreak investigation and the analysis of epidemiological measures during emergency situations. • Integration of adoption of social methodologies and tools to improve the efficacy of knowledge transfer, communication, and the implementation of sanitary measures for the prevention and control of aquatic animal diseases.

**Relevance for WOA?H** Capacity Building,

**Relevance for the Code or Manual**

**Field** Epidemiology and Surveillance,

**Animal Category** Aquatic,

**Disease:**

**Kind of disease (Zoonosis, Transboundary diseases)**

**If any, please specify relevance for Codes or Manual, chapter and title**

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

**Answer:**

**Notes:**

**Answer:**

4. Did your Collaborating Centre maintain a network with other WOA?H Collaborating Centres (CC), Reference Laboratories (RL), or organisations designated for the same specialty, to coordinate scientific and technical studies?

Yes

Name of WOA?H CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
Aquatic Collaborating Centre Network	Global	América Asia y el Pacífico Europa	Enhance the networking between WOA?H aquatic CC's and between the aquatic CC's and others in the WOA?H community.
WOA?H Collaborating Centre for Economics of Animal Health.	UK	Europa	The Centre is part of the Consortium for WOA?H CC for Economics of Animal Health, focusing on aquaculture.
Network of Aquaculture Centres in Asia-Pacific (NACA)	Thailand	Asia y el Pacífico	A member of the Centre is co-opted member and presented at the annual meeting of the Asia Regional Advisory Group on Aquatic Animal Health.
WorldFish	Malaysia	África Asia y el Pacífico	Collaboration in a Capacity Building project in Africa

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COST (European Cooperation in Science and Technology).	EU	Europa	Participating in BETTER (Biosecurity Enhanced Through Training Evaluation and Raising Awareness) COST Action 20103 to reduce the risk of infectious disease introduction and spread by improving implementation of biosecurity measures in animal production systems.
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## TOR 4 AND 5: NETWORKING AND COLLABORATION

5. Did your Collaborating Centre maintain a network with other WOAHA Collaborating Centres, Reference laboratories, or organisations in other disciplines, to coordinate scientific and technical studies?

Yes

Name of WOAHA CC/RL/other organisation(s)	Location	Region of networking Centre	Purpose
WOAHA Collaborating Centre for Epidemiology and Training on Emerging Avian Diseases.	Italy	Europe	The Centre has been involved as the external advisor of the project "Strengthening Capacity on Aquatic Animal Health and Epidemiological Surveillance (AquaStrength)" with Scientific Coordinator Dr. Amedeo Manfrin and Project Manager Dr. Nicola Ferre
<ul style="list-style-type: none"> <li>Ethiopia: Animal Health Institute, Armauer Hansen Research Institute, and the Ministry of Agriculture</li> <li>Malawi: Department of Animal Health and Livestock Development</li> <li>Tanzania: Various national institutions</li> </ul>	Tanzania	Africa	Co-developed epidemiology courses for field Veterinarian. The training was part of the project "One Health – Controlling Zoonotic Diseases and Antimicrobial Resistance in the Milk Value Chain in Tanzania, Ethiopia, and Malawi", funded by the Government of Norway

## TOR 6: EXPERT CONSULTANTS

6. Did your Collaborating Centre place expert consultants at the disposal of WOAHA?

Yes

Name of expert	Kind of consultancy	Subject
Dr. Saraya Tavornpanich	Technical advice	• Epidemiology
Dr. Edgar Brun	Technical advice	• Epidemiology

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Dr. Maria Fernanda Serrano	Technical advice	• Aquatic Animal Health and outbreak management and preparation • Biosecurity
Dr Torrfinn Modal	Technical advice	• Control program for Infectious Salmon Anemia
Dr Haakon Hansen	Technical advice	• Epidemiology of Gyrodactylus salaris

## TOR 7: SCIENTIFIC AND TECHNICAL TRAINING

7. Did your Collaborating Centre provide advice/services to requests from Members in your main focus area?

Yes

See TOR 1 and 2. Share expertise knowledge regarding Biosecurity, outbreak investigation, design of studies and analysis of data from active and passive surveillance, development of contingency plan for aquatic animal diseases with the Colombian Veterinary Authority- the Colombian Agricultural Institute-ICA.

8. Did your Collaborating Centre provide scientific and technical training, within the remit of the mandate given by WOA, to personnel from WOA Members?

