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Research Paper

Use of a Blind to Observe the Breeding Behaviour of the Asian Paradise Flycatcher (*Terpsiphone paradisi* L.)

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In the study of animal behaviour it is critical to observe animals with as little disturbance as possible in order to get valid information. A blind is essential equipment for observing bird behaviour where the observer can gather data without affecting the observed bird, especially during the breeding season. From 2005 to 2008, 38 pairs of Asian Paradise Flycatchers (*Terpsiphone paradisi* L.). were observed during the breeding season (March to July) at Chiang Dao Wildlife Research Station, Chiang Mai Province, Thailand. Fifteen nests were studied from observation blinds on the ground, 10 m away from the nesting trees, using a 15x–45x telescope and video camera to record parental behaviour for 12 hours per day. Observation blinds were made from bamboo and the foliage of the herb *Etlingera littoralis* (Kon.) Gise. (Zingiberaceae), which grows in abundance in the study area. In order to minimize disturbance to the birds' activities, blinds were built when nest-building was almost finished, and were placed parallel to the birds' regular flight approach pathways to the nests. None of the nesting pairs displayed anxiety when the observer was inside the blind and none of the nests were subsequently abandoned, so observations of the breeding cycle were possible. Of the 15 nests observed, eight nests had breeding success, the eggs in one nest were broken by a tree fall, and in the other 6 nests eggs or nestlings disappeared probably as a result of predators. Successful breeding cycles lasted 26–34 days, including 2–4 days of egg-laying, 14–18 days of incubation, and 10–12 days of parental care of nestlings. Blinds, made of natural materials, are effective in allowing observations of this bird and may also be useful for studying other birds.

Keywords*: blind, breeding biology, parental care,* Terpsiphone paradisi

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Introduction

Techniques for studying animal behaviour in natural habitats are not well-known in Thailand. Students who do research on birds in their natural environment are often limited to observational studies. In order to collect objective data firsthand, the observer must ensure that there is no impact on the birds' activities when the observer is collecting data. In ornithological studies, constructing small camouflaged areas called blinds allows researchers to unobtrusively study bird behaviour. Blinds can be constructed out of natural or artificial materials that conceal an observer inside hollows, holes, rock fissures, hollowed-out trees, etc. Blinds are designed to blend in with the natural habitat as closely as

possible (Lehner, 1996). When constructing a blind, the kind of animal, its behaviour, and its habitat should all be considered. For example, the Great Cormorant breeds mainly on coastal cliffs, and effective blinds can be concealed in rock fissures surrounding the nesting area (Wikipedia, 2008).

The Asian Paradise Flycatcher (*Terpsiphone paradisi* L.) is a wild bird species. It is distributed throughout Asia in evergreen, deciduous, and secondary growth forests at elevations ranging from sea level to 1,500 meters (Lekagul and Round, 1991). Males are distinguished by their conspicuously broad blue eye-rings and greatly elongated central pair of tail feathers, extending up to 25 cm beyond the rest of the tail. Males have two colour morphs, rufous and white, while females have only one morph, dull rufous–brown with grey eye–rings and a short tail (Sibley and Monroe, 1990; Lekagul and Round, 1991; Mizuta, 1998; Mizuta and Yamagishi, 1998; Khobkhet, 2004; Robson, 2004).

Blinds can be made out many of materials, but there is little information on blind design. In this study, the breeding behaviour of the Asian Paradise Flycatcher was observed from a blind made from natural materials. The blind was in the general shape of a small hut in order to camouflage the observer inside. The aim of this study was to report on the effectiveness of a natural kind of blind structure as well as to observe the birds' overall behaviour. This included reporting on the breeding stages of the Asian Paradise Flycatcher in northern Thailand. Males of this species in northern Thailand consist only of the rufous morph, while those in southern Thailand are of both the rufous and white morphs (Mizuta, 1998). This study can be used to develop and modify new blind designs for other bird species, while also contributing to the overall understanding of the Asian Paradise Flycatcher's environment and ecology. This information will be useful for assisting future students interested in acquiring techniques for studying bird behaviour.

