A Pilot Suitability Analysis to Identify Implementation Sites in the New York Champlain Valley

Wildlife-Friendly Farming

Project Overview

The unique working landscape of the New York Champlain Valley contains an abundance of diverse wildlife habitat and is a focus area for many conservation organizations. The region is also home to numerous farms, and agriculture is a crucial sector of the local rural economy. While most residents are supportive of agricultural activity there remains some concern among conservation groups regarding the potential negative impacts of farming on wildlife populations and their habitat. Wildlife-friendly farming (WFF), a set of farm management practices ranging from non-chemical pesticide control to the establishment of wildlife habitat on the farm, is one possible solution for mitigating some of the negative impacts associated with traditional farming activities while maintaining a farm’s economic viability. A number of local conservation organizations including Wildlife Conservation Society (WCS) and the Eddy Foundation are in the early stages of developing programs and resources to help farmers adopt WFF practices in the Champlain Valley. However, little information currently exists to inform decisions regarding where to focus initial WFF efforts. The aim of this pilot suitability analysis was to utilize publicly available datasets to identify agricultural land that is most suitable for the implementation of WFF practices in the NY Champlain Valley to inform local WFF initiatives.

Methodological Approach

This analysis involved a two-step process. Step 1 consisted of creating individual suitability layers that each represent some spatial or physical phenomena that is relevant to WFF. These individual layers, which are each discussed in further detail below, were combined in Step 2 to create the final composite suitability map to the right. Each time layers were combined they were assigned a weight reflecting their importance to the resulting composite layer.

Discussion of Results

Five parcels were selected to discuss the fitness of the suitability model. Parcel 1 received the highest mean suitability index value - the average value of a cell in the 36 acre parcel was 0.697. This was largely due to the presence of, or proximity to, existing wildlife habitat (mean habitat value = 0.848). Parcels 2-5 were selected based on their proximity to nearby parcels with disparate suitability values.

Conclusion

Overall, the model created and implemented in this suitability analysis appears to have value for informing decisions regarding WFF initiatives in the NY Champlain Valley. Of course, there are many non-spatial factors that determine where WFF is likely to be successful such as a farmer’s willingness and ability to adopt WFF practices. The model could be significantly improved by including protected land (e.g. Split Rock Wild Forest) in the Wildlife Habitat suitability layer. Additionally, using individual parcel boundaries instead of aggregated agricultural districts would allow for identification of specific farms for the implementation of WFF management practices.

Sources

Data sets


Images

- Poster created on: 21 December 2017
- UEP 0294, Advanced GIS, Fall 2017
- Lake Champlain
- Split Rock Wild Forest
- Cornell Institute of Resource Information Sciences (Cornell IRIS). Agricultural District, Essex County NY, Data sets
- Agricultural Land Suitability for Implementation of WFF Practices. Poster created on: 21 December 2017