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FRV *Scotia*

Cruise 0807S

Report

30 May - 3 June 2007

Personnel

David Bruno (SIC)	C1
Alistair McIntosh	B3
Patricia Noguera	B3
Alison McIntosh	B1
Campbell Pert	B1
Stuart Wallace	B1
Mhairi Smith	A3
Gillian Packer	A3
Margaret McKenzie	B1
Linda Leith	B1
Katy A Urquart	B1
Sarah Barker	visitor from Stirling University

Fishing Gear

BT 101 (48' Aberdeen trawl) with tickler chain and small mesh cod end.

Objectives

To conduct an annual fish disease monitoring survey at Moray Firth, Fair Isle, Bell Rock, Marr Bank, Montrose Bank, Wee Bankie, St Abbs using standard ICES protocols for external fish diseases of haddock and dab (i.e. lymphocystis, ulcers, X cell, hyperpigmentation, fat cell necrosis and epidermal hyperplasia). To collect dab liver samples a fix for light microscopy (30 per station, 20-24cm group). A histological examination of the tissues will be carried out in the laboratory. To carry out an internal examination of >25cm dab for indication of liver neoplasia. Disease prevalence data will be prepared and a report submitted to ICES on return to FRS.

To collect tissues from common dab for mixed function oxidase activity and PAH bile metabolites in line with current monitoring programme. Additional hauls and grab samples are planned at the East Buzzard control site, subject to available time.

To sample tissue from dragonet, *Callionymus lyra* in connection with joint histopathology study with Cefas.

To conduct survey of external diseases of whiting (*Merlangius merlangus*) for potential monitoring including epidermal hyperplasia, *Lernaeocera branchialis, Diclidophora merlangi* and *Clavella adunca.*

To sample gills, liver and muscle from female control and hyperpigmented dab (stages 1-3; 20-24cm group) at all stations for laboratory analysis including virus culture, histopathology and bacteriology.
To sample approximately 30 herring per sampling point for VHSV surveillance programme under FC1196. Fish will be frozen and head kidney will be dissected from fish and total RNA use for VHSV screening employing the universal European VHSV qRT-PCR assay in the laboratory.

To sample single specimens of named species for PCR validation.

Out turn days per project: 3 days AE11a; 2 days AE08o

Narrative

FRV Scotia sailed from Aberdeen on 30 May at 1030 and commenced trawling in the Moray Firth in the vicinity of the Beatrice oil platform during the late afternoon. Sampling was undertaken at Fair Isle on the 31 May, and 15 grab samples completed in the East Buzzard control area on the evening of 31 May followed by 2 hauls (GOV). The sampling at St Abbs and Wee Bankie were completed on 1 June. Trawling began in the evening of 1 June at Bell Rock. Marr Bank and Montrose Bank were trawled on the 2 June. Scotia berthed in Aberdeen on the evening of 2 June.

All common dab, *Limanda limanda* were examined for external disease by standardised ICES protocols (n= 7275). Sufficient fish were present in the middle length classes (19-24 cm) for a full data set to be completed for the long term monitoring positions. Liver tissue was fixed for light microscopy from up to 30 fish (21-24 cm) dab from each area for examination in the laboratory for evidence of neoplasia and pre-neoplastic lesions.
Market-sized haddock were caught in Fair Isle and St Abbs were examined for vertebral anomalies.

External disease assessment according to ICES recommendations for whiting, *Merlangius merlangus* i.e. epidermal hyperplasia, *Lernaeocera branchialis*, *Diclidophora merlangi* and *Clavella adunca* were recorded. Haddock were examined and presence of *Clavella adunca*. All tissues from dragonet, *Callionymus lyra* were sampled for light microscopy.

At each area, 20 common dab were sampled for mixed function oxidase function activity, PAH bile metabolites and PAH concentration in liver and flesh. Fish caught at the Buzzard Field were sorted and all or sub-samples of haddock, plaice, common dab, long rough dab, gurnards, Norway pout, whiting were measured by basket or by length according to I.B.T.S. protocols. It was not possible, however to weigh any of the catch. Liver and flesh was collected from 20 male common dab per area which will be examined for brominated flame retardants in the laboratory. In addition fifteen grab samples were also taken in connection with flame retardants.

Herring were frozen for a VHSV surveillance programme. In the laboratory head kidney will be dissected and total RNA used for VHSV screening.

Single species sampling of named species was carried out for use in a real time PCR in the laboratory.

Tissues from female control and hyperpigmented dab (stages 1-3; 20-24cm group) were collected at all stations for laboratory analysis for virus culture, histopathology and bacteriology.

Various stages of female *Lernaeocera branchialis* from *Melanogrammus aeglefinus* (haddock) were taken from each trawl site for histology at the site of attachment. The cephalothorax of gravid females were often found to be encased in a blood clot with erosion of the mouth cone area, and dead parasites associated with a caseous exude around the leftover head and neck. Only two haddock sampled possessed more than one gravid female, which were found to be severely emaciated with a long thin body in comparison to those with one gravid female.

Gravid female *L. branchialis* were dissected from the host tissue in order to collect secretions induced by dopamine. These will be used to determine possible proteins secreted by the parasite, and also there affect on their hosts cellular immune responses *in vitro*. Parasites were dissected and frozen to collect soluble proteins for use in western blots and ELISA with serum from infected versus uninfected gadoids.
L. branchialis infected and uninfected haddock from each trawl site were frozen whole for further analysis by Dr James Bron and Dr Nick Taylor (University of Stirling).

Gills were taken from X-cell infected common dab and fixed for histology and genetic analysis by Dr Mark Freeman (Stirling University).

The prevalence of the parasitic copepod *Clavella adunca* was examined in haddock at 3 stations as part of a 5 year study examining the presence of this parasite. Fifty haddock were randomly selected from each haul, measured and examined for attached stages of the parasite.

The programme aims were achieved, and helped by the excellent co-operation of the officers and crew of the FRV Scotia. The quality of service was very good.

David Bruno, Chief Scientist
13 June 2007