

Helping hawks weather the storm

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A team of researchers at a University of Alberta institute is helping endangered prairie hawks weather the storm of climate change.

Alberta's changing climate poses challenges for humans, but for a species like the ferruginous hawk, which already faces a variety of threats, climate change could have disastrous consequences for its survival in the province.

To help improve the odds for these iconic birds, U of A researchers collaborating with the Alberta Biodiversity Monitoring Institute (ABMI) on the Biodiversity Management and Climate Change Adaptation project are tackling two challenges—understanding how climate change is affecting hawk populations, and finding ways to reduce the impact.

Ferruginous hawks, named for their reddish-brown colour, are North America's largest hawk species. These raptors, which nest across the grassland region, are listed as endangered in Alberta and threatened throughout Canada—largely, it is thought, because of habitat loss and land-use changes throughout the Prairies. In 1987, the number of nesting pairs in the province was listed at 1,791. By 2010, that number had dropped by nearly two-thirds, to just 643 pairs.

Now add [climate change](#) to the mix. Climate projections for the Great Plains suggest our future will be hotter and drier, with more intense and frequent rain and wind—conditions Albertans are already experiencing. Heavy rains and high winds may make it increasingly difficult for ferruginous hawks to nest, mate and fledge (raise their young to flight).

"Ferruginous hawks—in fact, most birds that breed in the prairie—are at the mercy of the elements simply because there aren't a lot of places they can take cover during harsh weather events," says Ryan Fisher, former post-doctoral fellow with the U of A's Raptor Ecology and Conservation team (REACt) and project co-lead.

Prolonged periods of heavy rain limit opportunities for the adult birds to hunt food for their young. When adults do hunt in the rain, the chicks are left vulnerable to cold and wet conditions. Strong windstorms can damage hawk nests and the nesting trees, and can sometimes even blow the nests to the ground.

To measure the impact of more frequent extreme weather on hawk reproduction and survival, Fisher and other members of REACt monitor up to 300 Ferruginous Hawk nests each year.

"To monitor nests we basically check on them once a week. We use a painter's pole with a camera secured on top to count chicks and eggs," explains Janet Ng, a PhD candidate at the U of A. "We ultimately want to see how many young fledge out of that nest at the end of the season."

The team also monitors adult hawks using satellite transmitters. "We track the movements of male ferruginous hawks because they defend the territory," says Jesse Watson, a science master's student at the U of A. "Knowing the hawk's territory helps us understand where the hawks will hunt and how far away from the nest they will travel."

Finally, the team collects detailed information on local weather, using portable weather stations, to see how their data on hawk reproductive success, survival and territory size correlate with the frequency and intensity of storms.

Their research so far is showing that ferruginous hawks are very vulnerable to heavy rain and high winds. But the good news is that artificial nest platforms used to encourage [hawks](#) to build nests seem to act as a buffer against [high winds](#).

"We're trying to identify which types of artificial platforms might be best to prevent wind damage to nests," says Fisher. "If we know which designs are best from a weather perspective, those are the ones we can recommend."

Provided by University of Alberta

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