Grant Report - SG315 Title: Effects of noise on marine invertebrates

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A portion of my ongoing PhD research on the effects of anthropogenic noise playbacks on marine invertebrates is taking place at St Abbs Marine Station. Here I utilise the large tanks available as a stepping stone between the fine scale control of laboratory experiments and the realistic environment in the field. This enables the production of a sound field that is reminiscent of that encountered in the natural environment.

To adequately asses the effects of anthropogenic noise on marine invertebrates I have been conducting a number of experiments on a range of animals. One of these trials focused on crustaceans, with edibles crabs (*Cancer pagurus*) and European lobsters (*Homarus gammarus*) as the chosen study species. To assess the effect of noise on the behaviour of these animals, a choice chamber set-up was utilised, where a gradient of noise intensity was presented along the length of a 7m experimental tank. The movement as well as changes in the behaviour of the animals across the noise gradient was filmed. The 80 hours of video footage created during this experiment are currently being analysed. I will be happy to provide a summary of the results at a later point, upon request

The £500 I received from the MASTS small student grant was used to fund transport to and from the marine station for a month. This was vital, as the marine station it is difficult to access without a car, especially when transporting equipment. By having this transport I could travel to the marine station every day allowing me to conduct my experiments as efficiently as possible. The choice chamber experiment took place over a 3 month period, and the MASTS funding covered transport during set-up and preliminary trials.

Once the results of this first choice-chamber experiment are available, follow-up experiments are planned. For example, I plan to conduct a number of experiments looking at how noise affects the behaviour of *H. gammarus* as juveniles, and to compare how these responses vary as the animal ages. Experiments on the physiology and biochemistry of these animals are also planned, following the integrative approach advocated by the aquatic noise research group at Edinburgh Napier University.