

Blue whale songs worldwide: an update

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- Blue whales produce at least 13 regionally distinct songs
- North Atlantic has the least song diversity (1 song) and Indian Ocean the most (5 songs)
- Songs are typically separated spatially or temporally
- Antarctic blue whale song is recorded most broadly
- Songs very rarely found outside their primary range

ABSTRACT

Blue whales produce regionally-distinct song types. In over a decade since McDonald and colleagues published the first review of biogeographic differences in blue whale songs worldwide, multiple new publications have expanded our understanding on the seasonality and distribution of different song types. We review the spatial and temporal occurrence of previously reported song types and report several new, unpublished types. At least thirteen song types believed to be produced by blue whales have now been recorded worldwide, four more than reported in the first review. Only one blue whale song type occurs in the North Atlantic. In the North Pacific there are three song types; the well-studied Northeast Pacific song, the Central-West Pacific song (previously called Northwest and North Pacific song), and a new song recorded off Hokkaido, Japan. The Northeast Pacific and Central North Pacific songs overlap spatially in the Gulf of Alaska, and the new Hokkaido song co-occurs with the Central North Pacific song. At least nine song types are present in the Southern Hemisphere. The Antarctic blue whale song type is the most widely distributed, occurring in the Southern Ocean and seasonally extending into the other oceans of the Southern Hemisphere as well as low latitudes in the Northern Hemisphere. The Indian Ocean has the largest variety of blue whale songs, including a new split of the Southwest Indian Ocean song to one type first recorded off Madagascar, and a different song type in the vicinity of Diego Garcia Island. The Southeast Pacific contains two distinct, co-occurring song types. Blue whale song reported off South Georgia Island in the South Atlantic that also occurs seasonally off Ascension Island, is currently believed to be a Southeast Pacific song SEP2. Occasionally blue whale song types occur outside of their reported range, indicating that males sometimes roam more broadly. However, this is not a common occurrence. These details on seasonal, spatial and acoustic variation in song types and song type occurrence will enable further development of hypotheses for blue whale population structure on a global scale.

SONGS AS POPULATION INDICATORS

- Song: repetitive sequence of phrases that consist of one or more distinct units
- Produced only by males: potential for speciation
- Proposed as population indicators
- New data and gaps in earlier publication reviewed for an update
- Old gaps: south Atlantic, western Pacific
- Includes confirmed blue whale songs (based on sighting data) and presumed (based on spectral and temporal features of the song)
- Many songs types can have variable unit phrasing

