

First attempt to Record minke whale (*Balaenoptera acutorostrata*) in Irish inshore waters

Lyne



¹ Irish Whale and Dolphin Group, Merchants Quay, Kilrush, Co. Clare, Ireland

² Marine Mammal Observer Association, Communication House, 26 York Street, London W1U 6PZ, UK

³ Institute Marine Engineering Science and Technology, 1 Birdcage Walk, London, SW1H 9JJ, UK

⁴ Marine Mammal Research Association, Antalya, Turkey

*Corresponding author: patrick.lyne@iwdg.ie



Introduction

This was a first attempt to record minke whale vocalisations (*Balaenoptera acutorostrata*) in Irish waters where records of vocalisations to date in the North East Atlantic have until relatively recently been non-existent. The frequency range of minke whale vocalisations is likely to experience increased interference from anthropogenic noise in Irish waters in the coming years from wind farm construction and operation as well as shipping noise (figure 5). Therefore it is critical to understand the importance of minke acoustics in minke behaviour, where these occur and when, in order to properly mitigate any impacts on minke whale populations migrating through and perhaps resident in Irish waters.

Methods

Irish Whale and Dolphin Group (IWDG) sightings schemes were accessed and explored for groups of baleen whale sightings during the period 2016 to 2020. The data was examined for groups of minkes of 8 or more due to increased likelihood of vocalisations. A drifting hydrophone was deployed from RIB and buoy. Both systems used a single HTI-96-min hydrophone with good frequency response from 2Hz to 30kHz. The RIB deployment suffered from wave noise due to waves hitting the rigid hull. The Buoy deployment with 20m of cable suffered less from waves hitting the surface of the buoy, creating quieter recordings with less noise.

Results

No other baleen whales apart from minke whales were sighted before during or immediately after detections during survey periods. Some detections of very high amplitude are believed to come from animals in the immediate vicinity of the RIB.

The pulse trains recorded in 2021 (see figure 1 and 2) were associated with clicks with a peak frequency of 10 kHz and 2.4 kHz. Due to the high amplitude of the pulse train it is believed to be from the minke individual that subsequently swam under the RIB. Upsweeps and downsweeps (figure 4) were recorded ranging 220Hz to 500 Hz but more typically to 315Hz or lower. These were in doublets often with 8 to 10 seconds between sweep signals lasting 0.2 to 0.4 seconds. These are similar in duration to downsweeps previously described (Edds-Walton, 2000; Gedamke et al., 2001). Further analysis and survey work is required to separate minke whale calls from other baleen whale calls, but it is likely that minkes produce a variety of vocalisations (Figure 3) which warrant further study.

During all survey dates sea conditions had a low swell (less than 1 metre) and Beaufort sea states and windspeed of 2 or less. This allowed visual identification of species present in the immediate vicinity and better recordings with reduced wave noise. Good and Moderate quality recordings, where low frequency minke or other vocalisations of 100 Hz and higher could be isolated from background noise, were assessed manually for baleen whale vocalisations.

References

- Edds-Walton, P. L. (2000). Vocalizations of menke whales *Balaenoptera acutorostrata* in the St. Lawrence Estuary. *Bioacoustics* 11, 31–50. doi: 10.1080/09524622.2000.9753448
- Gedamke J, Costa D.P., Dunstan A. 2001. Localization and visual verification of a complex minke whale vocalization. *J Acoust Soc Am.* 109:3038–3047

