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Malaysia Program

Orang utan nest analysis in DISTANCE

[stats main page](#)[Lab guide \(pdf, 440KB\)](#)[Data file \(csv, 17KB\)](#)

Objectives

This is an introduction to using the DISTANCE software package for the analysis of line transect data. Download and installation details are [here](#).

The main role of DISTANCE is to fit a detection function to the data, which consist of distances from the line transect to the animals (or other objects) detected.

You should be familiar with the [concepts of distance sampling](#) before looking at this unit. DISTANCE uses maximum likelihood estimators and AIC: check the units "[Frogs in ponds - maximum likelihood estimators](#)" and "[More frogs in ponds - AIC and likelihood](#)" if necessary.

Working through the analysis

WCS Malaysia has studied orang utan in Batang Ai National Park in Sarawak for some years. Like most great apes, orang utan build a simple nest of broken branches to sleep at night, and sometimes build a day-time nest too if they take a siesta.

If we assume that there is a simple relationship between the number of nests and the number of orang utan in our study area, we can use the number of nests to compare populations between sites or to detect declines or increases in the population over time.

Transect surveys were used to estimate the density of nests in the park.

Download the file "[O-u_nests_DISTANCE.csv](#)".

This lists the perpendicular distances from the various line transects to each nest spotted. At least one nest was recorded on each transect, so there are no blank cells.

Download the [lab guide "O-u_nests_DISTANCE.pdf"](#). You will probably want to print out the lab guide and have it next to your computer while you work through the instructions.

Work through the lab guide before checking the results below.

Results

The nest density comes out to 390 nests per km² with a coefficient of variation (CV) of 11%. Most of the variance is due to the scatter in encounter rate in the Centre zone. Densities are higher in the South, and an analysis which (incorrectly!) ignored stratification would come up with a much higher overall density. A model answer is available [here](#).

It is difficult to estimate the length of time that nest remain visible (see [here](#) for details), and it certainly depends on the location and the weather in the months preceding the survey. [Morrogh-Bernard et al \(2003\)](#) quote figures of 150 to 280 days for Borneo, and this is clearly the biggest source of imprecision in estimating orang utan numbers from nests.

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