

30 July 2006

To: Barnstable Town Manager, John C. Klimm
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From: Jonathan G. Way, Ph.D.

CC: Eric Strauss, Ph. D., Boston College
Peter Auger, Ph.D., Boston College
Nina Coleman, Chief Ranger, Sandy Neck Beach
Janet Joakim, Barnstable Town Council
Carol Bernon, Science Dept. Head, Barnstable High School
John Mica, Ph.D., Acting Principal, Barnstable High School
Rob Gatewood, Barnstable Conservation Commission
Doug Kalweit, Barnstable Department of Natural Resources
David Curley, Barnstable Recreation Department
Dick Wheeler, Cape Cod Museum of Natural History
Colleen Offenbuttel, Massachusetts Division of Fisheries and Wildlife
Bill Lynn, Ph.D., Tufts University
Marc Bekoff, Ph.D., University of Colorado
Camilla Fox, Animal Protection Institute
Robbie Fern, Cape Wildlife Center, Humane Society of the United States

Regarding: Hunting in Barnstable

Dear Mr. Klimm,

Thank you for the opportunity to speak on behalf of my research team and for the citizens of Barnstable. I am a graduate of Barnstable High School and a native Cape Codder. I have long been interested in wildlife, starting with my twelfth grade high school ecology class taught by instructor Dr. Peter Auger. Dr. Auger's class helped give me a life's mission to study wildlife in my hometown and to teach people about these studies.

Currently, I am also now teaching Ecology at Barnstable High School for the recently retired Dr. Auger. However, I also continue to collaborate with Dr. Auger and Dr. Eric Strauss at Boston College, where they both teach. Our collective classes reach over 500 students per year, with Sandy Neck and the Barnstable Coyote Study site as major components of our courses. Each year more students have an opportunity to become involved with our research within the town of Barnstable.

In the past six years, I have received my M.S. at University of Connecticut Storrs and my Ph.D. at Boston College. Those graduate programs collectively involved studying coyote ecology on Cape Cod and in the Boston area. The programs also involved analyzing how students learn and care about our wildlife heritage, specifically coyotes. My research has overwhelmingly shown that citizens care deeply for our wildlife. It is clear that coyotes, especially, are very popular among students and the general public is eager to learn about this species of interest. (Note: I refrain from referring to them as ‘natural resources’ as this implies they fall into a human utilitarian and consumptive category).

My book, *Suburban Howls*, which we anticipate will be released in the fall, posits many of the ideas presented in this letter, yet in much more detail. It also details many unfortunate events such as collared coyotes from our study, not only being shot, but literally targeted by hunters on the Cape. While this book with all its supporting data is nearing publication, I would like to make my specific requests, mentioned in the book, to you now.

In a state where only 1.5% of the public hunts, yet over 30% participate in outdoor hiking, photography, and wildlife watching activities, these requests should not be taken lightly. As it stands now, there is a gross inequity associated with how our wildlife is managed.

Herein, I respectfully request two things:

1. An injunction against coyote hunting throughout the town of Barnstable.

Research has confirmed that the argument that hunting is needed to control coyote numbers is not valid. However, there is solid data that supports that recreational hunting actually increases coyote numbers in local areas due to many factors; among them that there are no resident coyotes to prevent the influx of other coyotes.

We have been told that hunters have specifically targeted our collared coyotes, and many citizens and students have been outraged by it, and by the fact that those actions are not illegal. I propose that you and the Town of Barnstable help our coyote study, one of only a couple of others in the entire country that is long-term in nature, by not allowing coyote hunting in the town. Hunting does nothing to reduce coyote numbers, and canceling the practice will not only allow wildlife-minded individuals to freely roam our beautiful woods and beaches unafraid of hunters, but greatly help our research by enabling us to monitor radio-collared animals for the duration of their natural lives. This is important for at least two reasons: 1) the considerable research money and effort it takes to capture and collar coyotes; and 2) the fact that coyotes have intense social bonds and randomly killing them can have far-reaching implications on coyote pack structure and possibly their behavior.

2. An injunction against hunting any large mammal (deer, coyote, and fox) on Sandy Neck Beach. While I speak as a concerned resident, this beach has also been a core long-term study area for our field team. Over many years, more scientific research

has probably occurred on this barrier beach (and resulted in multiple published articles and papers about this area), than in any other one place in New England. As a result, Sandy Neck has been put on the map as a wildlife preserve where some rare species are found and where wildlife biologists come to study them. Dr. Auger achieved his Ph.D through his studies on diamondback terrapins here and he has published extensively on them; Dr. Eric Strauss has published on and earned his Ph.D. studying Sandy Neck piping plovers. And I have obtained both my M.S. and Ph.D. studying coyotes, with Sandy Neck a major component of my research. Further, all of us have been in the past, and continue to be the sources that the local media approach for wildlife information in our respective areas of expertise, which repeatedly brings the town of Barnstable into the limelight.

