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Commercial Vessel MV *Heather Sprig* (BCK 181).

Charter Cruise 1896H (EC FAIR Contract)

REPORT

29 July - 23 August 1996

Personnel

G I Sangster	HSO (in charge)	on board part time, shore based with diving team
R J Kynoch	SO	on board part time, shore based with diving team
M Breen	SO	on board part time, shore based with diving team
F G O'Neill	SO	on board part time, shore based with diving team
D J Bova	SO	on board part time, shore based with diving team
J T M Hunter	PTO	on board part time
M Burns	ASO	on board part time
N Lowry	(DIFTA)	on board
M Andersen	(DIFTA)	on board
U J Hansen	(DIFTA)	on board part time
T Moth-Poulsen	(DIFTA)	on board part time
R R Harris	(DIFTA/Leic Univ)	on board part time
M Andrews	(DIFTA/Leic Univ)	on board part time
A V Soldal	(IMR, Bergen)	on board part time
O Cruickshank	(IMR, Bergen)	on board
B Hoddevik	(IMR, Bergen)	on board part time
A Bjordal	(IMR, Bergen)	shore based (17 - 19 August)
M Ulmestrand	(SEIMR, Sweden)	on board part time
D Valentinsson	(SEIMR, Sweden)	on board
H Hallback	(SEIMR, Sweden)	on board part time

Out-turn days to project: 26 days C544

Objectives

To assess the damage to, and survival rates of: a) *Nephrops*; and b) commercial species of fish with respect to length, age and mesh size after escaping from a typical 500/600 hp dual purpose fish/prawn trawl.

To measure the selectivity characteristics of each "test" cod-end using hoop-supported covers.

Narrative

The Marine Laboratory mini-bus transferred the participating foreign staff between Dyce Airport and their Gairloch accommodation on 28 July. *MV Heather Sprig* arrived at Gairloch (from Lochinver) on the morning of 29 July. The crew immediately prepared the SOAEFD and DIFTA fishing gear on the quayside and took it on board. SOAEFD, DIFTA,

IMR and SEIMR staff prepared and set up all their scientific equipment on board the vessel and the SOAEFD fish transport container was transferred to the Longa Island cage site. The first few days were used for a) shallow and deepwater trials with the newly designed acoustic system for releasing the selectivity cover during trawling; b) selectivity hauls to obtain data on the fish species and *Nephrops* available on the various tows in the Inner Sound fishery; c) re-rigging the fishing gear to prevent it "mudding-up"; and d) collecting and transferring creel-caught *Nephrops* controls from a local commercial vessel. The SOAEFD diving team meanwhile transferred handline caught control fish into their designated cages on the seabed. *Heather Sprig* and the chartered local vessel *Salar* then worked uninterrupted, trawling, collecting and transferring *Nephrops* and fish for either "survival", or "selectivity" experiments, with periodic changeovers of the 60 mm square mesh, 70 mm, and 100 mm diamond mesh cod-ends.

MV *Heather Sprig* was off-loaded on 23 August and immediately sailed for Lochinver. The minibus returned the visiting scientific staff to Dyce Airport and all SOAEFD personnel returned to Aberdeen on 23 August.

Results

Fish escaping from each of the "test" cod-ends during towing were to be collected in a soft nylon hooped cod-end cover. The whole cover was acoustically released from the cod-end during towing. The cover and its fish contents was to be transferred at depth, by divers, into the fish transport container. Unfortunately, on these *Nephrops* grounds, roundfish were not caught in the cod-ends and cover in sufficient numbers to justify a survival experiment.

An agreed contingency plan was adopted whereby only *Nephrops* damage, survival and selectivity would be studied in the first year of this three year experiment. Triplicated groups of *Nephrops* deck discards and escapees from each cod-end mesh size category were collected and transferred to the cage site. The *Nephrops* were held in 2.5 m x 2.5 m fibreglass pens. Each pen housed 96 *Nephrops* in individual cells. Each cell contained an artificial burrow and sediment. Fifteen pens were used to investigate all treatment categories. Monitoring of their survival, including the triplicated groups of creel-caught "controls" were carried out each day by divers to remove dead specimens for body damage investigation. The use, for the first time, of a 40/60 mixture (40% oxygen, 60% nitrogen) of NITROX as a breathing gas greatly enhanced the divers daily working capability at depth. Furthermore, by using a voice communication system between the diver and the SOAEFD surface raft staff during survival monitoring, details of survivors, moribunds and mortalities in each *Nephrops* pen could be quickly recorded.

The survival experiment continued to be monitored by the SOAEFD diving team for a total of 27 days after the conclusion of the fishing vessel charter.

The data obtained from this joint SOAEFD/DIFTA/IMR/SEIMR project will be analysed by all four Institutes according to the tasks laid down in the agreed workplan.

Some preliminary results will be presented in a "Field Work" report after the termination of the survival and damage experiments and the clearing of the cage site.

G I Sangster
7 November 1995