

The Introduction reflects three key factors in the current set of circumstances:

1. The integration into one process of approval by means of GEA and REA.
2. The fact that bats are important to Ontario's biodiversity.
3. The issue that bat populations are declining and vulnerable.

The correlation between point 1 and points 2 & 3 is a highly sensitive one. The provincial government and its agencies, MNR included, have a crucial responsibility to make sure point 1 is not implemented at the expense of points 2 & 3.

Yet, these draft Guidelines are an alarming indication that obviously point 1 completely overrides any precautionary approach that would honour points 2 & 3.

Many aspects about bats in Ontario are not well researched or understood. Current knowledge lacks definition of certain habitat components and evaluation criteria (as stated in Appendix B).

Nevertheless, pre-construction monitoring is dismissed altogether. Why? If current research and understanding of bats in Ontario is so thin, would pre-construction monitoring at a number of sites across the province not help to significantly expand this insufficient knowledge base so that these vulnerable animals can be protected appropriately?

In these Guidelines, MNR lists the very reasons why bats are important and why they are in need of protection. Why does it then issue the wind industry a blank cheque, giving a 'green' light to massive industrial wind developments that will cover large areas of Ontario, all the while basically just saying, 'well, go ahead and tell us how it goes'? Do we not risk losing a lot if we send precaution into the wind and build hundreds upon hundreds of turbines all at once without first having carefully and scientifically assessed the current status of bat populations? Without looking over the shoulders of those who have a vested interest not to be slowed down by bats, we don't even know what we stand to lose.

Pp. 12-13 clearly outline the concerns with regards to bats and wind power. Obviously MNR fully realizes that the bat situation in Ontario is sensitive. And yet the Guidelines' softly formulated requirements for siting and mitigation measures and incredibly small setback regulations of 120m from SWH completely defy the precautionary principle in the context of the potential effects.

Similarly appalling is the 50m turbine radius that is considered sufficient for bat mortality surveys. Rotor blades on 150m tall turbines can cut through the air at extremely high speed at the blade tip – how likely will a bat killed by collision be found within a 50m radius of the turbine base? The methodology is simplistic, the restrictive search parameters leave the door wide open for warped monitoring results. Furthermore, it is not clear how thresholds such as 10 mortalities per turbine are established or justified. Why is this figure not differentiated with respect to individual bat species, some of them endangered?

With the obvious absence of sufficient knowledge in the field, the Guidelines point out that, "to improve the understanding and management of bat populations [...] Applicants are encouraged to submit pre- and post-construction data to the Wind Energy Bird and Bat Monitoring Database to facilitate an improved understanding of the impacts of wind turbines on bats" (App. A). This database is managed by several agencies, notably CanWEA being listed first. Companies are not legally bound to submit data. Furthermore, raw survey data is confidential, the public will eventually be presented with a summary. Is there not a distinct conflict of interest if such surveys are largely left up to the developers? Analyses can be very subjective, and such soft guidelines give the wind industry full authority to keep ongoing monitoring and research very much in line with their corporate interests, which will not help protect the bats at all.

The document states that "MNR will update this Guide as criteria for confirming bat SWH become available." (App. B, p. 15) Keeping in mind that currently, with a large number of proposals endorsed by the OPA and undergoing the REA process, many projects are likely to be built at the same time, and very soon at that. So the current proposals, if approved, can destroy bat SWH before we ever even become aware of it! In the absence of documented Ontario data, where is the precautionary principle? Who – within the Ontario government as well as among the project developers – coordinates surveys, monitoring and mitigating measures in the light of cumulative effects as the turbines will sprout up all over the place, *at the same time*? Who will be accountable for the issue that parallel proposals in unprecedented large numbers are being assessed and approved *at the same time*? The Ontario government has made it very clear that it wants these projects up and running as soon as possible. The little knowledge we have with respect to mapping migration and habitat patterns will be thrown up in the air – literally – with the synchronous development of multiple projects when fast-tracking and streamlining policies override precaution and accountability.

What if, ironically and as a result of this approach, mortality will eventually drop significantly – simply because we run out of bats?

From an environmental point of view, any renewable energy project must undergo a cost-benefit analysis. If the potential environmental cost can legitimately be swept under the carpet with Guidelines like these, how can we ever be sure that we are not sacrificing a vital part of our biodiversity for a controversial environmental benefit that wind power generation claims?