We have all been involved in radio-collaring deer and studying their movements in this area (most were subsequently shot by hunters); and finally, we have also studied and radio-collared red fox on this unique landscape. By canceling large mammal hunting, we will preserve a beautiful natural ecosystem for the residents in at least one area on the Cape. Since there are virtually no other natural areas here without hunting, including Otis Air Force Base and Cape Cod National Seashore, Barnstable would immediately stand out as a town that chooses to protect and preserve its land and wildlife. I predict this will greatly increase its tourism to birders, photographers, wildlife watchers, and other wildlife researchers.

Sandy Neck Beach could be world-famous for its wildlife and scenery. Yet we allow a mere 20-30 people per year to hunt deer and other big game on this beach, taking in minimal fees, and expending a lot while maintaining these hunts. During these seasons the public is warned from using these lands because of these hunting activities. This defies common sense as it greatly reduces the availability of deer and other creatures on the conservation area. Considering that Barnstable has 45,000 residents and less than 100 people sign up for the hunts (of which many are non-residents), the vast majority of people could benefit from actually having a sanctuary to observe wildlife.

I propose that the beach be set aside for non-consumptive recreational activities as a wildlife sanctuary, where off-road vehicle travel is still allowed as it already is under current regulations, but wildlife watching be given preference over hunting. There are ethical, moral, scientific, educational, and economic reasons for not allowing hunting here, which I will discuss in an extended letter. I am sure if the public were allowed to vote on the issue, it would easily pass to be a protected wildlife sanctuary.

Personally, studying wildlife in this region has changed my life and connected me to the land, even on human-dominated Cape Cod. It has motivated me to want to share with everyone what I have gained from my exposure to the 'Suburban Wild' in my backyard (I grew up in Marstons Mills and still live there). There ought to be a place in Massachusetts where actual wildlife needs, not human ideas of wildlife needs, are the primary and dominant forces in the landscape. Sandy Neck Beach has already gained a name as a prime research area and should be protected as a place where anyone in New England can come to appreciate the scenery and wildlife year-round. This will show that

we, in Barnstable, have some morality and are willing to step back and allow natural processes to be the predominant factors shaping this lovely environment.

New Englanders and the people of Massachusetts needn't be relegated to following the systems of our western national parks to witness true nature in action. This could occur right in our backyards in Barnstable, and specifically on Sandy Neck, an area already managed for its pristine conditions (and lack of year-round human dwellings). Aside from national parks, there should be places where animals can live out their existence without constant "management," that is, being killed by people.

I respectfully ask you to meet these two requests and provide some equity for the vast majority of people who do not hunt but would cherish the opportunity to value animals. This letter is not intended to be anti-hunting in scope, but rather one that points out the needs of wildlife and non-consumptive users to finally be put first for a change. I think you would find that, given the opportunity, the many people who appreciate their wildlife alive would be willing to pay fees for the privilege of keeping them that way, and that due to their numbers, the income would be far larger than hunting fee income.

Thank you in advance for your time. My colleagues and I would be glad to meet with you and other interested parties at any time to discuss the merits of this issue. Please use the following letter as an in-depth review of the issues.

Sincerely,

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P.S.: I copied many people/interested experts on this letter. They may or may not submit a letter of support on their own. I have previously submitted these requests to the Sandy Neck Governing Board, specifically pertaining to Sandy Neck regulations (one was specifically for no coyote hunting on Sandy Neck; the other was for eventually establishing Sandy Neck as a wildlife sanctuary). The Board has not yet granted these requests.

Hunting in Barnstable: Revising a Gross Inequity in How Wildlife Is Managed

By Jonathan Way, Ph.D.

Introduction

This paper is intended to provide an open forum on current hunting regulations in the town of Barnstable. I have recently moved back to the Cape full-time to conduct research and to teach Ecology at Barnstable High School. Meanwhile, Drs. Auger and Strauss are still committed to long-term ecological studies based at Boston College and on the Cape. With our renewed focus on examining the natural systems in Barnstable, we feel that we are now in a strong position to present our case for non-consumptive uses of wildlife in our town.

A Little Background

One of the most contradictory things about state hunting regulations (and followed by towns like Barnstable) is that the people who enjoy watching wildlife (locals, hikers, birders, photographers, etc.) greatly outnumber the people who hunt, especially in urban areas. Wildlife watchers make up about 31% of the country, while only 6% hunt. In an urban state such as Massachusetts, about 31% percent of the population watches wildlife, while only 1.5% hunts. Despite this staggering difference, state fish and game agencies, who make most of their revenue from hunting and fishing licenses, have a strong incentive to cater to this segment of the population. Their agenda is to keep the agencies operating so the officials can keep their jobs. With the “sport” of hunting declining nationwide, managers are increasing hunting seasons and bag limits in an effort to increase the number of birds and animals killed. It is little more than a marketing ploy to increase sales to ‘keep the company open’.

