
A Simple, Effective and Portable Modified Walk-in Turkey Vulture Trap

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ABSTRACT

A variety of traps have been used to capture vultures alive. The most productive in terms of vultures captured per days of effort has come to be known as a “walk-in” trap. Herein we describe and provide instructions for an inexpensive off-the-shelf commercial kennel that can be assembled quickly and modified to function as a walk-in vulture trap. We also provide advice on its operation and the care and protection of the birds inside.

INTRODUCTION

Raptor research frequently relies on the live capture of the investigators’ subject for use in studies such as ethological studies, marking individuals for identification under field conditions, investigation of natal and breeding dispersal patterns, understanding population dynamics, and obtaining morphometrical and biomedical data (Bloom 1987, Saggese 2007, Boal et al. 2010). Thus, a wide range of trapping techniques have been designed by raptor researchers for the capture of free-ranging diurnal and nocturnal birds of prey (Bloom 1987). Most of these trapping methods and techniques rely on a live animal that serves as a lure to attract raptors (Bloom 1987). In the case of scavengers like vultures (Order Accipitriformes, family Cathartidae; family Accipitridae), the lure consists of an animal carcass, sometimes coupled with a live captive conspecific (Bloom 1987).

The Turkey Vulture (*Cathartes aura*) is considered the most widespread species of all New World vultures and found from southern Canada through Central and South America to Tierra del Fuego (Brown and Amadon 1968, del Hoyo et al. 1994, Kirk and Mossman 1998, Bildstein 2006). Several available capture techniques, such as bow-nets, noose carpets, padded leg-hold, and pit traps, have been used to trap small numbers of Turkey Vultures and other avian scavengers (Bloom 1987, Bloom unpubl. data). For the capture of large numbers, cannon nets are more commonly utilized (Bambford et al. 2009, Varland et al. 2012). Despite their effectiveness, cannon nets are not always available, and in the case of those which require explosives, are expensive, and their handling requires qualified training and permits in compliance with complex local state or provincial and national regulations (Bloom 1987, Bambford et al. 2009). Given that Turkey Vultures are often relatively tame and acclimated to people, they are readily captured in walk-in traps (Bloom 1987), also referred to as house traps (McClure 1984).

The walk-in trap’s classic mechanism of action is very straightforward. Typically, in California, dairy calf carcasses (*Bos taurus*) or/and mule deer (*Odocoileus hemionus*), usually cut in half while frozen, are used as lure to attract the vultures to the trapping site, wherein they typically land on or around the trap (Fig. 1). They enter the trap at ground level through a wire mesh funnel door that tapers into the enclosure that narrows to a small opening but is large enough to allow vultures to squeeze in (Bloom 1987). This design has the slight disadvantage of occasional escapees. If desirable, in situations where mammalian predators such as coyotes (*Canis latrans*) and other canids become a problem, vultures can enter through the top by cutting a 0.6 m diameter square hole in the netting. Once inside, the birds generally cannot escape. Classic walk-in traps are large cage-like structures (Fig. 2) (McIlhenny 1937, Parmalee 1954) baited with carrion and include perches, a water bowl,

and shade and are designed for the simultaneous capture of multiple vultures (Bloom 1987). They are very effective but can also be heavy, difficult to construct, and difficult to move (Barber and Bildstein 2011). A significant challenge associated with the classical walk-in trap rectangular shaped design is the extensive time required for setting (from start to completion classic walk-in traps require a full day or more to construct and assemble the panels and doors). A large amount of storage space is needed to hold the (depending upon desired holding capacity) 8-10 wire panels that must be assembled together for home-made traps (Bloom 1987). A more practical, affordable, readily available walk-in trap that can be easily and rapidly assembled and moved around on a study area regional scale is needed for the wide range of Turkey Vulture studies in the Americas. As a result of our past trapping efforts and recent experiences trapping Turkey Vultures in southern California, we describe a modification recently made to this technique that proved useful for the capture of this species.

METHODS

We used an off-the-shelf purchased chain link pet kennel (Blue Hawk Model #0476087), easily converted into a walk-in trap (Fig. 3) by providing a nylon net roof, and an opening for the birds to walk in, but not out of the door. Once the entry door modifications are finished, the trap is readily assembled (2.5 hrs.) and disassembled (one hour), portable, cleanable, and collapsible, and requires minimal storage space. This trap easily holds 20 vultures.