Wind power is increasingly under scrutiny as experts and the public alike raise more and more questions with regard to the ultimate green benefit of wind power versus the costs, on many different levels. In this light, it should specifically be the objective of government agencies and their Guidelines to proceed with caution, to minimize risks and to protect potential victims. Well, bats certainly lose out in the scenario set by these Guidelines. This document does not impose any firm requirements on companies to make sure wind power generation on a large scale will not harm the bats.

As the REA does on the whole, these Guidelines give a clear priority to wind power developers over any issues that might stand in their way. One clear indication of this is the following point: "Operators may also choose to coordinate turbine shutdown for maintenance with periods of high bat activity and/or mortality to reduce operational impacts" (4.2.2, p.11). In other words, the only time that MNR suggests a complete shut-down of turbine operation for the benefit of bats is when the developer needs to shut it down anyway for mechanical/maintenance-related reasons. In line with its mandate, MNR should be concerned with impacts on our natural resources, notably wildlife, not with operational, i.e. corporate profit impacts!!

The language used in these Guidelines is entirely geared to the convenience of the developer. "Consultation with MNR is recommended" (fig.1, p.6), "Applicants are encouraged", "should be considered", "The local MNR office may be contacted" (all App.A, p.14), are just a few examples of the soft tone these Guidelines adopt. The ball for protecting bats is put entirely in the court of the developer. Requirements are vague, and there is very little indication as to how exactly developers will be held accountable with regards to these Guidelines.

Another serious concern is how the new regulatory framework will work with respect to communication between government departments. MNR will be responsible for reviewing the applicant's proposed Environmental Effects Monitoring Plan (4.0, p.10), whereas post-construction monitoring reports as part of that plan will be submitted to MOE (4.1, pp 10-11). In this context we would like to raise the question of how government departments will actually cope with the new regulations, that will supposedly speed up the approval process and streamline management of projects. One of the reasons the GEA came into existence is that it took too long to get projects approved; various government agencies' involvement created the need to streamline to speed things up. How, in practice, will MOE cope with the added responsibility of managing project components that used to be MNR's responsibility? Especially in the light of the massive number of applications that will be submitted and will have to be monitored shortly, has MOE the manpower and/or the expertise to deal with this? How can the government guarantee that this new process is not implemented drastically at the expense of animals vulnerable to environmental impacts such as bat populations? Will MOE have the resources to handle these matters with adequate attention and qualified diligence? Who will be accountable if or when this experimental procedure goes terribly wrong? It is much easier to control the spread of man-made wind turbines than it is to control White Nose Syndrome, so should this not raise red flags with regards to declining bat populations? What will be the snowball effect if bats are removed from the biodiversity equilibrium?

It is becoming obvious with regards to the REA and its applicable Guidelines that wind companies will comply with minimum regulatory requirements for project implementation. Environmental issues will get the same treatment. This sobering realization creates an increased need for government agencies to impose stringent requirements and employ independent controlling measures to follow up on compliance.

After assessing these Guidelines, there is all the more reason to worry that policies are being implemented in a questionable way, with the wrong priorities, putting bats and many other living creatures at risk for a questionable benefit.

The following document addresses the Draft Guidelines by section, with specific comments on each area of concern.

Please rework these Guidelines to ensure a much more cautious approach to project implementation, preceded by meaningful pre-construction studies, equipped with conservative setback numbers, and supported by independent controlling measures and tangible penalties for non-compliance.

MNR Guidelines will be the key pieces of reference for wind developers. The responsibility to ensure adequate protection for this important wildlife species is enormously significant. We hope that you will consider our concerns. We look forward to correspondence from you regarding the issues raised.

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## COMPILED COMMENTS ON 2010 DRAFT MNR GUIDELINES BATS AND BAT HABITATS

### OVERALL CONCERNS ABOUT THE DRAFT GUIDELINES

- (1) The scientific basis for 120 m and 200 m setback distances is not explained.
- (2) The Draft Guidelines leave bats and bat habitats unprotected because:
  - mitigation measures go into effect only after significant mortality has occurred or is occurring;
  - bat species known to be most affected by wind turbines are not protected at all (high canopy, tree roosting bats) because they are difficult to find, either to protect them pre-construction or to search these types of areas for fatalities.

