



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists

The Influence of Natural Features on Bat Activity

Andrew Ryckman, B.Sc.

Natural Resource Solutions Inc.

CanWEA 2009

September 21, 2009



Overview

- **Introduction**
- **Monitoring Methodology**
- **Natural Feature Influence**
 - **Woodlots**
 - **Watercourses**
 - **Major Shorelines**
- **Species Information**
 - **Migratory vs. Residents**
- **What Does it all Mean?**





Introduction

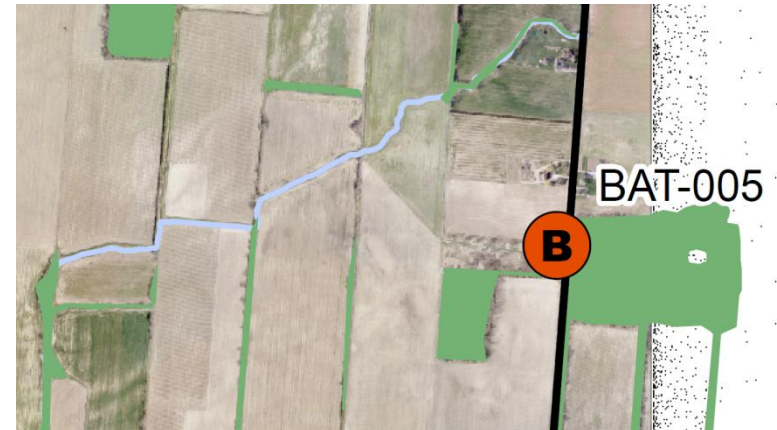
- **Little is known about nightly, monthly, and annual bat activity patterns**
- **Available guidance documents suggest reliance on natural and landscape features**
- **This talk will focus on information from the fragmented landscape of southern Ontario**
- **Will begin to assess potential higher risk areas to bat populations**





Methodology

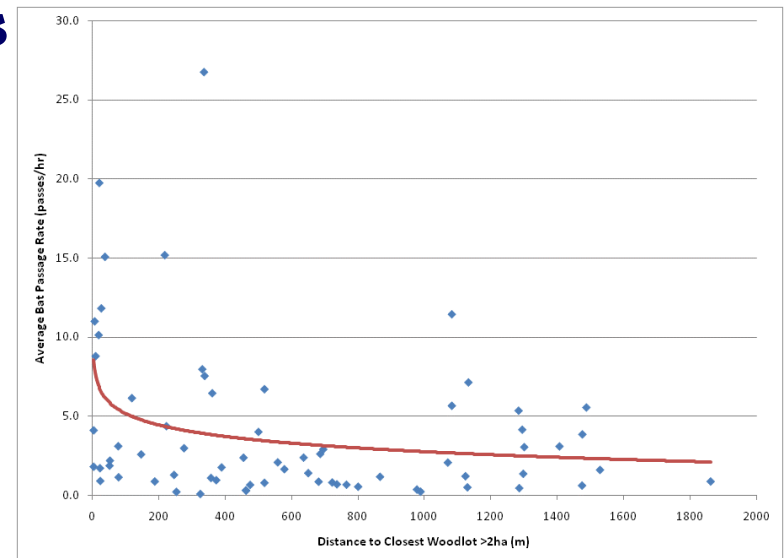
- **Bat passes and species information were documented between 7pm-7am**
- **11,000+ hours of bat monitoring data between 2007 and 2008**
- **84 monitoring stations at more than 30 proposed projects in southern Ontario**
- **Distances from each station were measured to major natural and landscape features**





Woodlots

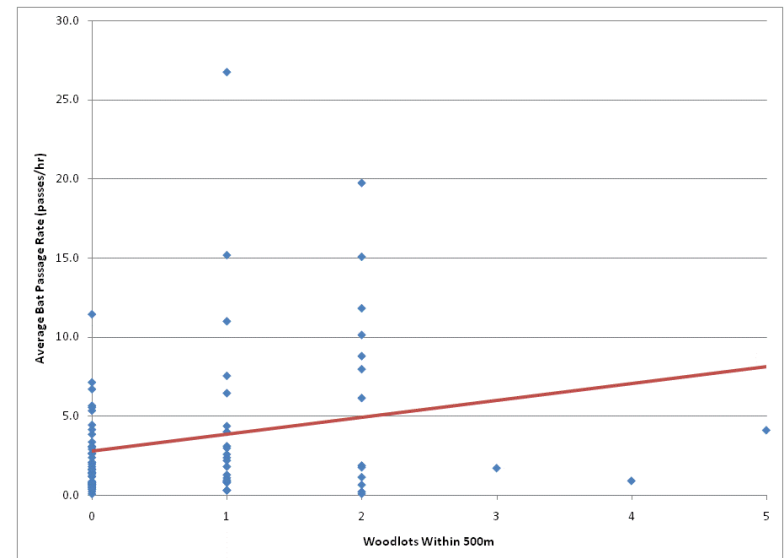
- **70 monitoring stations were within 2km of wooded habitat (>2ha in size)**
- **Bat activity tended to show increases within approximately 50m of wooded habitats**
- **Beyond the initial peak in activity, average rates dropped quickly**





