

CAPTURE METHODS FOR CRESTED CARACARAS

JOAN L. MORRISON AND STEVEN M. MCGEHEE

Department of Wildlife Ecology and Conservation

P.O. Box 110430

University of Florida

Gainesville, Florida 32611 USA

Abstract.—Research on a population of threatened Audubon's Crested Caracaras in Florida necessitated capture of specific adults. Although caracaras readily feed on carrion, we could not reliably capture them using methods traditionally employed to capture avian scavengers. Despite capturing 15 sub-adult caracaras in a walk-in cage trap, we abandoned this method because it was non-selective and time-consuming, and because adults would not enter the trap. Other methods commonly used to capture raptors were unsuccessful at capturing caracaras. They would not approach closely bal-chatri traps, noose carpets, noosed posts, or ground snares. Because caracaras are territorial and act aggressively toward an intruding adult caracara near their active nest, we developed a successful capture method that exploits this behavior. This technique uses a Q-Net, similar to a large bow net, and a live lure caracara set in the nest stand. During 1993–1995, we captured 35 adult caracaras in 30 different territories, for an overall success rate of 67%. In five territories, both adults were captured simultaneously. Time to capture of a selected individual or pair ranged from 5–90 min, and the ratio of males to females captured was 1.33 to 1.

METODOLOGÍA DE CAPTURA PARA EN *CARACARA PLANCUS AUDUBONII*

Sinopsis.—Se necesitaba capturar individuos particulares de *Caracara plancus audubonii* para un estudiar una población de esta especie amenazada con extinción en la Florida. Aunque la especie se alimenta velozmente de carroña, no podíamos confiablemente capturarios utilizando métodos tradicionales para atrapar aves carroñeras. Abandonamos el uso de trampas donde el ave entra caminando aunque capturamos 15 subadultos porque no era selectivo, consumía mucho tiempo, y porque los adultos evitaban entrar a la trampa. Otros métodos utilizados comúnmente para atrapar la especie no fueron efectivos. Las aves no se acercaron a trampas “bal-chatri,” alfombras con soga o postes con sogas, o señuelos de suelo. Como la especie es territorial y actúa agresivamente hacia un ave adulta que se acerque a un nido activo, desarrollamos un método exitoso que explota ese comportamiento. La técnica utiliza una red Q, similar a una red de arco grande, y un individuo vivo puesto en la plataforma de nido. Capturamos 35 individuos adultos en 30 territorios diferentes entre 1993 y 1995, para un éxito de captura de 67%. Se capturaron ambos adultos simultáneamente en cinco territorios. El tiempo para capturar un individuo o paraja particular varió entre 5 minutos a 1.5 horas, y la razón de machos a hembras capturados fué de 1.33 a 1.

Audubon's Crested Caracara (*Caracara plancus audubonii*; hereafter, caracara) is a unique raptor/scavenger that reaches the northern limit of its distribution along the southern border of the United States. Common in parts of southeastern Texas, caracaras also occur as small populations in southwestern Arizona and in south-central Florida. We needed to capture and mark individual adult caracaras in Florida for use in a radiotelemetry study. Because this population is isolated and listed as threatened, concern exists for its long-term persistence, focusing attention on the need to collect demographic data.

Although often seen scavenging along roadsides, caracaras are not well-studied (Palmer 1988), and published reports of attempts to capture them do not exist. Dickinson (1990) attempted unsuccessfully to capture adult

TABLE 1. Description, operation, and approximate cost (US \$) of trapping methods used in attempts to capture adult Audubon's Crested Caracaras in Florida.

Trapping method	Description
Cage trap 1	2.4 × 4.2 × 1.2-m cage with walk-in funnel entrances (Bub 1991, Rabenold 1986). \$300.
Cage trap 2	2.4 × 4.2 × 1.2-m cage with drop-down door controlled by a remotely operated solenoid. Permits greater selectivity of capture of species or individuals (cf. Heinrich 1988). \$400.
Noosed pole 1	Single noose affixed with thin wire slightly above the top of a fencepost, triggered by observer in a blind when bird lands on top of post. Noose pulls up slightly as it closes around the bird's legs (Dunk 1991). \$25.
Noosed pole 2	Fencepost with crossbar covered with nylon nooses attached on top. \$15.
Ground snare	Single nylon noose attached to a 1.0-m diameter hoop of garden hose, which is buried in the ground. Noose lies on the ground and is triggered when observer in a blind pulls the line around the legs of a bird that has stepped into the snare (E. Alvarez, pers. comm.). \$15.
Noose carpet	0.5 × 1.0-m sections of hardware cloth covered with nylon nooses. Sections are buried in the ground so only the nooses are exposed. Bait is tied in the center of each section (Bloom 1987, Watson and Watson 1985). \$25.
Bal-chatri	Small cage covered with nylon nooses with live bait inside (Berger and Mueller 1959). \$25.
Q-net	A 4.8 × 7.6 m, 2.5-cm mesh cotton net attached to two fiberglass poles, each attached at a pivot point to a metal base (Fuhrman Diversified, Inc., Fig. 1), similar to a large bow net. \$1500.

