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Coyote Coexistence and Management Plan for Aquidneck and Conanicut Islands

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with the endorsement of the Rhode Island DEM and the Potter League for Animals

The Narragansett Bay Coyote Study (NBCS) has been tracking the resource use of coyotes on Aquidneck Island and Jamestown since 2005. We undertook this work because coyotes were clearly becoming more numerous on the Narragansett Bay Islands, and we saw the need for regionally tailored management/coexistence strategies for them. Both island communities are searching for answers to coyote issues and we feel we are far enough along in our work to submit the following plan for your consideration.

Since we began our study, the unique GPS tracking collars we use have definitively revealed that coyotes on our islands are being heavily subsidized by foods that humans directly and indirectly provide to them. Coyotes respond to more food by increasing their numbers and to less food by decreasing their numbers. It follows that we can passively manage coyotes - get them to drop reduce their own numbers - if we aggressively manage ourselves and decrease the food subsidies we are providing them.

To implement the following management strategies the three Aquidneck Island municipalities need to work as a unit, because there is no such thing as Portsmouth coyotes or Newport coyotes. Our research has shown individual coyotes can range over the whole island. Coyotes born in Portsmouth flow into any voids in Newport and vice versa – thus requiring Newport, Middletown, and Portsmouth to develop a joint strategy for Aquidneck Island coyotes. This study also showed that Jamestown could also benefit from this plan as well. A successful plan will require direct collaboration with state agencies (DEM and DOT), or collaboration with state agencies through partnership with NBCS.

Below is the outline for a Management and Coexistence Plan for Coyotes on Aquidneck and Conanicut Islands:

1. **Issue**: Road killed deer and other animals:

   Currently, there is no effective plan for disposal of inedible road kills on Aquidneck Island, Jamestown, or elsewhere in RI. Some are buried or trucked to landfills, but most deer killed on roads are dumped somewhere or along roads where coyotes find and eat them. There are well over 1,000 deer killed on roads each year in Rhode Island. DEM has reported as many as 28 deer killed on Jamestown roads alone in 2003 and 28 killed on Aquidneck Island in 2004. At 100-150 lbs each this poses a significant problem as abundant food is linked to increased litter sizes in coyotes.

Recommendation: The four municipalities develop local ordinances requiring proper disposal (burial, cremation, rendering, or composting). DEM and DOT employees responding to a roadkill currently have no close-by options for secure disposal. Many deer hit are pushed out of view and dumped in the woods or brush. It is in the joint interest of each municipality that roadkill carcasses are inaccessible to coyotes. NBCS and its partners are working with the Natural Resources Conservation Service (NRCS) to develop three island farm composting facilities that will be able to accept carcasses, compost them in fenced areas, and use the compost to replace topsoil that is lost in the course of their businesses. Each town can facilitate this effort by assuming responsibility for the pickup and transfer of roadkilled deer within their municipal boundaries to the nearest secure composting facility by the Department of Public Works. The RIDEM agrees that communities with high coyote populations could benefit from the creation of locally available composting facilities for inedible road killed deer. DEM and DOT should partner in the coyote management effort by transporting island carcasses they pick up to the nearest secure composting facility.

2. **Issue:** Farm livestock carcasses:

Coyotes commonly feed on the carcasses of dead farm livestock on Aquidneck Island and Jamestown. Often livestock, like cattle or sheep, die in the winter when holes cannot easily be dug to bury them. This winter timing coincides with coyote breeding season. Again, if coyotes are in good condition in breeding season they have larger litters. Carcasses available may be contributing to coyote fitness and therefore increased reproductive output.

Also, NBCS data show that abundant food in an area causes coyotes packs to decrease their territory size. Coyote packs cluster around reliable food sources and defend a smaller land area. Smaller territories created by point-sources of food may create room for the establishment of new packs (preliminary data from NBCS indicates this occurs). In short, livestock carcass availability may be contributing to coyote population increases. An associated problem for farmers is that coyotes that eat dead livestock are more likely to prey on livestock.