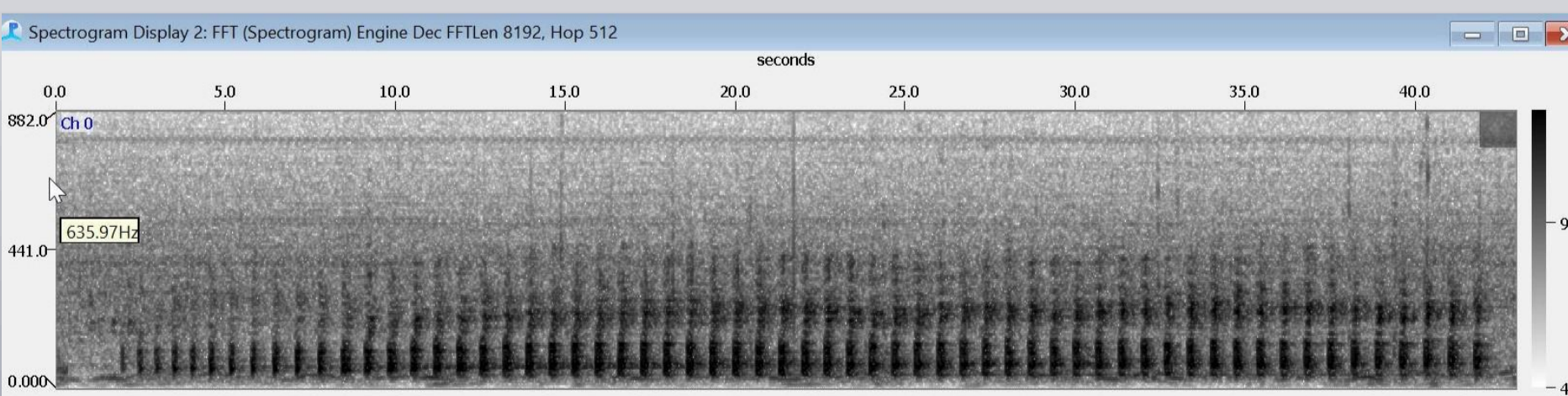
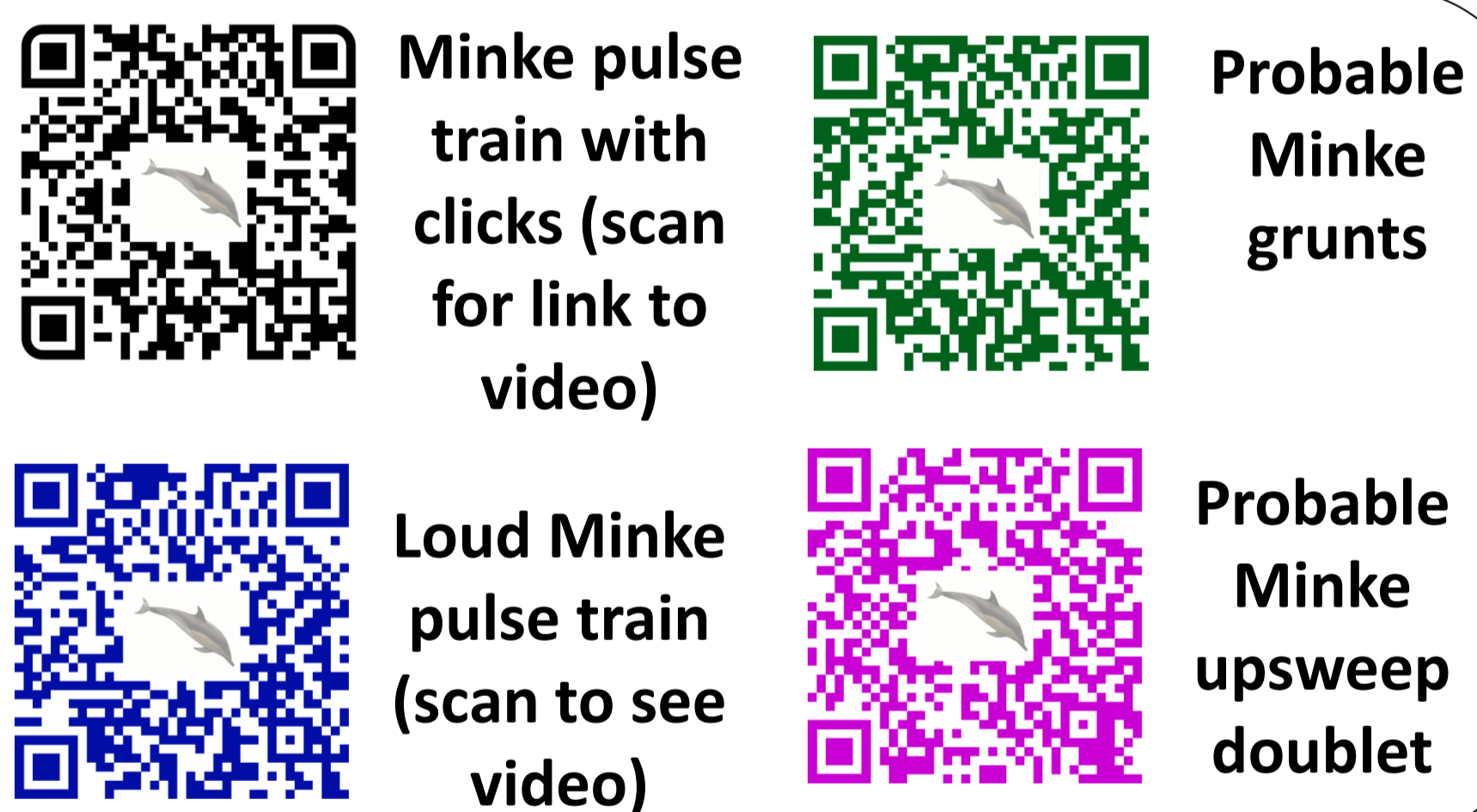