caracaras in Texas using several techniques. Using bal-chatri traps, P. H. Bloom (pers. comm.) tried unsuccessfully to capture adult caracaras in Mexico and Ecuador. Otherwise, only B. A. Millsap (pers. comm.), in Florida, has reported an incidental capture of a sub-adult caracara, on a bal-chatri trap.

In this paper we describe methods we employed in unsuccessful attempts to capture adult caracaras and present details of one method that proved suitable for capturing adequate numbers of selected individuals. In our search for a suitable method, we focused on those that would minimize risk to individual birds. We chose not to use drugs, although they have been used successfully for capture of free-living scavengers (Houston and Cooper 1973, Pomeroy and Woodford 1976), because of the risks involved (Caccamise and Stouffer 1994). We also decided against using rocket nets (Bloom 1987) because of the danger associated with the use of explosives and concerns of private landowners regarding wild-fires.

STUDY AREA AND METHODS

Our study was conducted at sites throughout Highlands and Glades Counties in south-central Florida. During June–December 1993, we tried eight trapping methods (Table 1). All traps were set in open areas in pastures or agricultural fields where we had seen caracaras. An observer

TABLE 2. Comparison of the success rates of traps used in attempts to capture adult Audubon's Crested Caracaras in Florida, 1993-1995.

Method	Attempts ^a	No. captured		
		Adults	Sub-adults	% successful
Q-net with tethered live caracara	52	35	0	67
Q-net with stuffed caracara	3	0	0	0
Q-net with bait	3	0	0	0
Cage trap with walk-in funnels	58	0	15	26
Cage trap with drop-down door	53	0	1	2
Noosed pole 1	6	0	0	0
Noosed pole 2	8	0	0	0
Ground snare	9	0	0	0
Noose carpet	6	0	0	0
Bal-chatri	17	0	0	0

^a For the cage traps, this is the number of days the cage was left open with the intent of capturing a caracara (does not include prebaiting). For all other traps, this is the number of times the trap was set with the purpose of capturing a caracara.

in a vehicle or blind recorded the reaction of caracaras encountering the traps. As difficulties with trapping became apparent, continual modifications were made to existing traps and new methods were tried. Each trapping method was tested a minimum of three times and at three different sites before being abandoned.

Because caracaras feed readily on carrion (Bent 1938, Glazener 1964), they can be attracted to large baits. We initially tried cage traps similar to those used successfully to capture vultures and other avian scavengers (Bub 1991, Heinrich 1988, Rabenold 1986). We subsequently tried other trapping methods used successfully for capturing birds of prey (Bloom 1987, Dunk 1991, Watson and Watson 1985).

RESULTS

Unsuccessful methods.—Observations at all traps indicated that adult caracaras were wary of new objects or areas of disturbance within their territory. They readily landed at baits without traps but would not land at all or would not approach closely baits associated with traps. Prebaiting sites did not lessen the caracaras' apparent wariness of traps.

Sub-adult caracaras may not be as wary as adults. During a 2-mo period in 1992, we captured 15 sub-adults in the cage trap with walk-in funnels (Table 2). Sub-adults could be differentiated from adults because of differences in plumage color and pattern (Palmer 1988). With this trap, up to five sub-adults were captured simultaneously but only after the trap had been left in place and baited continuously for approximately 6 wk. No adults entered this trap, although they landed nearby. In 1993, we redesigned the cage trap to accommodate remotely controlled drop-down doors because we believed that adults would enter a larger opening. Adult caracaras occasionally approached this trap, but they did not enter (Table 2). They foraged on the ground outside the trap and kleptoparasitized

vultures leaving the trap. Although one sub-adult caracara was captured in the redesigned cage trap, we abandoned this method after numerous additional attempts. Caracaras range over a wide area and it is impossible to predict when or which individuals will approach this trap. Walk-in cage traps are non-selective and must be set and left in one location for long periods, making this method time consuming and inefficient.

Interference from both Black Vultures (*Coragyps atratus*) and Turkey Vultures (*Cathartes aura*) was the major problem with other methods involving bait (noosed poles, ground snare, noose carpet; Table 1). Vultures readily landed on and near these traps, and within minutes the sets were destroyed. Although ground snares and noose carpets were carefully hidden, they were avoided by caracaras.