The presence of dead livestock carcasses on farms affects everyone by providing food for coyotes and increasing potential coyote population size. It is of paramount importance that municipalities with farms within their boundaries ensure, for the good of the community, that carcasses be disposed of where they cannot be reached by coyotes.

Recommendation: Develop and ordinances pertaining to on-farm disposal and implement a dead livestock disposal strategy for farmers. The easiest alternative for the towns is to develop an ordinance that requires carcasses be buried under at least three feet of material at all times. This is the least supportive of the farmer, however, and municipalities may wish to provide services that assist farms with pick up or disposal of dead livestock. We recommend that the towns endorse the development of secured carcass composting facilities planned by the NBCS and partners, and provide livestock

carcass transport from the farms to the secure facilities by the DPW if they cannot be disposed of in a similar fashion by DOT or DEM.

3. **Issue:** Intentional and unintentional feeding by residents:

   Coyotes eat fruit, meat, vegetables, pet food, birdseed, garbage, animals, and carrion. They tend to center their territories on places with abundant food.

   Recommendation: Create Municipal Undomesticated Animal Feeding Ordinances forbidding the placing of any material that attracts coyotes to land or premises. For example, In British Columbia Section 33.1 of the British Columbia Wildlife Act provides a minimum $345 ticket and a maximum $50,000 fine and six-month prison sentence for anyone who "with the intent of attracting dangerous wildlife to any land or premises, provides, leaves, or places in, or about the land or premises, food, food waste or any other substance that could attract dangerous wildlife to the land or premises" intentionally or unintentionally feeds coyotes. This includes any domestic animal food left outside where it is accessible to coyotes. NBCS GPS collars would help with the enforcement of these ordinances as they identify specific areas where coyotes are feeding.

   The State of Rhode Island prohibits the intentional feeding of coyotes at all times with the exception of baiting coyotes to hunt on private land (14.13 of RI DEM Hunting and Trapping Regulations). This can be expanded upon by town ordinances to incorporate fines.

4. **Issue:** Free roaming, outdoor, and feral cats provide food to coyotes. Coyotes are attracted to and eat primarily the cat food left out for cats and secondarily the cats themselves. On Aquidneck and Conanicut Islands there is an undetermined number of pet owners who allow their cats to roam freely outdoors as well as a very active program to trap/neuter/return feral cats (defined as any wild, unsocialized or untamed cat, RIGL 4-22-2 (c)) to managed colonies. Feeding these populations on our back porches or at feeding stations for feral colonies serves as a magnet for coyotes, teaches coyotes to associate people with food, and teaches coyotes to eat cats (not a natural prey item). This is extremely unsafe for cats and many pet owners have reported their animals killed by coyotes. These common cat practices allow the coyote population to thrive and develop the undesirable habit of hunting domesticated cats wherever they live.

   DEM biologists have also noted that non-native feral cat colonies impact native wildlife through predation and disease transmission and support the idea of increased regulation and control, or reduction of feral cat colonies. The State of RI defines cat ownership in Title 4-22-2 (f) (1) as "any person who keeps, has permanent custody, owns, maintains, harbors, provides care or sustenance for, has control or charge of or responsibility for a cat or who permits a cat to habitually be or remain on or be lodged or fed within such persons property or premises." Cat "guardians" (4-22-2 (h)) have the same

responsibilities as "owners." The state requires identifying marks on owned cats (4-22-3), and that cat owners spayed or neuter them by six months of age (4-24-3).

Recommendation: Owners of feral cats may feed them as as long as: 1) feeding occurs during daylight on elevated platforms inaccessible to coyotes (6 feet high, no climbable supports) and that 2) food remains on the platform no longer than 20 minutes per day. The Municipal Undomesticated Animal Feeding Ordinance should prohibit feeding all other cats outdoors: at large, roaming, or feral (4-22-2 (a-c)).

5. **Issue:** Policies for normal vs. problem coyotes:

In general "normal" coyotes are not a problem if communities understand how to live with them. "Normal" coyotes are sustained almost entirely by natural resources (mice, voles, rabbits, woodchucks, geese, deer, etc.) and do not rely on humans for food. They are generally afraid of people.