Figure 1. Minke pulse train April 30th 2021

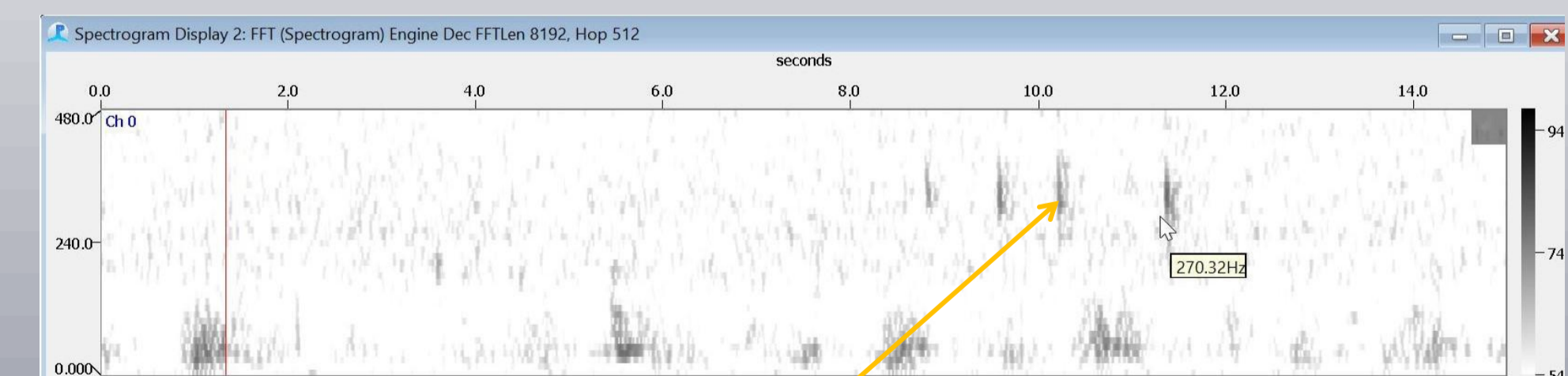


Figure 3. Probable Minke grunt from 400Hz to 270 Hz at 13:03 hrs