Yes

a) Technical visit : 8

b) Seminars : 236

c) Hands-on training courses: 121

d) Internships (>1 month) : 0

Type of technical training provided (a, b, c or d)	Content	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
A	Study tour by Fisheries Commission staff of Ghana to understudy legislative and regulatory strategies that aided the transition to land-based aquaculture in Egypt	Ghana	8
B	Technical Webinar: Diving into Flavobacterium spp. -Fish for Development Project-Colombia	Norway	137
B	Webinar: Francisellosis in farmed and wild fish Fish for Development Project-Colombia	Norway	99
C	Fish Pathology training course Fish for Development Project-Colombia	Norway	1
C	Trainer of Trainers meeting with employees of the Fisheries Commission of Ghana on the use of the biosecurity guidelines and training manual developed in collaboration with FAO.	Ghana, Norway	67

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C	A Trainer of Trainers meetings (3 cycles) on the use of the Ghana Aquaculture Information Management System (GAIMS) developed by the Fish for Development project	Ghana, Norway	53
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## TOR 8: SCIENTIFIC MEETINGS

9. Did your Collaborating Centre organise or participate in the organisation of scientific meetings related to your main focus area on behalf of WOA?H

Yes

National/International	Title of event	Co-organiser	Date	Location	No. Participants
Internationally	3 days Regional Workshop for WOA National Focal Points for Aquatic Animals (V Cycle)	WOAH, EU Regional	2025-09-03	Ålesund, Norway	35
Internationally	4 days AQMENET Technical and Steering Committee meeting National Focal Point for Aquatic Animals Training	WOAH, Middle East Network	2025-10-26	Jeddah, Kingdom of Saudi Arabia	30
Internationally	2 days Aquae Strength Project, Final Workshop	Istituto Zooprofilattico Sperimentale delle Venezie	2025-10-21	Alghero, Sardinia	30
Internationally	2 days Advancing Aquaculture Health Research Workshop	WOAH	2025-02-20	Paris, France	25
Internationally	2 days Workshop on enhancing aquatic animal health and biosecurity: Surveillance, control, and best practices for key pathogens in aquaculture	the General Fisheries Commission for the Mediterranean (GFCM)	2025-05-05	Jeddah, Kingdom of Saudi Arabia	15
Internationally	3 days Technical Workshop: Development of Aquatic Animal Disease Early Warning System (EWS) at Farm Level	FAO	2025-11-03	Qingdao, China	30
Internationally	3 days Workshop: Aquatic Organism Health (AOH) Management and Aquaculture Biosecurity	FAO	2025-11-06	Guangzhou, China	30

## TOR 9: DATA AND INFORMATION DISSEMINATION

10. Publication and dissemination of any information within the remit of the mandate given by WOA?H that may be useful to Members of WOA?H

a) Articles published in peer-reviewed journals:

6

- Ageng'o, F. O., Waruiru, R. M., Wanja, D. W., Nyaga, P. N., Hamisi, M. M., Ndegwa, J. M., Ali, S. E., Chadag, M. V., & Mbuthia, P. G. (2025). Parasites of farmed and wild tilapine fishes from selected farms and lake jipe in Taita Taveta County, Kenya. *Aquaculture Fish and Fisheries*, 5(1). <https://doi.org/10.1002/aff2.70042>
- Ackah, M., Ali, S. E., Sowah, W. N. A., Asamaah, E. K., & Addo, S. (2024). In vitro and in vivo activity of herbal and chemical treatments against *Saprolegnia ferax*—a

causative agent for saprolegniasis. *Aquaculture International*, 33(1). <https://doi.org/10.1007/s10499-024-01765-0>