The kennel enclosure constitutes the holding component of the trap and is made of light chain link weighing 176.4 lbs (80 kg) and measuring 74.8 in x 20.87 in x 7.68 in (1.89 m x 0.53 m x 0.19 m) in its collapsed form. It can easily fit into a small SUV or pickup truck. Once assembled, the kennel measures 10 ft x 10 ft x 6 ft (3.05 m x 3.05 m x 1.83 m). Netting (Memphis Net & Twine Co., Inc., Memphis, TN 38108) measuring 14 ft x 14 ft (4.27 m X 4.27 m) and 1 7/8 (4.76 cm) in square mesh (stock # B1001 and twine size #42) was used for the roof and was secured with zip ties. The overall cost of the cage and netting was USD 350,

plus tax. Perches, shade, food, and water should always be available and in adequate amounts for the total number of birds expected to be caught.

A modified entry door allows vultures to enter via a small cut into the bottom of the door and adding a “pigeon coop” style door (McClure 1984), essentially hanging moveable rods that swing inward and allow vultures to enter the trap, but not to exit (Fig. 4). Space for the vulture entry door is made by removing the lower wire ties to the chain link fence on the kennel entry door. The chain link and tension bars are bent upwards at 9 in (22.8 cm) with the entry door itself being 18 in (45.2 cm) wide. Two 17/64th in (6.74 mm) holes were drilled in the door frame post on both sides at 8 3/4 in (22.23 cm) up and 1/4 x 3 1/4 in (0.64 x 8.26 cm) eye bolts were attached with eyes to the outside. Materials needed are an 18 in (45.72 cm) section of 3/8 in (95 mm) threaded rod, four 3/8 in (95 mm) flat washers and two nuts. A 17 1/2 in (44.45 cm) piece of 1/2 in (1.27 cm) thin wall conduit, five schedule 40 PVC 3/4 in x 3/4 in x 1/2 in (1.91 cm x 1.91 cm x 1.27 cm) reducing tees, six 3/4 in (1.91 cm) schedule 40 PVC pipe cut 3/4 in (1.91 cm) long (used as spacers between tees) and five 5/8 in (1.59 cm) pine dowels cut long enough to hit against lower support of the door frame. The dowels are held in place with a strong waterproof glue into the 1/2 in (1.27 cm) reducing tee. To assemble, start with spacer that is slid over conduit and alternate tee spacer. Place this between the eye bolt holes with dowels inside of the door. Run a threaded rod through the hole in the first eye and conduit-adding washers and nuts (Fig. 4). The spacing between the dowels was 1 1/2 in (3.8 cm) from doorframe pipe to first dowel, 3 1/2 in (8.9 cm) between next 3 dowels and 1 1/2 in (3.8 cm) between fifth dowel and the door frame on opposite side. This allows PVC tees to swing open to the inside independent of each other and the dowels to stop against the door frame keeping vultures from escaping when attempting to come back through the opening from the inside. Some personal discretion may be exercised pertaining to exact spacing of the dowels, and the size of the trap door may be enlarged to modify for the capture of larger vultures.



Figure 1: Turkey Vultures usually land and gather around or on top of the cage before entering. Other Turkey Vultures from the distance detect this behavior.

