

● Objectives

The spin-off project of Snapshot Japan 2024 focuses on estimating animal density based on Snapshot Japan data using the random encounter and staying time (REST) model. For this project, the video-recording camera traps should be installed in the same location as the Snapshot camera.

● REST model

The REST model estimates terrestrial animal densities based on the video recorded by camera traps. The frequency with which an animal is recorded by a camera trap (i.e., the number of encounters) depends on the density of the animal, the detection zone, and the speed of movement. In the REST model, instead of using animal movement speed, we use the more easily measurable staying time (the inverse of speed) within a predetermined focal area. The details of the REST model are described in Nakashima et al. (2018, J App Ecol).

■ Equation

$$D = \frac{E(Y) \cdot E(T)}{sHa}$$

D: Population Density; E(Y): Expected Number of Encounters; E(T): Expected Staying Time;
s: Focal Area; H: Research Period; a: Activity Level

■ Assumptions

- Camera traps must be randomly placed
- Cameras must reliably detect the animals entering the focal area
- Animal movement and behavior are not affected by camera traps
- All animals being active at the activity peak

● Camera trap placement

For implementing the REST model, additional cameras are installed on the same trees and oriented in the same direction as the existing Snapshot cameras. The focal area is delineated using a white rope and short stakes, as illustrated in the photo below. Video footage of the focal area is recorded using the manual mode of the REST cameras. The entire setup process is brief, requiring only a few minutes. Spin-off project participants will receive a comprehensive manual in advance, detailing procedures such as REST camera installation and data transfer methods.

Camera trap for REST model



The focal area is the triangular area outlined by the white rope. After a video is reviewed, the rope is removed. Note that the Snapshot camera is not in this photo.