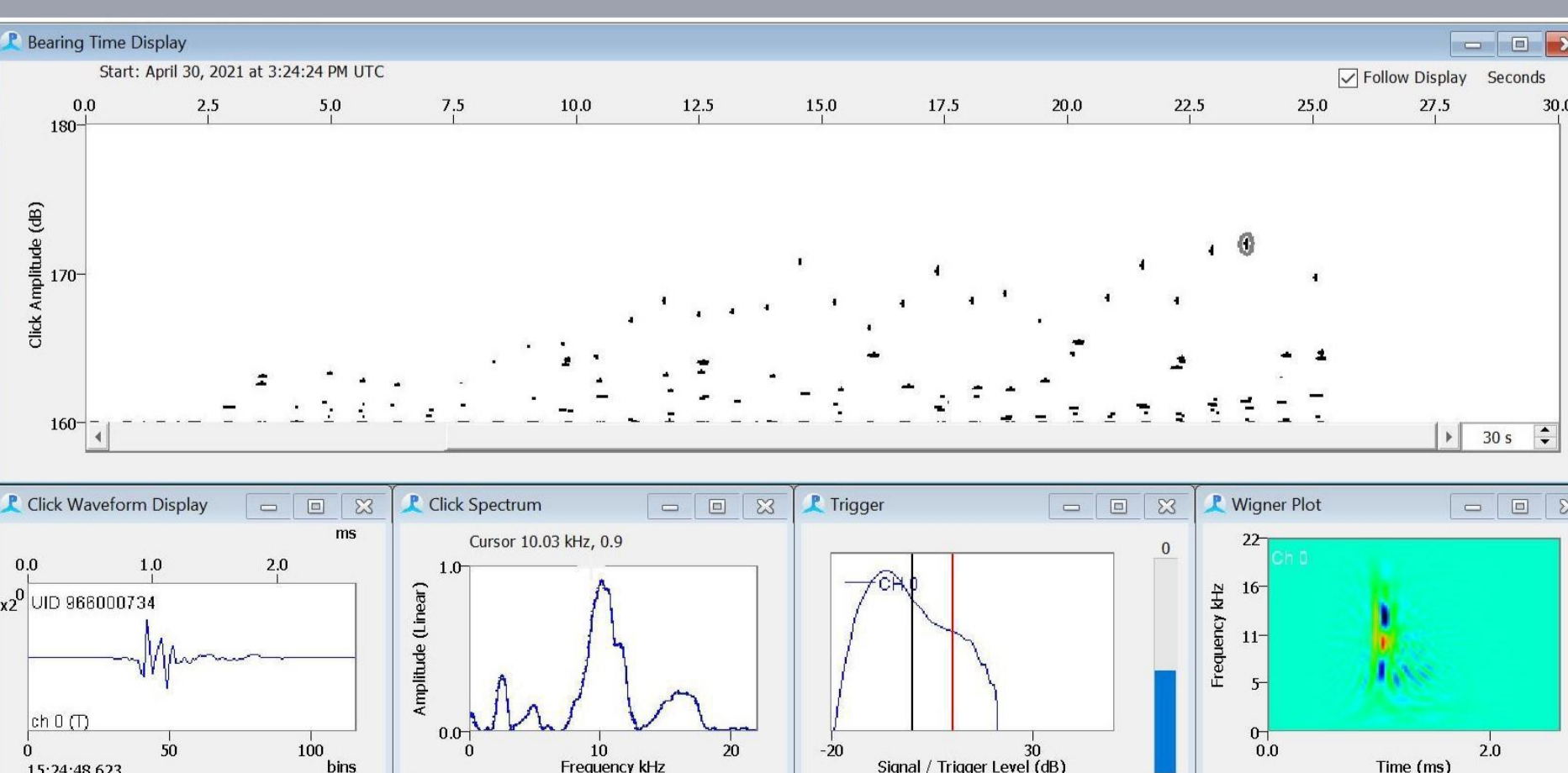


Figure 2. Clicks associated with minke thump train

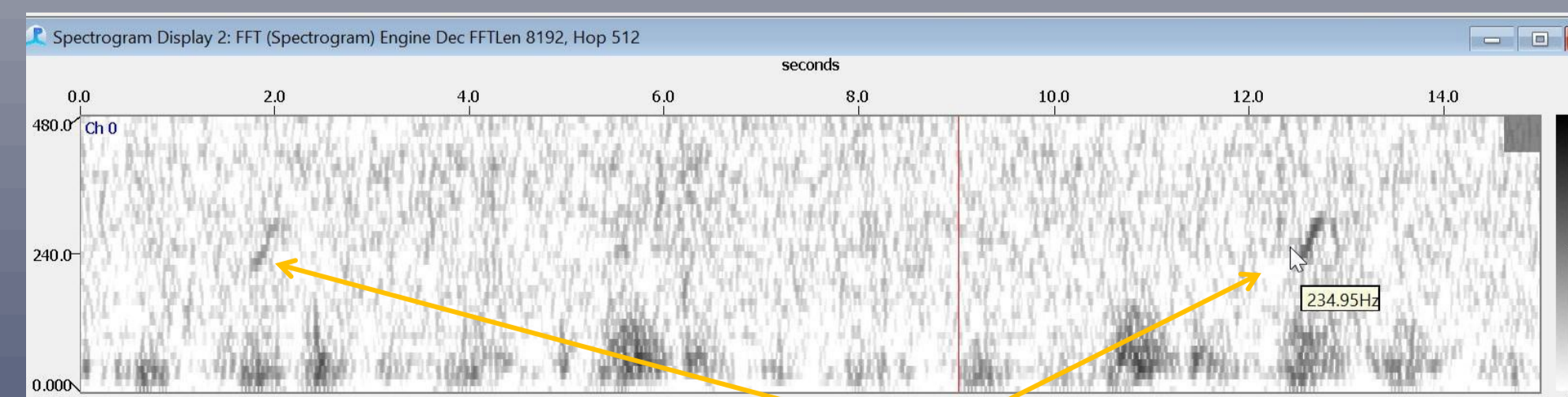