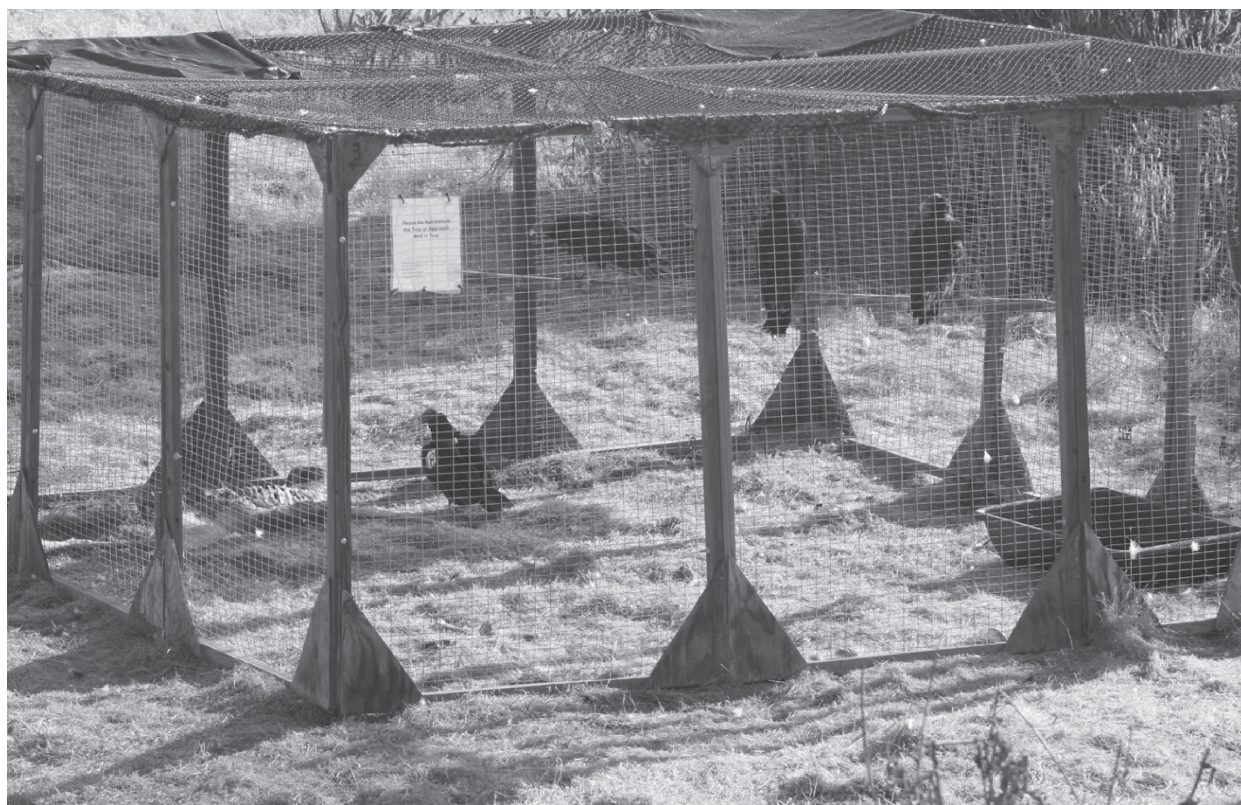


Figure 2: Classical design of a Walk-in trap used by the authors in the past.



Figure 3: Thirteen Turkey Vultures inside the chain link pet kennel converted into a Walk-in trap and waiting to be tagged and sampled.



Figure 4: A modified entry door allows Turkey Vultures to enter but not to exit.

Our Standard Operative Procedure for the setting up and functioning of walk-in traps includes:

- 1) Select area: trap should be placed in location ideally fulfilling the following requirements: safe place, flat, far away from public access, protected from the view of public, relatively predator free, adequate offer of trees and other roosting sites, relatively easy access, and with confirmed presence of vultures in the area.
- 2) Prepare area: check for the presence of anthills, broken glass, metal, potential foreign bodies.
- 3) Set trap: as described above. Check all elements and parts function properly.
- 4) Predator proofing: cover ground sides with chicken wire on the surface to prevent predator access or entry.
- 5) Place temporary perches of adequate size and shape on both back corners.
- 6) Attach roof net on top: cover 30% with tarp to provide places of shade within the cage.
- 7) Fill water bowl: 15 liters of fresh water. Refresh as needed.
- 8) Place carcass: consider staking it down to keep it in one place.
- 9) Ingress lure: if desired, add live or taxidermy mount bird.
- 10) Open cage trap-door: open before sunrise.
- 11) Monitor birds from 50-100 m away.
- 12) Retrieve birds individually from cage: for tagging and sampling.
- 13) Ideally, turkey vultures are most easily processed and with the least stress in the evening. Avoid handling birds at high temperatures.

RESULTS

After the initial set up and carcass placement, it may take several days until the carcass is detected and the first vultures land near the cage and enter. In the initial stages many birds will stand outside, on top, or near the cage. Seeing other vultures inside feeding on the carcass is an important visual attraction and will lead to more vultures entering the trap in the following hours.

As an example of the effectiveness, in 2016, a total of 73 Turkey Vultures were trapped at Anaheim Lake (52.4667° N, 125.3167° W) using the modified kennel trap design with the pigeon coop door in four trapping sessions. In 2017, 84 turkey vultures were trapped in the same location along another four trapping sessions. The time since the trap is set and first vulture was caught ranged from 1 to 5 days (average 3.16 days), depending

on weather conditions and the random presence of vultures flying over the area. Upon first arrivals, the number of vultures entering the cage in a period of 12 hours ranged from four to twenty-four, ultimately this final number depending on the decision when to close it. Past attempts using a funnel entrance we had the lure bird escape several times through the entry door. Using the new “pigeon coop” door, none of the birds from our last 50 days of trapping effort walked back out. Vultures typically behave calmly and quiet within the cage, except for some birds with minor self-inflicted head abrasions resulting from escape attempts. The only mortality event observed was one bird captured by a coyote who dug under the cage and pulled the lure bird out.