Massachusetts currently allows deer hunting for two and a half months, likely the lengthiest hunting season since colonial days. While the state views the activity as needed because of lack of hunter participation and the so-called need to control wildlife (especially deer) numbers, others (like myself) view this ‘management strategy’ as giving a minority of people the opportunity to reduce the majority’s chances to view and enjoy wildlife. This is certainly a backwards approach if there ever was one. If the population of non-hunters using an area is so much greater than the hunters, why doesn’t the state charge small parking or usage fees to hikers, birders, and photographers, and double or triple their income in that way? (This is now done in the White Mountain National Forest and has always been the case at all Audubon sanctuaries.). Why don’t state and town agencies cater to the non-hunter by having fee-for-entry contests of the best photographs of wildlife in their jurisdictions or of the largest group size of a species, such as a coyote pack or deer herd? That should bring in a little revenue. The very same departments that

now regulate the hunting could stay open and maybe even grow with this new and more appropriate focus.

What all this means is that Barnstable, like other towns in Massachusetts, has open hunting seasons on many species of animals. With a ~\$30 license, a person can shoot (kill, or wound and leave behind) many of the animals that the non-hunter cherishes to see, such as a deer on the Cape. In this paper, I present reasons why this is not acceptable in our society today. We can change these inequities in a groundbreaking way by revising the laws for the town of Barnstable.

Coyote Biology

Our collaborative research team includes fellow scientists and numerous students from Boston College, Barnstable High School, Revere High School, and the Urban Ecology Institute. Together we have published more than 10 peer-reviewed articles and numerous newspaper and magazine pieces on the ecology of eastern coyotes. Our data, some of the longest continually-collected data in the country on coyotes, indicate that coyotes typically live at low densities because they are highly territorial. This means that they actively displace other coyotes besides their own group. This component of their behavioral ecology acts to naturally limit their population size and basically regulates their own densities in local areas. Typical winter coyote packs are 3-4 adults that live in about 10 square miles of land. With these statistics on hand, we can state fairly confidently that there are probably about 8 coyote social groups in the town of Barnstable.

The majority (42 of 49; 85.7%) of U. S. states have an unlimited season on coyotes. Massachusetts has a four-month hunting season (Nov-Feb) where a hunter can kill unlimited numbers of them. Yet, traditional coyote management has been largely ineffective at reducing populations and resolving site-specific conflicts. Data indicate that coyotes regulate their own numbers in localized areas by living at low densities in guarded territories, yet they are very quickly able to recolonize areas where other resident coyotes are killed. In addition, coyotes compensate either with larger litter sizes or higher litter survival in hunted areas when their numbers are artificially decreased.

One argument in favor of lethal control is that it will ‘keep coyotes scared of people’, however, there is little quantified data demonstrating that point. Non-lethal aversive conditioning (e.g., chasing, making loud noises, using negative physical stimuli like paint ball guns) might be just as effective in the long run, especially in conditioning particular individuals to stay away from certain areas.

Another contention in favor of open seasons and lethal control is that coyote numbers have to be controlled because of their growth potential. But rather than setting liberal harvest seasons, managers should stress education and the value of coyotes and other predators as a primary management technique within the ecosystem, especially to an urban public that often does not understand wildlife ecology. As a growing number of non-consumptive users recognize the coyote’s ecological, economic (tourism), educative

(using coyotes to teach science education), aesthetic, ethical, and intrinsic value, these stakeholders ought to have a say in how coyotes and other wildlife are ‘managed.’

Management Recommendation #1: Injunction against Coyote Hunting

An injunction against coyote hunting throughout the town of Barnstable would greatly aid our research and education efforts on coyotes. The argument that hunting is needed to control coyote numbers is not valid. There is solid data that supports that recreational hunting actually increases coyote numbers due to the fact that there are no territorial coyotes to suppress or challenge the influx of other coyotes. It is inexcusable that hunters have specifically targeted our collared coyotes, which are providing valuable data, not only about the species itself, but also about how humans can effectively live with them. Many citizens and students have been outraged by these currently legal activities.

The cost and effort required to capture and radio-collar a coyote is considerable, and it is a major loss when a study animal dies needlessly. It is proposed that you support our coyote study for its value to the prestige of Barnstable as a town, and because many of its residents are greatly in favor of it. There are, at most, possibly two other such long-term studies in the whole country, and it is the third major wildlife research study in this specific area (Dr. Auger’s, Dr. Strauss’s and my own, now a collaborative study with Dr. Auger and Dr. Strauss) that is providing positive press for the town of Barnstable. Not allowing coyote hunting in the town will have little affect on overall coyote numbers since, without hunting, their numbers are self-limiting. It will open up the area to walkers, hikers, birders, and others who appreciate this pristine location and greatly help our research by assuring a natural life span for the coyotes that we monitor.

Lastly, research has shown that coyotes are intelligent, sentient creatures. I propose that Barnstable should take the lead as one place in Massachusetts where they aren’t subject to random and pointless killings. It is more than conceivable that we can provide evidence that coyote numbers naturally decrease (or stay the same) in Barnstable without “management”.

