A TECHNIQUE FOR NIGHTTIME TRAPPING OF BURROWING OWLS WITH A BOW NET

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Concern about Burrowing Owl (Athene cunicularia) population declines in North America has increased research interest in the species over the last 25 yr (Millsap et al. 1997). Studies of Burrowing Owl population dynamics, dispersal, migration, and survival often require the capture of owls for banding, attaching radiotelemetry transmitters, or tissue sampling. Capture techniques have focused primarily on efficiently catching breeding adults and/or their young passing through burrow entrances, using a variety of traps such as tethered house mice (Mus musculus) or a mouse in a wire cage as a lure animal in a trapping apparatus (Martin 1971). An obvious choice is the bal-chatri, but this style trap is unreliable because Burrowing Owls are cautious and usually do not attack the trap aggressively enough to ensure capture (Botelho and Arrowood 1995).

Bow nets have been used to catch numerous species of raptors (Bloom 1987, Bloom et al. 2007), particularly at raptor banding stations where bow nets, which are time-consuming to set up, may be left in place for the duration of the trapping season (Clark 1970, Field 1970, Shor 1990a, 1990b). Trapper-operated bow nets are seldom used at night, however, because of the inherent risk to owls posed by operating bow nets at night. Fuller and Christensen (1976) attempted to catch forest owls with an automatic, raptor-activated bow net (Tordoff 1954), but they reported no captures. Previously described wireless (i.e., radio-controlled) bow nets have used servomotors that were originally designed to control model cars/airplanes and were modified to release a bow net (Meng 1963, Bryan 1988, Jackman et al. 1994). However, the servomotor release mechanisms make too much noise and release the bow net too slowly; while using such mechanisms, I twice observed owls flying out of a bow net before it closed, creating a dangerous situation for the owls (J. Barclay unpubl. data). Even with a hair-trigger adjustment, the servomotor was still noisy, and the high sensitivity of such an adjustment increased the chances of unprompted release, increasing the potential of injuring an owl.

I here describe a technique to trap Burrowing Owls at night using a bow net activated by a solenoid. This previously unreported technique was effective for catching Burrowing Owls at times when it is difficult to capture them at burrow entrances, (e.g., during winter and late in the nesting cycle when owl activity is less focused on nest burrows [Smith and Belthoff 2001]). Two systems are presented (one direct-wired and one wireless) for activating a solenoid to release a bow net faster and thus enable safer trapping, compared to bow nets released using servomotors. I describe two systems to visually monitor and enable safe release of a bow net after dark, both of which provide more flexibility in field use than a bow net manually released with a trigger string (Shor 1990a, 1990b) and more selectivity than an automatic bow net (Tordoff 1954, Fuller and Christensen 1976).

METHODS

The elapsed time in msec for the bow net to move from the set to the closed (released) position was measured with two magnetic reed switches (Coto Technologies Model no. RI-48B, Warwick, RI U.S.A.); one switch was positioned next to the moveable bow in the set position and the other next to the bow in the closed position. The switches were activated by the movement of a magnet (2.9 cm in diameter × 0.6 cm) attached to the moveable bow and connected to a Hewlett-Packard Model 5308A timer/counter. The direct-wired and wireless bow-net release systems were timed with the timer connected to the respective trigger button and one reed switch next to the bow in the closed position. Elapsed time was the average of five trials.

A trapping attempt was defined as the placement before civil twilight of one or two bow nets with a tethered house mouse (Mus musculus) or a mouse in a wire cage as a lure animal in an area where one or more adult Burrowing Owls was present. Some attempts included the placement of a bal-chatri containing a mouse in the same area. Trapping attempts were discontinued after the capture of a Burrowing Owl or approximately 45 min after civil twilight if no owl was captured.

Bow-net Design and Assembly. A 91-cm-diameter bow net was used; the stationary bow was made of 19 × 19 mm cross-section hollow steel and the moveable bow was made of 6.5-mm-diameter steel rod (Table 1). These pieces cost approximately $125 (U.S.) for a metal fabricator to make. The bow net was powered by one coiled torsion spring, 37 cm in diameter, at each hinge, as opposed to two springs for the larger bow net described by Shor.