Woodlots

- **The effect of multiple woodlots was also examined at each of the monitoring stations**
- **Initial results indicate that multiple woodlots may increase potential passage rates**
- **This trend is expected to occur to a certain concentration, but limited data is available beyond 2 woodlots.**





Woodlots

- **Also examined were stations placed between woodlots**
- **A total of 17 stations were located between woodlots (>2ha) that were separated by less than 500m**
- **Stations between these woodlots averaged 8.7 passes/hr, twice as high as other stations (3.2 passes/hr)**





Woodlots Summary

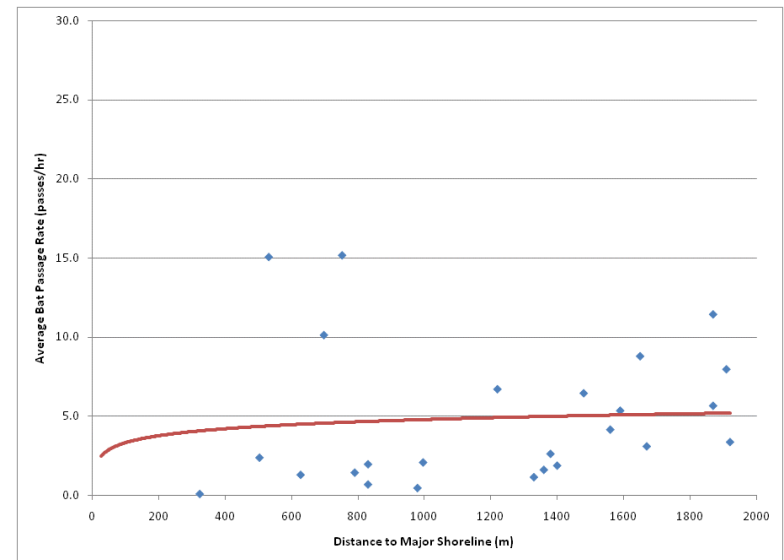
- **Woodlots appear to influence local bat activity with increased passage rates within approximately 50m**
- **Higher concentrations of woodlots further increase the potential for bat activity**
- **Areas between woodlots may act as a movement corridor for local bats**





Shorelines

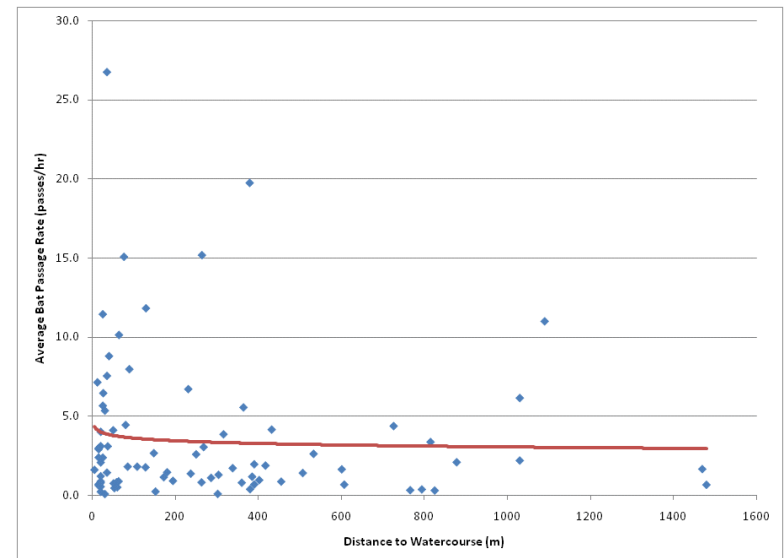
- **26 monitoring stations were within 2km of a major shoreline**
- **Little influence was observed at the distances of stations examined**
- **Stronger influence may be observed within distances of 300m**





