Eastern Coyote: That Canid in Evolutionary Perspective

By

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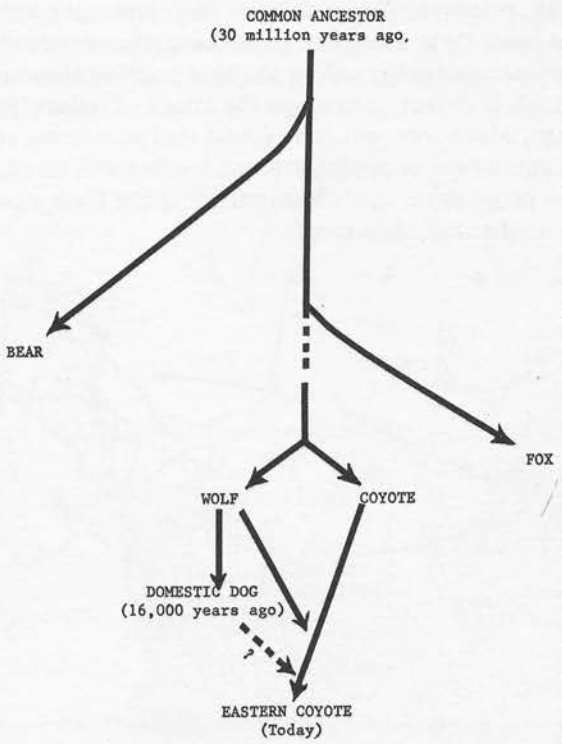
"Coyote!" Just mention that word and you'll draw a response from all within earshot. Ask a hundred folks for their concept of that controversial canid and you'll be showered with a hundred varied opinions of its characteristics and role in the ecosystem. Here in Maine, where the coyote is considered a newcomer, the general response often is not one of welcome.

The hostile attitude of many Mainers lies deeply rooted in fear. Fear of competition for that deer that promises to fill the freezer. Fear of livestock losses that further threaten to pinch the farmer's pocketbook. Fear of potential carriers of rabies or other dread diseases. Indeed, fear of direct attacks on man himself. Real or imagined, these and other anxieties have led many to prejudge the coyote and even to demand its eradication from the state. And it seems for each person who prefers to "wait and see" what the coyotes' impact in Maine will be, two others stand poised, ready to fast-draw an "I told you so" at the first indication of trouble.

Despite the general lack of funding for studies of nongame wildlife, concerned researchers at UMO and other New England Universities are determined to replace speculation with facts about the eastern coyote. Taxonomic status, distribution, physical characteristics and food habits comprise the core of recent research at the University of Maine. The current study, my Master's project, examines growth and behavior of pups in a captive litter.

But these investigations have scarcely begun to scratch the surface. We must continue to expand our knowledge in the areas already explored. In addition, we must begin to examine all other facets which contribute to the eastern coyote's ultimate role, including habitat preferences, home ranges and movements, reproductive capabilities, parasites and diseases, relationships with other wildlife, and so on. Plans for these projects are being prepared. Nevertheless, if we are to appreciate the results of these studies, we first need to place the coyote in its proper perspective. A thumbnail sketch of its history will help set the scene.

A common ancestor some 30 million years ago gave rise to two families commonly seen today: the Ursidae, or bears, and the Canidae, to which foxes, jackals, wolves, dogs, and coyotes belong. Departing rather recently from this evolutionary mainstream, the foxes developed distinct differences which warranted their classification as separate genera. Similarities between the remaining canids allowed them to be lumped into a single group, the genus *Canis*. Of these, wolves and coyotes remained close cousins.



