

# Educational Curriculum Packet

## Eastern Coyote Project: Box trapping

By Jonathan G. Way

### Introduction

In order to study coyote behavior in the wild, one must first trap and radio-instrument them. Radio-collars (or implants) enable you to track a target animal at virtually any time of the day (see educational packet on radio-telemetry for more information on this subject). Currently, box trapping is the only legal method to capture coyotes in Massachusetts. Therefore, this packet is devoted to explaining how to successfully use this technique to capture coyotes. The next packet will explain how we use radio-telemetry to find our study coyotes once they are captured and radio-collared.

First of all, permits/permission must be acquired before any traps are put in the field. We currently have a permit from Boston College's Animal Care and Use Committee, the Massachusetts Division of Fisheries and Wildlife (also called MassWildlife), and from the Town of Barnstable on Cape Cod. We must make sure that we have written permission before initiating the study in any towns in and around the Boston area. You must carry copies of these permits while working in the field with us!

It is important to note that our 2 study sites are located in areas with high a density of humans. Thus, care must be taken to avoid conflicts with people. On Cape Cod we have posted signs on all of our traps, informed people near the trap as to why the trap is there, and attempted to answer all questions related to the study in a professional and sincere manner. This approach has worked well and has probably caused us to avoid many negative situations/confrontations (including with police officers). Despite these precautionary measures, we have had 1 trap stolen and another badly damaged from vandalism. That trap required a machine shop to fix it. We have only had 8 traps throughout the 4-year ongoing study including the traps that were stolen and damaged;

thus the potential exists for damage to our equipment while on public and/or private lands.

### Background to trapping methodology

The box traps we use are made by Tomahawk Live Trap Co., Tomahawk, WI, USA and consist of 3 sizes: models 610A, 121.9 cm 50.8 cm 66.0 cm; 610B, 152.4 cm 50.8 cm 66.0 cm; and 610C, 182.9 cm 50.8 cm 66.0 cm; 109, 106.7 cm 38.1 cm 38.1 cm. Each trap, including shipping, costs about \$300. Once we have purchased traps for the Boston area, the next step is to figure out where to put them. We generally choose trapping areas based on reported coyote sightings or direct documented activity (i.e., tracks, scats, direct observations). Reported coyote activity can come from the general public, natural resource officers, and animal control personnel. These sources should be contacted in areas where we are attempting to trap for the first time. We often prebait an area before traps are initially deployed to see (usually through tracks or scats, rarely by direct observation) if coyotes show up.

When coyote activity is detected or already known, traps can then be deployed. Typically, we put traps in inconspicuous areas of lower human density, such as in small wetlands, in back of cemeteries, adjacent to railroad tracks and powerlines, in conservation areas, directly in backyards (believe it or not) or in other areas of known or suspected coyote activity where people will not easily find and/or disturb the traps. We try to space traps at least 3-4 miles from each other in an attempt to capture different coyote social groups. Coyote social groups, at least on Cape Cod, typically consists of 3-4 members. These groups (or packs) have an average home range of about 12 square miles, which they actively defend from other coyote groups. Thus, spacing traps allows one to potentially capture different coyotes from different groups.

Once box traps are in the field we conceal trap bottoms with material that naturally occurs near deployed traps (i.e., soil, leaves, pine needles, grass, mulch or snow). In the past, we have not staked traps down so they could be easily and quickly

transported to different sites; however, covering the bottoms appears to somewhat stabilize them in place. It is important to cover trap bottoms because we have observed that coyotes do not approach the front of a trap when bare metal is exposed on the ground. However, we leave the sides and tops of traps exposed with the idea of keeping traps as open in appearance as possible. In addition, we keep trap doors wired open until set for capture and we always wire the rear door shut in addition to latching it to the trap to ensure that no animals escape when captured. Finally, we always place signs that alert the public to this study on traps or nearby trees.

