Aquaculture & Sports Fisheries

Module
Fish Health
And
Welfare

EQF
Level
5

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Fish Health and Welfare

EQF Level 5:

Credit Points: 10

Unit abstract

Maintaining the health of fish is a vital part of managing fish populations. Fish health and welfare is important for both extensive systems such as fisheries as well as intensive breeding systems. In the fish management industry it is vital to understand the pathogens that cause diseases, in order to plan the use of the various techniques available to both treat and prevent them. Learners will investigate health problems associated from both environmental and nutritional factors.

Learning outcomes

On successful completion of this unit a learner will:

1 Understand the causes and symptoms of viral, bacterial, fungal and parasitic diseases

2 Understand methods of control and prevention of common diseases

3 Understand the effect of husbandry on fish health

4 Be able to assess welfare conditions for fish

5 Understand the relevant codes of practice and legislation relating to the management of fish health.

Unit content

1 Understand the causes and symptoms of viral, bacterial, fungal and parasitic diseases

Viral infections: significant viral diseases of fish, eg Koi Herpes Virus, Infectious Pancreatic Necrosis; biology of viruses, structure, life cycles, pathology; symptoms of major viral infections of fish; methods used to identify viral infections; vaccination;

Bacterial infections: significant bacterial infections eg furunculosis, bacterial kidney disease; biology of bacteria, structure, life cycles, symptoms and modes of pathology; identification of bacterial pathogens

Fungal infections: significant fungal infections, eg Saprolegnia, branchiomycosis; biology of fungi, structure, life cycles, symptoms, pathology; identification of fungal pathogens

Parasitic infections: significant parasitic infections eg whitespot, *Ergasilus sieboldi*; biology of parasites, structure, life cycles, range of types, symptoms and modes of pathology; identification of parasitic pathogens

2 Understand methods of control and prevention of common diseases

Hygiene and housing in disease control and prevention: use of chemical disinfectants and antiseptics; effectiveness; environmental awareness; pollution control; isolation and quarantine

Chemotherapy: selective toxicity; spectrum of activity; adverse reactions; drug metabolism; administration; modes of action; drug resistance and toxicitiy

Antibiotics: environmental and health risks of using antibiotics

Spread of diseases: environmental and economic risks of the spread of diseases, prevent spread of diseases.

3 Understand the effect of husbandry on fish health

Husbandry: correct feed type, quality and quantity of food; cleaning and disinfection routines; stress minimisation; social interaction; provision of prophylaxis and preventative care.

Health and disease: examples of common fish diseases and ill health (definition, identification, treatment, prevention) ; clinical terminology used; significance of health in relation to fish management; production; economics.

Nutritional health problems: significant nutritional disorders e.g vertebral deformity; symptoms and causes of nutritional problems; identification of nutritional problems; methods used to manage and avoid nutritional problems.

Environmental health problems: significant environmental problems eg hypoxaemia, gas bubble disease; symptoms and causes of environmental health problems; identification of environmental problems; methods used to manage and avoid environmental problems

Health monitoring: invasive and non-invasive techniques for monitoring; observation and frequency of monitoring; signs of health-normal and abnormal for species; information source; stock knowledge; health recording; diagnostic techniques

4 Be able to assess welfare conditions for fish

Animal welfare assessment: factors affecting welfare; limitations of assessment practices; invasive and non-invasive techniques and effects on results; controlled environment experiments; range of viewpoints; public perception; producer and consumer conflicts

Environmental appraisal: environmental conditions; specific purpose and keeping requirements/restraints for different groups of fish; public health and safety; economics; accommodation and agriculture appraisal potential improvements.

5 Understand the relevant codes of practice and legislation relating to the management of fish health.
Regulation and related organisations:, international and European welfare legislation; codes of practice and conduct; related guidelines, legal enforcement procedures and penalties, relevant governmental and non-governmental animal health and welfare organisations; fish transport; humane slaughter; fish husbandry; record keeping

Learning outcomes and assessment criteria

Learning outcomes On successful completion of this unit a learner will:	Assessment criteria for pass The learner can:
LO1 Understand the causes and symptoms of viral, bacterial, fungal and parasitic diseases	1.1 Explain the structure and life cycle of selected viral fish pathogens and the symptoms of the diseases they cause. 1.2 Explain the structure and life cycle of selected bacterial fish pathogens and the symptoms of the diseases they cause 1.3 Explain the structure and life cycle of selected fungal fish pathogens and the symptoms of the diseases they cause 1.4 Explain the structure and life cycle of selected parasites of fish and the symptoms of the diseases they cause
LO2 Understand methods of control and prevention of common diseases	2.1 Evaluate the disease potential of a named animal facility 2.2 Recommend valid measures that could be taken to prevent disease transmission 2.3 Explain the role of chemotherapy and antibiotics in disease prevention
LO3 Understand the effect of husbandry on fish health	3.1 Evaluate the factors that contribute to good husbandry practice. 3.2 Explain techniques available for monitoring the health of animals 3.3 Assess the suitability of animal husbandry techniques in relation to animal health 3.4 Describe the symptoms caused by selected nutritional deficiency and excess syndromes 3.5 Describe the symptoms caused by selected environmental health problems
LO4 Be able to assess welfare conditions for fish	4.1 undertake a valid fish welfare assessment for given fish breeding system 4.2 undertake a valid environmental appraisal for given fish breeding system

LO5 Understand relevant codes of practice and legislation relating to the management of fish health.	5.1 review Fish welfare regulations relevant to given fish species 5.2 explain how main relevant legislation and codes of practice help protect a particular sector of the fish industry.

Guidance for tutors

Delivery
Lectures, discussions, seminar presentations, site visits, supervised laboratory and fish health management practicals, research using the internet and library resources, and the use of personal and/or industrial experience would all be suitable for the delivery of this unit. Delivery will also involve practical assessments, written assessment and visits to suitable collections and will link to work experience placements.

During delivery of this unit, it is essential that tutors stress the importance of fish welfare and sound, legal environmental management. Health and safety issues relating to working in a laboratory and using chemicals must be stressed and reinforced regularly, and risk assessments must be undertaken before any practical activities. Adequate personal protective equipment (PPE) must be provided and used following the production of suitable risk assessments. Apply the national and international codes of practice and legislations when working with fish.

Visiting expert speakers will add to the relevance of the subject for learners. For example, a fish farmer could talk about their work, the particular situations they face and the methods they use.

Essential requirements

Essential requirements: learners must assess the condition of a fish breeding unit. Learners must have access to the internet as well as to up-to-date literature on fish health and welfare. Laboratory equipment should be made available for learners to analyse fish health, for example access to equipment to carry out parasite analysis. Microscopes are essential items of equipment for this unit. Fish welfare requirements must be paramount at all times. Fish must not be subjected to stress or overuse during delivery of this unit.

Employer engagement and vocational contexts

Delivery of this unit would be enhanced by the visits from relevant experts such as veterinary professionals and/or personnel from environmental health departments. Learners would benefit from off-site visits to, for example, different types of husbandry and welfare of fish kept in controlled situations. Discussion on population density, in relation to productivity and welfare. Learners could also benefit from carrying out practical activities such as for parasite infestations, analysing skin scrapes for signs of abnormalities. It may be useful for a veterinary professional, for example a veterinary nurse, to lead these exercises.

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