# Applying Automated Analysis Methodology to Humpback Whale Communication Studies

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# Overview

## Humpback Whale Communication

- Song Characterisitcs
- Song Structure

## Automated Song Analysis

- Spectrogram Cross Correlation (SPCC)

## Importance

- Application of SPCC

# Song Characteristics

- "song" defined as a structured and complex sequence
- General duration of 10-15 minutes, may be repeated for hours
- Range between 80-4000 Hz
- Only males sing (females may produce "social" sounds)
- Whales in same geographic population sing same song, may change over time

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- Themes: distinct combination of phrases, equivalent to a sentence
- Song: sequence of themes

# Song Structure

# SPCC

Spectrogram Cross Correlation (SPCC) refers to an automated recognition method of acoustic analysis that is widely used in ornithology.

SPCC quantifies the similarity between spectrograms in order to detect a pattern of interest within a recording.

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- Due to humpback whale song complexity, SPCC has never been used in analysis
- The application of automated analysis has the potential to increase the amount of research and in turn inform important conservation efforts of humpback whales

# The End