APPENDIX XII

Proposal for modification of gillnets

Our review of the evidence suggests that both porpoises and dolphins are capable of detecting gillnets. The avoidance of nets by porpoises during attempts to catch them (Hatakeyama *et al.* 1994) provides important evidence suggesting that they can, or do, perceive the nets as a threat. Consequently the most likely explanation for by-catch, at least in gillnets, is that cetaceans do not echolocate all the time, particularly in familiar surroundings (Goodson *et al.* 1994a), and that they become distracted by their prey (Au 1994; Kastelein *et al.* 1995b).

BRDs which increase the noise profile of gillnets have produced very promising results (see Kraus *et al.* 1995) and we fully advocate the wide scale (monitored) application of pingers. However, the fact that trawls are very noisy and yet still cause by-catch is circumstantial evidence that that habituation to noise may reduce the effectiveness of acoustic enhancement devices in the long-term. Thus, alongside tests of pingers, we advocate tests of net modifications to promote the escape of porpoises that approach nets too fast or too close to avoid entanglement under normal circumstances.

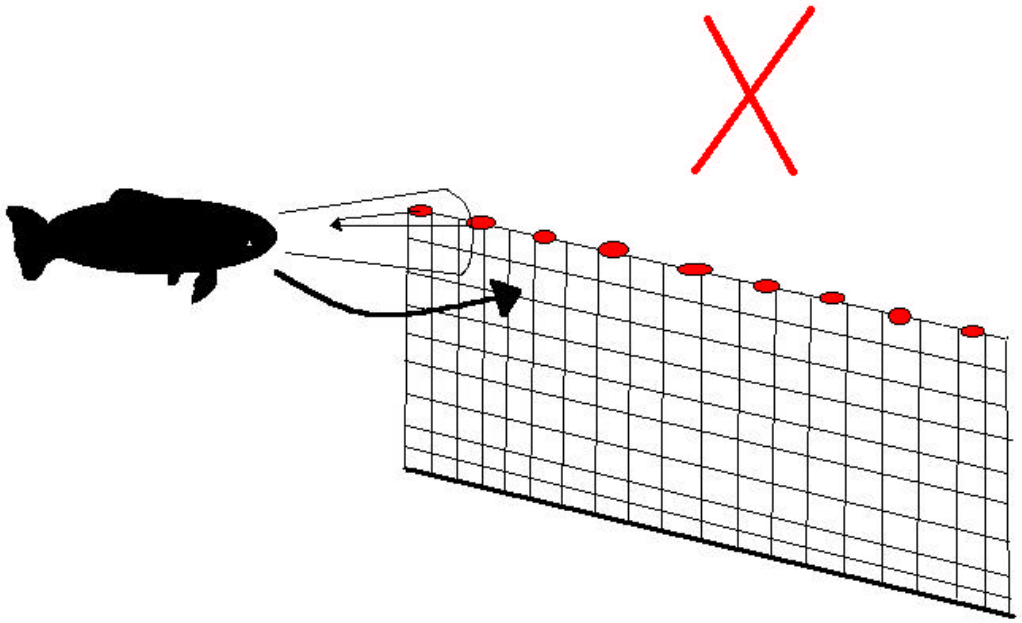
Kastelein *et al.*'s (1995a) work provides evidence that small cetaceans tend to swim underneath obstacles such as ropes placed before them in a pool. These data are confirmed by reports of dolphins' reluctance to swim over lowered purse seine floatlines in the ETP (Moore 1980). While acting to deter dolphins from nets, the placement of pingers on the floatline of gillnets also serves to make the floatline a more substantial acoustic target and therefore a more substantial obstacle. The attachment of pingers can be problematic (Goodson & Datta 1992; Goodson *et al.* 1994a; Lien *et al.* 1995; SMRU 1999) and the results are often quite bulky, further increasing the target strength of the floatline. We suggest that porpoises, approaching nets despite the noise from pingers, may nevertheless detect the floatline and attempt to swim below it and thus swim straight into the mesh. The fact that the by-catch rate was higher in nets with malfunctioning BRDs attached to the floating in bait bags than it was in control nets, as recorded by SMRU (1999), lends support to this hypothesis.

We suggest a net modification that separates the floatline from the body of the mesh such that efforts to swim below the floatline will enable the animal to pass above the mesh (Figure 4).

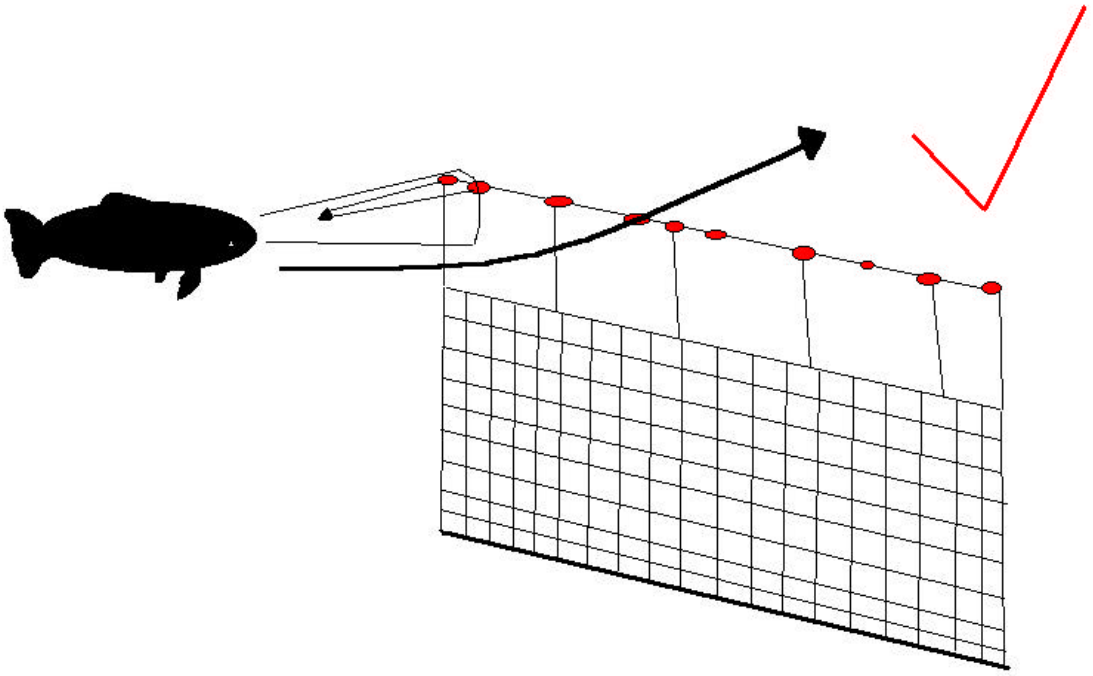
Studies of captive porpoises have showed that they were reluctant to pass through nets with mesh sizes less than 4.58 x 1.44 m (De Haan *et al.* 1997). This suggests a minimum gap size for use in the net.

This proposed modification utilises the porpoise's instinct to swim below obstacles in their environment and may be worthy of investigation.

Figure 2. Diagram of a) current and b) modified gillnet.



a) Current gillnet



b) Modified gillnet