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PORTABLE PLATFORMS FOR SETTING ROCKET NETS IN OPEN-WATER HABITATS

ROBERT R. COX, JR.
School of Forestry, Wildlife, and Fisheries
Louisiana State University
Baton Rouge, Louisiana 70803 USA
and
National Biological Survey
Southern Science Center
Lafayette, Louisiana 70506 USA

ALAN D. AFTON
National Biological Survey
Louisiana Cooperative Fish and Wildlife Research Unit
Louisiana State University
Baton Rouge, Louisiana 70803 USA

Abstract.—Portable platforms for setting rocket nets in open-water habitats were developed and used to capture 1116 waterfowl of seven species during September and October 1991 and 1992 in southwestern Louisiana. Incidence of mortality (1% of captured birds) and escape (3% of captured birds) was low. Rocket-netting from platforms was a reliable and efficient technique for capturing waterfowl, and should be applicable to other avian species using open-water habitats.

PLATAFORMAS PORTÁTILES PARA COLOCAR REDES IMPULSADAS CON COHETES EN HABITATS ACUÁTICOS ABIERTOS.

Sinopsis.—Se desarrollaron plataformas portátiles para preparar el lanzamiento de redes impulsadas por cohetes en habitats acuáticos abiertos. Con éstas se lograron capturar 1116 aves acuáticas pertenecientes a siete especies de Anseriformes durante septiembre y octubre de 1991 y 1992, en el suroeste de Louisiana. Tan sólo escaparon el 3% de las aves capturadas y la incidencia de mortalidad resultó ser de 1%. La captura de aves con redes impulsadas por cohetes desde plataformas, resultó ser una técnica confiable y eficiente para la captura de aves acuáticas, y podría ser utilizada para la captura de otras aves que utilizan aguas abiertas.

Projectile-type net traps (Dill and Thornsberry 1950) have been used extensively to capture a variety of birds including Wild Turkeys (*Meleagris gallopavo*), Brown-headed Cowbirds (*Molothrus ater*), Sage Grouse (*Centrocercus urophasianus*), Bald Eagles (*Haliaeetus leucocephalus*), Sandhill Cranes (*Grus canadensis*) and waterfowl (reviewed by Day et al. 1980, Schemnitz 1994). Rocket-netting birds in aquatic habitats can be difficult because nets and propellant charges must remain dry, and most rocket-netting of aquatic birds is done from permanent sites that: (1) are free of vegetation and debris to allow visibility and unobstructed projection of nets, (2) allow easy and expedient access for baiting and removal of trapped birds, and (3) are located on land, but usually near water, to allow bait, nets, projectiles, electrical wiring and trapped birds to remain dry. Construction and maintenance of permanent sites is time-consuming and costly. Budget limitations, landowner restrictions, site-specific limitations (e.g., fluctuating water levels) or reluctance of target species to ap-

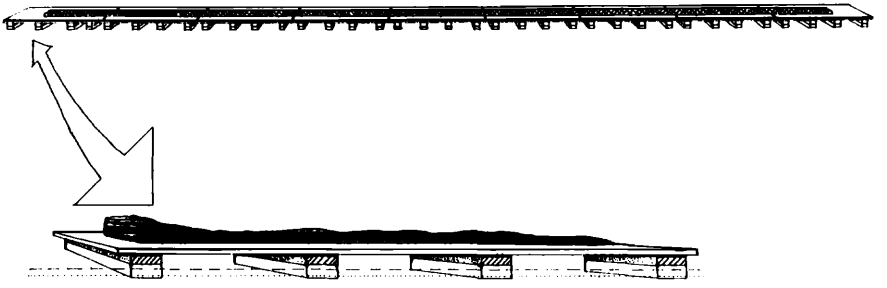

FIGURE 1. Platforms (top) for a single 17.4 × 13.4 m rocket net set in water 2 cm deep. Four sets of two 5.1 × 10.2 cm wall studs are used to support each of nine, 1 cm × 0.4 m × 2.4 m platforms. Wall studs can be nailed to platforms to expedite assembly. Inset (bottom) shows magnified view of left-most platform. Dashed line represents water surface and dotted line represents sediment surface.

proach shore may make construction of permanent trapping sites infeasible. We describe here a method of setting rocket nets on portable platforms in open-water habitats.

STUDY AREA AND METHODS

We used portable rocket-net platforms to capture waterfowl 28 Sep.–27 Oct. 1991 and 28 Sep.–25 Oct. 1992 (National Biological Survey Permit No. 08810). Three flooded trapping sites were used: (1) a 19-ha fallow field located 8 km south of Gueydan, Louisiana (29°57′N, 92°31′W), (2) a 25-ha domestic rice (*Oryza sativa*) field located 10 km southwest of Lake Arthur, Louisiana (30°02′N, 92°48′W), and (3) two moist-soil units (18 ha each) located on Lacassine National Wildlife Refuge (NWR; 30°01′N, 92°54′W).