When advocating our proposed strategy to the public, the following facts defend the stance that hunting doesn’t decrease coyote numbers;

- 1) random removal of coyotes from local populations often has the unintended consequence of increasing local coyote densities. Researchers have discovered that the death of a breeding coyote can cause an influx of transient coyotes into the formerly guarded territory.
- 2) Hunting deflects attention and saps resources away from proven ecological and educational interventions in local communities of the Commonwealth.

3) Hunting is usually conducted after the fact (e.g., after a coyote kills a dog in an area). Research throughout the country has shown that recreational hunting (and trapping) actually increases the wariness of coyotes making it more difficult to address an actual situation to kill a trouble-making animal (after a major coyote incident).

4) A small minority of people actually target coyotes.

Hunting promotes a temporary reduction in coyote density which then spurs more coyotes to breed, ultimately increasing reproduction and coyote population density. Thus extending a hunting season could have exactly opposite the desired effect in coyote numbers. Our data indicates that when territorial coyotes are killed, transients quickly settle in and occupy those vacant territories. Thus, in a local area, recreational hunting usually does not reduce population densities, it increases them.

Those favoring hunting have argued for controlling wildlife numbers (by culling) to prevent disease outbreaks. This simply doesn't work because of normal coyote ecology. A coyote can cover a 50-mile distance in a short period of time. Even young coyotes that leave their packs disperse tremendous distances in short amounts of time. So the exact opposite of this argument is true, since hunting upsets stable packs and leaves both vacant territories and broken pack structures that encourage and require transient coyotes to move and disperse over large distances to attempt to correct them and re-establish pack stability. Hunters killing coyotes may actually create an additional risk of spreading disease, as animal carriers (who may also have systemic immunities) that would normally confine themselves to localized territories, suddenly become destabilized through the loss of supporting pack members and need to disperse from a given area to find new mates. If they move a long distance to settle in vacant territories, they may come into contact with other animals that have undeveloped immunities.

While hunting will not ultimately impact coyote numbers negatively (because of their reproductive potential and colonization ability) it will definitely have an impact on animal suffering. I provide many individualized accounts of coyote behavior in my book and how their deaths affected individual packs. As scientists, managers, and educators, we need to teach the public from these documented accounts and to encourage them to cherish having these animals around as they are sentient, intelligent, and valuable members of the ecological community.

Additionally, our research has shown that coyotes, even in urban areas, largely avoid people and the mere sight of a coyote is cause for most of the hysteria that we have encountered over the past few years, save for the occasional coyote-pet attack. Coyotes are mostly nocturnal in our study populations. Only in undisturbed places like National Parks are they typically active during the day in full view of people.

The way hunting is given preference over photography and wildlife watching is also troubling because only 1.5% percent of the people in the Commonwealth hunt and only a fraction of those actually target coyotes. Thus, continuing or increasing the hunting season would benefit only the smallest minority of people, yet accomplish

nothing to address coyote numbers (the assumed ‘problem’) in the long-term. There are increasing numbers of concerned non-consumptive users of wildlife that hate having gun-toting people killing off animals that they want to observe and enjoy.

What Makes Coyotes Popular?

Part of my doctoral research involved an educational study, and data from which indicates that involving people in local, place-based research projects is highly important. Community involvement in our study motivated those individuals to take pride and ownership of their local resources (in the case of our study, coyotes). Massachusetts residents need programs like this to realize how ordinary it is to see coyotes in residential areas and that they should value, not despise these experiences. Coyote ecology (large home ranges and territories and continuous movement throughout these large areas) requires this behavior and it is normal that they do things like travel through residential back yards. This will never change given the amount of urbanization in the state, but it is not synonymous with them being dangerous.

Benefits of Coyotes

Human overdevelopment has forced wildlife to live in human dominated areas. Little area is left where they can live that we will not see them. Many of us have been thrilled to our first sighting in years, perhaps ever, of a graceful deer seen out our own window. Long gone are the days in New England when one could walk for miles without seeing anything but birds and squirrels. And isn't that what we all wanted – a natural landscape with its natural inhabitants? But we must pay the price and act responsibly with a new set of rules. We must accept and support the fact that we share this landscape with these wild creatures.

A troubling trend statewide (and nationwide) is the ongoing ignorance of pet owners who leave cats and small dogs outside. A dog loose in a wooded area could just as likely be killed by another wild animal as by a coyote. While cats are normally let out to do their own hunting, people forget that fishers are now prevalent throughout the state and routinely prey on house cats. Great horned owls, large hawks, and even eagles have returned to this area. Foxes and bobcats have become established as well as coyotes, yet residents become furious when their pets become the hunted. One woman asked for my help when ‘coyotes killed her cat’, only to have me investigate and find that it had been shot with a paintball gun. The outdoors is simply no longer a safe place for domestic pets, for many more reasons than that coyotes are sighted more frequently than before.

