

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD,  
FISHERIES LABORATORY, CONWY, GWYNEDD, U.K.

1989 RESEARCH VESSEL PROGRAMME

REPORT: R.V. PRINCE MADOG

STAFF: B R Howell (SIC)  
S M Baynes  
T W Beard  
D Thompson  
Miss P Panagiotaki (Student, Port Erin)

DURATION: Left Menai Bridge 1300 h, 2 May, 1989.  
Arrived Menai Bridge 1000 h, 6 May, 1989

LOCALITY: Southern Irish Sea

AIMS:

1. To supplement existing data on the timing of ovulation in sole.
2. To determine the relationship between the specific gravity of eggs, their post-ovulatory age and their fertilisability.
3. To determine the effects of the extent, duration and timing of cold shock on the induction of diploid gynogenesis and triploidy.
4. To return live fish to the laboratory to supplement the broodstocks.

NARRATIVE:

Staff arrived at PRINCE MADOG at 1030 h on 2 May and spent the remainder of the morning stowing the gear and setting up equipment. The ship sailed at 1300 h and fished on the spawning grounds about 10 mi north of Llandudno from 1600 h through to about 2300. Tows were restricted to 30 min duration to limit damage to the fish. This pattern of fishing was repeated on each of the four days spent at sea.

The length and maturity stage of each female caught was recorded. Eggs from 'running' females were used for the experiments on cold shock. Surplus batches were fertilised and returned to the laboratory to support other programmes. Fertilisation rate and specific gravity of each batch of fertilised eggs were assessed.

Live fish and eggs were landed at Llandudno each morning (3-5 May) and transported to the laboratory. Halibut sperm, for the experiments on gynogenesis, was sent from Ardtoe by Datapost and was taken on board on 3 May. This was stored at 4-6 °C and retained its potential for activation throughout the cruise.

Miss P Panagiotaki, a Ph D student from Port Erin, joined the ship on 4 May for the last two days of the cruise to familiarise herself with some of the techniques being used aswell as to secure some batches of eggs to support her studies.

RESULTS:

Aim 1. The full analysis of the data is yet to be completed but it was clear that the incidence of females containing ovulated eggs increased greatly after sunset.

Aim 2. No clear relationship between the specific gravity of eggs and their fertilisability emerged though a full examination of the data has not yet been completed.

Aim 3. With the notable exception of the first night, adequate quantities of eggs were obtained to support these experiments. It was confirmed that sole eggs could be activated by exposure to halibut sperm. Such eggs were successfully diploidised by subjection to a cold shock and experiments were completed on the effect of the extent, timing and duration of the shock. A preliminary evaluation of the results indicate that, for eggs fertilised at 11-12 °C, the most favourable conditions were exposure to 4°C for 1 h applied 5 mins after fertilisation. A small number of larvae (putative diploid gynogenomes) successfully hatched and continued rearing is being attempted.

Aim 4. Over 40 live mature sole were returned to the laboratory.

In addition to the stated aims the following live material was secured:

- five batches of fertilised sole eggs (Conwy)
- four batches of fertilised sole eggs (Port Erin)
- specimens of Pecten and Chlamys (P Dare, Lowestoft)
- 25+ hermit crabs (UCNW)
- 2 Lophius (Bruce Dunne, UCNW)

B R Howell  
15 May, 1989

INITIALLED: 

DISTRIBUTION:

- Basic list +
- B R Howell
- S M Baynes
- T W Beard
- D Thompson
- Miss P Panagiotaki (Port Erin)
- L Rees (UCNW)
- FCR 23