The Guidelines focus on post-construction monitoring and mitigation although proper project location is stated repeatedly to be the most important measure for mitigating negative impacts on this group of long-lived animals whose populations are particularly vulnerable to increased mortality (as stated in Introduction, p. 1).

Therefore, this document needs to contain specific guidelines for pre-construction siting of projects and turbines in order to avoid areas with either known bat habitat OR a high likelihood of containing bat habitat (as indicated by high numbers of feeding swallows for example).

## SPECIFIC PAGE-BY-PAGE COMMENTS ON DRAFT DOCUMENT

### 1.0 Introduction p.4

The purpose of this Guideline is to provide guidance on identifying and addressing potential negative effects on bats and bat habitats.

In order to address potential negative effect, these guidelines need to include pre-construction mitigation steps (i.e., modification of proposed site plan or project location as required). Without this, the Guidelines will not achieve their purpose since site location is generally “the most important consideration to minimize potential impacts to bats and their habitats” (p. 6).

### 1.1 Regulatory Framework

The document states that “MNR is responsible for establishing or accepting evaluation criteria and procedures related to natural features ... reviewing all reports and confirming that they have been prepared using appropriate evaluation criteria for procedures.” As “MNR confirmation is required as part of an application to MOE for a REA for a wind power project” it is important that these guidelines provide adequate procedures and evaluation criteria.

There are many instances where the wording includes “should” or “may”. While we understand that these are guidelines only, we are concerned at this soft wording. How will wind developers be held accountable for their practices?

Add bullet point: “Pre-construction mitigation (i.e. modification of proposed site plan or project location)”

MNR is responsible for establishing or accepting evaluation criteria and procedures...reviewing reports...confirming preparation using appropriate criteria or procedures...

What are the ramifications if protocol is not followed?

### 1.2 Assessment Process for Bats and Bat Habitats ( p. 5)

Last paragraph refers to “habitat-based monitoring”.

An explanation of this term would be helpful.

Figure 1. (p.6), sidebar: Applicants may choose to modify the site plan or location as information becomes available during the natural heritage assessment or other requirements for relevant approvals.

This is not useful. Instead there should be a third box in the last row of the decision tree labeled “Modify Site Plan or Project Location”.

Offshore (p. 5)

At offshore sites in Ontario, the significance of bat habitat (e.g. bat migration corridors) cannot currently be assessed.

Will the Government of Ontario commit funds to third party research?

## 2.0 Assessment Process for Bats and Bat habitats (p.5)

What if material on pre-construction assessment and mitigation options which *should* be provided, is not?

(p. 6) Should post construction monitoring show significant bat mortality, operation mitigation will be required.

Who enforces mitigation requirements? What if they are not successful?

Figure 1. Bat Habitat Assessment Process (as part of natural heritage assessment).

All scenarios lead to No Further Action Required of Operation Mitigation and/or Additional Monitoring. The only option is Apply Set Back of 120 m. Clearly, a project is always acceptable.

Setbacks need to be proportional to tower height. Towers are now commonly approaching 150m and getting larger. In the unlikely event of tower damage or collapse due to mechanical failure or atypical weather conditions, it is not appropriate to have turbines sited where debris or oils etc. could be deposited in watercourses or sensitive habitats. Tower failure or collapse could also cause physical damage to forest habitats where bats roost.

The box in the lower right of Figure 1 should read “Operational Mitigation and Additional Monitoring”, i.e. additional monitoring should be obligatory in order to evaluate the success of mitigation.

## 2.1 Project Site (p.6)

Selecting the project site is generally the most important consideration to minimize potential impacts to bats and their habitats.

Therefore, a third box is needed in Figure 1 as stated above (“Modify Site Plan or Project Location”).

## 2.2 Records Review (p. 7)

Records review stage *may* be confirmed during the Site Investigation and during the Evaluation of Significance...

Why are proponents not always scrutinized?

## Bat and Bat Habitat Data

Re: potential feeding areas with documented high insect activity or abundance

Who has done insect work? Very little is available in the peer reviewed literature. As swallows and bats occupy the same geographical niche, would it not be appropriate to assume that areas of high swallow activity by day indicate areas of high bat activity at night?

### 2.3 Site Investigation p.8

The applicant will ensure that a physical investigation of the air, land and water within 120m of the project location is documented.

This should read “proposed project location”.