We subsequently attempted to trap caracaras near active nests. Successful trapping of other raptors has been achieved most often during the nesting season (Bloom 1987). Bal-chatri traps (Berger and Mueller 1959) were set in full view within 100 m of an active nest, in hopes that adults looking for food would be attracted to the live bait. No caracaras descended to these traps (Table 2). Because caracaras kill live prey (Chapman 1930, Whitacre et al. 1982, pers. obs.) the live bait should have attracted them, so we concluded that visibility of the bal-chatri trap was a deterrent.

Successful method.—We successfully captured adult caracaras using a Q-Net (Fuhrman Diversified, Inc., Seabrook, Texas), which is similar to a large bow net (Fig. 1). Operation of this trap required two people, and setup took approximately 1 h. First, the net and pivot pole assemblies were placed in an open area. The observer, who triggered the net, was positioned within 15 m of the trap to permit an adequate view, yet was well-hidden by vegetation or camouflage material. When this trap was prepared for use, the poles were cocked back and the net was laid on the ground in a half-rectangle shape (Fig. 1). The net was released when the observer pulled the trip wire. The poles pivoted rapidly forward carrying the net, which covered a 4.8×7.6 m capture area.

The Q-net with bait did not work (Table 2). Caracaras landed near the trap but would not walk into the capture area and vultures quickly became entangled in the net. The capture method that was ultimately successful exploited the territorial behavior of adult caracaras. After setting up the Q-Net within 100 m of an active nest and positioning the observer, the second person tethered a live caracara inside the capture area (Fig. 1). The caracara we used as a lure was a permanent captive loaned to us by the Miami Museum of Science. Trapping attempts using a taxidermically mounted caracara set as a lure inside the capture area were unsuccessful.

After the trap was set and the lure bird positioned, the resident adult caracaras usually flew over the trap, landed on the ground nearby, then approached the net by walking toward it. As a wild caracara approached the lure bird, it exhibited an upright, dominant posture and sometimes gave the "head throw-back rattle call" (Barbour 1923). This often elicited submissive behavior such as crouching and begging from the tethered bird. During all trapping attempts, wild caracaras only rarely stooped the

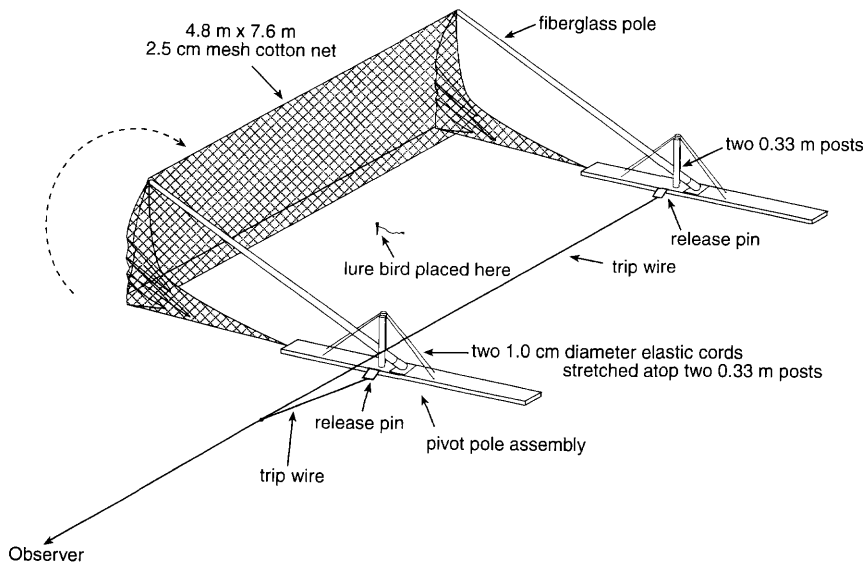


FIGURE 1. Schematic drawing of the Q-net used to capture wild Audubon's Crested Caracaras. The observer pulls on the tripwire thereby releasing pins that hold the pivot poles in place. The poles pivot forward carrying the net. The wild caracara usually attempts to fly straight up and is brought gently down by the descending net.

lure bird, and physical contact between wild birds and the lure bird did not occur. When the wild caracara walked into the capture area, the observer pulled the trip wire, which released the net.

Although the Q-net was slow compared to many bow nets (closure time was approximately 0.75 s), we used it because of the low risk of injury to the caracaras due to its large size, reduced power, and lightweight hard frame. A disadvantage of this slower speed, however, was that burying or otherwise camouflaging the net and poles impairs trap operation and reduces closure speed. Therefore, the trap was highly visible to caracaras.

