MORTALITIES IN FARMED ATLANTIC SALMON ASSOCIATED WITH THE JELLYFISH Phialella quadrata

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During August 1984 many small jellyfish were reported swarming around sea cages belonging to a smolt unit within the Shetland Isles. This site contained Atlantic salmon, *Salmo salar*, post smolts, about 270g in weight and some larger fish which had spent over one year in sea water. The leptomedusae were identified as *Phialella quadrata* (Forbes). The diameter of the umbrella measured 9-11 mm (Fig. 1a). This species commonly occurs in coastal waters around Scotland including the Hebrides, Orkneys and Shetlands, also from the western half of the English channel and along the western coast of Great Britain (Russell 1953).

Although no reliable estimate could be made of the numbers of *P. quadrata* involved, all ten smolt cages each containing approximately 5000 fish were affected. The water temperature was 13°C. Fish stopped feeding and mortalities increased from 40 per day when the jellyfish were first observed, rising to 500 per day within 48 hours. During the four days when the jellyfish were present it was estimated that 1500 fish were killed.

Histological examination of the gills showed severe epidermal stripping and necrosis involving both the primary and secondary lamellae, leucocytic infiltration and degranulation of eosinophilic granular cells (Fig. 1b). These findings are consistent with a hypersensitivity reaction to the jellyfish toxin (Fisher 1978). No adverse effect on the one sea winter fish was recorded. Examination of the stomach of dead fish revealed up to 40 *P. quadrata* accompanied, in some cases by a clear fluid. The pancreas, caeca and liver were considered normal, and certain pathological signs observed in other tissues were considered to be associated with a *Vibrio* sp. isolated from these fish.

Although individual *P. quadrata* are not significant to the health of fish of this size, under certain local environmental conditions aggregation may occur (Russell 1953) resulting in vast numbers. Russell (1953) also notes that this species has an extended period among the plankton, possibly allowing more than one generation within a year, which may also contribute to an increase in the jellyfish population. This is the first report of this species contributing to mortalities among farmed Atlantic salmon. Our laboratory records show that during August *Cyanea capillata*, a much larger stinging jellyfish, has also been implicated with mortalities among farmed salmonids.

**References**


**Acknowledgements**

We would like to thank Mr S. Hall for identifying the jellyfish.
Fig. 1a. Specimens of Phialella quadrata (natural size)

Fig. 1b. Section of gills from Atlantic salmon (H&E x 130)