As long as these coyotes are not aggressive towards humans or preying on livestock it is advisable to leave them alone. If you remove them they will be replaced by other coyotes that could either be normal or problem coyotes.

Some background biological information will help explain why this occurs. Coyotes regularly roam an area of about 3-6 square miles or whatever it takes to get enough food for the pack members. As of April 2007 there were 6 coyote packs on Aquidneck Island and 3-4 on Conanicut Island. Normally, each pack is a territorial family group that varies in number from 3 to 10 individuals. A portion of the area the pack inhabits is the pack's territory, which they defend from other coyotes. The number of mature coyotes in the pack is linked to the amount of food resources in the territory. The pack system keeps coyotes from getting too numerous because the packs defend the area they need to survive. A coyote pack usually has one breeding (or alpha) female. This female produces many more puppies than are ultimately wanted in the pack. All but one or two of the young are forced to leave the pack at about 9-11 months of age. These coyotes become transients. Other types of transients include older individuals that can no longer defend their role as upper level pack members and leave the pack. Transients move all over the islands in narrow undefended zones that exist between pack territories searching for an open habitat to occupy or group to join. They often die before they succeed (many are hit by cars). It is largely because of these transients, that wholesale coyote eradication plans are unsuccessful. Removing a group of territorial coyotes will create an undefended area into which the transient coyotes will flow. At all times of year, numbers of transients are immediately available on Aquidneck and Conanicut Islands to replenish any voids created by culling.

In some cases, individual coyotes become bold, in general because they have been fed by people. Feeding causes coyotes to lose their natural fear of humans and they become "problem" animals. This was the case with a bold coyote female that attempted to bring up a litter on Narragansett Ave, near the Cliff Walk, in Newport. This female originally came from the Navy Base where she had seven pups in spring 2006. On the Base the

pups were fed by security guards. By fall the coyote family moved to the Park Holm neighborhood where they were hand-fed by children and further trained to look to humans for food. The coyotes also preyed on cat colonies in the area. Since food was plentiful at the Park Holm neighborhood they abandoned the rest of their previously held territory: the entire Navy Base. When the weather got cold, people in Park Holm stopped feeding these coyotes and the cat supply quickly ran out. When the pack tried to go back to the Navy Base they found other coyotes had moved in to fill the void – and were defending it. The maturing puppies moved to Middletown and Portsmouth from where there were numbers of reports of them active in neighborhoods during daylight hours, and to the other side of Newport – where the alpha female had 6-7 more pups in spring 2007. For the first time there was a downtown pack of coyotes in Newport. Because they approached people expecting food they were problem coyotes. The female had to be shot and the new pups (already accepting food from humans) were destroyed. In winter 2006 NBCS began hearing reports of bold coyotes in Jamestown village (one was shot near Narragansett Avenue). In fall 2007 there were numbers of sightings in the village area. In late 2007 a case of daytime activity downtown was reported: a bold coyote on a porch during daylight hours. Again, our extensive GPS habitat-use data clearly show that coyotes prefer rural habitat and avoid contact with humans - unless people are (intentionally or unintentionally) feeding them.

Recommendation: The Coexisting with Coyotes program based in Vancouver, British Columbia, provides a good model for urban coyote coexistence strategies which the NBCS supports. Aquidneck Island could use aspects of their accepted and effective program as a template that municipal officers here can point to as best practices. The Vancouver program has shown that most coyotes can be discouraged from lounging on lawns, and patrolling neighborhoods, by people acting "big, mean, and loud." They have designed loud shakers and also recommend relentlessly throwing things or charging with brooms. Coyotes should be made to feel unwelcome at all times. If the coyotes remain in the area they are probably being fed. Regardless, coexistence with individual coyotes that are aggressive or threatening is not an option. Aversive Coyote Training (ACT) should be attempted. If the police deem that the ACT is unsuccessful, problem individuals can be destroyed by the Police, trained personnel designated by the Police, or the DEM Division of Law Enforcement (401-222-3070). DEM has an existing policy for dealing with problem coyotes: refer to DEM Management & Response Protocols for Incidents Involving Coyotes drafted March 13, 2006 (http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/coyotpol.pdf).

