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A MODIFIED BAL-CHATRI TO CAPTURE GREAT PHILIPPINE EAGLES FOR RADIOTELEMETRY

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KEY WORDS: *Great Philippine Eagle*; Pithecophaga jefferyi; *radiotelemetry*; *trap*.

Proven capture techniques for eagles and other large raptors include bownets (Meredith 1943, Mattox and Graham 1968, Clark 1970, Field 1970), padded leghold traps (Harmata 1985), net guns fired from helicopters (O'Gara and Getz 1986), pit traps (Bloom 1987), power snares (Jackman et al. 1994), and bal-chatris (Berger and Mueller 1959). The bal-chatri is one of the most effective traps and can have a success rate of up to 85% for most species that strike the trap (Bloom 1987). Since the late 1970s the Philippine Eagle Conservation Program has been developing techniques to capture Great Philippine Eagles (*Pithecophaga jefferyi*) for radiotelemetry studies. Trapping tropical eagles proved difficult because of the rugged terrain of Philippine mountains. Also, the precarious conservation status of the Great Philippine Eagle as critically endangered (Bildstein 1998) demanded the development of safe as well as effective trapping techniques.

In 1998, we initially used a traditional bal-chatri to attempt trapping of several captive raptors of different species, including one Philippine eagle at the Philippine Eagle Center, Malagos, Davao City. A bal-chatri measuring 75 cm × 75 cm × 30 cm was constructed using 1.25 cm mesh chicken wire and nooses made of 70 lb (31.8 kg) test monofilament. This standard bal-chatri was ineffective at capturing the captive Great Philippine Eagle. With a medium-sized domestic rabbit (*Oryctolagus* sp.) as bait, the Philippine eagle struck the prey on the ground by pouncing directly on the trap from above. More than 50 strikes were made by the Philippine eagle on two occasions, but it was not snared.

In this article, we present a modified design of the bal-chatri that is simple and effective. We also discuss the importance of timing of the capture effort relative to the eagles' breeding cycle.

METHODS

Construction. A circular frame (Fig. 1) was made of 5 mm wire and fastened to a 100 × 100 cm chicken wire base. Because nylon easily loosens when tied to metal, the frame was covered with large black rubber bands to keep the nooses securely in place for long periods of time. Nooses 8–10 cm long were attached along the wire frame. In the center was a dome-shaped cage made of the same type of chicken wire to contain the rabbit. A collapsible wire platform was placed midway along the height of the cage. The entire structure was then firmly placed on top of the 100 × 100 cm chicken wire, the corners of which were anchored to the ground by large thick rubber bands. This was important to keep the trap upright and stable on the ground, but not rigid, and flexible enough to hold a trapped eagle when it attempted to escape. The trap without the wide chicken wire platform easily tumbled upside down when Great Philippine Eagles attempted to fly upon seeing the approach of investigators. This posed potential danger of injury to the foot of the bird. The wide

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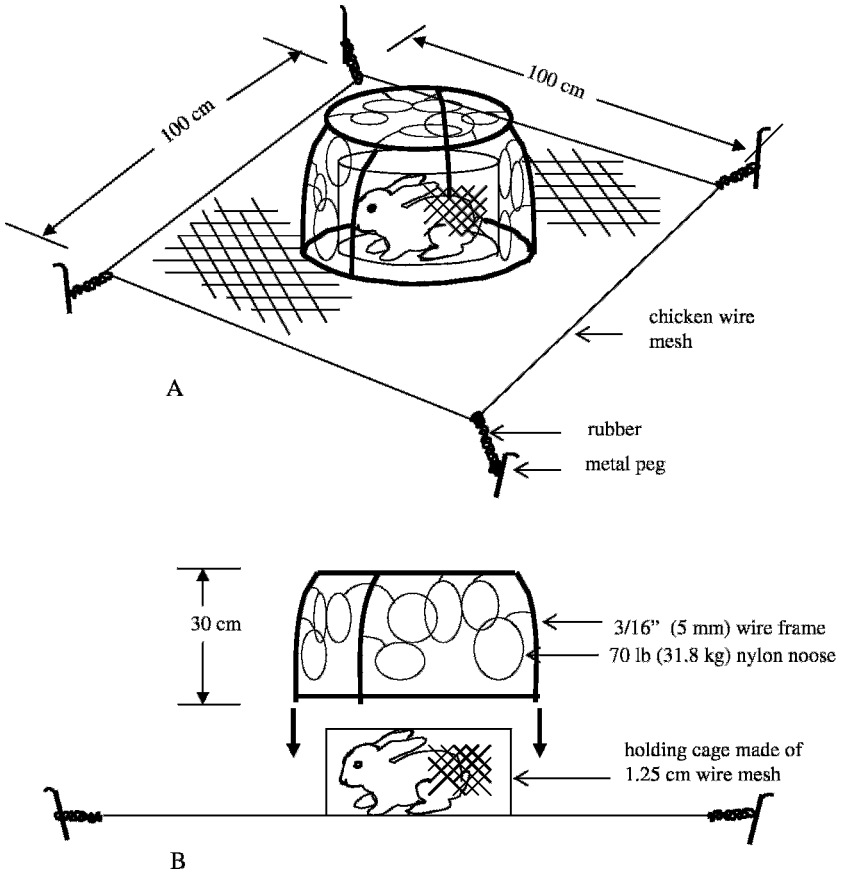

