AUSTRAL SUMMER INSTITUTE XIII (ASI XIII)

Understanding physical, chemical and biological processes in the marine environment
Why do diseases emerge in marine aquaculture?
And what can we do to limit this?

Alexander Murray and Nabeil Salama
Marine Scotland Science, Scotland
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Description

The course aims to provide an overview of the epidemiology of emerging diseases that affect marine aquaculture production systems. The course with include description of major pathogens and resultant disease, an overview of modelling for epidemiology, with concentration on Susceptible-Infected (SI) epidemiological modelling, coupled hydrodynamic-particle transport models, and risk analysis. We will also cover the epidemiology of surveillance for pathogens, strategic approaches to disease control (management areas, codes of practice), technical approaches to disease control (medicines, vaccines) and the economic and legislative aspect of disease control.

Contents

Introduction and modelling
A brief history of aquaculture
The basic concepts of disease
A brief description of major groups of pathogens
Case histories of disease
An introduction to modelling
Susceptible-Infected Epidemiological models
Concepts of coupled hydrodynamic-particle model
An overview of hydrodynamic modelling
Particle transport and biology
Sea lice modelling
The epidemiology behind surveillance
Risk based surveillance schemes
Field sensitivity and specificity of diagnostic tests
An Exercise in surveillance
Long-distance transmission
Histories of fish movements around the world
Networks resulting from movements
Network theory
An exercise in SI modelling
Risk assessment
ISA and the development of strategic disease controls in Scotland
Disease management areas and codes of practice
Technical solutions: medicines, vaccines and cleaner fish
Economics and legislation in disease control