For bait, we mainly use supermarket meat scraps from a reliable local supermarket (Osterville A&P) and road-killed animals when opportunistically found (mainly gray squirrels, *Sciurus carolinensis*, woodchucks, *Marmota monax*, and cottontail rabbits, *Sylvilagus floridanus*, and sometimes domestic chickens from a local county farm). Rubber gloves should be used when handling meat or road-killed animals. For the Boston study, we still need to contact and find a reliable source of bait. We do not use road-killed opossums (*Didelphis marsupialis*) and raccoons as bait because, except during the middle of winter, coyotes did not regularly eat them even when placed outside of traps. We initially place bait (usually 5-10 pounds per baiting) outside traps until sign indicates that coyotes are taking the scraps. Bait is then gradually placed inside, and eventually, behind the trap pan. Lifting the rear door allows for easy access to baiting the back of the trap. From experience we have found that when all bait at a trap site is gone, including bones, we feel that coyotes are actively taking the bait. In many cases this has been confirmed by coyote tracks and scats found at trap sites. We have not documented any other species that consumes all of the bait. Traps are usually not set (or armed) for capture until we are confident that coyotes are consistently taking bait from the back of traps. Generally, traps are baited for 2-3 months (conditioning period) and checked every 2-3 days until we decide to set them.

Many trappers that use padded leg-hold traps to capture coyotes attempt to mask

human scent by wearing gloves and rubber boots anywhere near where they are trapping. Coyotes have a very keen sense of smell and do not like the smell of humans. Because leg-hold traps are buried under the soil and covered with dirt and leaves trappers feel that coyotes will avoid a trap site if human scent is saturating a specific location. However, we have not worried about concealing human scent for 2 reasons: first, we have to regularly walk around (and sometimes crawl inside) box traps to bait and/or re-bed the trap in order to make the trap functional (raccoons, when captured, commonly dig and scratch throughout the trap); second, box traps were exposed (unlike foothold traps that are hidden in the ground), thus coyotes know traps are there. However, we do attempt to be consistent by wearing the same boots and the same clothes on a regular basis in order to condition coyotes to the same human(s). It appears that coyotes get conditioned to humans being around trap sites (all bait is regularly eaten by coyotes if put immediately outside traps, given that coyotes are visiting a trap site). In summary, the problem we have is simply getting coyotes to enter enclosed box traps, which we believed has little to do with human scent. We do, however, stay away from the traps whenever possible to avoid putting “too much” human scent in an area. For example, if we check a trap when it is set for capture and it is unsprung and sufficiently baited we generally stay >10 feet away from the trap.

Once traps are in the field and coyotes are eating bait from the back of the trap, the trap is ready to be set (or armed) for capture. We set traps during all seasons and weather conditions and check them twice daily when armed for capture. The 1st check is as close to dawn as possible, and the 2nd check is just before dusk. Many non-target species (notably raccoons, dogs, and, possibly, opossums and crows) will be captured. The reason that we prebait traps before setting them for capture is to get coyotes conditioned to going inside traps. We feel that if we set traps immediately when put in the field, coyotes would shy away from the traps if they commonly visited traps with animals like raccoons and opossums, which readily enter traps. Coyotes are known to be

very wary and we feel that it is imperative to get them conditioned to traps before setting them for capture. When we feel that coyotes are going inside traps and are ready to be captured, we set the traps, but usually still capture many non-target species. You will quickly learn to hate raccoons and other non-targets as far as trapping is concerned. There is nothing more frustrating than repeatedly capturing them when you knew coyotes were also going inside during pre-baiting efforts. We have evidence that coyotes shy away from these traps when other animals are repeatedly captured in them even when coyotes were conditioned to go inside the traps. Thus, it is important to keep traps set for many days/weeks at a time to increase our chances of a coyote eventually going inside and getting captured. Incidentally, winter is usually the best time to capture coyotes because they seem to be hungrier (there is less food around) at this time, and, also, there is generally less activity from other animals, notable raccoons and opossums.