DISCUSSION

The walk-in trap style for vulture capture has seen variation throughout past decades and is primarily dependent upon the number of birds living in the area and the number of birds to be captured. Classically, cages were circular but are now square or rectangular. Cage width can vary from 3–12 m with a height of 1.2–1.8 m (Parmelee 1954). Henckel (1982) built a successful trap, 3 × 3 m, 1.8 m high that captured as many as 12 vultures daily. The walk-in trap is most effective when using a live lure vulture, which can yield many vultures in just a few days of effort (McIlhenny 1937, Parmelee 1954, Henckel 1982, Bloom 1987). Using the same trap with carcasses only may result in a much lower capture rate or, in some cases, no success at all after 10 days (Bloom unpubl.) Barber and Bildstein (2011) reported the use of a smaller, relatively economic (USD 540 in 2010) portable walk-in trap with a “live” mounted vulture.

Conflict with non-targeted species, although rare, may occur while using walk-in traps. Over a period of about 200 trap days between 1974 and 2017, two incidental captures of Common Ravens (*Corvus corax*) occurred using the earlier version (Bloom 1987). The safety of the captured birds inside the trap is essential. Over this same period, we lost one vulture due to predation by an urban coyote that dug a hole under the trap. The risk

of canids entering the trap can be eliminated by providing a 1 m diameter buffer of chicken wire out and around all sides of the trap, including below the entry door, and fastening it to the exterior of the trap then staking it down on the edges. Removal of the lure vulture at night and replacement in the early morning essentially eliminates all potential predation of the lure bird.

Several factors should be taken into account to process and release Turkey vultures. To ensure trapping success, allow vultures to approach the cage, flying or perching around until several birds are present. Open the trap door before sunrise, but keep it closed during the night to avoid unwanted entry by nocturnal potential scavengers and predators. Vultures will enter the cage during the day, and between 8-12 hours after sunrise, according to day length, can be closed and the total number of birds caught birds sampled. Because seeing conspecifics inside the trap encourages more vultures to enter, processing when you have only three vultures will decrease future trap success, and thus you should wait until the trap fills more and process them all at once. Turkey vultures can be processed at any time of the day as long as temperatures do not exceed 29 °C (to avoid risk of heat stress) and ideally must be released before sunset. Trapping efforts typically span multiple days. In the USA, the time birds spend inside the cage should not be more than 12 hours. In other countries, national/state/province and/or local regulations should be followed.

The use of animal carcasses for trapping vultures requires special considerations. Animals must not be euthanized with barbiturates nor should they have received other veterinary drugs such as anti-inflammatory drugs, anesthetics, and antibiotics due to the risk of secondary poisoning for vultures and other wild animals attracted to the carcasses (Oaks et al. 2004, Viner et al. 2016) and exposure to antibiotic resistant microorganisms. Guidelines for the euthanasia of calves and/or wild animals used for research are available (AVMA 2013). Recommendations for handling and working with wildlife and prevent pathogen transmission have been recommended (Fair et al. 2010).

Vulture trapping, marking and sampling should follow national, or state regulations, and receive Institutional Animal Care and Use Committee (or its equivalent) approval (Boal et al. 2010).

CONCLUSION

In summary, we report a new modified commercial kennel for the construction of a walk-in trap that can be widely used for the capture of free-ranging Turkey Vultures for wildlife research. The primary value of using the kennel as a starting point for building a vulture trap is that 1) it is “off the shelf” and inexpensive, 2) it is easily modified, 3) the size and strength is adequate to keep vultures inside, and other would-be scavengers outside, 4) it is spacious, 5) it is easily assembled and disassembled, 6) it is easily transported, 7) it is proven to be effective, and 8) it is easily stored. The principal way that walk-in traps differ from each other is size and the type of entry door for the vultures. However, detailed information on the trapping success (number of birds/unit of time) of different style walk-in traps, including ours, is not available. This is an area of vulture trapping that requires further studies

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