Further, research has repeatedly discovered that coyotes are very important members of the ecological community. Biologists have found that cats can have devastating effects on wildlife, even causing extinctions of species. Although cat-caused extinctions have only occurred on island settings where birds or rodents have not evolved with predators, the domestic feline can also cause chaos in more mainland settings by preying on literally millions of animals, especially birds. Cats often live at unnaturally high densities due to their association with people and are considered part of the food chain

by all of the host of new predators now roaming our neighborhoods, the moment their owner lets them outside unattended. Many biologists have found that coyotes can actually increase the diversity of species living in an area because they decrease small predator abundance (including sometimes cats) through either direct predation, avoidance by the smaller carnivore, or because the presence of coyotes provides a strong incentive for people to keep their cats inside.

Regardless of population density, large predators like coyotes will always prey on small animals like cats. A much more logical and efficient strategy is to better educate pet owners about the dangers, not only to the cats themselves, but to the ecosystem as a whole by leaving cats and other pets outside unattended. I implore the town not to consider merely the complaints of the public (who believe they are) losing cats to coyotes without considering the most important issues of coyote management and subsequent 'control' efforts, which are increased public education efforts. I make this statement as a dog and (indoor) cat owner. The effort and expense are considerably less while the results are considerably greater.

Relative Danger of Coyotes

Recent comments in many different papers' editorial sections have claimed in one way or another, that since coyotes kill domestic pets, mainly cats, they might next prey upon children. A little common sense and perspective might help this issue.

1. There has been one coyote-caused human fatality in recorded history, which occurred with a 3-year old child in California in the early 1980s.
2. On the other hand, a survey by the National Centers for Disease Control (CDC) and Prevention in Atlanta reports that there is a dog-bite epidemic in the United States.
 - An average of 20 people die annually nationwide from domestic dog attacks.
 - About 4,000 dog bites per year occur in Massachusetts alone.
 - Nearly 5,000,000 people are bitten by dogs in the U.S. every year, with 800,000 of those victims requiring medical attention.
3. One coyote bite on a human typically makes front-page headlines regionally and sometimes nationwide.
4. In the Boston-area, news covered the death of a child killed by a dog for one day, while those same networks repeatedly, over a two week period, reported the mere presence of coyotes near a play ground.
5. Data from the CDC indicates that if humans fear coyotes, we should also be terrified of bees, lightning, getting into our cars, leaving our homes and getting murdered, or of getting charged by a deer in rut.
6. Statistically speaking, our commute home from work is a much more dangerous undertaking than walking in our favorite conservation area for fear of a coyote mauling.

Considering all that I've mentioned, one can only conclude that coyotes actually do an amazing job of avoiding people. Collectively, if coyotes wanted to, they could show up virtually anywhere in the state (including cities) on any given night. Closer to home, a coyote anywhere within the town of Barnstable could easily show up anywhere else in Barnstable by the next day. Consequently, interactions with people are relatively rare. I cannot even count how many times I have tracked bedded coyotes within 50-100 meters of houses. In these common situations, I listen to people working or relaxing outside while I am monitoring a sleeping family of coyotes who no doubt hears everything that is going on around them. Additionally, I regularly documented radio-collared coyotes bedded in urban settings such as at the edge of yards or by school playgrounds; I am sure this occurs statewide 365 days per year, obviously without happenstance.

Moral and Ethical Reasons for Protecting Coyotes

Many people tell me since they live in America they should not have to deal with their wild neighbors. Society's disconnect from nature seems to grow from one generation to the next and could be directly linked to many social ills, including violence, pollution, and obesity. For me, having wild animals around is one of the reasons why I love my country (and town) so much. Living with coyotes increases the wildness of the landscape and makes it a more exciting place for me to be. I also strongly believe that accepting all animals improves our moral and intellectual character and increases our chances to prosper as a society in perpetuity. In essence, it displays our humility and recognition that we are part of this world too, not a separate functioning being.

Education Reasons for Protecting Coyotes

Because there have been few previous studies that have examined student learning of animal behavior, as part of my Ph.D. degree I focused on developing a curriculum studying student learning of coyotes. I included student participants from two urban environmentally-based high school science courses.

Both classrooms showed meaningful learning and affective gains from before to after experiencing the curriculum unit. The coyote curriculum unit was very successful because

- it was designed from a local, place-based study (i.e., involving students in local events)
- it was authentic in the students' eyes
- it used a diverse array of teaching tools to maintain student interest and to encourage their learning and beliefs about coyotes
- and it involved a trained scientist teaching the unit

This means that students gained interest and respect for coyotes because they were part of the research study and got to learn in-depth about the species under study. Place-based authentic activities overwhelmingly demonstrate that students can be

empowered to care for their surroundings when they are interested and encouraged to do so.

Coyotes could potentially be used as a flagship or charismatic species to trigger an increased interest in science, environmental education, and the environment near where people live. For instance, when we had to tell our students that some of our study coyotes had been poisoned, many of them were in tears. While a tragedy for our study, their reaction showed what a huge impact education can have in promoting commitment to our local wildlife heritage.