#### Description of how set a trap for capture

Before setting a specific trap (or traps) we must first have a schedule in place to make sure that Jon is available for the duration of the trap being set and to make sure that we have people covering trap checks at least for every dawn and dusk period (and possibly during the middle of the day). Note: All coyotes in the past have been captured during the night, thus it is important to make sure that when armed for capture, traps are functional. If traps are not checked at dusk there may be a crow (or other animal) inside the trap. Obviously no coyote can be captured in that trap until the crow or other animal is released.

As for setting traps, first of all, always make sure that the rear door is wired and latched shut to avoid animal escape. Also, make sure bait is in the back of the trap (usually 5-10 pounds of meat scraps or equivalent of road kill). Usually, it is also good to leave a bait trail of small pieces of scraps into and to the back of the trap (this can be less than a pound). To set a trap, the front (vertical) part of the door must be pushed down to meet the horizontal section of the trap door. To open the door, both sections are lifted up

together. If facing the trap, the right side has a lever (this is where the trap door should be wired open when not set for capture) that moves the end of the wire latch (called the dog) to hold the door up. The dog should be latched under the wire from the top part of the door when set for capture. You will notice that when the trap is armed, the pan, the big sheet like device on the ground towards the back of the trap, raises to an angle. When the pan is stepped on hard enough that moves the lever (i.e., the dog) off from holding the door open, thus causing the door to fall down and lock shut thanks to the double door system that Tomahawk uses on their traps. Be sure that there is no dirt, debris, or bait interfering with the pan being able to shut properly. However, there should always be a light layering of dirt, leaves, or pine needles on the pan to at least partially hide it from potential captures. Make sure you always practice firing a trap to ensure that it works before setting it for capture. To do this, simply arm the trap, then depress the pan with your hand and, hopefully, watch the door shut. Always depress the pan on the side where the road is. There is much more give on the other side. See for yourself.

Traps must be checked twice a day. Non-coyote captures need to be released. Releasing the animals will depend on the person checking the trap. Experienced personnel will be allowed to release most animals on site, whereas others will need to call Jon Way first before any release. Anyone uncomfortable with releasing a certain animal (if given permission to do so) should immediately contact Jon so he can arrange to get to the trap. Raccoons can sometimes be quite ferocious when captured. Skunks are skunks: they smell if they are provoked to spray. All foxes (red or gray), bobcats, or unidentifiable species should NOT BE RELEASED until talking with Jon. This is very important as part of the research project is documenting the variety of species and how many of each we catch. Predators that are sympatric (i.e., species living in the same area) with coyotes, such as foxes and bobcats need to be analyzed closely when captured; therefore, they should not be released until Jon sees them. Obviously, Jon should immediately be contacted when a coyote is found in a trap. Currently, Jon and Dr. Larry

Venezia (the veterinarian we work with on Cape Cod at The Hyannis Animal Hospital) are the only personnel familiar with sedating and radio-collaring coyotes.

Do not worry about the danger posed by coyotes or other wild animals when checking traps. These animals are much more scared of you and want to have nothing to do with you. They will almost always run away when given the chance. However, there is no guarantee in nature and everyone should be alert to their surroundings when entering the domain of the coyote.

#### Data collection for trapping activities

See the attached handout on Coyote Trapping Activities at the end of this packet. This is the data sheet that we use for recording all box trapping data. If you keep a general notebook describing what you do, it is very important to also write on this data sheet summarizing what happened at each trap site. We tabulate monthly values for all trapping information and use these sheets to do the calculations.

The date should only be written once/page (i.e, if you go to a new trapping sheet on a given day, then write the date again on the new page). It is important that we are able to calculate how many trap nights there were. A trap night (or trap day) is a trap being set for 1-24 hour time span. Thus, theoretically if a single trap is checked 10 times a day and during 6 of the visits animals are captured, then 6 animals were captured during that 1 trap night. Therefore, it is important to not duplicate a second (or third, and so on) trap check as a trap day for a specific trap. For example, if a trap has been sprung on a second or third (and so on) trap check and I have already written down if it has fired (i.e., sprung/shut) or not (this indicates a trap day, i.e., when Yes or No is written down) on my initial visit to that trap, I then write, in parentheses in the date column, the time the trap was checked when it was sprung on the second (and so on) trap check of a given day. In this way, I can go back at the end of the month and subtract these sprung trap checks from the overall trap nights for a given month. An example of this in class may help. Additionally, when a trap is checked a second, third (and so on) time on a given day and

the trap is NOT sprung, or when a trap is wired open and will therefore never spring, I put a dash under the Trap Fired heading. This way I know to not include this check as a trap day (or night).