Study Area and Methods

Study Area

This study was conducted at Chiang Dao Wildlife Research Station, Chiang Mai Province, northern Thailand (19°21'N, 98°55'E) (Fig. 1) at an elevation of 500 meters above sea level from 2005 to 2008.

Figure 1 Map of Thailand showing the location of Chiang Dao, Chiang Mai Province.

The main vegetation types are bamboo + deciduous, hardwood seasonal forest characterized by many woody climbers, and abundant seedlings and saplings of both evergreen and deciduous tree species, as well as several species of bamboos. The herbaceous ground flora was dense and diverse with many creepers, vines, and numerous gingers, *e.g. Etlingera littoralis* (Kon.) Gise. (Zingiberaceae), *Costus specious* J.

E. Sm. (Zingiberaceae) (Maxwell, 1992).

Nest Searching

The nests were searched for along existing footpaths in the forest from 08:00 to 12:00 and from 14:00 to 18:00 hrs almost every day during the breeding season. Once a bird was sighted or heard, it was followed to the nest. Nests were hidden amongst dense shrubs and treelets in dark areas. The nest building period was determined by field observations of nests under construction.

Blind Construction

The blinds were built when the nests were near completion in order to minimize disturbance. They were constructed on the ground from bamboo and the foliage of the herb, *E. littoralis* and had dimensions of 1.5 m x 1.5 m x 1.5 m. Bamboo poles were driven into the ground and tied with thin bamboo strips to make a square shape. The foliage of *E. littoralis* was used as roofing material and to densely cover the walls, excluding a small hole for the entrance (Figs. 2, 3). The inside of the roof was lined with a plastic sheet to prevent rain from entering. The blind floor was covered with a plastic sheet. In the wall opposite the nest a small hole was created for a telescope and video camera.

The observation blinds could be built within a short time and be used for several weeks during observation periods. They also withstood wind and rain. Once the leaves of the plant dried, extra fresh foliage of *E. littoralis* was put on the blind.

Blind Positions

The position of observation blinds was adapted from Mizuta (1998). In this study, the blinds were located 10 m away from the nest trees. The blinds were built on the ground parallel to the birds' regular flight approach pathways to the nests. To give the best possible view blinds were placed at locations higher than the nest sites and with light behind them.

Figure 2 A blind built from natural materials.

Figure 3 The completed blind blends in well with the birds' habitat.

Nest Observations

Observation of the nest was started 1-2 days after the blind construction was finished in order to habituate the bird. Fifteen nests were selected at random to observe from these blinds, using a 15x–45x telescope or a pair of binoculars (7x) and a video camera. The data were collected every five minutes by the focal–scan sampling method in the morning (06:00–10:00 hrs.), around mid-day (10:00-14:00 hrs.) and in the evening (14:00–18:00 hrs.). Each day, parental behaviour, including the date of egg-laying, hatching, and fledging were recorded. Additional observations included the reactions of the birds to the observer inside the blind. Other nests found were observed every day to confirm the dates of egg-laying, hatching, and fledging; and to determine whether breeding

was successful by using a telescope or binoculars without using a blind.

Results

Nesting Habitats

Thirty-eight nests of the Asian Paradise Flycatcher were found from 2005 to 2008, including abandoned or predated ones. Nests were located in a fork of small saplings near small, seasonally-dry streams, usually hidden in dense shrubs and treelets, such as *Mallotus peltatus* Mull. Arg. (Enphorbiaceae), *Mitrophrora vandaeflora* Kurz (Annonaceae), and *Knema tenuinervia* Wilde (Myristicacaae) in bamboo+deciduous, hardwood seasonal forest. The nest trees were less than 3 m tall.

General Breeding Information

In the study area were both male and female Asian Paradise Flycatchers take parts in nest-building, incubating, brooding, and feeding the nestlings. They started breeding in early March and ended it in July. Nests were open, deep, bowl–shaped, and 1-2 m above the ground. A successful breeding cycle lasted 26–34 days, including 2–4 days of egg-laying, 14–18 days of incubation, and 10–12 days of parental care of nestlings in the nest.

