FEBRUARY 1 – 14, 2019 NATURAL HISTORY NOTES
By Dick Harlow

UNDERSTANDING HYBRIDS

Because there seems to be confusion about the term Coywolf, or confusion relative to what we are hearing or seeing here at EastView, I am reproducing the following article by Matthew Miller. I am hopeful that this article will clear up some of the uncertainty concerning coyote wolf hybrids.

Notice I have also included two pictures. Picture **(1)** is of a Western Coyote and picture **(2)** is of a Gray Wolf.

(1) Western Coyote, *Canis latrans*,
© Steve Byland

(2) Gray Wolf, *Canis lupus*, © Sam Parks

These pictures are simply to give context to the accompanying article.

I have pasted Miller's article into my notes with the hope that it will help people to understand the genetic complexity that results when two genetically similar species/subspecies interbreed.

Wolf? Coyote? Coywolf? Understanding Wolf Hybrids Just Got a Bit Easier

BY MATTHEW L. MILLER
AUGUST 3, 2015

(3) Eastern Wolf, *Canis lycaon,* in Algonquin Park, Ontario, Canada. Photo: © Michael Runtz

In a Nutshell Eastern Wolves, often considered to be a hybrid of Gray Wolves and Coyotes, actually represent a separate species, revealed by the latest genomic research published in Biology Letters. The paper also helps clarify the hybrid origins of other wild canines, including Eastern Coyotes and Great Lakes Wolves.

Unlike Little Red Riding Hood, most of us can tell the difference between a wolf and Grandmother. But beyond that our wolf identification skills are probably not as good as we think.

Consider the names bandied about the popular media today: Gray Wolf, Red Wolf, Coyote, Coywolf, coydog. Which of these are species? What is the real deal with hybrids? What does it mean for conservation?

The answers are not simple, in large part because the topic of wolves and wolf hybrids often resides more in the realm of folklore than biology. A good way to pick a fight in any bar in rural America is to start offering opinions on "Canadian Gray Wolves" or "Coywolves" or "Eastern Coyotes."

What does the science say?

A new paper in the journal *Biology Letters* uses the latest genomic techniques to give a clearer picture of canid taxonomy and hybrid origins. The researchers used a technique called restriction site association DNA marker sequencing (RADSeq) and genomic simulations to resolve the hybrid status of wild canines in North America.

It's only in the last ten years that these techniques have been developed to be able to understand complicated biological systems – not just in humans and fruit flies, but in wolves and all kinds of other creatures.

A whole new set of questions can now be answered with these genomic techniques – including questions about wolf hybrids. Even the paper's authors acknowledge that canine taxonomy can be, well, complicated.

"The genetics has gotten very complicated," says the paper's lead author, Linda Rutledge, post doctorate researcher and instructor at Trent University, Ontario. "It's very difficult for people to read genomic papers and understand them."

So, what should wildlife conservationists know about the research? Here are some key points.

Despite being often overlooked, Eastern Wolves are a separate species, not a hybrid. The paper notes two prevailing evolutionary models for animals in the *Canis* genus in North America. One model maintains that there are two species of wild canids: the Gray Wolf (*Canis lupus*) picture **(2)** and Coyote (*Canis latrans*) picture **(1).** Their comingling has also resulted in various hybrids. The second adds a third species to the mix: the Eastern Wolf (*Canis lycaon*) picture **(3).**

For years, many have considered the Eastern Wolf to be one of the hybrids of Gray Wolves and Coyotes. This has led to confusion among policy makers and the general public. Disagreement over the Eastern Wolf's evolutionary history may be its biggest threat.

As geneticists' debate, policy makers and wildlife managers base their decisions on confusing information. Or, more often, they feel paralyzed to make decisions.

Eastern Wolves, though, need action. Their core population is centralized in Algonquin Provincial Park in Ontario. For many years the animals could be legally shot as soon as they left the park. That's changed, there is now a buffer zone around the park that prohibits all hunting and trapping of wild canids.

But beyond that, protection of Eastern Wolves in Ontario is largely on paper only. Why? **The Eastern Wolf is difficult to tell apart from the Coyote.** And Coyotes can be hunted or trapped year-round, without bag limits.

So, it's essentially open season on Eastern Wolves in potential expansion areas. The paper's authors hope that establishing the evolutionary history of the Eastern Wolf, demonstrating it is a species and not a hybrid, will lead to better protection.

The Eastern Wolf needs a recovery plan that extends into dispersal areas, including Quebec, says Rutledge. There is wonderful habitat for them to disperse into; there just needs to be protection so they are not killed as soon as they disperse out of the buffer zone.

FEBRUARY 1 – 14, 2019 NATURAL HISTORY NOTES
By Dick Harlow

A Wisconsin **Coyote**. Photo: Matt Miller/TNC

Eastern Coyotes and Great Lakes Wolves are hybrids. The genomic testing revealed three species of canids, but there are also hybrids arising from these species encountering each other.

Here is what the paper argues about hybrids.

Eastern Coyotes are hybrids of Western Coyotes and Eastern Wolves. This is the animal often referred to as the Coywolf.

Following extermination of wild canids in the Eastern United States following European colonization, Western Coyotes began colonizing the habitat – and bred with Eastern Wolves when they encountered them on their expansion.

Great Lakes Wolves are hybrids of Gray Wolves and Eastern Wolves.

Red Wolves are likely the same species as Eastern Wolves.

The researchers did not test for Red Wolves for this paper but relied on a body of work conducted previously.

Red Wolf, *Canis rufus*, photo National Wildlife Federation.

These animals, once found in the southeastern United States, became critically endangered in the 1900's, and the last wild animals were gathered and placed in captive breeding facilities.

The captive breeding of a small population may have caused their genetics to diverge from eastern wolves. They have since been reintroduced in sites of the Southeast – where they breed readily with coyotes, perhaps further confusing the genetic situation.

The attention and controversy around wolves are all cultural, not biological, says coauthor Paul Hohenlohe, assistant professor of biology at the University of Idaho. But the reality is the biological situation is also complicated. It's not static. The role of canids in ecosystems is as important as their evolutionary history.

Arguments about wolf management and conservation can quickly descend into trying to reconstruct the past. What wolf really belongs in the East? Were Gray Wolves there? Are Canadian Gray Wolves the same as Rocky Mountain Wolves?

Historical records don't help. European explorers were not taxonomists, let alone geneticists. They called things by confusing and inconsistent names: brush wolf and gray wolf and black wolf could all mean the same thing or be perceived as different species.

And, so obsessing over what canine belongs where can seem a futile quest.

Lead author Rutledge proposes another way for conservationists to approach this: focus on the ecosystem not the species.

Conservation focuses on a very species-specific model, she says. Agencies often want to know first whether a species is taxonomically valid, but that may not be an efficient way to approach conservation in general. Our research shows that what species are can be very difficult to pin down.

But we know that ecosystems need top predators, she continues. That is so clear in the case of over-abundant white-tailed deer in eastern forests. The eastern wolf could play that role, if it could disperse.

In other words: Let's quit trying to make wolves fit into our neat little taxonomic boxes. Let's focus instead on how to protect and restore their critical role as top predators.

FEBRUARY 1 – 14, 2019 NATURAL HISTORY NOTES
By Dick Harlow

OBSERVATIONS

MAMMALS

Eastern Cottontail – tracks and scat
Weasel - scat

Weather Tidbits

Month of FEBRUARY 1-14, 2019
All Measurements taken at solar noon (1230 EST).

PRECIPITATION

30.8 mm or 1.2 inches

Overcast Days: 6/14 = 43%