What is the method to this madness? Very simple. By writing down every trap check we get to see how much EFFORT (# of trap visits/month) we are putting into trapping. We are also seeing how many times the trap shuts (is sprung) on a given month and obviously what animals are captured (and recorded in the notebook/datasheets). By keeping a note on not duplicating a second, third (and so on) trap check as an additional trap day, we standardize our data regardless of how many times we check a given trap in a day. When all of this data is tallied it should then be entered into a spreadsheet for future analysis.

Three additional notes: 1) Always write your name on any data sheets when you work with us; 2) It is important to list (maybe to the left of the date column) what size trap was used (model 610A, B, or C, or other trap) so we can eventually calculate trap days/trap size; 3) We need to keep count of many days traps are in the field. This should be simple unless we obtain (or lose) traps in the middle of a month, which, then has to be documented.

#### Coyote handling information

This will be in conjunction with Jon Way, but it is good to know, ahead of time, the methodology employed when we have a coyote in a trap because it can be quite hectic when a coyote is sedated and we have a zillion things to do before it wakes up.

Captured coyotes are either handled on site or brought to the Hyannis Animal Hospital. Coyotes are given a hand-held intramuscular injection of 8 mg of telazol<sup>®</sup> (A. H. Robins Co., Richmond, Virginia, USA), a combination of tiletamine hydrochloride and zolazepan hydrochloride/kg (or 4 mg/lb) of estimated coyote weight based on body size. Based on behavior of individual coyotes in traps when approached, we use 2 methods to sedate coyotes: 1) aggressive coyotes (e.g., growling at researchers while in

the cages) are intramuscularly injected with a hand-held syringe from outside the box traps, or 2) to ensure a successful and non-injurious injection into the animal's rump, placid coyotes are pushed to the back of the cage with a blanket and are injected with a hand-held syringe from inside the cage. Both methods have been used on about half of captured coyotes on Cape Cod. Recaptured coyotes have been sedated by the same method as their respective initial captures. Chemically restrained coyotes are weighed, measured, their sex determined, given either an implant radio-transmitter (IMP/300/L, Telonics, Inc., Mesa, AZ, USA) or a radio-collar (MOD-225 and 335, Telonics, Inc.), ear tagged if a pup, and checked for injuries. All adults are radio-collared. Pups receive either a surgically attached abdominal implant (because of potential neck growth) during summer or a radio-collar with foam taped inside an adult circumference (30-35 cm) sized collar to allow for growth if captured after 1 August. Veterinarians conduct all surgeries. Ear tags enable identification of implanted pups. All animals over one year old, based on body size and dentition, are classified as adults.

One note about collars or implants. There should always be a magnet connected to the transmitter. This magnet keeps the transmitter from running, thus conserving battery life (see radio-telemetry packet for more information on this). It is critically important to take the magnet off the collar/implant and make sure it works before attaching it to the animal.

We record limb, oral, and body injuries sustained to coyotes while captured in box traps. Minor injuries to limbs include minor cuts, abrasions, claw damage, or rubbing. Moderate limb injuries include those not likely to endanger the life of the animal including: broken, dislocated, and luxated digits; superficial lacerations, and abrasions caused by rubbing. Severe limb injuries are classified as all injuries likely to cause the death of the animal, including fractured, dislocated, or luxated bones or joints of the leg or shoulder. Minor tooth (oral) damage includes loss of incisors or premolars or chipped tips of any teeth; broken or excessively (halfway) worn teeth are scored as

moderate; wear of several canines, premolars, and molars to the gum line, or complete loss, or abrasion of the jaw bone is considered severe. Loss of teeth in pups is not considered as serious as in adults because pups eventually get permanent teeth. Minor body damage include noticeable cuts or loss of fur due to rubbing/bumping into the trap cage walls; moderate body damage include any bruises or edematous swelling that incurred while an animal is trapped; severe body damage is classified as an animal that appears to be staggering severely, unconscious, or dead resulting from contact with the trap.

