

Documentation of multiple species of marine fish trapped in Atlantic salmon sea-cages in Norway

The production of salmonids in sea-cages has been developed for monoculture of the target species. However, we show here for the first time, that wild fish may enter sea-cages used for farming of Atlantic salmon (*Salmo salar* L.) in Norway, out-grow the mesh size, and thereafter become permanently trapped. Within seven different sea-cages located in western Norway, eight different species of wild fish were identified; European eel (*Anguilla anguilla*), sea trout (*Salmo trutta* L.), cod (*Gadus morhua*), haddock (*Melanogrammus aeglefinus*), saithe (*Pollachius virens*), pollack (*Pollachius pollachius*), hake (*Merluccius merluccius*) and whiting (*Merlangius merlangus*). In the two most extreme cases, a 5 × 5 × 7 m cage with 311 farmed salmon (903 g) also contained 542 whiting (79 g), 77 haddock (43 g), and 5 cod (26 g), and a 12 × 12 × 15 m cage with 1695 farmed salmon (559 g) also contained 1196 haddock (35 g), 1115 whiting (31 g), 46 cod (23 g), 23 saithe (48 g), 15 pollock (22 g), 5 sea trout (54 g), and 2 hake (29 g). The present study thus demonstrates that aquaculture cages designed for monoculture may attract and effectively 'trap' wild fish. We did not investigate the frequency of this occurrence, and the ecological significance of these observations remains unclear. However, with the ever-increasing number of sea-cages used for global aquaculture, this is clearly a topic for further research.

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