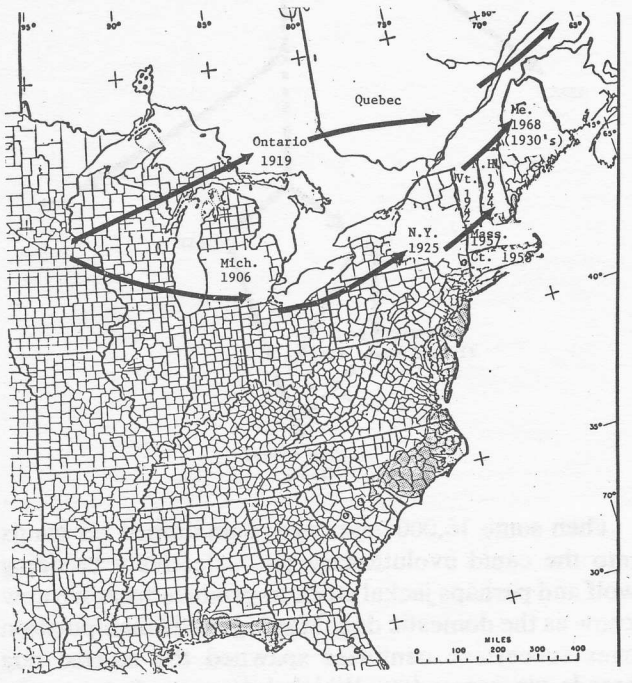
Then some 16,000 years ago, man dipped his hands into the canid evolutionary pie, selectively breeding wolf and perhaps jackal stock to produce what we now know as the domestic dog. Man's genetic manipulation over successive centuries spawned the myriad dog breeds we see today. Which brings us down to the eastern coyote, that wild canid whose ancestry has baffled scientists since its arrival in New England.

The author with 10 month old eastern coyote pup

"Pshaw!" explodes from the lips of some readers. "Who gives a damn what its ancestors were? We simply want to know what the coyote is doing here and how to control it." But that's precisely why researchers seek to trace the newcomer's roots. For with a knowledge of its relationships comes an understanding of its habits, an insight into its needs, and clues to its chance of survival in a region it has not known before.

Or has it? A single ancient coyote skull recently unearthed in New Brunswick lies silent testimony to a population of forgotten times. Or perhaps that deduction itself is wrong. Perhaps some long-forgotten traveller transported the beast's head for a motive now whispered only by the wind. Until more facts are known, however, most researchers consider the coyote to be a recent invader rather than a species reintroduced to eastern North America.

Back to the question of heritage. Coyotes hold the scientific name *Canis latrans,* translated literally as "barking dog." They were native to our western plains and, historically, they clashed with man whenever the two happened to meet. The reason was simple. Indians and subsequent plains settlers genetically engineered their livestock, using the same selective breeding methods their forefathers had used to domesticate the dog. In this case, however, they selectively bred for fat, sleek, relatively docile animals that were easy to herd and made for good eating. In so doing, they bred out the wariness and other wild traits that enabled those individuals to detect and escape the attack of natural predators. Moreover, ranchers found that protecting stock by manpower or predator-proof fencing was an expensive proposition, and most opted to graze their animals on unguarded open range.



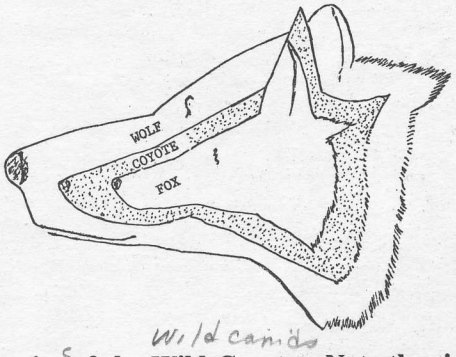
The coyotes' eastward trek, dated by first positive identification of specimens.

Enter coyote. One easy meal for that eager opportunist and the war was on. To escape persecution, coyotes expanded their range much like an inkstain spreads on a blotter. They diffused eastward at a rate of about 16 miles per year, following a mosaic of tracts opened up by fires and changing land-use practices. Somewhere along the line, they apparently interbred with *Canis lupus* lycaon, the small Ontario wolf. Perhaps an element of dog (*Canis familiaris*) was also introduced into the stock. As a result, when they arrived in New England some 40 years ago, the coyotes differed somewhat from their western counterparts. Citizens who collected occasional specimens received identification reports of "coy-dog" and "coy-wolf." Not until the late 1960's did researchers systematically begin to identify the strange intruders.

Subsequent studies of the New England wild canids confirmed that the animals were predominantly coyote. Because they did not appear sufficiently different from the western stock to warrant calling them a separate species, scientists agreed they be named *Canis latrans* var., the eastern coyote. They bred true, producing offspring like themselves, rather than dog- or wolf-like. They were, however, larger, darker, and more powerful than coyotes of the western plains. And when their skull measurements were computer-compared with those of western coyotes, dogs, and wolves, the relative strength of those relationships emerged. Preliminary studies of other physical and behavioral characteristics reinforced the conclusions.

