

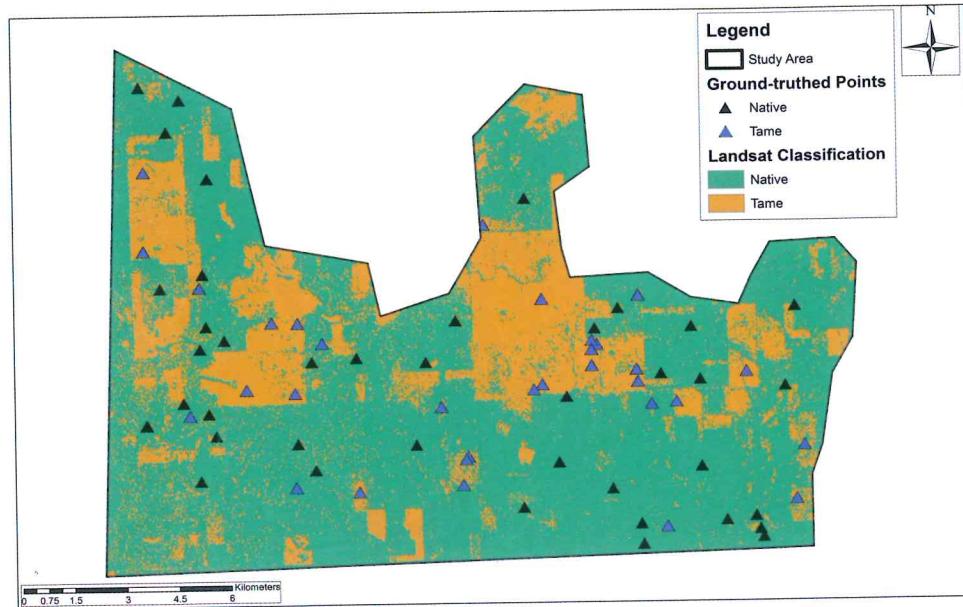
Grasslands Go Modern: New Modelling Methods Show Promise for Saskatchewan

by Tara Mulhern Davidson

It has been more than fifteen years since land cover images, dating back to 1994, were evaluated to estimate Saskatchewan's native prairie land cover. Based on that assessment, in 2001 Saskatchewan's Native Prairie: Statistics of a Vanishing Ecosystem and Dwindling Resource reported that approximately 21% of Saskatchewan's native prairie was left remaining. The need to update this information using modern technologies to better identify conservation priorities has long been on the radar of Saskatchewan prairie stakeholders. The Saskatchewan Ministry of Environment is working on some promising land cover assessment techniques and habitat models that may change the way prairie and species at risk concerns are prioritized.

These innovative modelling initiatives will prove useful for issues like species at risk habitat, big game habitat, and resource development. "Right now industry has access only to actual known locations of species from the Saskatchewan Conservation Data Centre and relies on its own surveys to help guide development. Using our developing habitat model that highlights high, medium, or low likelihoods of species occurrence, they can plan accordingly," said Ryan Fisher, a landscape conservation specialist with the Ministry of Environment. Ben Sawa, a habitat ecologist with the Ministry of Environment, agreed that both the land cover and habitat projects will have benefits to industry and other stakeholders. "The more accurate land cover assessments we have, the more successful other models will be. We can provide industry with a way to pre-plan its siting and help other conservation organizations guide and prioritize their conservation efforts," he added.

The Ministry's land cover modelling project tested three methods of delineating native prairie from tame grasslands in a specific study area in



NDVI Approach 2016 – The normalized difference vegetation index that differentiated between tame and native cover, like other models, was tested in the field to ensure its accuracy. Photo courtesy of The Ministry of Environment

southwest Saskatchewan. The project evaluated the use of heads-up digitization of photo imaging, which is a more traditional land cover assessment method; a normalized difference vegetation index, which estimates cover based on how green an area is to distinguish between native and tame types; and a third method, called LiDAR which is a remote sensing technology that measures height differences in vegetation as well as on the ground.

"All modelling techniques were actually more successful than originally anticipated," said Sawa, who coordinated the land cover project. The techniques were verified by field crews who visited test sites to ensure that digital results were reflective of what was happening on the ground. "This is a fairly novel approach to determine the difference between native and tame cover," explained Sawa who added that the next steps may be to apply the normalized difference vegetation index on a larger area, perhaps on an

ecoregion level, starting with the mixed grassland ecoregion and expanding from there. "Our initial promising results turned mapping land cover on a larger part of the province from a decade-long project into perhaps a three year project, just by using modelling," Sawa said.