120m setbacks are inadequate and should be proportional to tower height. How was the number (120m) derived?

### 2.4 Evaluation of Significance p.8

Criteria for confirming the following bat SWH are not currently defined in the SWHTG. In the absence of criteria, the following bat habitats cannot be evaluated. (re migration corridors, movement corridors)

(p.9) If a candidate bat SWH is evaluated and confirmed within the project location, applicants may setback 120m or conduct an Environmental Impact Study (section 6.0) as part of the NHA process to determine whether potential negative environmental effects can be avoided or effectively mitigated.

Figure 2 indicates Setback from Significant Wildlife Habitat as 120 m

What is the scientific basis for this 120m distance? If applicant does a study with mitigation measures addressed, this implies they can override the 120m (inadequate) setback. This is not acceptable as 120m is already too close.

The document recommends evaluating significance of the following bat SWH: Bat hibernacula (seasonal concentration areas) and Bat maternity colonies (seasonal concentration areas).

How will this SWH be evaluated for tree roosting bats including high canopy occupants? They are most affected by wind turbines (Cryan & Barclay 2009).

AND

Criteria for confirming the following bat SWH are not currently defined in the SWHTG. In the absence of criteria, the following bat habitats cannot be evaluated:

- Bat migration corridors (seasonal concentration area)

- Bat movement corridors (animal movement corridors)

Long-distance migratory bats are the most affected (Cryan and Barclay 2009). How can we make valid assumptions on impacts (immediate and cumulative) in the absence of criteria?

THEREFORE: these guidelines are currently incapable of assessing negative impacts on bats. We need to monitor and evaluate (using third party investigators, valid statistical analysis) current projects, before proceeding with further development.

What is the Province doing to address the deficiency in criteria to describe “Significant Wildlife Habitat” for bats? Until then, these guidelines should incorporate basic guidance to proponents based on expert opinion (e.g. from Bat Conservation International).

p. 8, 3<sup>rd</sup> last paragraph: “To address potential negative environmental effects to bats and bat migratory habitats, operational monitoring and/or mitigation are required elements of an Environmental Effects Monitoring Plan”

After the fact is too late to protect them, damage has already been done to a group of animals whose populations are “particularly vulnerable to increased mortality” (p.4). Elsewhere in this document (pages 6 & 12) it is recognized and stated that locating projects appropriately is the key way to minimize negative impacts on bats.

p.9 , 1st paragraph: “applicants may...to determine whether potential negative environmental effects can be avoided or effectively mitigated.”

If negative effects can’t be avoided or effectively mitigated, then what? Need a box for this decision point in Figure 1. A “Modify site plan or location” box, so that negative impacts can be prevented before they have occurred and reduced population numbers significantly (see p.1 and p.12 comments).

### 3.0 Environmental Impact Study (p.9)

Due to the sensitivity of bat hibernacula, this Guide recommends applicants locate wind power projects outside of hibernacula identified as significant wildlife habitat (i.e. 200 m from the hibernacula). An EIS should be conducted to determine appropriate mitigation should an applicant *wish* to locate within the standard 120 m setback from the significant wildlife habitat.

What is the scientific basis for the 200 m distance recommended?

Why is this up to the applicant’s wish? Bat hibernacula are sensitive and these Guidelines aim to protect bats and their habitat. Furthermore, how is a project ever possible within the (inadequate) 120m setbacks? The Green Energy Act says so, but once again, this is unsound (from a truly green perspective).

#### 4.0 Environmental Effects Monitoring Plan (p.9)

The EEM will describe any bat SWH mitigation and monitoring required...

In addition, for all wind power projects, the EEM will outline the post-construction mortality monitoring plans that are required for a minimum of 3 years to address potential negative environmental effects to bats.

Who assesses accuracy and completeness: the proponent, MOE or MNR? What happens after the 3 year period? Are turbines forced to shut down permanently if there continues to be a high number of casualties?

#### 4.1 Post Construction Monitoring (p.10)

...required for all Class 3 and 4 wind power projects. Consists of

- Regular bat mortality surveys
- Carcass removal
- Searcher efficiency

What is the frequency of monitoring, and why are reports sent to the MOE only? MOE staff are unqualified to review wildlife data, thus reports need to be submitted to the MNR as well.

Monitoring Effort and Timing Requirements (p. 10)

...a sub-sample of turbines should be selected to cover representative areas throughout the project area.