Although they clearly noticed the net and poles lying on the ground, the resident pair was highly aggressive toward an intruder near their nest. At least one member of the pair almost always walked into the capture area and was subsequently captured. Time to capture ranged from 5–90 min. If no individuals were captured after 2 h, we left the site. Early in the study, we attempted to capture the second member of a pair by resetting the net following capture of the first adult. After several attempts, however, we abandoned this practice because we determined that even though the second adult was nearby, it would not approach the net after watching its mate get caught. Both members of a pair can be captured simultaneously if they walk into the capture area together, however. This happened at five nests during our study.

Continued use of the Q-net and increased experience in handling the

caracaras led to improvements in our ability to choose suitable locations to set up the trap and shortened setup time. In 1994, as the breeding season progressed, our success rate improved from 29% to 45%. In 1995, the success rate was 82%, giving an overall success rate of 67% (Table 2).

DISCUSSION

The difficulties we encountered in capturing Audubon's Crested Caracaras were apparently due to their reluctance to approach traps and their notice of even minor ground disturbance. Scavenging birds are known to be wary of traps (Watson and Watson 1985), perhaps because they must be on the lookout for other predators (particularly mammals) that are likely to be present near carrion.

The combination of the Q-net and tethered lure caracara was ultimately successful probably because of the caracara's territoriality. Since caracaras remain wary of the Q-net, however, extreme care must be taken with the setup—the observer must be completely hidden, vegetation that could hinder proper net release must be removed, and the tripwire must be covered with grass or soil.

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LITERATURE CITED

- BARBOUR, T. 1923. The birds of Cuba. Mem. Nuttall Ornithol. Club, No. 6.
- BENT, A. C. 1938. Life histories of North American birds of prey, part 2. U.S. Natl. Mus. Bull. 170. 482 pp.
- BERGER, D. D., AND H. C. MUELLER. 1959. The bal-chatri: a trap for the birds of prey. *Bird-Banding* 30:18–26.
- BLOOM, P. H. 1987. Capturing and handling raptors. Pp. 99–123, in B. A. Giron Pendelton, B. A. Millsap, K. W. Cline, and D. M. Bird, eds. *Raptor management techniques manual*. Sci. and Tech. Ser. No. 10, Natl. Wildl. Fed., Washington, D.C.
- BUB, H. 1991. Bird trapping and bird banding: a handbook for trapping methods all over the world. Transl. by F. Hamerstrom and K. Wuertz-Schaefer. Cornell Univ. Press, Ithaca, New York. 330 pp.
- CACCAMISE, D. F., AND P. C. STOFFER. 1994. Risks of using alpha-chloralose to capture crows. *J. Field Ornithol.* 65:458–460.
- CHAPMAN, F. M. 1930. *Handbook of the birds of eastern North America*. D. Appleton and Co., New York, New York. 581 pp.
- DICKINSON, V. M. 1990. Breeding biology and behavior of the crested caracara in Texas. M.Sc. thesis, Texas A&M University, College Station, Texas.
- DUNK, J. R. 1991. A selective pole trap for raptors. *Wildl. Soc. Bull.* 19:208–210.

- GLAZENER, W. C. 1964. Note on the feeding habits of the Caracara in south Texas. *Condor* 66:162.
- HEINRICH, B. 1988. Winter foraging at carcasses by three sympatric corvids, with emphasis on recruitment by the raven, *Corvus corax*. *Behav. Ecol. Sociobiol.* 23:141–156.
- HOUSTON, D. C., AND J. E. COOPER. 1973. Use of the drug Metomidate to facilitate the handling of vultures. *Intl. Zoo Yearbook* 13:269–271.
- PALMER, R. S. 1988. *Handbook of North American birds*. Vol. 5. Yale Univ. Press, New Haven, Connecticut. 465 pp.
- POMEROY, D. E., AND M. H. WOODFORD. 1976. Drug immobilization of marabou storks. *J. Wildl. Manage.* 40:177–179.
- RABENOLD, P. P. 1986. Family associations in communally roosting Black Vultures. *Auk* 103: 32–41.
- WATSON, R. T., AND C. R. WATSON. 1985. A trap to capture bateleur eagles and other scavenging birds. *South African Tydskr. Natuumav.* 15:63–66.
- WHITACRE, D., D. UKRAIN, AND G. FALXA. 1982. Notes on the hunting behavior and diet of the Crested Caracara in northeastern Chiapas and Tabasco, Mexico. *Wilson Bull.* 94: 565–566.

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