

THE BLACK COYOTES OF WASKESIU LAKE



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Black coyote photographed at Waskesiu Lake on 19 April 2021. Photo credit: Curtis Matwishyn.

In recent years, sightings of black coloured coyotes (*Canis latrans*) have become common in the community of Waskesiu Lake, which is situated in Prince Albert National Park (PANP), Saskatchewan. I provide evidence of reproduction and subsequent transfer of the gene responsible for the black colour, and a possible explanation for the presence of black coyotes in Waskesiu.

In the world of canines, black coloured dogs (*Canis lupus familiaris*) are common. It could be considered to be their default colour as most dogs of mixed breed exhibit some black in their coats. Black wolves (*Canis lupus*), though not as common, are also far from rare. Estimates of black or dark grey coloured wolves in Alberta are

estimated to represent more than 50 per cent of the population.¹ However, a coyote that is entirely black in colour is new to me. Prior to my move to Prince Albert National Park in 2019, all of the coyotes I had observed were of the “standard” coyote colouration — grey, with orangey brown colouration on the legs and ears, and a dash of black here and there. They certainly were never predominantly black.

In the summer of 2019, my wife Rae and I were bicycling along a trail in Waskesiu Lake when we startled what we assumed to be a very small black wolf. It was accompanied by an even smaller “grey wolf pup”. The animals ran off before we could make a positive identification, but we both noted something odd about them that we couldn’t precisely determine. During the same time, park staff started to hear reports of other people around town seeing a

small black wolf that didn’t actually appear to be a wolf, but seemed more coyote-like in appearance and behaviour.

Finally, on 8 July 2020, I discovered a coyote rendezvous site (the location where, once the den has been abandoned, pups are left on their own but continue to be tended by adults) on the edge of the townsite of Waskesiu Lake. On that first visit, I spotted approximately five coyote pups, with several appearing to be quite dark in colour. I regularly returned to the area over several weeks, and at 05:00 on 10 July 2020 I spotted two adult coyotes, both entirely black. They were relatively small and one was submissive to the other, including approaching in a crouched position with ears back and tail wagging. Then a grey adult coyote, very clearly larger than the two smaller black adults, came into sight.



Black coyote photographed at Waskesiu Lake on 19 April 2021. Photo credit: Curtis Matwishyn.

Having sub-adult family members assist in raising pups is not uncommon in coyotes, and my interpretation is that this was a grey adult male, a black adult female, and a black yearling or sub-adult female.² The appearance of the large adult triggered a response in the hidden pups, as he was soon surrounded by eight of them. The pups were two distinctly different colours, with five being black and the remaining three grey.

Since that time, park staff and visitors have continued to report seeing black coyotes in Waskesiu Lake, and I was able to capture an image of two black coyotes feeding on a bull elk carcass using a trail camera in the fall of 2020.

As a result of these sightings, I searched the literature for other occurrences of melanism, or an unusually large amount of black skin or hair pigmentation in coyotes.³ While generally rare, there is a relatively large population of black coyotes in the southeastern parts of the United States, sparking a research program in and around Atlanta, Georgia.⁴ Mowry and Edge (2014) theorised that coyotes in Georgia are

expanding their range into areas that they have never occupied and, as such, there are fewer opportunities to find mates. In response, the coyotes may have occasionally mated with dogs.⁴ Genetic testing indicates that the regional coyote population has dog genes in their DNA, supporting this theory.⁵ An alternate theory is that the gene for melanism came through interbreeding with red wolves (*Canis lupus baileyi*) in the past.⁴ In either case, whether the gene arrived directly from domestic dogs, or through dogs to red wolves, the presence of dog DNA is believed to explain the high prevalence of black coyotes in that area.⁴

The evolutionary history of the gene that expresses black coat colour in canids is being revealed through genetic mapping.⁶ Given that all breeds of dog originated from a common ancestor of modern grey wolves, it was originally assumed that black wolves led to black dogs.⁷ Interestingly, the opposite appears to be true. The gene that expresses black fur in wolves didn't arise in them, but evolved in dogs. As far as geneticists can tell, the gene mutation developed in domestic

dogs about 50,000 years ago.⁶ This gene was then transferred to wolves through interbreeding events about 15,000 years ago in the vicinity of the Bering land bridge in northern Yukon/Alaska, when humans, along with their dogs, migrated from Siberia to North America.⁶ This mutation is dominant, so it required only one copy of the mutated gene to produce a black wolf. This also meant that the gene mutation spread throughout the North American wolf population.⁶

Historically, coyote/dog crosses have been considered extremely rare, if not impossible, as this requires mating between two different species.⁵ However, the genetic evidence that coyote/dog crosses have occurred in the southeastern US population demonstrates that this same dog gene for black colour could make its way into a coyote population.⁴

A similar situation may be occurring near Waskesiu Lake. While coyotes are known to have expanded into the boreal forest of Saskatchewan for more than 100 years, long-time residents recall few observations of coyotes near

Waskesiu Lake until the early 2000s (Jonathan Jansen, Parks Canada pers. comm.; Adam Pidwerbeski, Parks Canada pers. comm.; Brad Lloyd, Parks Canada pers. comm.).⁸

This lack of coyotes until recently may be due to the effects of predator cascade. It is well known that wolves suppress coyote populations, and wolves have long been known to inhabit the region immediately surrounding the townsite of Waskesiu Lake.⁹ Thus, while coyotes have been present in PANP for a long period, it is also likely that they have never been abundant, particularly in areas with relatively high wolf populations.⁸ As discussed below, there appears to be no significant change in wolf populations, but rather the current situation may be reflected in an increased tolerance of coyotes to live near humans, and thus an ability for coyotes to live in the “sweet spot” between wolves and humans that Waskesiu Lake provides. Given that black coyotes stand out from their grey relatives, it is likely that coyotes in the region have only recently cross bred with domestic dogs, and the genes for melanism were transferred to the local coyote population. It is unlikely, however, that the cross occurred in Waskesiu Lake itself.