We used 17.4 × 13.4-m turkey nets equipped with 0.6-m tapered fringes, with mesh sizes of 3–5 cm. Projectiles consisted of rockets and W-115 charges (color-coded yellow; Winn-Star, Inc., Marion, Illinois). We followed U.S. Fish and Wildlife Service (USFWS) safety procedures for transport and use of rocket-net charges. Nets were equipped with four rockets each, and were anchored with five, 0.5-m lines. Each anchor line was tied to two, 5-cm wide rubber bands made from automotive tire inner tube to reduce backlash. We used 46-cm long stakes made from 1.27-cm diameter rolled steel to anchor rubber bands.

We constructed platforms from 1 cm × 1.2 m × 2.4 m sheets of untreated industrial-grade plywood (Fig. 1). Each plywood sheet was cut twice lengthwise into three 0.4 × 2.4-m platforms. We camouflaged upper and edge surfaces of platforms by smearing them with a light coat of mud. Platforms were supported either by standard 20.3 × 20.3 × 40.6-cm cinder blocks or by 5.1 × 10.2 cm wall studs cut to 38-cm lengths. In deep water (8–36 cm), a cinder block was placed in the middle of each supporting platform, with each platform sharing a block with the next platform in line. In shallow water (2–7 cm), wall studs were placed at four

equidistant points beneath each platform. We generally used nine platforms to support each net; however, the exact number was dependent upon the way nets were gathered for firing. Approximate costs of platforms, including supports for a single net, were $44.00 and $51.00 (US) for deep and shallow water sets, respectively.

We wired charges in series using 16–20 gauge solid copper thermostat (waterproof) wire and detonated them with 650-A 12-V automotive batteries via remote-control units (Sharp and Lokemoen 1980). To make rockets as inconspicuous as possible, we usually placed rockets on mounds constructed of mud and vegetation located 0.5–0.8 m in front of nets, and securely staked electrical wiring below the water surface. On two occasions, we placed rockets behind nets in launchers. We angled end rockets approximately 30° laterally to facilitate net extension.

We placed two nets close together (3 m) and detonated them simultaneously (on a single circuit) on eight occasions; we set single nets on two occasions. We camouflaged platforms, nets and rockets with vegetation. We heavily baited an area extending from 1 m directly in front of nets to attract birds to the site, and progressively decreased the size of the baited area over time (2–8 d) to concentrate birds close to the net. We used unmilled domestic rice as the primary bait, but also used smaller amounts of buckwheat (*Fagopyrum esculentum*), white millet (*Pennisetum glaucum*), dove proso (*Panicum miliaceum*) and brown-top millet (*Panicum ramosum*).

RESULTS AND DISCUSSION

We fired a total of 18 nets from 10 detonations using the technique, and captured 952 Northern Pintails (*Anas acuta,* hereafter pintails), our target species. We incidentally captured 64 Blue-winged Teal (*Anas discors*), 50 Fulvous Whistling-ducks (*Dendrocygna bicolor*), 25 White-fronted Geese (*Anser albifrons*), 11 Green-winged Teal (*Anas crecca*), 12 Mottled Ducks (*Anas fulvigula*) and two Northern Shovelers (*Anas clypeata*). Numbers of waterfowl captured per successful detonation ($n = 9$) ranged from 15 to 524 ($\bar{x} = 124$, SE = 53). One successful detonation of a doublet-net set resulted in poor net throws, and only 83 of an estimated 400 ducks within range of nets were captured. We believe that rockets, which were located in front of nets on this occasion, were placed too close to platforms causing dislodged platforms to become entangled in the extending net. In the single unsuccessful detonation, one double-net set fired only one end rocket from one of the nets, and no birds were captured. Failure of additional rockets to detonate was caused by a submerged, bare (non-insulated) electrical connection, which produced a short circuit.

We observed low incidence of mortality using this technique. Twelve of 1116 captured waterfowl (all pintails) died during capture. Eleven individuals were drowned; one individual was found dead in the net, but exhibited no external signs of injury. The drowning mortalities occurred when two simultaneous firings of three nets (one doublet-set and one

single-set) captured 594 ducks, mostly pintails. The drowned ducks became trapped between platforms and the portion of the net that was staked. We believe that such mortalities could be avoided by staking nets in front of, rather than behind, platforms.

We found that escaping birds were a minor problem (29 of 1116 captured ducks), even when water depths were sufficient for birds to swim from under nets. We minimized potential escapes by approaching fired nets quickly and removing birds from the net perimeter first. We observed wet plumage on birds that spent longer than 15 min in nets and recommend holding birds until plumage dries before releasing. We also recommend that sufficient personnel be available (i.e., approximately one person per 20 birds captured) to remove birds from nets quickly so that capture myopathy is minimized (Bollinger et al. 1989, Dabbert and Powell 1993).

In conclusion, we believe that the major advantage of the technique is increased portability, allowing nets to be placed far from shore where some species, such as pintails, frequent. We found that the technique was effective in capturing waterfowl, and believe that it is applicable to other avian species using open-water habitats.

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