Reaction of the birds to the blinds

Fifteen of 38 nests were selected at random for study from 15 observation blinds on the ground. The parents did not show any uneasiness when the observer was inside a blind. They continued incubating the eggs, feeding, and brooding the nestlings. When the observer was outside the blind, the parents flew out and came back when they did not see the observer. None of the observed parent birds abandoned their nest, so allowing observations of the breeding cycle to be made. Among the 15 nests, eight had breeding success, in one eggs were broken by a tree fall, and in the others eggs disappeared in three nests and nestlings in three others, probably as a result of predators. However, both parents came back to their nests on the same day that they lost their eggs or nestlings. The other 23 nests that were found were checked every day not using blinds to determine whether breeding was successful. Only three of these nests had a successful breeding cycle. Six nests were abandoned before nest-building was completed. Eggs disappeared in nine nests and the nestlings in the five others.

Discussion

Several studies of the breeding biology of birds have used artificial blinds for careful observation but there are some characteristics that should be considered when choosing a blind position, such as the behaviour of the birds being studied and nest habitat surroundings. For example, Kauth *et al*. (1998) studied the breeding biology of Writhed–billed Hornbills (*Aceros waldeni* Sharpe) in the Philippines. These birds breed in evergreen forest and whose nests are located in living trees at about 10–20 m above the ground. Observation blinds were placed 25 m away from the nest trees but located to give a distinct view. Sciborska (2004) studied breeding biology of the Citrine Wagtail (*Motacilla citreola* Pallas), which breed in wet meadows, marshes and lakesides in Poland. The observations were made from a blind situated 6 m from the nest. A similar technique was used by Jakubas (2005) studied factors affecting the breeding success of the Grey Heron (*Ardea cinerea* L.) in northern Poland, where they live and breed in colonies on grassy plains on inland and coastal marshes, mangroves, mudflats, lakes, and paddies, exposed to strong winds. The blinds were placed on mounds a little farther away from the nests at distances of 10–50 m. Observations were made by one or two people in the blinds.

A few publications have dealt with blind design. Woodin (1983) described the construc-

tion of a portable umbrella blind. Rodenhouse and Best (1983) described the construction of a portable tower-blind. These blinds were made from artificial materials as nylon or canvas, which have some advantages. For example, small, lightweight tents can easily be moved between observation sites. However, these can have some disadvantages, such as the high temperature inside a blind making observations uncomfortable. Furthermore they might not be able to withstand severe wind and rain. In addition, they are also obtrusive, and so likely to disturb the observed animal, in contrast to blinds made from natural materials. The atmosphere inside the blinds used in this study was comfortable with good ventilation. The observer was able to stay inside for a long period at a time. In addition, the ceiling lined with a plastic sheet could protect against rain. They withstood wind and precipitation in the rainy season for several weeks. There is no earlier information on the construction of blinds from natural materials. In this paper we propose that an observation blind made from natural material may be more effective and of sufficient quality making it better than one of nylon or canvas.

In the present study, the position of observation blinds was adapted from Mizuta (1998). The observation blinds were situated 10 m away from nest trees in order to minimize any disturbance caused by the observer's presence. The blinds were placed on higher ground, above the nest site, with the light behind them in order to get the best possible view. A successful breeding cycle lasted 26–34 days, similar to that reported by Mizuta (1998) and Mizuta and Yamagishi (1998) who studied breeding biology of the Asian Paradise Flycatchers in Khao Pra–Bang Khram Wildlife Sanctuary, southern Thailand. They reported that the nest habitat surroundings were small remnant patches of lowland evergreen forest. The breeding cycles were 25–31 days.

In this study, the Asian Paradise Flycatcher became habituated to the blind and did not show any uneasiness when the observer was inside the blind. None of the parent birds observed from the blind abandoned their nests, and eight nests had breeding success. Although in some nests the eggs and nestlings disappeared, we were able to collect data from these parents until they lost their eggs and nestlings. The results indicate that the blinds made from natural materials were effective in allowing observations of this bird species and may also be useful for studying other bird species and other animals in order to generate results that contribute towards conservation and long term survival of the species.

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