Management Recommendation #2: Injunction against Large Mammal Hunting (Deer, Coyote, Fox) on Sandy Neck Beach

An injunction against large mammal (deer, coyote, and fox) hunting on Sandy Neck Beach. Sandy Neck has always been a long-term study area for our field team. More scientific research has probably occurred on this barrier beach than in any other one place in New England.

1. Dr. Peter Auger has published extensively on diamondback terrapins of Sandy Neck and earned a Ph.D. as a result.
2. Dr. Eric Strauss has published and earned a Ph.D. studying Sandy Neck piping plovers
3. I obtained an M.S. and Ph.D. pertaining to coyotes, with Sandy Neck coyotes being a major component of my research

We have all been involved in collaborative research radio-collaring deer and studying their movements; as well as studying and radio-collaring red fox on this unique landscape. I strongly suggest that canceling large mammal hunting will preserve a natural ecosystem in at least one place on the Cape where there are virtually no other natural areas on the Cape without hunting, including Otis Air Force Base and Cape Cod National Seashore (one of the only national parks to allow hunting).

Sandy Neck Beach could be world famous for its wildlife and scenery. Yet during most years 20-30 people have recently been allowed to hunt deer and other big game on this beach. This defies common sense as it greatly reduces the availability of deer and other creatures on the conservation area. Well over 44,000 of Barnstable's 45,000 residents do not hunt. I propose that the beach be set aside for non-consumptive recreational activities as a wildlife sanctuary where off-road vehicle travel is allowed as it already is under current regulations, but wildlife watching be preferred over hunting. There are ethical, moral, scientific, educational, and economic reasons for not allowing hunting here. I am sure if the public were allowed to vote on the issue, it would easily pass to be a wildlife sanctuary.

There really should be certain jurisdictions, such as towns, that are off-limits to hunting. This will benefit other users of wildlife such as animal rights groups, wildlife watchers, and scientists, which altogether, greatly outnumber consumptive users. The

public should be given incentives to care for the wildlife around them rather than panic every time animals are observed in a backyard. The power of caring for local place-based things such as wildlife has been demonstrated in the education literature. These protected areas would allow scientists to study the effects of coyotes and other wildlife in non-disturbed urban areas where cars would be the only human factor endangering animals. This would also let people enjoy watching unmolested wildlife in these jurisdictions. Our town of Barnstable study area would be an ideal location to implement this vision. After all, many people can watch, enjoy, and study the same animal many times, and pay multiple use fees if need be, whereas it can only be killed once.

This protected environment would support our research and still give sportsmen valid hunting opportunities in adjacent areas. In the past (and likely the future too, with current conditions) people have discovered where I go to study coyotes, then have tried to kill the very animals that we were studying. During my public seminars, the vast majority of citizens (of thousands) that attend the meetings are appalled to hear of it.

Ethical and Moral Issues

As mentioned in the coyote section of this proposal, accepting all animals increases our moral and intellectual character and increases our chance to prosper as a society in perpetuity. Much is stressed in business these days about the importance of being a 'team player'. Similarly, each species is integral to the success or failure of an overall ecosystem. Mankind as a race needs to learn this lesson, to cease attempting total control over a system that works best if left alone, and to begin to function in sequence with the other integral factors of this Earth's environment. In essence, it displays our humility and recognition that we are part of an integrated world, not a separate functioning being. There ought to be a preserve that exemplifies the ideas of its inhabitants; the deer, coyotes, and fox, rather than man. Sandy Neck, a perfect natural laboratory, would be the ideal location for this. It would allow people to appreciate animals for what they are and not simply as objects for human needs (e.g., a resource to be taken).

Educational Issues

In the coyote section of this letter, I mentioned that coyotes were an important means for students to learn science education. This argument is even more important if there were a complete natural laboratory available where students could learn. As I searched for deer in 2006 on Sandy Neck, my sightings were far less frequent than before hunting was allowed in 1998 for the first time in a decade. It doesn't take a genius to realize how many educational opportunities (through sightings) were lost when animals were removed from the system. Data indicates that seeing animals is very important for student appreciation of nature. While zoos are famous for providing those opportunities, there should be natural settings where this occurs as well. I predict that within 5 years of not allowing deer hunting on Sandy Neck, deer again will be a common sight on the beach. This will greatly benefit our young people and our educational mission.

Scientific Issues

All too often, scientists depart human-dominated systems to go to pristine areas like Yellowstone to study nature. I tell my colleagues that there are systems on the Cape which, although smaller in size, could be comparable to famous places like Yellowstone. By not allowing large mammal hunting on Sandy Neck, there will be at least one place in Massachusetts where scientists like my team can look at how mammals such as deer, coyotes, and fox respond to each other's limiting factors without the pressures of human so-called management. There has never been any actual data indicating that deer were overabundant and in danger of altering the vegetative structure of Sandy Neck (including before the 1998 hunt). All too often, arguments for controlling deer to protect the environment are done for political reasons (i.e., to allow hunting) rather than for true environmental reasons. We suspect that now that a relatively intact ecosystem is present (with a top predator, the eastern coyote), deer will never become overabundant even without human hunting. I stress that deer becoming a common sight on Sandy Neck does not mean that they are overabundant.