Watercourses

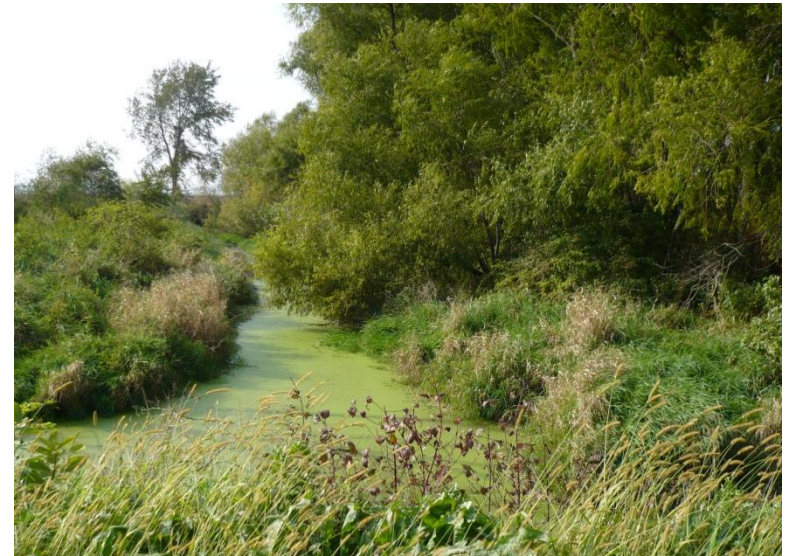
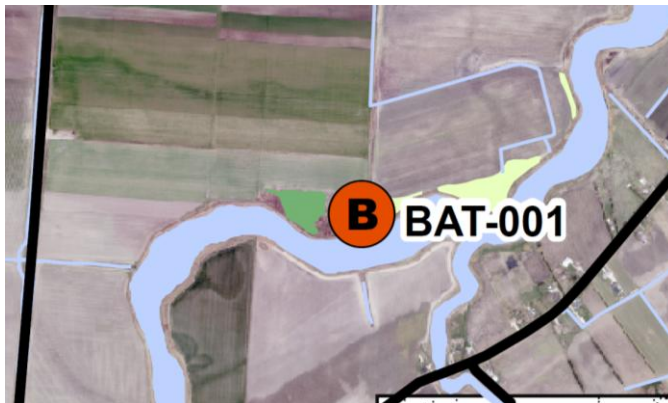
- All 84 monitoring stations were within 2km of a watercourse
- A limited effect was observed in close proximity (<50m) to watercourse habitat
- Based on the data this effect is not considered a direct reflection of the presence of a watercourse





Multiple Features

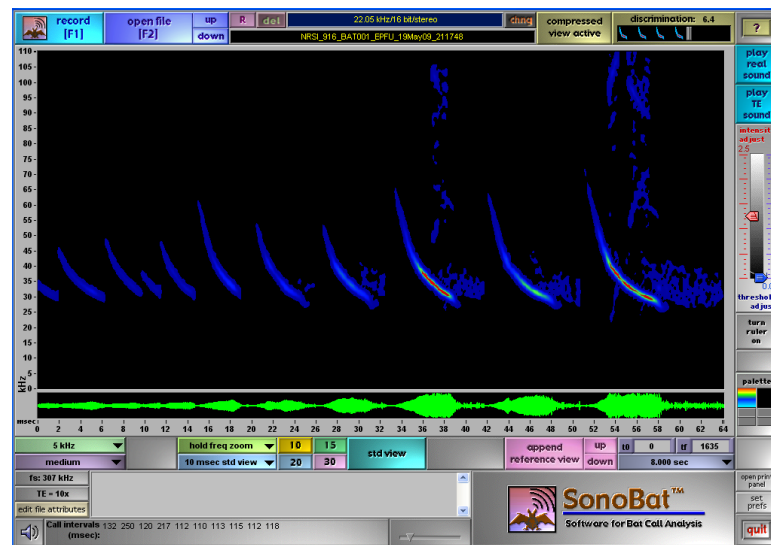
- Stations were examined to address the combination of multiple natural features on bat activity
- No station had all three features within 500m
- Average passage rates were highest at stations with 2 types of features





