

Song sharing and diversity in the Bering-Chukchi-Beaufort population of bowhead whales (*Balaena mysticetus*), spring 2011

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ABSTRACT

Bowhead whales (*Balaena mysticetus*) of the Bering-Chukchi-Beaufort population migrate in nearshore leads through the Chukchi Sea each spring to summering grounds in the Beaufort Sea. As part of a population abundance study, hydrophones were deployed in the Chukchi Sea off Point Barrow, (12 April to 27 May 2011) and in the Beaufort Sea (12 April to 30 June 2011). Data from these sites were analyzed for the presence of bowhead whale song. We identified 12 unique song types sung by at least 32 individuals during ~95 h of recordings off Point Barrow. Six of these songs were detected at the Beaufort MARU site as well as six additional song types that were not analyzed. These results suggest a shared song repertoire among some individuals. This report represents the greatest number of songs to date during the spring migration for this population. We attribute this greater variety to population growth over the 30 yr since acoustic monitoring began in the early 1980s. Singing during early to mid-spring is consistent with the hypothesis that song is a reproductive display, but further research is necessary to understand the exact function of this complex vocal behavior.

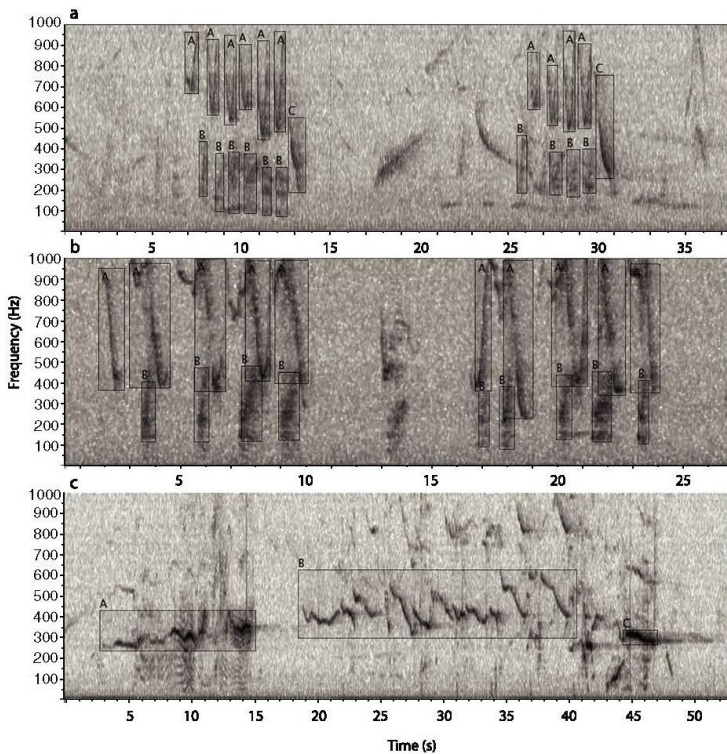


Figure 6. Examples of three bowhead whale song types during the spring 2011 migration: (a) Song-4 (two songs shown), (b) Song-5 (two songs shown), and (c) Song-6 (one song shown), and their labeled notes (1,024 pt. FFT, 90% overlap, Hann window).

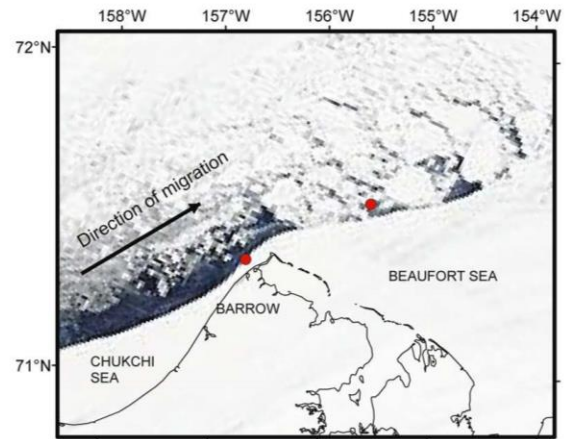


Figure 1. Location of two hydrophones (red dots) 45 km apart near Point Barrow, Alaska used to record bowhead whale songs during the 2011 spring migration. The lead in which bowhead whales migrate can be seen offshore of the fast ice. Sea ice data are from 1 May 2011 from MODIS (<http://lance-modis.eosdis.nasa.gov>).

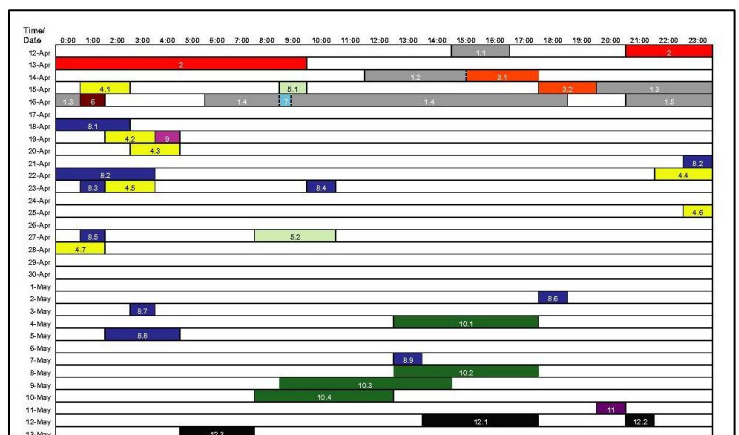


Figure 5. Daily patterns of singing bouts for 12 different bowhead whale songs recorded near Point Barrow, Alaska from 12 April to 13 May 2011.