Behaviour of stocked and naturally recruited European eels during migration

An objection to the stocking of translocated eels as a management measure for the European eel (Anguilla anguilla L.) is that these eels may lack the ability to find their way back to the spawning area in the Sargasso Sea because the translocation will confuse their imprinted navigation. We undertook a series of tagging experiments using satellite tags, data storage tags and acoustic tags to test the hypothesis that eels translocated 1200 km from the UK to Sweden differed in their ability to migrate compared to naturally recruited eels. Eels to be tagged were caught in two locations: one with a record of eel stocking for more than 20 years and with a series of barriers to upstream migration, and another in a river with only natural immigration and without barriers to upstream migration. In the first year, the natural and stocked eels were released in a fjord where the initial escapement behaviour could be monitored by acoustic tagging, in addition to using archival and satellite tags to track the subsequent marine migration. In the second year, the eels were released on the open coast and only their marine migration was investigated. Eels were tracked more than 2000 km along a route that, after leaving the Skagerrak, followed the Norwegian Trench to the Norwegian Sea, turned south and west along the Faroe-Shetland channel before emerging into the Atlantic Ocean and then continued west. There were no statistically significant differences in estuarine or oceanic behaviour regarding route, swimming speed and preferred swimming depth between stocked and naturally recruited eels. These results provide the first empirical evidence of a Nordic migration route, and do not support the hypothesis that a sequential imprinting of the route during the immigration is necessary for adequate orientation or behaviour during the adult spawning migration.