Summary Report on the Results of Narragansett Bay Coyote Study Forensic Tracking Program

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Submitted to: Town Councils and Administrators of Newport, Middletown, Portsmouth, and Jamestown, Newport County, RI

October 6, 2017

Background

Since the inception of the Narragansett Bay Coyote Study (NBCS) in 2005, we have used GPS tracking of coyotes to understand the biology and resource use of coyotes on Aquidneck and Conanicut Islands. Our goal is to develop and test effective science-based strategies for coexisting with coyotes and managing their populations.

From existing research two things are clear about coyote management. First, lethal control does not work except in the very short term because coyotes rapidly repopulate any vacated territory. Second, control of food resources should work because food availability is known to determine the reproductive rate of coyotes and thereby the upper limits of coyote density. For these reasons we focused our research on identifying important regional food resources and determining if it would be possible to control them. We hypothesized that reducing food resources on the islands would lower the ceiling for coyote population. This, in turn, would reduce human coyote interactions.

Initial results

We rapidly determined, from GPS tracking, a large part of the coyote food resources were anthropogenic (from humans). We found two major coyote issues created by food subsidies:

1. **A numbers problem** – Root causes are large reliable resources such as unsecured commercial dumpsters, outdoor livestock feeding, livestock carcass dumps, commercial compost piles, free range poultry farms, feral cat colonies, or fruit orchards and vineyards. Abundance is key; more food creates higher coyote population density.

2. **A behavior problem** – Root causes are small or occasional food resources present in populated communities, such as dumpsters with open doors/lids, uncovered or unsecure garbage or recycling bins, accessible home composting bins, pet or feral cat feeding outdoors, individual fruit trees, or coyote feeding. Foods provided near human activity generate coyotes habituated to people. Habituated coyotes can be bold and approach people for food (including small pets).

We concluded that these coyote food subsidies are controllable if communities, cities, towns, and states committed to stop residents from providing them.

Initial recommendations to municipalities

Based on early data, we promulgated the "Best Management Practices for Coexistence and Management of Coyotes on Aquidneck and Conanicut Islands" and a recommendation for a companion "No-Feeding Ordinance" that prohibited the placing of food attractants for coyotes and other wildlife. As of this date, Newport, Middletown, Portsmouth, and Jamestown have adopted both.

Forensic Tracking Program

In 2013, NBCS joined forces with the Potter League for Animals, the Norman Bird Sanctuary, the Aquidneck Land Trust, and the Rhode Island Natural History Survey to launch **CoyoteSmarts**, a public information initiative whose purpose is to raise public awareness of coyotes, promote public and pet safety, and encourage best coyote management practices through a website— www.coyotesmarts.org—and various outreach activities.

Following a rise in coyote complaints in the latter half of 2014, NBCS and the CoyoteSmarts partners agreed to deploy three collared coyotes—one in each Aquidneck Island community—in an effort to determine the source of the problems, which were strongly suspected to be food-related. State-of-the-art collars capable of transmitting location data at 15-minute intervals were acquired for this purpose, along with a software app that presents tracking data as a visually compelling series of connected dots. To help identify the best locations for collar deployment, the NBCS sightings databank was consulted and input was sought from the communities and the local police departments.

As tracking data became available, it was shared with the individuals or operations shown to be causing the problems, which in most cases were corrected voluntarily. When necessary, the information was also provided to the local police departments and the RI Department of Environmental Management (DEM). Thanks to our tracking data, a Portsmouth resident who was feeding coyotes was successfully prosecuted for the offense, and DEM agreed to place wildlife "no-feeding" signage at the state parks and boat ramps in Newport and Jamestown.

NBCS continues to conduct the Forensic Tracking Program to identify food resources or issues contributing to increased coyote traffic. Any time problems are identified, NBCS provides data from the tracking program to municipal administrators and/or police. In turn, some communities have donated collars to NBCS to assist with program expenses.

Current findings specific to municipalities and municipal action recommended

Findings:

Data from the Forensic Tracking Program confirm our earlier findings (see **Initial results**) regarding food sources that contribute to coyote numbers and behavior.

