Abstract

Along the east coast of the United States, by-catches of bottlenose dolphins, *Tursiops truncatus*, in gillnet fisheries exceed removal levels set under the US Marine Mammal Protection Act. One measure proposed to reduce this mortality is the use of acoustic alarms, or pingers, which have proven effective in reducing by-catches of other small cetaceans, but have not been tested with bottlenose dolphins. We examined the responses of bottlenose dolphins to a commercial gillnet equipped with functional (active) and non-functional (control) Dukane NetMark® 1000 alarms near Fort Macon, NC. Between 5 April and 10 May 2001 we used a theodolite to track 59 groups of dolphins around the net. Choice of treatment was random each day and the two shore-based observers were unaware of whether alarms were active (13 days) or controls (9 days). There were no significant differences in the number of groups observed ($P=0.315$; $1-\beta=0.835$) or in the closest observed approach to the net ($P=0.307$; $1-\beta=0.828$) between treatments. However, dolphins entered a circular buffer approximately 100 m around the net more frequently with control than active alarms ($P=0.015$). We conclude that some dolphins responded to the alarms by avoiding the net, but caution that the potential efficacy of alarms is confounded by dolphin behavior. Most dolphins were aware of the net, regardless of the status of alarms, and some dolphins fed on fish in the net or discarded by the fishing vessel. We believe that it would be unwise to use pingers in these fisheries because of the limited behavioral responses we observed in our experiment. Furthermore, the responses we observed are likely to diminish or change over time as dolphins habituate or sensitize to these alarms. Further research is required to understand the behavior responsible for entanglement.

Keywords: Behaviour; Bottlenose dolphins; By-catch; Fisheries; Noise