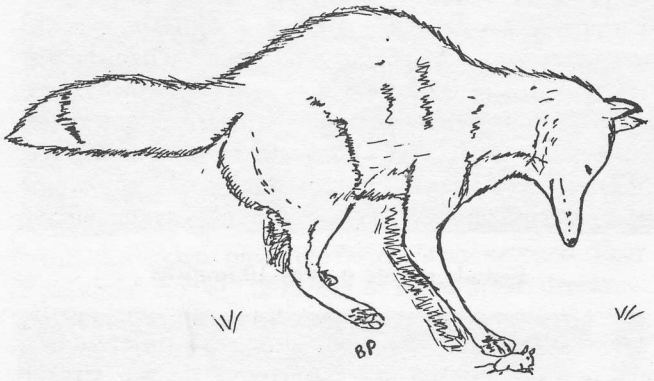
In any given ecosystem, animals assume the roles for which evolution prepared them. Each of their characteristics, whether physical, physiological, or behavioral, must be superbly adapted to existing conditions if the creatures are to survive. In any given animal group, these features interact to permit that species to occupy a single niche. This holds true, of course, for the various canids. While bearing a striking resemblance to each other in many respects, they exhibit pronounced differences which allow them to coexist whithin the same geographic locale.

To focus the eastern coyote's image more clearly, let's briefly compare the North American canids: foxes, wolves, dogs, and coyotes.



Relative size of the ~~Wild Coyotes~~ Wild canids. Note the similarities between fox and coyote. From Seagers in the N.Y. State Conservationist.

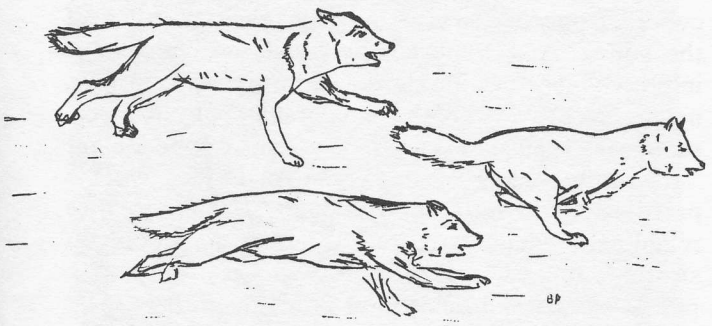
Foxes rate distinction as the smallest canids, often weighing 15 pounds or less. They occupy both forest and field. Their small size and delicate bone structure essentially restrict them to feeding upon such small game items as rabbits, mice and birds. In addition, insects, fruit, and fresh carrion round out the foxes' seasonal fare.



Fox performing "mouse pounce"

To obtain these foods, the fox needs no help and can well afford to be a loner. But for this solitary hunter to successfully perpetuate his species, he must quickly and clearly identify himself to a potential mate when the breeding season arrives. To this end, his coloration tends to be bright and distinct; his social behaviors are few, exaggerated, and stereotyped. He wastes little time with vague or ambiguous movements. His entire being seems geared to exude one single message: "I am a fox. If you are a fox of the opposite sex and we find each other acceptable, let us get on with the business of passing on our genes." Male foxes, incidentally, breed once a year and assist in rearing their young.

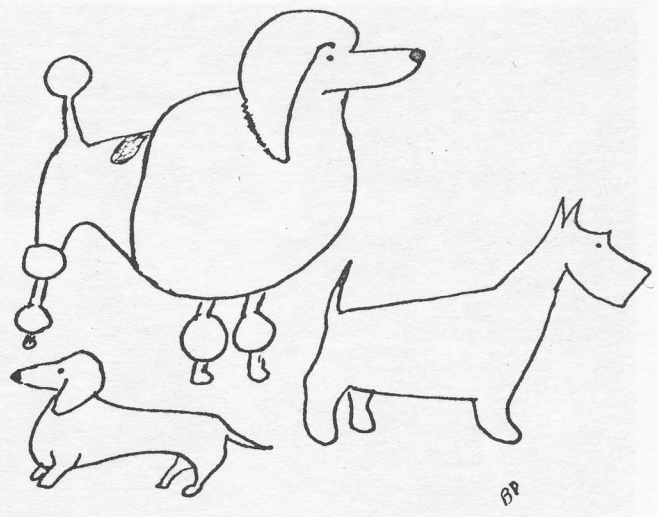
Wolves, those dwellers of tundra and wilderness forests, stand out as the largest of the wild dogs. Some weigh as much as 120 pounds. In addition to their massive jaws, these sizable carnivores boast powerful muscles attached to a rugged skeletal frame. These attributes enable wolves to bring down large ungulates in addition to their more standard diet of smaller prey and carrion.