Fisher is leading the habitat modelling project which involves compiling species data from the Saskatchewan Conservation Data Centre, as well as a variety of citizen science projects, such as breeding bird surveys, and points recorded on online forums such as eBird and iNaturalist. "One of the biggest challenges is consolidating all of the information. There is a wide range of species at risk and biodiversity data in Saskatchewan, especially in the southern part, but it mainly exists in point form," Fisher explained. "You can look at a map and see a point here that depicts a burrowing owl or a rare plant, but for areas that haven't been surveyed, if there isn't a point, is it fair to say they don't exist there?"

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SSGA Welcomes New Director - Rodney Gamble



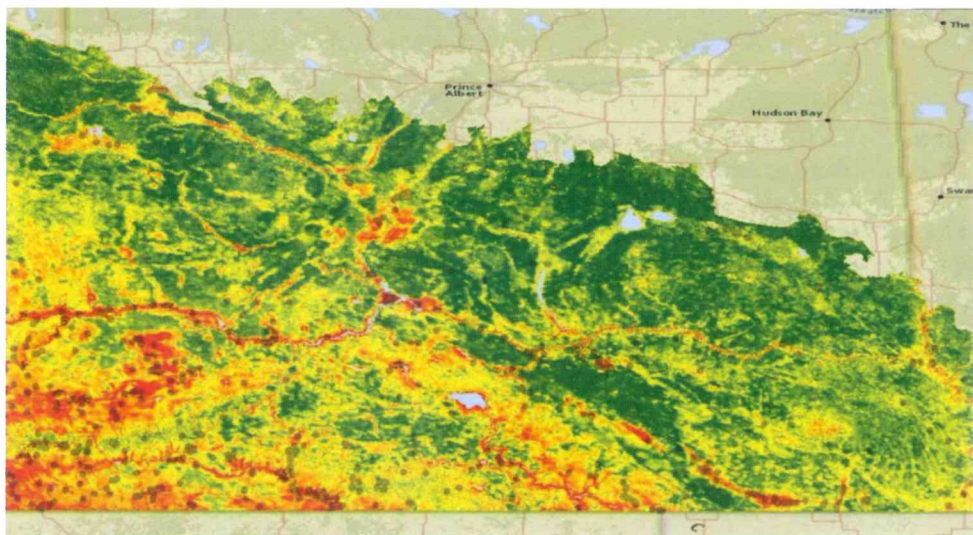
Rod joined the SSGA Board as the Zone 3 Chair in June 2016 at the SSGA AGM. Rod, an SSGA lifetime member, and his wife Vickie ranch at Pambrun, SK where they have both a purebred and commercial cow-calf operation in partnership with their son Richard. They reside on the yard originally homesteaded in 1908 by Rodney's grandfather.

Rod sees the biggest challenges and concerns facing the beef industry as maintaining a demand for beef; educating and listening to the consumer; and working with government to ensure legislation is not onerous. He feels that the SSGA can provide leadership to support the beef industry into the future by offering a vision, being proactive and using a measured response when reacting to current issues. 

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Fisher is developing habitat models on a species by species basis, prioritizing those that are more at risk or potentially in trouble. As the project continues, more species are added and they plan to incorporate rare plant information or groups of species that are often found together in similar conditions. "We are trying to make these models as realistic as possible, and have sought expert feedback to make sure that everything looks like it is in place," Fisher explained.

"We're hoping that a lot of outcomes of the models and native and tame work will end up on HabiSask – the Ministry of Environment's online mapping platform," Fisher said, adding that partners will be able to access the information on a broad scale. Similar modelling initiatives are taking place in other parts of the Prairies, including work done by the Alberta Biodiversity Monitoring Institute. "They are doing a lot of modelling at the same scale using similar information so hopefully the maps that we generate will cross borders and the two mapping projects will be able to talk to each other," Fisher added.



Species model – The habitat model demonstrates areas that have a low, medium, or high likelihood of occurrence for a particular species. Photo courtesy of the Ministry of Environment

It is impossible to beat the experience of actually being on the prairie, along with the sights, sounds, smells, and real life species observations that happen out on the grasslands. However, the application of effective technologies such as these

models, will help industry and other organizations save time, plan accordingly, and conserve Saskatchewan's original natural resource – our prairie grasslands. 