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## Artificial nest boxes to encourage the breeding of hornbills in Malaysia



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### Synthesis

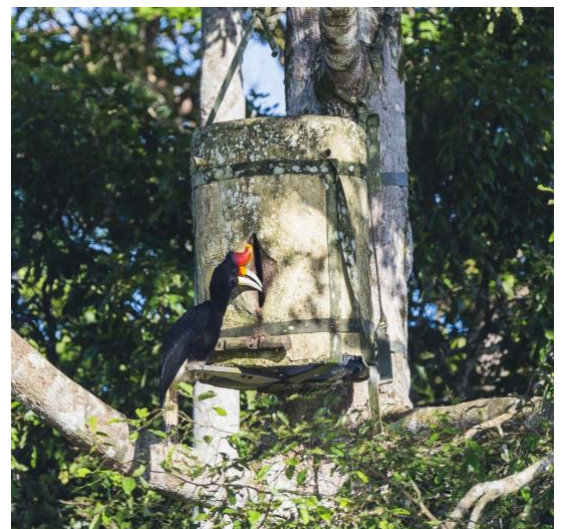
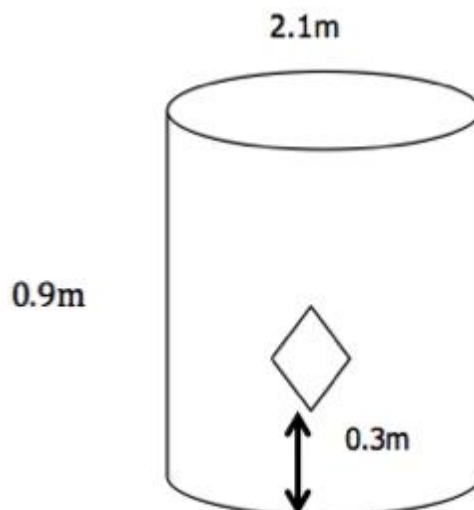
Hutan is constructing artificial nest boxes to help conserve wild hornbill populations. In 2017, one of these artificial nest boxes was successfully used by a pair of rhinoceros hornbills - a world first.

### Objectives:

Installation of artificial nest boxes to conserve wild hornbill populations in areas where the destruction of trees has made natural nesting impossible.

### Methodology:

The nest boxes were constructed with **inexpensive, locally available materials** to enable easy replication in the event of a successful outcome (Sabah, Borneo).



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The inside of the circular nest boxes is made of a plastic drum (which initially contained chemicals).

This drum is then insulated with a layer of polystyrene and covered with a second plastic drum. After that, the nest box is protected with a coating of cement.

A perch is constructed in the lower part of the entrance hole.

The nest boxes are then installed at a height of between 15 and 25 meters in trees that offer adequate cover, using rot-proof webbing (so as not to damage the trunks).

Once the box is installed, the base of the nest is covered with earth and sawdust.

Each nesting box is then fitted with a **data logger** to measure the microclimate conditions inside (temperature and humidity).

Finally, **camera traps** are installed near the nest boxes to monitor visits by birds (or other animals).

## Results:

- We installed four circular nest boxes in the Kinabatangan in 2014.
- Seven hornbill species (of the eight found in the Kinabatangan) showed definite interest in the nest boxes. They visited on several occasions and spent time inside the boxes.
- However, in the two years following installation, only pied hornbills used the boxes (three nests successfully occupied). The pied hornbill is the most common species and the most adaptable to changes in its natural habitat. It is not, therefore, our target species.
- A pair of rhinoceros hornbills showed definite and sustained interest in one of the nest boxes installed beside the Kinabatangan river. In 2015 and 2016, this pair was seen regularly in the fig tree where the nest box had been installed. In early 2017, the pair began to modify the entrance hole, and the female remained inside, spending over four months there before emerging. The young hornbill remained inside for a further eight weeks, coming out of the nest in early November. This is the first successful use worldwide of an artificial nest box by a pair of rhinoceros hornbills.
- The measurements recorded by the data logger show significantly greater fluctuations in the humidity and inside temperature of the nest box compared with a natural cavity. We are currently working on second generation prototypes where temperature and humidity fluctuations will be more stable.