

## Hunter, Donielle

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**From:** Ohio Power Siting Board <contactopsb@puc.state.oh.us>  
**Sent:** Thursday, April 11, 2019 9:28 AM  
**To:** Puco Docketing  
**Subject:** public comment 16-1871 [ ref:\_00Dt0GzXt.\_500t0GJYhf:ref ]  
**Attachments:** Exposing the Lake Erie Icebreaker Research final\_pdf.html

**Subject:** Comments by Jim Wiegand at his request and to us as well, Icebreaker 16-1871 EL BGN

Dear Ms. Mertz, Steven Gray, and Matt Butler,

Kindly add the work of Jim Wiegand to the Case for Icebreaker: 16 1871 EL BGN.

Mr. Wiegand is likely the most intimate of our completely independent U.S. commentators and researchers on industry led wildlife biologists who prepare paid for "studies", and write reports on loss of wildlife through manufactured ideas that "habitat is not suitable" or will be no "biological" impact.

His work also comments quite a bit on the true meaning of "incidental."

It is very useful for all of our understanding.

Thank you,

Sincerely,

Sherri

*Executive Director, Canada, Great Lakes Wind Truth*  
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# **Additional Comments on the Icebreaker Wind Turbine Project**

DOE/EA-2045

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## **Final Environmental Assessment LEEDCo Project Icebreaker Lake Erie, City of Cleveland, Cuyahoga County, Ohio**

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If "green" wind energy is so good, why do so many people have to lie their asses off about it? Except for making a lot of money for a select group of people, I can see no good that has come from any of this industrial blight. As it is, this industry cannot cite one scientifically credible impact study from the last 30 years related to the species impacted by wind turbines.

The Icebreaker project is the first of what the wind industry hopes will be hundreds of turbines placed on Lake Erie. One of the primary obstacles to this plan is the impacts to birds and bats once wind turbines will have when placed on Lake Erie. As an expert on wildlife and wind turbine mortality impacts, I can safely say that hundreds of massive wind turbines on Lake Erie will have a tremendous impact on these bird and bat species, easily killing tens of thousands of birds annually.

Rigging opinions and citing fraudulent research that says otherwise will not change this fact. In addition, rigged post construction mortality research with fraudulent research methodologies approved by the USFWS, is another wind energy pattern that will be repeated on Lake Erie if this project is approved.

A few weeks ago, I had a chance to look over this Final Environmental Assessment. This assessment needs to be amended because there is absolutely no possible way that this project can be approved unless the State of Ohio accepts this industry's fraudulent research and opinions from their list of terrible experts. The research conducted for developers of the Icebreaker project, as scripted, shows no significant mortality impacts. Hopefully, Ohio will not use the industry's paid for biased opinions or their false contrived research, to justify an

approval or to create a fraudulent mitigation of impacts. After all, how can Ohio officials or anyone for that matter, fairly mitigate turbine impacts when so many lies are on sitting the table?

I would join other groups and adversaries to the proposal, with a request for an elevation to an EIS. This additional scrutiny would present a clearer lens to the inevitable wildlife and water impacts.

For Biological impacts to species, this final Environment Assessment relies primarily on the opinions of Tetra Tech, Western Ecosystem Technologies Inc., and Dr Kerlinger. Their opinions are NOT credible. All three of these parties have consistently produced unscientific and fraudulent Wind turbine Mortality studies for the wind industry. Several clear examples will be provided in these comments.

Sadly, and with great deception, Wind projects across the world, have had significant local and cumulative mortality impacts to species. But these impacts have been hidden with contrived research and the deliberate avoidance of meaningful scientific research. The Research conducted for this project has been no different. I will remind Ohio officials that pretending to do research is not science, deliberately collecting data with contrived methodologies is not science, and just because the public is being exposed to this false information, does not make any of it true.

## **A few comments about Tetra Tech's unscientific research**

Tetra Tech has conducted research for this project that is not scientific or even close to accurate reporting real world conditions from the field. Look at their filtered Radar data results. They dismissed 583 hours of radar data or 82%, of the total, using the excuse of rain and wave clutter. During this amount of time, 10 million birds could have flown through this area. And even if they had, because this is a "Wind Energy" radar study, accurate direct observations would be classified as **"incidental"**. If Ohio wants the truth, new studies by credible researchers are desperately needed here.

### **2.2.1 Onshore Radar Data Results**

The MERLIN Avian Radar System operated onshore at the Cleveland Lake Front State Park (East 55<sup>th</sup> Street Marina) from March 31 to April 30, 2010 (see Figure 2.1). A total of 128.8 total hours of onshore radar data were recorded during the onshore sampling period, out of a total of 712 available hours between March 31 and April 30. The onshore radar survey recorded substantial period of rain and wave clutter, resulting in only about 20% of available, clear air, radar data available for analysis. Wave clutter was less of a problem at the offshore Crib site; however there were still periods of rain.

Radar Data is worthless and has no scientific value when 82% of the data has been thrown out. There are not just 4 hours in a day, there are 24, and leaving 20 hours a day unaccounted for is typical of this industry's research.