Species Information

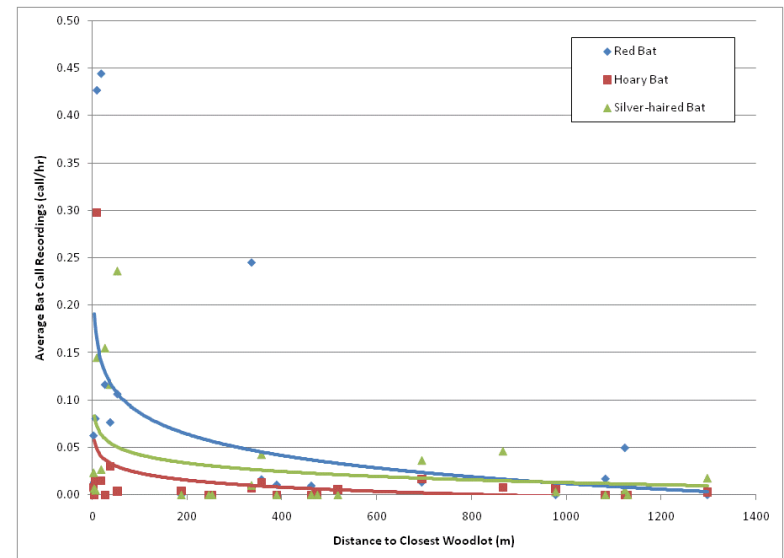
- 3550 recorded calls were identified to species
- Calls represented 7 of the 8 species known to occur in Ontario
- Known limitations and call similarities resulted in certain difficulties in analysis





Woodlot Usage

- All 3 migratory species showed a preference to woodlot
- Red bat calls were most often associated with stations close to wooded habitats
- All three species showed almost immediate declines to lower levels





Shorelines and Watercourses

- All three species showed little association with either shoreline or watercourse features
- None of the three species demonstrated any observed preference to shoreline habitats at the stations monitored
- Shorelines may be used by migratory species, but likely at distances closer than those examined here





Summary

- **Bats, including all three migratory species, are more likely to be found in areas in immediate proximity to woodlots**
- **At the distances examined (>300m), bats do not appear to show increased affinity to shoreline habitat**
- **Watercourses do not appear to concentrate bat activity in southwestern Ontario**





What Does It Mean?

- **This is a small step understanding bat in fragmented landscapes**
- **Will allow for site-specific risk assessment and siting considerations to limit potential impacts**
- **Initial step towards the development of appropriate setbacks and monitoring requirements based on solid data**



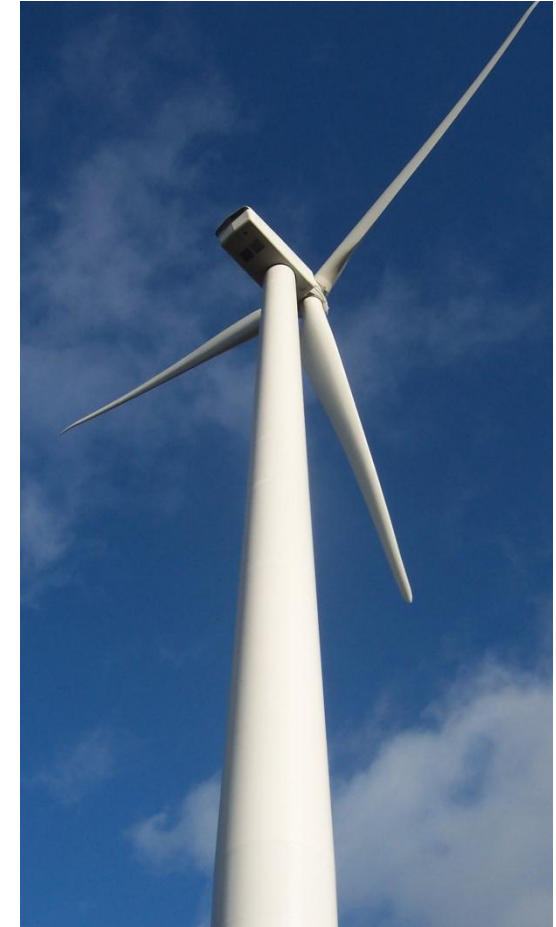


Thank you

Questions?

**Come Visit us at
Booth #917**

www.nrsi.on.ca



NATURAL RESOURCE SOLUTIONS INC.

Aquatic, Terrestrial and Wetland Biologists