3. Ndegwa, J. M., Njagi, L. W., Mulei, I. R., Nyaga, P. N., Wanja, D. W., Ali, S. E., Delamare-Deboutteville, J., & Kimemia, B. B. (2025). Conventional and molecular characterization of an *Aeromonas* isolate recovered from an aquaculture farm with high fish mortality in Kenya. *International Journal of Fisheries and Aquatic Studies*, 13(1), 01–09. <https://doi.org/10.22271/fish.2025.v13.i1a.3008>
4. Dandi, S. O., Evensen, Ø., Addo, S., Abarike, E. D., Abobi, S. M., Doke, D. A., Lyche, J. L., Mutoloki, S., Obiakara-Amaechi, A. I., Alhassan, E. H., Cudjoe, K. S., Edziyie, R. E., & Opokuware, S. (2025). Antibiotic residues in farmed fish and sediments from cage aquaculture: Insights from Stratum II of the Volta Lake, Ghana. *Journal of Hazardous Materials Advances*, 21, 100961. <https://doi.org/10.1016/j.hazadv.2025.100961>
5. Dandi, S. O., Evensen, Ø., Addo, S., Abarike, E. D., Abobi, S. M., Doke, D. A., Lyche, J. L., Mutoloki, S., Obiakara-Amaechi, A. I., Cudjoe, K. S., & Edziyie, R. E. (2025). Antibiotics governance in aquaculture: knowledge, practices, and challenges among stakeholders on the Volta Lake in Ghana. *One Health Outlook*, 7(1), 22. <https://doi.org/10.1186/s42522-025-00141-z>
6. Collado-Gonzlez, M., Esteban, M., Machuca, C., Mndez-Martnez, Y., Reyes-Becerril, M., Angulo, C., Mofad, Mohammadi, G., Rashidian, G., Hoseinifar, S., Naserabad, S., Doan, H., Soto, D., Aguilar-Manjarrez, J., Brugre, C., Zornu, J., Tavornpanich, S., & Brun, E. (2025). Erratum to "Stakeholder Perspectives on the 2023 Ghana National Aquaculture Development Plan: An Integration within the Ecosystem Approach Framework." *Aquaculture Fish and Fisheries*, 5(4). <https://doi.org/10.1002/aff2.70109>

b) International conferences:

3

1. Salas Chalapud, M., Benavides Benavides, B., & Serrano De La Cruz, M. (2025). CHARACTERIZATION OF BIOSECURITY KNOWLEDGE AND PRACTICES IN THE PRODUCTION OF RAINBOW TROUT *Oncorhynchus Mykiss* IN LA COCHA LAKE, NARIÑ. LATIN AMERICAN & CARIBBEAN AQUACULTURE 2025 - LACQUA 2025, Puerto Varas, Chile. <https://www.was.org/meeting/code/lacqua25>
2. Serrano De La Cruz, M. (2025). Motivational Interviewing and Biosecurity, Experiences with small-scale producers in Colombia (Social Science special Session). 7th FRDC Australasian Scientific Conference on Aquatic Animal Health & Biosecurity - Technology for Improved Production and Health, Cairns, Queensland, Australia. <https://events.csiro.au/Events/2025/January/20/7th-FRDC-Aust-Sci-Conference-on-Aquatic-Animal-Health-Biosecurity>
3. Zornu, J., (2025) Poster presentations at the 22nd International Conference on Diseases of Fish and Shellfish organized by the European Association of Fish Pathologists (EAFP):
  - o Understanding tilapia mortalities and fish health management in Lake Volta: a systematic approach
  - o Biosecurity in aquaculture: a practical approach for on-farm implementation

c) National conferences:

1

1. 2025 Ghana Aquaculture Conference to share achievements from the Fish for Development Programme. Sponsored by FFD Ghana

d) Other (Provide website address or link to appropriate information):

2

1. Fish Health Report – The Norwegian Veterinary Institute (NVI) Annual Report on Fish Health Status in Norwegian Aquaculture <https://www.vetinst.no/rapporter-og-publikasjoner/rapporter/2025/norwegian-fish-health-report-2024>
2. Research Needs for Infectious Salmon Anaemia (ISA). DISCONTTOOLS: Available at: [www.discontools.eu/database/119-infectious-salmon-anaemia.html](http://www.discontools.eu/database/119-infectious-salmon-anaemia.html)

11. What have you done in the past year to advance your area of focus, e.g. updated technology?

Members of the Collaborating Centre attended workshops and trainings in the area of epidemiology and data analyses including: use of basic epidemiological tools, analysis of data, risk analysis, outbreak investigation, assessment of epidemiological surveillance and biosecurity in Aquatic Animals.

- Attended Online courses on One Health Behavior Science to address AMR
- Attended a training school on Economic analysis and tools for effective communication and endorsement of enhanced biosecurity measures, Helsinki, Finland

12. Additional comments regarding your report:

None