Figure 1. Diagram of the noose trap. (A) isometric view, and (B) lateral view.

chicken wire platform prevented the trap from tumbling upside down and did not break or bend the tips of the eagles' long feathers. A trapdoor measuring 20 × 20 cm was located underneath the trap for bait access.

Traps were placed in known eagle foraging areas, usually in small clearings within 1 km of a nest. Baits were medium-sized rabbits and young palm civets (*Paradoxurus hermaphroditus*). Traps were constantly monitored using binoculars or spotting scopes and were covered or removed at night to avoid accidental trapping of the eagles when investigators were not in attendance. Groups of 2–3 traps were placed in one locality, and monitored by field workers from camouflaged blinds, which were usually positioned under heavy vegetation 100 m–0.5 km away from the traps. Two-way radios were used for communication among investigators.

RESULTS AND DISCUSSION

The modified bal-chatri we developed produced 100% capture success on all occasions when presented to a captive Great Philippine Eagle, perched about 15 m above the ground, inside a large flight cage. During the 1998 field season, after 1 wk of trapping using an average of 2 modified traps per d, we caught a juvenile and an adult male Great Philippine Eagle using a medium-sized rabbit as bait. We attached a backpack-mounted radiotransmitter on a backpack harness to the juvenile and released it. In 2000, we were unsuccessful in a 2 wk attempt to capture an adult pair in the nonbreeding season, but we trapped a single juvenile in a different territory after 1 d of trapping. In 2001, we caught one juvenile after 2 wk of trapping. In the same year, another juvenile and an adult pair were caught in a span of 21 d, with each eagle caught at 1 wk intervals. On all occasions, the eagles were caught in the post-fledging period, when the juveniles were between 7–13 mo old. All successful trappings happened on the eagle's first attempt at snatching the bait.

The trap design performed better than the traditional bal-chatri because the nooses on top of the traps were positioned horizontally, rather than vertically. There was also enough space between the inner dome cage and the outer noose frame so that any noose would easily lock on any toe once an eagle grabbed the bait. This innovative

trap is more likely to catch forest eagles that pounce on their prey from above than a traditional bal-chatri.

Great Philippine Eagles breed once every two years, or the subsequent year when nesting fails at an early stage (Kennedy 1985, Miranda et al. 2000). During the 2000 season our initial trapping efforts for an adult pair in the nonbreeding season were unsuccessful. In contrast, the ease of trapping recently-fledged juveniles and their parents suggests that the timing of trapping in relation to the eagle's life cycle may be an important factor influencing trap success. After fledging, the nest area remained a center of activity for both adults and juvenile. Using this trap at the proper time of the breeding cycle (i.e., soon after fledging of the young) may be important when dealing with a critically endangered raptor, because trapping at the nest may cause abandonment of nest or young.

UNA MODIFICACIÓN DE LA TRAMPA ''BAL-CHATRI'' PARA CAPTURAR ÁGUILAS *PITHECOPHAGA JEFFERYI* PARA ESTUDIOS DE TELEMETRÍA

RESUMEN.—Presentamos una modificación de la trampa ''bal-chatri'' para capturar águilas de la especie *Pithecophaga jefferyi*. En este diseño, se ubicaron lazadas de monofilamento alrededor de un marco metálico con forma de domo, que se mantuvo firme con alambre y se ancló al suelo. Las lazadas se disponían horizontalmente encima del marco y alrededor de éste. Entre 1998 y 2001, capturamos siete aves: cuatro juveniles y tres adultos. Tanto los adultos parentales como los juveniles parecieron responder más a las trampas durante el período posterior al emplumamiento.

[Traducción del equipo editorial]

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