Coyotes normally mate during the winter months.^{10,11} However, Waskesiu Lake, as a seasonal community, has a very low dog population at that time. Additionally, the likelihood of mating decreases further as the number of free ranging dogs is near zero, given the current Parks Canada policy to have all dogs on leash or confined.¹² My sense is that these regulations are generally abided by, especially during the winter.

A more likely scenario is that the mating occurred somewhere near but outside the park boundary. Beginning in the winter of 2017-18, PANP staff who travel from Waskesiu

Lake toward the City of Prince Albert first noted a black coyote at the intersection of Highway 2 and Provincial Highway 953, which leads to Anglin Lake and Great Blue Heron Provincial Park (Adam Pidwerbeski, Parks Canada pers. comm.; Brad Lloyd, Parks Canada pers. comm.). This coyote, or a similar black one, was regularly observed in the same location for several years, and as recently as the winter of 2020-21 (Brad Lloyd, Parks Canada pers. comm.). Of note, the intersection where the Anglin Lake coyote was observed is approximately 30 kilometres from Waskesiu Lake by highway, and 23.5 kilometres in direct line distance. Coyotes have been recorded to disperse up to 500 km, thus this distance could be easily navigated by dispersing coyotes.^{13,14}

These sightings precede the sightings in Waskesiu Lake by several years, and with sightings at the two different locations overlapping temporarily, it is possible there are currently two core populations of black coyotes. Furthermore, based on the proximity of the Anglin Lake coyote, and by the lack of opportunity for crossbreeding at Waskesiu Lake, it is more probable that the founding black coyote in Waskesiu Lake came from the Anglin Lake population.

Regardless of where the gene transfer occurred within the region, it would take only one pairing between a female coyote and a domestic male dog to create a black coyote (it is unlikely that the cross would occur between a domestic bitch and male coyote, as the resulting pups would be born into a domestic household). The ratio of my observed five black pups to three grey coyote pups also bears out the dominance of the genetic trait, and would explain the relatively common sightings of black coyotes in Waskesiu Lake recently.

Some coyote populations have adapted to live in close proximity to humans, even successfully living in urban city centers such as downtown Chicago.^{15,16} This increased tolerance of humans could explain how the interbreeding event, and subsequent transfer of the melanistic gene, could occur. It also may explain the recent establishment of coyotes in the Waskesiu Lake area. These coyotes may have found a buffer zone between humans and wolves, using the presence of humans to avoid interactions with the local wolves, which tend to be wary of humans. At the same time, I have observed that few humans stray from the pavement and established trails of the townsite, making the bush immediately surrounding Waskesiu Lake a safe and relatively untrammelled place for coyotes to inhabit.

An excellent example is provided by the location chosen for the coyote pair’s rendezvous site. This site was less than 150 metres from a busy cottage area, only separated by a relatively narrow band of forest, and the pups would have been constantly exposed to the noise and activity of humans. At first appearances, it would seem like a poor location to raise young, but in fact it provides a perfect spot to avoid wolves while being distant enough from the cottages to reduce the likelihood of discovery by humans.

One additional observed outcome is an anecdotal reduction of red foxes (*Vulpes vulpes*) living within the town boundaries. I have made fewer observations of foxes over my two years living in the townsite, which could be explained by the cascade effects of coyotes moving into the area and killing or displacing the resident foxes.⁹

While there is currently no plan to undertake genetic testing on Waskesiu Lake coyotes, time will tell

whether these black genes persist in the local coyote population. Stahler et al. (2012) found that black female wolves had 25 per cent fewer surviving pups when compared to grey-coloured females.¹⁷ The reason for this difference in pup survival rates was not determined, but this does suggest that if wild black canids are less fit than other individuals, then the population of melanistic coyotes near Waskesiu Lake may slowly disappear.

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THE MYSTERY OF MIGRATION

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What is the inner bidding that stirs the birds to migrate?

Is it the shorter number of daylight hours? Over the summer, the number of daylight hours decreases thus signaling to the birds it is time to prepare for migration. As winter approaches, their normal prey will not survive and hence the need to migrate to the wintering grounds until Spring returns.

Just how do they navigate this migration? Some suggest that it is by landmarks such as rivers, mountain ranges, land formations and cities. Other suggest that they navigate by the moon and the stars. Still others will say that it is by the angle of the sun that helps them determine a course. And what of the birds that have migrated many times? Perhaps they already know the route and can fly directly to their wintering grounds without any hesitation. Younger birds, migrating for the first time, may learn how to migrate by following the adults.

We may never know for sure just how the birds migrate.

It might be by any one or combination of methods. Or is it by some method that we haven't yet considered. Besides, perhaps it is the intention of the birds to keep the mystery of migration their secret. I wonder? 🐾