FoodBioSystems DTP - PhD Project Advertisement

Project title:

FBS2021-34-Ironside: Investigating an emerging shellfish disease: is *Marteilia* a threat to cockle health in the UK?

Lead supervisor:
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Co-supervisors:
Dr Martha Betson, University of Surrey, Department of Veterinary Epidemiology and Public Health, School of Veterinary Medicine

Dr David Bass, Centre for Environment, Fisheries and Aquaculture Science (CEFAS)

Project description:

Emerging infectious diseases pose a major threat to humans and to the animals and plants upon which we rely for food. The aim of this project is to investigate whether a recently discovered pathogen poses a serious threat to the health of UK cockle populations which provide an important source of food for humans and wildlife.

The common cockle (*Cerastoderma edule*) is harvested all around the coast of the UK and is one of the UK's most commercially valuable shellfish species. Recurrent mass mortality events affect cockle fisheries in the UK causing significant impacts on the local economies that they support. The underlying causes of these mass mortality events have not been clearly identified.

In Spain, collapses of several cockle fisheries have been attributed to the paramyxid parasite *Marteilia cochillia.* A similar parasite has recently been discovered infecting cockles in UK but it is unclear whether this parasite causes significant mortality in UK cockles. Following initial engagement with the cockle industry and regulatory bodies, the student will conduct a longitudinal field study in which cockles are sampled every month over the course of two years and screened for *Marteilia* parasites. Pathology of infected and uninfected cockles in each sample will be compared to determine whether

mass mortality of cockles coincides with a peak in *Marteilia* prevalence and associated pathology. The student will also investigate the geographical extent of this threat to UK cockle fisheries by screening cockles sampled from sites throughout the UK, with an emphasis on economically important cockle fisheries.

The student will also sample live cockles and maintain them in individual aquaria. *Marteilia* spores released by the cockles will be genotyped to develop new molecular markers and water from aquaria will be screened by qPCR with the aim of developing a method of diagnosing infections in live cockles. The health of infected cockles will be monitored and compared with uninfected cockles from the same population.

Training opportunities:

At Aberystwyth University and The University of Surrey, the student will receive training in coastal field work, aquaculture, molecular biology, bioinformatics, epidemiology and development of molecular diagnostic tests. Additional specialist training in histopathology and advanced techniques such as in-situ hybridisation and transmission electron microscopy will be provided by the CEFAS laboratories in Weymouth.

Student profile:
This project would be suitable for students with a degree in biology, zoology, marine biology, microbiology, parasitology or a closely related subject. Applicants should be willing and able to travel throughout the UK and undertake field work in coastal and estuarine habitats.

Funding Note
This project is part of the FoodBioSystems BBSRC Doctoral Training Partnership (DTP), it will be funded subject to a competition to identify the strongest applicants.
The studentship is open to UK and international students (including EU countries) however due to funding rules, no more than 30% of the projects can be allocated to international students.
The funding will include a tax free stipend (minimum £15, 285 per year), support for tuition fees at the standard UK rate (currently £4,407 per year) and a contribution towards research costs. **Please note** that the host universities have not yet confirmed the level of fees charged to international students funded by the DTP. Fee levels may vary across the institutions. This information will be shared on the FoodBioSystems DTP website as soon as it becomes available.

To apply
Please go to FoodBioSystems DTP website for information on how to apply for this studentship. The closing date for applications will be 8 February 2021.