The attached **Summary Table** lists all the coyote food subsidies identified by our tracking, including residential, commercial, agricultural and other sources (road kill, carrion, livestock carcass dumps, free-range and other unprotected animals, and feral cat colonies). These resources are categorized by **municipality** (Newport, Middletown, Portsmouth and Jamestown) and **problem type** (numbers, behavior or both).

While almost all food resources are present in every community, there are a few logical exceptions with agriculture, livestock and roadkill, which are less prevalent in urban areas. What the Table clearly illustrates is the coyote's omnivorous diet, which includes everything from garbage and compost to fish remains, fruit, and some vegetables, such as corn.

Recommendations:

In general, we recommend a two-pronged approach that begins with **education** and is followed, when appropriate, by **enforcement** of the local no-feeding ordinances.

For **residential** food sources (fruit trees, vegetable gardens, small pets and other animals), we recommend
1. An educational visit from the Animal Control Officer.
2. Citations and fines to follow if the problem is not corrected. This process was followed in the case of a Portsmouth resident known to be feeding coyotes, who was subsequently prosecuted for the offense.

For **agricultural** food sources (fruit and other produce, chickens and other small animals, and livestock), we acknowledge that
1. Farmers have found ways to deal with coyote predation through hazing, shooting, and making use of guard animals such as llamas and donkeys.
2. Municipal action is not usually warranted unless the farmer is unable to control coyote traffic and it becomes a problem for neighboring communities.
3. If problems persist, an educational visit to evaluate and troubleshoot issues (such as insufficient fencing, free ranging and unprotected livestock, free choice grain feeding of poultry or livestock, carcass dumping, edible compost) may be needed.
4. Municipal assistance may be required in burying or removing large livestock carcasses when the ground is frozen or the farmer lacks the resources.

Since **carrion**, especially road-killed deer, is a major food source for coyotes, we recommend that
1. DEM be asked to pick up and dispose of road-killed deer, or town equipment be made available for this purpose.

2. Since fish remains have also been identified as a coyote attractant, the towns place wildlife no-feeding signage at boat ramps as DEM has done.

Feral cat colonies and outdoor cat feeding stations offer a double bill for coyotes: they eat both cat food and cats. Placing and leaving cat food where it will attract coyotes is, a) a violation of the No-Feeding Ordinance, and b) sets up the cats for coyote predation. Coyotes learn the feeding schedule, just as the cats do, and intense coyote activity is focused on them. NBCS data show coyotes rest and forage near colonies to maximize their opportunity to exploit the food provided as well as the visiting cats. Feeding cats in a way that increases mortality cannot be justified as kind or humane. Since cat colonies also increase the chance of human and pet coyote interactions in surrounding or adjacent neighborhoods we recommend
1. An educational visit from the Animal Control Officer.
2. Feral cat feeding should only occur when the feeder is present. All food attractants must be removed when feeder not present.
3. Feeding cats on tables or elevated platforms to reduce cat mortality.

Non- Migratory Canada goose flocks: Canada geese, once entirely migratory, have become resident in Rhode Island. They gather in large flocks in agricultural fields but also on lawns around ponds, reservoirs, and on shorelines. Non-migratory geese are a valuable food source for coyotes, which regularly visit areas where geese congregate to prey on them. We recommend that
1. In or adjacent to residential areas, Canada goose flocks should be discouraged from settling and feeding to reduce coyote traffic in these neighborhoods.
2. Goose feeding should be prohibited in urban public areas.
3. Tactics to prevent geese from landing and foraging on lawns and shorelines, such as goose-dog services, goose canons, and goose guns, all used to startle geese and prevent settling of the flock, should be used.
4. Goose hunters should be encouraged to take their limit in agricultural and rural areas where it is safe to hunt.

Since proper **waste disposal** is a major issue, we recommend that the towns
1. Modify waste-hauler contracts to include use of wildlife-resistant garbage and recycling containers and clips on dumpster doors.
2. Require modification of residential and commercial garbage and recycling bins to include lids secured with clips or "bungie cords," or subsidize purchase of commercial wildlife-resistant waste and recycling bins.
3. Require residential and commercial dumpsters lids and doors be secured by clips or locks.
4. Require wildlife-resistant composting bins.