Tied closely to predation on large game is the wolf's highly-structured social organization. Cooperation between pack members strengthens the chance of a successful kill, with minimal energy being expended by each participant. When times are tough, only the top-ranking "alpha" male and female may breed, with the male and other family members assuming active roles in care of the pups.

Because wolves in a pack spend a great deal of time together, they communicate with far more subtle changes in posture, expressions, and vocalizations than do foxes. This isn't surprising when we think of ourselves. Strangers and relatives who meet infrequently tend to take few chances in making themselves understood. In effect, they are inclined to be rather demonstrative in their introductions and are likely to employ those stereotyped niceties we refer to as "manners." On the other hand, people who spend a great deal of time in each other's company usually need only subtle gestures to relate their intentions and are far more apt to abandon formalities.

The wolf's role as a large predator and its gregarious pack nature have hardly endeared that animal to man. On the contrary, both features have served to threaten that canid's survival. Man has failed to appreciate the coevolution of predators with their prey or the intricate feedback mechanisms which regulate their populations. As a result, dwindling numbers of wolves have found themselves banished to remote regions and national parks.

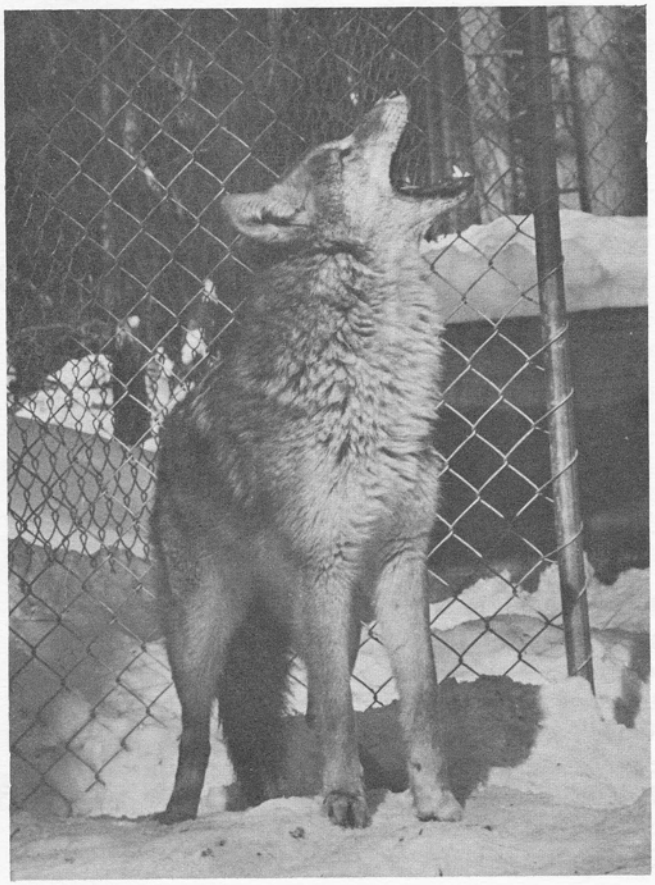


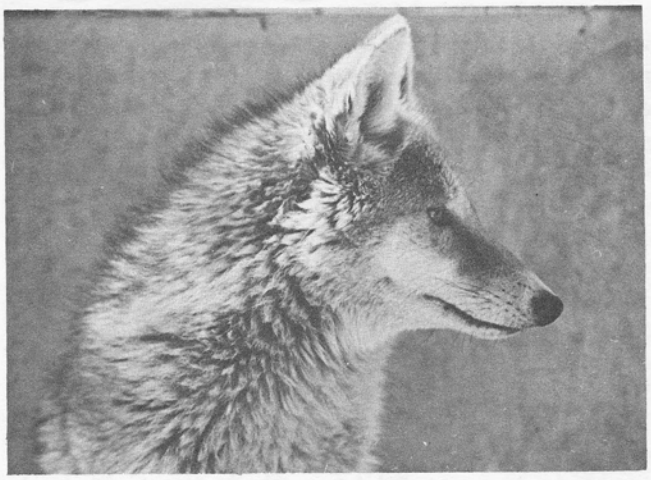
Domestic dogs defy all but the most general description. Selective breeding down through the centuries has produced everything from pocket-sized Chihuahuas to enormous Newfoundland Retrievers, with personality traits varying almost as greatly as their physical form. While some dogs can and do exist in the wild, most enjoy free meals and shelter at the expense of an owner. Left to their own devices, however, they delight in chasing wildlife or will scavenge whatever alternate food sources exist.