After handling, we place coyotes back in box traps to recover from the sedation. We cover traps with blankets, which appears to calm the coyotes based on their lack of movement and noise in traps. Coyotes are checked every hour or 2 while recovering from sedation. We do not release coyotes from traps until they are fully recovered and alert (approximately 12 hours after capture and handling). We have not yet visually observed any further injuries when coyotes were placed back inside traps (i.e., before being released). We release (usually at night when there is little human activity) all coyotes within 24 hours at their respective capture sites, except for coyotes that need to be rehabilitated at an animal hospital/rehabilitation clinic. Previously, we captured a coyote pup with mange. It was rehabilitated at Wild Care (on Cape Cod, in Brewster) for 6 weeks before being released in November.

Releases are very simple events. We usually keep the coyote in a garage or basement of a securely locked house while the animal is recovering from sedation. Once it is fully alert and ready to be released, we lift the cage, bring it to a pick up truck, and transport the animal to its original capture site. We release the animal around dusk, but sometimes later if vehicle traffic is heavy near the release site. When we lift the doors up for release all coyotes have taken a while to run out of the trap (usually over 5 minutes). They seem to be so scared of humans being so close to them that they just freeze and do not move an inch, almost play possum. Also, they may not realize that they are free to

run out when the door is opened. After all they have been trapped for the first time in their lives and probably do not realize that an open door means freedom, especially after trying to unsuccessfully escape when initially captured. Usually we have to lift the cage up and literally dump the coyote out of the trap. Once that happens, coyotes immediately realize that they can now run away.

### Conclusion

You have just been given the tools to capture and radio-collar a coyote. It was a lot of work just to get to this point. But don't stop now, the fun has yet to begin as you now get to follow these wily creatures through their and our homes.

### Box Trapping Checklist

- \_\_\_\_\_ Is there a schedule for trap checks. What are your dates/times?
- \_\_\_\_\_ Does everyone tending traps know where the traps are? Even in the dark?
- \_\_\_\_\_ Is the rear door wired and latched shut and the trap bottom bedded with dirt or debris?
- \_\_\_\_\_ Is all dirt, debris and bait away from, and not interfering with, the trap pan?
- \_\_\_\_\_ Is the wire off the front door so it can be armed for capture?
- \_\_\_\_\_ Have you armed/set then sprung the trap to make sure it fires properly?
- \_\_\_\_\_ Is each trap checked twice/day: 1) as close to dawn as possible, 2) around dusk?
- \_\_\_\_\_ Do you have bait and is the trap baited?
- \_\_\_\_\_ Do you have access to a phone to call Jon and others?
- \_\_\_\_\_ Do you have a data sheet to record trap visits (effort), animals captured, and status of traps (i.e., wired open or armed/set for capture)?
- \_\_\_\_\_ Are you adequately trained and do you feel confident properly arming the trap for capture?
- \_\_\_\_\_ Have you summarized the data after every month?

Contact information: Jon Way, cell phone: (508)360-6879 (always call this number first),

then (508)428-5615 or 428-9024 afterwards. Jon's home address is 64 Cranberry Ridge Road, Marstons Mills, MA 02648 and email is or

Dr. Peter Auger can be reached at (508)771-6325 if Jon can not be reached. Email is .

Boston College contact numbers for Environmental Studies Program is (617)552-2477 or 552-0735. Dr. Eric Strauss's email is .

### Coyote Trapping Activities

\*B=Baited, A=Armed,WO=Wired Open, N=Trap not in fieldDay in fieldTrap  
locationStatus\*Trap firedAnimal CapturedCommentsYou will receive data sheets  
with grid lines.....