A relatively new arena towards understanding more about ecosystems involves studying carnivores in urbanized areas. This research enables investigators to understand how certain species' (e.g., foxes, coyotes, wolves) demographic and ecological parameters change in varied landscapes along a rural to urban gradient. One of the problems with studies of predators in human-dominated landscapes is that humans are an important, and often overly present variable determining carnivore success in these systems. In many regions, humans kill them, either directly or indirectly (e.g., cars, poison). In an extreme example, hunters in Barnstable have deliberately followed me and hunted by our baited box traps and targeted our collared coyotes, often killing them with no consequence. This is not conjecture, as they have been stopped by myself and others and freely admitted it. Such incidents have brought early and empty endings to several studies, and terminated locations where we have tried to capture coyotes.

Studying the interactions where neither predator nor prey species are hunted or trapped by humans could elucidate how coyotes in varied settings influence prey dynamics. Sandy Neck and the nearby mainland could be a first-of-its-kind all-inclusive natural ecosystem in New England, one that might attract wildlife researchers from across the country, if the recommendations in this proposal are enacted.

Economic Issues

The presence of predators like coyotes signals a healthy landscape in which prey (rodents, rabbits, and deer) exist at sustainable levels. However, having intact food webs also increases property values and improves our overall socio-ecology in the long run. Many of the things we most cherish about comfortable suburban living, such as lush woods surrounding properties and open grassy yards teeming with wildlife, are also some of the key attributes that make suburban areas perfect coyote habitat. The reverse is also true, so having a healthy coyote population speaks well for the environments in which we live.

In addition, I also believe that the town of Barnstable has focused too limitedly on the economic benefits of our wildlife heritage. Current wildlife management is very expensive as well as inconvenient for many. For several weeks each year, the town devotes a large amount of resources and personnel towards monitoring the regulated deer harvest on Sandy Neck. By curtailing deer hunting, the town would save a considerable amount of monetary and human resources.

Furthermore, if the town provided a similar focus on ecotourism opportunities, thousands of people could actually pay the town of Barnstable for tours to wildlife hotspots. Ranger-led tours could take citizens to blinds to observe deer, or on radio-tracking expeditions for sighting coyotes. Instead of one \$30 hunting license for a season, many tourists would be paying the same or more each time a tour went out to watch the same live animals. In addition, it would open up a whole new category of jobs in Barnstable as wildlife guides. Rangers could bring citizens to these locations then pick them up in regular (hourly?) trips up and down the beach where the visitor could leave at his/her leisure. Either way you look at it, a deer can only be shot and killed once. But that same animal can potentially be watched literally thousands of times over its lifetime, providing a considerably higher income for the town for years to come than if it were shot. I suggest that ecotourism options be looked at much more closely.

Whenever I go hiking after a deer hunt, I view the harvest as a financial loss to the town, a psychological and spiritual loss to myself, and a scientific and educational loss to the community at large. From my perspective, allowing hunting on the beach for deer and other large mammals defies common sense and caters to a minority of people, depriving the larger majority of seeing such amazing nature so close to home. Few towns are so blessed as Barnstable is to have such a pristine area flush with wildlife within their borders and freely available to their residents and the rest of Massachusetts.

Spiritual Benefits

In addition to socio-ecological economic benefits, there is also increased belief among many people that having animals around increases our psychological well-being. We love seeing animals, and many of us feed them outside our windows and watch them with binoculars. The thrill of observing wildlife is often a welcome distraction from the hustle and bustle of everyday life.

Establishing a reserve for wildlife will improve our spirits in the long run, and likely the town of Barnstable's reputation as well. There is more and more clamor for less hunting and killing. Barnstable could lead the way with new park policies toward the kinder, gentler world we all want. It is sometimes satisfying enough for people to just know that they can go visit a reserve, like the one I describe for Sandy Neck, even if they don't go there every day. Once it becomes known, there is no doubt that interested crowds that don't plan to bake on the sand will still come to the Cape for the scenery and wildlife at Sandy Neck.

A Case for Non-Consumptive Users

Fortunately for the animals of Barnstable, there are considerably more non-hunters than hunters in the area. Sadly though, this small fraction of the population that does hunt is given the leeway to do virtually anything within the current liberal laws of wildlife management. I'm convinced that if just a few people have the moral conviction and integrity to do the right thing, progress can be made and maybe one day I, and the many residents who support the research and education that we are conducting, may get to enjoy this beautiful area free from large mammal hunting.