No distinct social structure characterizes the dog, for they have been programmed to redirect their allegiance from their own kind to man. Unsupervised, they will together join to form loose packs. Females come into breeding condition twice a year, while males, conversely, are quite willing and able to sire puppies at any given time. Males assume no responsibility in caring for young.

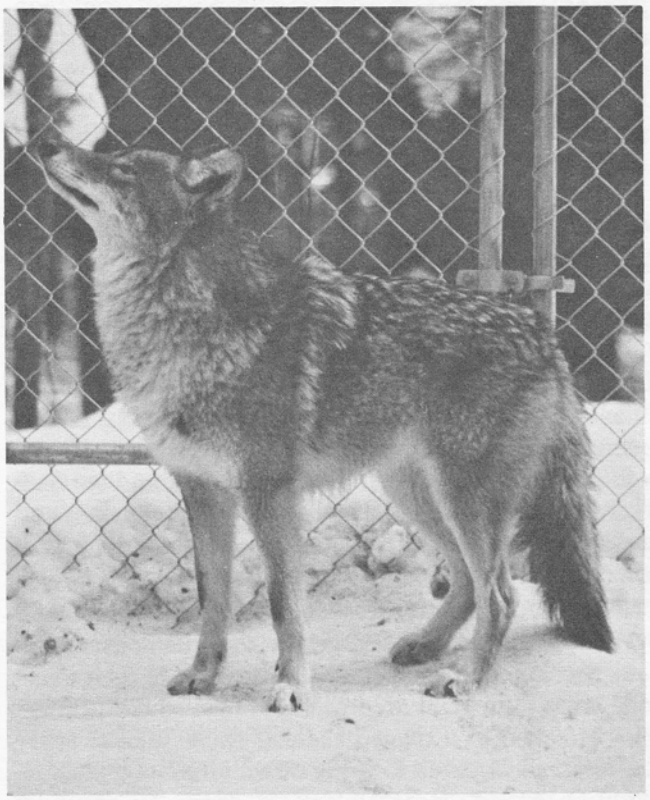
Coyotes fall intermediate to foxes and wolves in many respects. Ranging from 20 to 50 pounds, their medium size permits them to take some large prey. However, these opportunists are known for their catholicity of tastes. Birds, insects, fruit, vegetation, garbage, carrion, mammals large and small — the coyote will scavenge or prey upon whatever is abundant and easy to get. Found in every conceivable habitat from cedar swamps to blueberry barrens, he often occupies cover type edges which offer a wide variety of food sources. Indeed, the coyote's ability to generalize probably contributes the most to his continued success. For in this age of endangered species, he not only survives, but thrives in proximity to man.

Considered semi-solitary, the coyotes' social structure lies between that of the generally lone foxes and the gregarious wolves. All aspects of coyote social behavior reflects this intermediacy. Coyotes do *not* form packs. Parents and their young of the year comprise the family, or basic social unit. Folks who report hearing 20 or 30 coyotes howling together are shocked to learn a mere half-dozen animals produce that cacophony.





Female coyote pup at 10 months



Adult male eastern coyote

Coyotes, like foxes and wolves, come into breeding condition only once a year and males assist with care of the young. And while all the canids are capable of interbreeding, they rarely do so in the wild. In fact, nature has provided both behavioral and physiological safeguards against the formation of hybrid populations.

This brief review was intended to place the coyote in perspective with the other wild canids. Eastern coyotes retain many characteristics of the western stock, yet subtle changes are reflected in their physical, physiological, and behavioral differences. It is these differences which we must continue to define and explore if we are to understand and predict the newcomer's role in Maine.