We also recommend that the towns
1. Place wildlife no-feeding signage at public parks and other locations where food may be available.
2. Distribute public information (brochures, leaflets) at municipal offices, contribute to the cost of public service announcements, sponsor public information presentations.
3. Enforce leash laws and discourage free-range backyard poultry.
4. Purchase forensic tracking collars to troubleshoot persistent issues.

Final Comments:

It is much easier and safer to be proactive about enforcing the No-Feeding Ordinances and limiting food subsidies to coyotes than it is to correct coyote issues after they occur. This is particularly true with habituated coyotes in urban and suburban areas where hunting and trapping may be precluded by public and pet safety risks. We recommend that municipalities stringently enforce the ordinances and policies adopted and do not tolerate scoff-laws. Removing the root of the problem – food subsidies – will generate long term coyote control results better than lethal control efforts, which are dangerous and temporary solutions at best.

Reducing food subsidies that attract coyotes and generate coyote traffic through residential areas will reduce the potential for human and pet coyote encounters. The strategy and goal of these recommendations is to make residential areas worthless to coyotes as foraging areas. If no food is available, coyotes will choose to occupy natural habitats (meadows, shrublands, forests) for foraging instead. At this point, each of our municipalities has demonstrated, with repeated attempts at lethal control, what reams of scientific literature have long-since proven: killing coyotes to manage population size does not work. Alternatively, the science-based recommendations provided by NBCS are both logical and practical, and will be effective if adhered to by community residents and authorities.

For additional findings and recommendations, please consult the "Best Management Practices for Coexistence and Management of Coyotes on Aquidneck and Conanicut Islands" (http://theconservationagency.org/wp-content/uploads/Best-Management-Practices-for-Coexistence-with-and-Management-of-Coyotes-current-vers.pdf).

Summary Table. Important anthropogenic food subsidies for coyotes in Newport, Middletown, Portsmouth, and Jamestown, identified by the Narragansett Bay Coyote study using GPS tracking 2005-2017.

P = food resource present (confirmed by forensic tracking)
E = food resource expected (likely occurs)
N = large reliable resources supporting coyote population growth
B = resources likely to cause behavioral problems such as habituation and increased urban/suburban coyote presence

Food Subsidy	Newport	Middletown	Portsmouth	Jamestown	Problem caused
Residental fruit					
apples, pears, peaches, plums	P	P	E	P	B
grapes	P	E	E	P	B
Farm produce					
corn		E	P	E	N
strawberries		P	P	E	N
apples, pears, peaches plums	P	P	E	P	N
grapes		P	P	P	N
Carrion					
fish remains (shore, dock, boat ramps)	P	P	P	P	N & B
deer (roadkill or scavenged from hunter)	P	P	P	P	N
Carcass disposal					
Deer carcass dumps		P	P	P	N
Livestock carcass dumps		E	P	P	N & B
Farm livestock vulnerability					
Livestock birthing in fields		P	P	P	N & B
Unprotected small livestock < 40 lbs	P	P	P	P	N & B
Small free-range animals (common)					
chickens	P	P	P	P	N & B
dogs	P	P	P	P	B
cats	P	P	P	P	B
Outdoor pet feeding (grains or meat-based)					
residential	P	P	P	P	N & B
farm	P	P	P	P	N & B
Non-migratory Canada goose gathering areas	P	P	P	P	N & B
Feral cat colonies or outdoor cat feeding stations	P	P	P	P	N & B
Compost (containing fruit, vegetables, meat, fish, etc.)					
residential	E	P	E	P	B
commercial		P	P		N & B
farm	E	P	P	P	N
Dumpsters					
overflowing	P	P	P	P	N & B
unsecured side door	P	P	P	P	N & B
unsecured top	P	P	P	P	N & B
Unsecured residential garbage and recycling bins	P	P	P	P	N & B