

Bioacoustics MORISAKA LAB

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Dolphin society and conservation through acoustics

Keywords: Dolphin、Communication、Evolution、Society、Conservation

Background and Motivation

Dolphins are one of the most important mammals to understand evolutionary pathway of human society because of their complex nested society. They can catch prey food such as fish and squid in a totally dark night by using their superior echolocation ability, and can maintain group cohesion by their various sounds. To think in reverse way, we may reveal their superior ability and their complex society by reading the information embedded in their sounds. Recently there are reports that dolphins are become fewer because of the increasing human activity around coastal area where dolphins live throughout the year. We are now developing and utilizing several innovative techniques including bioacoustics to conserve dolphin populations.

Originality

We are basically studying dolphins from a biological perspective. However, due to the technological limitation, it is difficult to reveal the dynamic social relationship among dolphins. Japan has various cutting-edge innovative technologies, and I'm sure that those technologies speed dolphin studies up. We've already started projects in the body size estimation using the latest image processing techniques and the sound localization of dolphin sounds. These studies are non-invasive, basic studies which were previously needed to catch animals. We already have the condition that we do such studies not only on captive dolphins but also on free-ranging wild dolphins.

Impact and Perspective

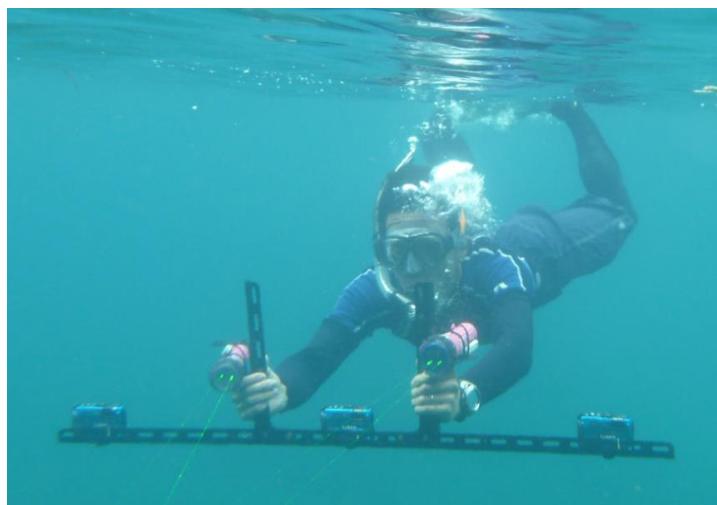
Dolphins went into aquatic environment about 50 million years ago. We human have a lot of things to learn from dolphins who are the specialist for living aquatic habitat. The study of their superior echolocation ability or acoustic communication may improve ship's instruments or meters. From our previous studies, however, dolphins have acquired such ability under several biological, physiological and physical limitations. It means that the signal which dolphins use now is NOT the best signal for their environment, but BETTER signal for the environment under the several limitations. So I think it is better for us not to mimic dolphin ability absolutely, but to sort out the best part which we should mimic after checking biological limitation of dolphins.

■ For more information:

http://www.u-tokai.ac.jp/tuiist/tt/2013_morisaka.html

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The system to measure dolphin body size



A wild dolphin and the system to measure sound source level of a dolphin sound