

## **MASTS Small Grant Award usage and resulting studies: Anna Kintner**

Dear Sirs/Madams;

Thank you once again for the contribution of the MASTS Small Grant Award to my PhD studies. This grant facilitated the construction of hydroid settlement experimental materials at St Andrews, which were then deployed in the Shetland Islands.

Hydrozoan jellyfish reproduction consists of a colonial phase, wherein individuals reproduce by cloning themselves, and a planktonic phase, when the colony releases a number of medusae capable of contributing sperm or eggs to form a new zygote. This zygote matures into a planktonic larva and eventually settles out of the water column and attaches to a benthic surface, and eventually grows into a new colony. Planktonic jellyfish larvae have the capability to select a substrate suitable for survival, and it has been shown that some species preferentially settle on certain artificial surfaces. If certain hydrozoan colonies prefer settlement materials in common use around salmon farms, this might artificially inflate the magnitude of potential jellyfish blooms at these farms. Since a number of jellyfish species have been implicated in causing mortality and injury to caged salmon, it is in the interest of farm managers to minimize any such effect. This requires the definitive identification of materials which may promote colonization by jellyfish larvae, which I set out to attempt during the summer of 2012.

Four salmon farm sites in Shetland (in the southwest, northwest, northeast, and southeast exposed regions of the Shetland main island) were selected and generously made available by Hjaltland Seafarms Ltd. At each site, a settlement array was hung from a floating buoy or cage structure at 4 metres depth. Each array consisted of four different plates of varying materials (polystyrene, plastic, steel, and slate), designed to offer a prospective surface for invertebrate larvae to settle out of the plankton and form an attached colony. Three such arrays were placed at each farm site and checked on a three-weekly basis, by photographing each plate top and bottom. At the conclusion of the summer (several weeks after the disappearance of medusae from the water), each array was removed from the water and preserved in formalin, and carried back to the Scottish Oceans Institute at St Andrews. As of this writing, these plates are being examined to verify observed settlement. Total settlement preference, as well as rates of settlement, will be analyzed using a general linear model. I expect to have completed this analysis by the end of summer 2013, with the possibility of various observational data gathered using SCUBA tunder salmon pens this August used to bolster the data.

It may be worth mentioning that this study involved a high volume of photography, which might be useful for MASTS public relations and outreach purposes. I plan to eventually publish these on my webpage, but if there is any wish to use these, please do not hesitate to contact me.

Once again, thank you to MASTS for facilitating this study.

Yours,  
Anna Kintner