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TRAPPING TECHNIQUES FOR BREEDING COOPER'S HAWKS: TWO MODIFICATIONS

ROBERT N. ROSENFIELD
Department of Biology, University of Wisconsin, Stevens Point, WI 54481 U.S.A.

JOHN BIELEFELDT
Park Planning, Racine County Public Works, Sturtevant, WI 53177 U.S.A.

Bloom et al. (1992) have shown that use of a Great Horned Owl (*Bubo virginianus*) as a live decoy provides an effective trapping technique for breeding raptors of many different species, including Cooper's Hawk (*Accipiter cooperii*). They did not, however, address the problem of retrapping the same Cooper's Hawks in later years with the same technique, i.e., the difficulty of recapturing "trap-shy" individuals (Bloom 1987). Indeed, mention by Bloom et al. (1992) of several Cooper's Hawks recaptured over a 4-yr period, apparently with the same type of trap, suggests no such difficulty with this species. As part of our long-term research using decoy owls in mark-recapture studies of breeding Cooper's Hawks (Rosenfield et al. 1992), we have encountered many trap-shy individuals. Here we present two trap modifications to overcome this problem.

Great Horned Owl Set. The typical trap consists of a lure owl tethered by a swivel and leash to a perch within 0.5 m of the ground near a nest with nestling hawks present; a mist net or *dho-gaza* is erected within 1–2 m of the owl. Hereafter this design is called the "typical set." Our modification of this technique places the decoy in an elevated set well above ground level. During 1980–86, at >30 active nests where we had captured one or both of the breeding birds, the typical set did not elicit stoops by the resident hawks in a subsequent year. Often the hawks would not even approach the decoy. We suspected that these trap-shy birds would be more likely to stoop at the owl if it were placed closer to the nest and thus appeared to be a greater threat to the nestling hawks. To test this speculation, we placed a live owl within 1 m of the ground near an active Cooper's Hawk nest where three previous visits using the typical set had failed to elicit stoops. We simultaneously placed a stuffed Great Horned Owl about 10 m from the ground on a pole erected within 2 m of the live owl. During the next 20 min (while the lower owl repeatedly moved about and jumped from perch to ground and back up to the perch), the adult female Cooper's Hawk stooped at and struck the stuffed owl five times, but did not stoop at the lower owl. We returned 2 d later and erected a mist net within 1 m of the stuffed owl, which was again placed 10 m high. We captured the adult female within 5 min following set-up. It was a bird caught with the typical set in the previous year.

This elevated set (from 10–13 m off the ground) has worked successfully at four other sites where previous visits in the same year with the typical set had failed to catch the hawks. In all instances we caught one or both adults within 10 min of trap set-up, and all were recaptures of birds originally caught with the typical set in a previous year. Lure birds at these four sites were a stuffed Barred Owl (*Strix varia*), a stuffed Rough-legged Hawk (*Buteo lagopus*), a stuffed Great Horned Owl, and a live Great Horned Owl, respectively. The live owl was tethered on a very short leash (about 3 cm) which would not allow it to leap from the perch.

This elevated set took 2 hr to set up in one instance and 0.5–1 hr in other cases depending on how many tree branches had to be cleared for a net lane. Suspending the net from tree trunks took at least two people—one climber and an assistant on the ground to hand up materials. The decoy was perched atop a horizontal pole braced on tree branches. We strongly recommend that at least one trapper remain hidden near the elevated set to ensure the safety

of the trapped bird and/or the safety of a live lure owl. When we trapped a hawk, the climber lowered one end of the net with a rope until the entangled bird could be reached by an assistant on the ground.

Pre-incubation Trapping. Our other modification in trapping technique for breeding hawks is a matter of timing: we have coupled the use of lure birds with early-season (pre-incubation) trapping. Although many of our colleagues contend that trapping of adults should not be attempted until nestlings are present in order to minimize disturbance and the chance of desertion by adults (e.g., Fyfe and Olendorff 1976), pre-incubation trapping has worked well for us.

The pre-incubation period for Cooper's Hawks in Wisconsin lasts about one month, beginning in mid-March (Rosenfield et al. 1991). During that period both members of a mated pair predictably begin daily courtship activities (e.g., copulations and nest building) at dawn, usually within about 100 m of a partially constructed nest (Rosenfield 1990). At dawn we made 41 captures of 38 different Cooper's Hawks (25 males, 13 females) at 41 nesting areas during 1987 through 1992 (three birds were recaptured once each in two different years). Twelve (seven males) of these hawks were recaptures of birds who were trap-shy of the typical set. Hawks were trapped in mist nets, bow nets, and/or bal-chatris baited with European Starlings (*Sturnus vulgaris*) or Ring Doves (*Streptopelia risoria*).

Trapping at this time was expeditious because we could place bait birds precisely where we expected the hawks to appear. We set out traps in pre-dawn darkness. Disturbance was minimal because Cooper's Hawks typically do not roost near partially constructed nests. Moreover, by attaching a line to the lure bird, we were able to tug the bait at a moment that allowed us to "select" which member of the mated pair we wanted to catch. At dawn, we usually wanted to capture males because later in the day during the pre-incubation period, and throughout the incubation and nestling periods, hunting males were often absent from the nesting area. At these latter times of the day and season, we often waited 2–3 hr for an opportunity to trap males (with an owl set) upon their return to the nest. At dawn, in contrast, Cooper's Hawks detect bait birds quickly and respond to them almost immediately. One and occasionally both adults can usually be caught (or missed) within 0.5 hr.

Pre-incubation trapping has had no discernable effect on subsequent behavior and productivity of trapped birds in our study. At the 41 nests where we captured hawks during pre-incubation, there were no desertions by adults and 98% of the 41 pairs had complete clutches. Among 127 other pairs that we discovered at the pre-incubation stage during 1987–92, but did *not* attempt to trap at this stage, 93% laid eggs.

Repeated trials of pre-incubation trapping in subsequent years on the same nesting areas have convinced us that this technique also can result in trap-shyness. Researchers involved in long-term mark-recapture studies of raptors may often need to apply a variety of trapping techniques.

RESUMEN.—Reportamos dos modificaciones de trampas que fueron exitosas en la recaptura de adultos de *Accipiter cooperii,* pero que han desarrollado aversión a la técnica de trampeo (un señuelo vivo sobre el suelo cerca de una red de niebla durante el estadio de polluelo de *A. cooperii*) usada tempranamente. Una modificación de la trampa incluye la elevación del señuelo y la red de niebla de 10 a 13 m del suelo. La otra implica el uso de aves atractivas durante el período de pre-incubación.

[Traducción de Ivan Lazo]

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