How large (or small) is a subsample required to be?

Should significant mortality be observed, and operational mitigation implemented, post-construction monitoring should continue for an additional 3 years from the implementation of operational mitigation, to evaluate the effectiveness of the mitigation.

What if mitigation measures are not effective, especially in light of future development of wind farms, especially in conjunction with White Nose Syndrome? Cumulative impacts could be, theoretically, catastrophic for bat populations, especially in light of the fact that bat populations are already vulnerable (as stated on p.4, paragraph 4).

Post construction monitoring reports should be submitted to Ministry of Environment...

\*Important: MNR should also receive and review these reports because they have expertise in wildlife biology whereas MOE does not.

#### 4.2 POST CONSTRUCTION MITIGATION (p. 11)

##### 4.2.1 Mortality Thresholds

Bat mortality is considered by this Guide to be significant when mortality levels exceed 10 bats per turbine per year.

Why is 10 considered an acceptable value of “incidental take”, especially in a population that is already vulnerable? This threshold number should be reduced in areas where there’s a greater density of turbines. The cumulative effect of numerous turbines at numerous sites must also be considered.

The Ministry of Natural Resources should engage experts to consider such information as population size, distribution, key limiting factors, and existing trends, and then recommend an acceptable level of bat mortality for each population. Only then should the decision be made as to what constitutes an acceptable threshold of mortality per turbine for any project. As some species are at greater risk than others, and some sites contain more critical habitat for some species than others, the acceptable upper limit per turbine should be lower where there is important habitat for a population of a species whose existence is at greater risk.

#### 4.2.2 Operational Mitigation (p.11)

- cut-in speed to 5.5m/s or feathering
- time of day (sunset to sunrise)
- time of year (July 15 to September 30)

Where mitigation measures are deemed necessary, there needs to be some assurance of compliance.

3<sup>rd</sup> paragraph: “...it is estimated that 90% of bat fatalities from mid-July through September.”

typo: should read “fatalities occur from mid-July”

4<sup>th</sup> paragraph: “...has been exceeded, operational monitoring will be implemented”

typo: should read “operational *mitigation* will be implemented”

#### 4.2.4 Contingency Plans (p.11)

A contingency plan addresses immediate mitigation actions necessary in case of large, unforeseen levels of mortality. A contingency plan allows mitigation measures (e.g. temporary blade feathering or operational mitigation) to be implemented in the event that unanticipated adverse environmental effects are observed.

This is proponent driven and self assessed. What is the allowed relationship between the wind turbine company and the reporter? Monitors need to be independent, third party.

#### Potential Effects of Wind Power Projects on Bats (p.12)

Wind power projects in the United States have reported bat mortality with annual mortality estimates varying from between less than 1 to over 50 bat mortalities/turbine/year.

Please be more specific. How much over 50? (55? 100? etc.)

Potential impacts of *White Nose Syndrome* make bat populations particularly vulnerable to increased mortality.

Recommend adding to the end of this sentence: “and populations are already vulnerable, as mentioned in the Introduction.”

Four main factors appear to contribute to bat mortality at wind power projects:

One being species and abundance in the area

Little is known about this though, according to other MNR documents. How will that be addressed?

“Appropriate project location appears to be a key factor in minimizing impacts on bats.” (this should be bold faced).

#### DIRECT EFFECTS (p. 12)

Theoretically insects are attracted to turbine heat, which in turn attracts feeding bats.

Has significant work been done on insects? If so, could you kindly provide references?

#### Appendix A: Best Management Practices (p.14)

Applicants are *encouraged* to submit pre and post-construction data to the Wind Energy Bird and Bats Monitoring Database to facilitate an improved understanding of the impacts of wind turbines...consistency of assessment...future improvements in approval processes. ....data entered in a confidential environment...create summaries for the public..

This is a step in the right direction, although it is voluntary, and data is not necessarily collected by an unbiased third party.

The local MNR office may be contacted prior to disposing bat carcasses...

*May* needs to be replaced with *should*.

#### Appendix B: Methods for Evaluating Bat Significant Wildlife Habitat (p.15)

- Bat hibernacula (seasonal concentration areas)
- Bat maternity colonies (seasonal concentration areas)

According to other MNR documents, little is known about these in Ontario.