Figure 4. Probable Minke upsweep doublet April 24th 2022

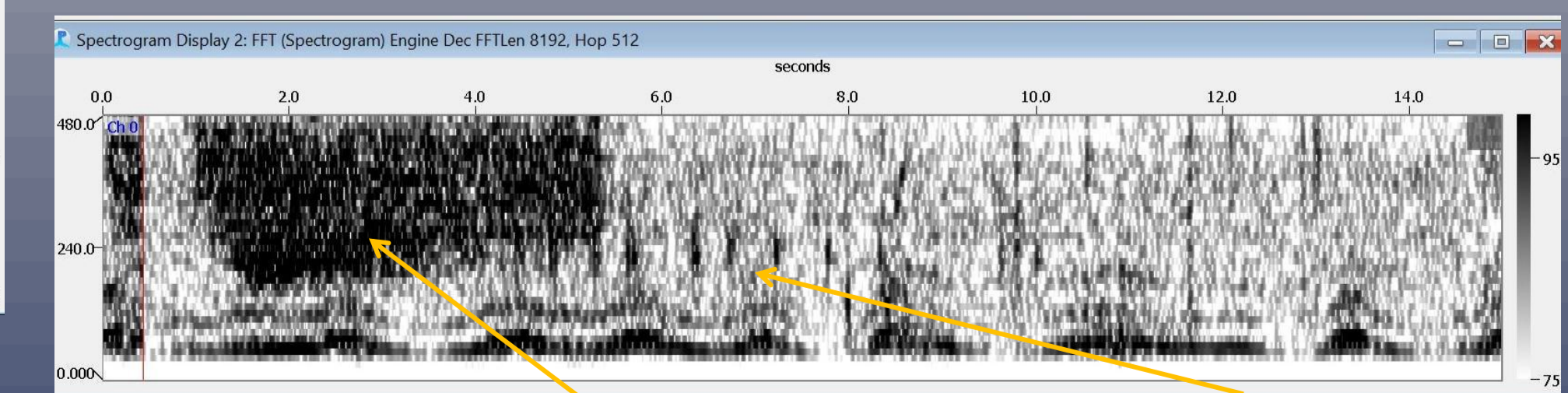


Figure 5. Fishing vessel masking minke pulse train, May 2 2022.