In my book, I noted that "As time went on and additional marked coyotes were taken legally during the hunting season (we lost three coyotes to hunters in February 2005 alone), it was more fitting to blame the state fish and wildlife agencies, whose laws allow and even encourage these needless killings. One quick glance at any agency's web page will find proud postings of 'harvest records' for species within their state. ('Harvest' is a word that is easier on the non-hunting public than 'killings'.) 'A record deer year,' for example, refers not to a time where deer are more commonly sighted or where great research took place on the species, but to the hunting season where the highest number of harvests (deaths) of the species occurred."

It is precarious for a municipality (either town or state) to advocate and allow killing animals. It doesn't seem to set a good example in a world with increasing instability. Is it too much to ask for governmental agencies to close 60 square miles (i.e., the town of Barnstable) out of an entire state that is open to large mammal hunting, especially with the long-term study we are conducting? Is it too difficult to ask to close Sandy Neck Beach (about a mere five square miles)?

My Vision

I believe it is prudent to set aside the areas that I discussed as core wildlife areas and protect them from consumptive uses, such as hunting and trapping. Sandy Neck is popular with nature watchers already so that would be an added benefit for the town. Additionally, the town of Barnstable is the focus of our long-term research study on coyotes. To be effective, research such as ours is designed to be long-term. Protecting our study sites from hunting and trapping could potentially draw ecotourists and local observers of flora and fauna and at the same time allow scientists to study how predators influence an urban ecosystem. We could potentially call this region the Barnstable Wildlife Watching Area or something similar to reflect the intent of the land. Potentially, user fees to park and use these sites could support jobs to promote the area's mission of wildlife watching. Many state parks incorporate a wildlife watching logo into the park description. I argue that they could expand on that idea and incorporate my vision.

In this model, future research topics at study sites could include scientific ones such as canid effects on urban community structures, canid interactions with other species (such as coyotes with fox and white-tailed deer), in-depth research into demographic changes that take place over time in canid populations, and examining human interest, understanding, and involvement in learning and caring about local resources around them. These wildlife

locations could also serve as important refuges for all types of wildlife and the local abundance of these animals might also increase hunting opportunities outside these reserves where hunting or trapping is allowed.

This is the proverbial win-win situation for all users where certain landscapes are managed for specific purposes. Perhaps in the future (maybe 10 years after closing deer hunting on Sandy Neck), I would imagine that the nearby marshes of East Sandwich would teem with deer as many leave Sandy Neck to forage elsewhere. These areas could be prime hunting grounds for hunters targeting deer, while guaranteeing a secure core reserve for the majority who do not hunt.

Some places are blessed with large National Parks dedicated to animals. Other places, such as New England, do not have large numbers of wildlife reserves. Existing reserves tend to be small. Therefore, certain species are often not protected by the boundaries of those protected landscapes. A hypothetical landscape of five square miles set aside for non-consumptive uses to support scientific research on eastern coyotes would do little to examine coyotes in an undisturbed population since pack territories are typically twice that size. Most coyotes would therefore likely leave such a small protected area at some point. However, an area (such as a town) that protects a sizeable portion of its land for such uses as wildlife watching and scientific study, would be more sufficient to protect and study multiple coyote packs.

In summary, there should be certain jurisdictions, such as towns or portions thereof, that are off-limits to hunting. This will benefit other wildlife lovers such as animal rights groups, wildlife watchers, photographers, scientists, and potentially nature-loving hunters as well, which altogether greatly outnumber consumptive users. The power of caring for local place-based wildlife has been demonstrated in the literature.

To promote those interests, I propose:

1. Hunting of coyotes be banned in the town of Barnstable.
2. All forms of large mammal hunting (deer, coyotes, fox) be banned from Sandy Neck.

I would also stress that enforcement actions be just as intense as the laws that protect wildlife. I urge town managers to close hunting within the town if protected wildlife is killed. For instance, many duck hunters have taken shots at our collared coyotes as evidenced by their bodies being littered with bird shot. These people should be disciplined for their actions by not being able to hunt for ducks for the rest of the year.

Studying wildlife in this region has motivated me to want to share with everyone what I have gained from my exposure to the 'Suburban Wild' in my neck of the woods. There ought to be a place in Massachusetts where actual wildlife needs, not human ideas of wildlife needs, are the primary and dominant forces in the landscape. This will show that humans have some morality and are willing to step back and allow natural processes to be the predominant factors shaping the environment. People in Massachusetts needn't

be relegated to following the systems of our western national parks to witness true nature in action. This could occur right in our backyards in Barnstable, and specifically on Sandy Neck, an area already managed for its pristine conditions (and lack of year-round human dwellings). There should be places where animals can live out their existence without constant “management,” that is, being killed by people.

If we are indeed the highest form of intelligent life, shouldn't we be the most adaptable? And therein, shouldn't we reap a blessing out of sharing our space with the wild animals that make our world a better and more sustainable place? Our greatest gift will be to leave an ecological legacy for future generations.

Thank you for your time and attention to these concerns.

Respectfully,

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