- Bat migration corridors (seasonal concentration area)
- Bat movement corridors (animal movement corridors)

But long distance migratory bats are the most commonly affected (Cryan & Barclay 2009)

NB: The lack of information and difficulty in obtaining information on SWH of the bat species most affected by turbines severely limits the ability of these Guidelines to provide protection for bats and bat habitats.

#### Other Considerations (p. 16)

Bat surveys and data analysis should be conducted by a biologist experienced in bat identification and monitoring.

Good idea, but how many of these exist in Ontario? How will this be implemented?

#### Maternity Colonies (p. 16)

Other bat species roost in foliage in small groups or individually very high up in the tree canopy and as such are often difficult to notice.

These are tree bats, the most vulnerable to wind turbine mortality (Cryan & Barclay 2009). These Guidelines do not protect them.

#### Appendix C: Post Construction Monitoring Methods (p. 18)

##### Bat Mortality Survey (p. 18)

As stated in MNR BAT ECOLOGY BACKGROUND 2006 “Relatively little is known about bat populations in Ontario.”

Again, we fully realize that these are guidelines only. However, we are concerned that such soft-worded guidelines are used as the main piece of reference for wind developers. To ensure the survey design and implementation is adequate, and that all data is provided to MNR along with the report, should the proponents not be encouraged to provide the Province with adequate funding for the specific purpose of hiring an independent third party contractor who will collect and report the data to both parties? All information – except that which must be protected by law, such as under Species at Risk legislation – should be available to the public for peer review and to advance research and management initiatives.

This in turn will help MNR ecologists and others to understand bat populations, define their significant wildlife habitat and inform the location and, design and operation of wind turbine projects.

Each surveyed turbine will have a 50m search radius and the complete area will be searched.

What is the mathematical relationship between the search radius and the diameter of the circle drawn by the tips of the rotating blades?

Re: Visibility Class 4 (very difficult). This is the best habitat for tree bats which are the type most affected by wind turbines (Cryan & Barclay 2009).

Where possible, ground cover around turbines should be maintained at a low level in order to facilitate more accurate bat mortality surveys.

This means increased cumulative impact of turbines on habitat of other species besides bats, due to increased habitat fragmentation and destruction associated with vegetation loss.

It is recommended that those turbines where the majority of the search area would not be searchable due to vegetation cover or other impediments (e.g. Visibility Class 4) should not be included in the sub-sample of monitored turbines.

Although practical for field workers, not monitoring turbines that are in more vegetated areas will skew the results significantly because it excludes specific types of bat habitat. How will this be addressed?

With respect to recording of bat carcass injuries, can barometric trauma be externally detected? If not, what procedure will be used to ensure that this type of injury is recorded?

#### Carcass Removal Trials

Removal trials *should* be conducted at every wind power project.

Trials should be repeated at set intervals (due to changes in factors i.e. weather, scavenger pressure may change seasonally etc. Comment: Carrion beetles (Family Silphidae) in the area arrive within hours of an animal's death and proceed to quickly bury the carcass, usually within hours. Trials have to be repeated seasonally.

#### Searcher Efficiency Trials

Searcher efficiency trials should be conducted at least once a season during the same period as the bat mortality surveys.

Insert: "but not at the same time as scavenger carcass removal trials"

#### Other Notes and Considerations (p.22)

If the incidentally discovered carcass is found outside a formal search plot, the data should be reported separately.

If the mortality is deemed caused by a wind turbine, it is imperative that it be included in the data report for the project, with distance from turbine and turbine location recorded.

#### Appendix E: Other Sources of Information on Bats and Wind Power

Add the recent scientific, peer-reviewed article reference as follows:

Cryan, P.M. and R.M.R. Barclay. 2009. Causes of Bat Fatalities at Wind Turbines: Hypotheses and Predictions. *Journal of Mammalogy* 90(6):1330-1340.

#### REFERENCES USED IN THESE COMMENTS:

Cryan, P.M. and R.M.R. Barclay. 2009. Causes of Bat Fatalities at Wind Turbines: Hypotheses and Predictions. *Journal of Mammalogy* 90(6):1330-1340.

Stewart, J., B. Fenton, E. Fraser, C. Davy, 2006. Wind Turbines and Bats: Bat Ecology Background Information and Literature Review of Impacts. Wildlife Section, Renewable Energy Section, Ontario Ministry of Natural Resources.