Advances and challenges in data-driven health surveillance in aquaculture

ISVEE-pre conference workshop at Halifax Hotel Marriott Harbourfront
August 6-7th 2022

General workshop information

Motivation and objectives:

Recent years has seen a large shift towards more data-driven surveillance of health and welfare in animal production. To a large degree this has been funnelled by an increased collection of and sharing of data relating to production, diagnoses, medicine use, behaviour and sensor technology. Some of the technologies from terrestrial animal production can (and has been) transferred to aquaculture. However, obtaining and utilizing data in aquaculture has its own challenges. A special issue is the large diversity of production systems and technology levels, where salmon production in Norway and ornamental fish production in Asia provides examples of the extremes in each end of the scale. Within this workshop we will address central aspects of using new and existing data to improve robustness of the production system, early detection of health and welfare issues and health monitoring. As data and analytical methods do provide exciting new opportunities for precision fish farming there is also several potential pitfall and caveats that users should be aware of to provide the full benefit of such precision technology.

After this workshop, the participants will be able to:

- Find and list sources of data that can be usefull for aquaculture health management
- Evaluate the suitability and availability of different data sources for aquaculture health management
- Provide examples of data-integration methods and draw an integrated health management system
- Explain the concept of Precision Fish Farming
- Discuss different implementations of data usage for aquaculture health management
- Argue the benefits of integrated data usage and discuss how to engage data providers (ie. producers, private laboratories, technology providers) in sharing data
- Translate an example of integrated data usage for an aquaculture production system in their own country
- Highlight factors and variables to take into account for evaluating economic cost-benefits for producers for moving from experience based to knowledge-based decision making when it comes to management

Background of attendees: Anyone with an interest in health surveillance in aquaculture or data-driven surveillance. No specific skills required.

Previous history: The workshop has not been held or proposed before.

Workshop specifications

The workshop will be offered as a pre-conference 2-days workshop. We will accommodate online participants, though the priority will be given to in-person participants. Non-ISVEE delegates are welcome to participate. The workshop will be a mix of lectures, discussions and case-based work. We expect participants to actively engage in the workshop. Participants will receive information on preparation for the workshop one month ahead.

The language of the workshop will be English

Schedule of the workshop (subject to change):

Day	Time	Activity/Contents	Details
1	8:30-9:10	Introduction to workshop and objectives	Expectations and goals
	9:15-10:00	Examples of health management issues in aquaculture	Perspectives from different levels: Asia/Africa Americas/Europe
	10:00-10:30	*Bio break*	
	10:30-12:00	Finding and evaluating data sources	Lecture and participant activities
	12:00-13:00	*Lunch break*	
	13:00-14:30	Precision Fish Farming concept and usefulness	Lecture and case
	14:30-15:00	*Bio break*	
	15:00-16:00	Case: How baseline mortality is calculated and defined in aquaculture	Presentation and discussion
	16:00-16:30	Insights and "muddy points"	Participant activity
2	8:30-10:00	Designing integrated health management systems	Lecture and participant activity
	10:00-10:30	*Bio break*	
	10:30-12:00	Ethical perspectives and data sharing	Cases and discussion
	12:00-13:00	*Lunch break*	
	13:00-14:30	Economic aspects of data-based surveillance	Presentation and participant activity
	14:30-15:00	*Bio break*	
	15:00-16:00	Workshop wrap-up and further resources	Package of resources for further exploration

Workshop leaders:

Britt Bang Jensen (britt-bang.jensen@vetinst.no): Veterinary epidemiologist specialized in aquatic animal health. A running focus throughout my professional career is to develop better methods for monitoring and controlling diseases in the aquaculture industry, thus improving the health and welfare of farmed fish. I assist competent authorities and industry with research-based knowledge support on epidemiological aspects of diseases and health problems in aquaculture. This includes risk assessments, design of surveillance programs, evaluation of mitigation measures and inputs on optimal production structure and biosecurity. I have experience within diagnostics, surveillance, research, dissemination and public sector consultancy, all with regards to aquatic animal health. I have organized and / or participated as a teacher in 13 workshops, 11 of them internationally.

Mona Dverdal Jansen (mona-dverdal.jansen@vetinst.no): Veterinary epidemiologist and part of the ERAAD (Europe) team. In addition to working with fish heath and disease control in Norwegian salmon, a significant proportion of my work has been related to aquatic animal health management in Asia and Africa. This includes work on how to improve health management, biosecurity and surveillance, all of which rely on improved collection, collation, interpretation, utilisation and sharing of data amongst key stakeholders.

Additional workshop team members:

Larry Hammell (lhammell@upei.ca) Dean (Interim), UPEI Faculty of Graduate Studies & Research; Professor (Dept of Health Management); Associate Dean, Graduate Studies and Research, Atlantic Veterinary College, UPEI. Larry is currently the leader of the OIE collaborating centre for Epidemiology and Risk Assessment of Aquatic Animal Diseases (www.eraaad.com). His research interests are Health and productivity management at fish farms / hatcheries, Clinical epidemiology, Disease surveillance and production monitoring, Diagnostic test evaluations and Risk factor studies.

Mogens A. Krogh (mogens.krogh@anis.au.dk): Quantitative epidemiologist with a focus on application-oriented research and development within livestock production. The primary focus is on herd health, management and welfare of the cattle concerned. It is about the interaction between biology and management to get from observations / measurements / registrations to knowledge and decision basis.

In addition, presentations will be given by members from other institutes.