

SHORT TERM SCIENTIFIC MISSION (STSM) – SCIENTIFIC REPORT

Action number: FA1304

STSM title: CRITICAL SWIM SPEED AND OXYGEN CONSUMPTION OF ATLANTIC COD (GADUS MORHUA) INTERNALLY TAGGED WITH AN ACCELEROMETER SENSOR

STSM start and end date: 08/01/2017 to 26/02/2017

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Summary

Electronic tagging has become a central and widespread tool in fish ecology and fisheries management; data logging devices are rapidly increasing our understanding of the movement, behaviour and physiology of fish in their natural environment. Today, electronic tags can include a range of different sensors that, among other things, can detect pressure, temperature, salinity and acceleration. Loggers that incorporate an accelerometer sensor track the tilt of the animal over three axes (x, y and z) which can provide us with inside information on the energetic costs of different activities. However, monitoring activity and measuring energy expenditure in free ranging fish in the field is problematic. To link field accelerometer data to certain activity patterns or energetic costs an understanding of the animals movement and energy expenditure related to acceleration is needed. In this project, supported by COST Action FA1304 “Swimming of fish and implications for migration and aquaculture (FITFISH)”, we linked acceleration to critical swim speeds (U_{crit}) as well as oxygen consumption rate (MO_2) of Atlantic cod (*Gadus morhua*). We furthermore investigated the effects of internal tagging on both variables. We used a total of 12 wild caught Atlantic cod and measured their aerobic swimming activity in 1,600 L Brett (Steffensen) type flow-tunnels. Measurements were taken repeatedly starting with non-tagged control and subsequent internally tagged individuals. Preliminary results indicate no effect of the tagging procedure on swimming capacity. Further analysis will enable us to link accelerometer data to actual swimming speeds and energy use and by that measure energy consumption in the field.