6. **Issue**: Normally coyotes are shy and wary of people which prevents them from being a problem in most cases. Problems occur when coyotes make a connection between humans and receiving food. Many people do not understand the consequences of feeding coyotes. If coyotes become dependent on humans they can become a public safety risk. It is important to educate the public about coexisting safely with coyotes.

   Recommendation: NBCS has been developing and conducting an Education and Outreach Program since its outset in 2005. We have a lively website designed to reduce concern while teaching about safe coexistence with coyotes

(www.theconservationagency.org/coyote.htm or google "coyote study"). In 2005-6 NBCS had 15 local schools involved with our study on Aquidneck Island, Jamestown, and the adjacent coast. Currently any school with a web browser can participate. Because of the feeding that occurred at Park Holm in early fall, we targeted Newport and Middletown in 2006-7 for school visits. In addition to the efforts of NBCS, the Potter League for Animals has brings NBCS education and safety materials to more than 1,000 students in Aquidneck Island classrooms each year (2006-2009). DEM provides brochures and additional information about coyotes online at http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/coyotes.pdf. In general we find that our regional scientific information and recommendations tend to reassure people and increase understanding. We explain that people are both unintentionally and intentionally creating the "coyote problem." We also explain that it is within our abilities to reverse the trend. Reasonable changes in our behaviors and policies will cause the coyotes to lower their own populations to levels sustainable by the natural environment. Last, for those people who love feeding wildlife, a reminder that "A fed coyote is a dead coyote" will probably make sense. Because of the need for greater outreach efforts this upcoming year, the NBCS is partnering with the Rhode Island Natural History Survey (NHS), the Roger Williams Park Zoo, and the Potter League for Animals to further expand the NBCS program. This work will increase emphasis on education and outreach to the adult population. We have jointly applied to the National Science Foundation's (NSF) Informal Education Program for a five-year grant. Aquidneck Island and Jamestown municipalities can help the educational effort by contributing to part of the funding required for NBCS and NHS to develop educational materials specific to these areas.

7. **Issue:** Continuing baseline data collection and monitoring efficacy of the implemented Management/Coexistence Plan

   Recommendation: NBCS is unique nationwide in using hourly GPS locations for a fine-scale study of coyote resource use. Our method is central to our new discoveries of coyote subsidies on Aquidneck Island and Jamestown and our data have led us to the science-based management initiatives we present above (which we suspect will be relevant in wider New England). We plan to continue data collection in order to monitor coyote pack numbers on Aquidneck and Conanicut Islands. We will be using pack territory size to estimate number of packs and overall coyote population size on the islands. Changes in coyote population size will provide an index with which to measure progress and efficacy of the management plan. If our management efforts are successful we should see coyote territories increase in average size as the coyote families begin relying on natural foods. The municipalities should also hear fewer complaints about coyotes.

   At this point we believe we have demonstrated the importance of our research. Prior to our study no one understood why coyote numbers seemed to be expanding in our study area. The next steps are to implement the management initiatives suggested in this plan and monitor the response of the coyotes.

8. **Issue:** Link between deer abundance and coyote population numbers.

   Recommendation: Deer populations are increasing in the suburban-rural landscapes of Aquidneck and Conanicut Islands. This makes for increased food opportunities for coyotes. DEM biologists have recommended that some current local hunting ordinances be amended in an effort to allow more hunting and thus reduce the number of deer on the islands. Examples of town ordinances that could possibly be amended are: Newport- there is currently no hunting allowed at all, Middletown- there is currently no Sunday hunting, no muzzleloader hunting, daily written permission of the police chief is required, and Portsmouth- there is currently no Sunday hunting permitted.

9. **Issue:** Funding.

   Recommendation: From 2004-2009, most of the funding for NBCS has come from private foundations and in-kind contributions. We continue to look for other funding sources for the program and encourage stakeholders to endorse and support it. The NBCS has already received three legislative grants from the Rhode Island Senate thanks to the efforts of Senate Majority Leader Theresa Paiva-Weed. She is an enthusiastic supporter of our work.