

## Research Trends and Results

# Development of bird survey techniques using advanced equipment and technologies

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### 1. Introduction

Various animal surveying techniques using advanced equipment and technologies have been proposed in the field of mammalogy and/or behavioral ecology, etc. The NILIM has the goal of establishing effective and efficient environmental conservation measures for wild animals, along with the development of efficient survey techniques using their advanced technologies in various public works.

### 2. Bird survey techniques using advanced equipment and technologies

In this section, we introduce the current development status for bird survey techniques. In the past, bird surveys (especially for raptors) have been conducted by experienced investigators. They searched for the target species and observed their behaviors in the field. These investigations required large amounts of manpower and

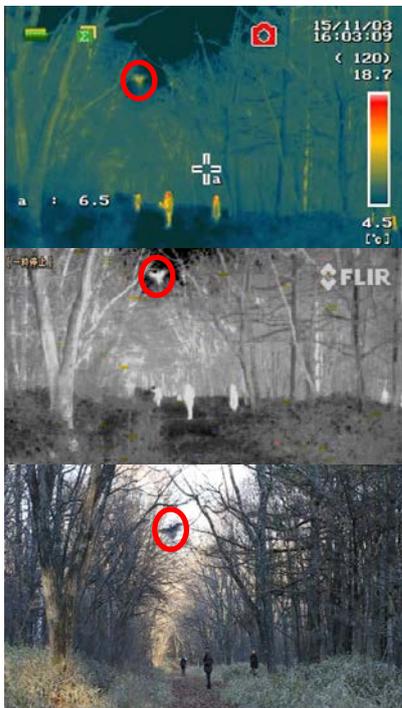


Figure 1: Photographs of goshawk perching on branch. From the top, with the infrared thermal camera (for general purposes), infrared thermal camera (for animal research), and video camera. The distance to the goshawk is approx. 50 m.

time, and might be impossible in some cases because of landform and/or vegetation. Therefore, we test the effectiveness of systems to find and follow raptors using three pieces of advanced equipment: infrared thermal cameras (2 models: one was developed for general purposes, and another was developed for animal research), marine radar, and a tracking device equipped with a compact GPS. In addition, we try to develop an analysis program that uses bird calls recorded by IC recorders to detect the existence and reproductive behavior of a target species automatically based on voice analysis technology.

### 3. Future direction

We are preparing a technical note, which is based on these results, and will release it on the NILIM website in spring, 2016.

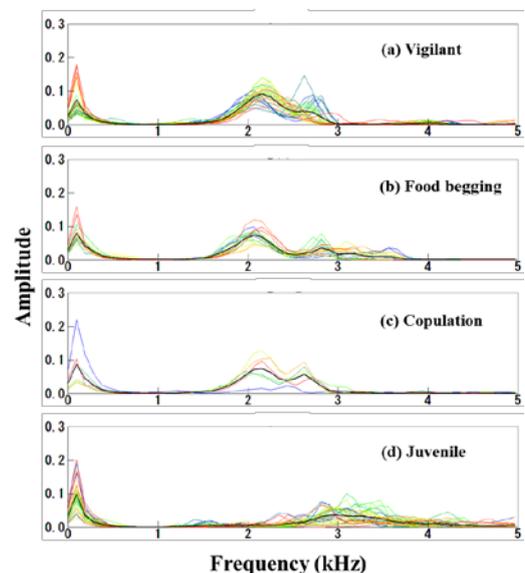


Figure 2: Characteristics of goshawk's call. Each colored line shows a bird call waveform sample (simultaneous calls), and each black bold line shows their average. We are attempting to develop an auto detection program based on statistical analysis, using the differences in the waveforms and call characteristics.

Detailed information:

1) Web site of Landscape and Ecology Division

<http://www.nilim.go.jp/lab/ddg/>