**Appendix B** for a glossary of radar terms. To date, radar has not been demonstrated to be a reliable or valid predictor of risk to birds or bats; however radar data are valuable as a baseline of nocturnal migration. Additional validation studies are needed before it is reasonable to rely on radar data as a means of assessing risks at prospective wind energy facilities.

With wind industry research the word **“Incidental”** is a term used to exclude important data. Wind industry research is riddled with this exclusionary term and Tetra Tech uses it frequently. The truth is, that the use of this term in research, should be a red flag to everyone because it invalidates scientific credibility. Wind industry research methodology with USFWS blessings and their complicit guidelines, are deliberately set to produce “incidental data” that alters results so real-world conditions are not reported.

Though **incidental** observations of birds in the vicinity of the Study Area were not included in the results of the standardized surveys, they provide insight on the avian community in the general area. Large concentrations of double-crested cormorants were observed incidental to transect surveys close to shore in the harbor and close to the Cleveland area shorelines in late March and early April, 2010. In

Again.....

**Incidental** bird observations were recorded while in the vicinity of the Study Area. Additional waterfowl and passerine species were observed at Burke Lakefront Airport, 55<sup>th</sup> Street Marina and on the Crib during scheduled radar maintenance include: American coot, mallard, Caspian tern (*Hydroprogne*

And again.....

While the higher numbers observed during fall surveys could be attributed to cormorants dispersing from nesting grounds to post-breeding foraging areas. Use of waters close to shore by cormorants appears to be related to the greater abundance of food in shallow waters and ease of finding prey in those waters. Farther offshore, forage is distributed over a wider area and deeper waters preclude foraging near the lake bottom. The greater abundance of prey species near shore also explains the presence of many other species of waterfowl and other birds observed **incidentally** near the shoreline.

What do these “incidental” observations actually represent? Possibly tens of thousands of birds at risk and if so, what other important information are they hiding? Information like this: these turbines will be built in shallow waters where foraging does occur. In addition, the new Icebreaker turbine related structures will provide additional cover that will attract even more prey species numbers which will include foraging bird species.

Here are some of my notes from an unscientific Tetra Tech turbine mortality study conducted in Shasta County CA.

For decades, mortality studies conducted around communication towers were "scientifically" designed to actually find carcasses. **In contrast, staged wind energy studies, like those conducted at Hatchet Ridge, are designed with methodologies to specifically allow the majority of fatalities to remain hidden by faulty design or by the selective removal of carcasses.**

And then, to anyone with just a bit of common sense, there is the obvious. The deadly air space around one or even 100 communication towers is relatively insignificant when compared to the millions of cubic feet of rotor sweep, moving with 200 mph blade tip speeds waiting for birds and bats at even a single wind project. The 400 ft. turbines installed at Hatchet Ridge located near slopes, can easily send carcasses over 200 meters from towers on a windy day. Yet for Hatchet Ridge research, most fatality searches were limited to clear areas that reached out to about **63 meters**.

Unlike wind turbine research, past communication tower research, reached out 1 ½ times the maximum tower height from bases and carcasses searches were daily. **Not with the 400-foot turbines Hatchet Ridge.** Carcasses searches were restricted to small areas with searches extended out every two weeks and in some cases a month. This massive flaw allowed extended periods of time for turbine carcasses to disappear by industry insiders or by beast.

Speaking of beasts, the Hatchet ridge location is somewhat unique because of the abundance of ground predators that exist in this habitat. The Hatchet Ridge location is inhabited by bears, foxes, martins, coyotes, bobcats, and Mountain Lions along with many other flying scavengers. Under these conditions, if a special status species or an endangered species happened to be killed by turbines, the odds are that it would never be found. **Of course, this wind energy research insanity, is by design.**

None of these ground predators and a multitude of others factors are even mentioned in the Hatchet Ridge mortality reports. But I know the foot prints of all these animals were there to be seen because the smell of a bloody turbine carcass, will bring them in from miles away. But typical of wind energy research, many important things like this are not even mentioned because **this industry's**

**so-called research, is a fabricated stage performance.** For these fake researchers, the less they say, the better while ignorant readers are dragged into a rigged world of meaningless calculations and conclusions.

Below is a little more factual information about wind turbine carcass dispersal. It illustrates the absurdity of the USFWS approved mortality research that was allowed to be conducted at Hatchet Ridge. This data was taken from 3-year study in Solano county. While this study was far better than most conducted by the wind industry, it still had a number of very serious flaws.

When compared to the Hatchet Ridge turbines, the Solano County turbines were not only shorter, they sat on relatively flat ground, and had shorter blades that reached out from towers 17 meters less. This study, like at Hatchet Ridge, had infrequent searches but search areas that were **completely searched** in all directions and extended out 105 meters from towers. Even so, 105 meters was still not adequate because fatalities were still being found much further out. **Two of these reported fatalities were golden eagles found at 200 and 155 meters away from turbines.**

**With the research conducted around the smaller Solano County turbines, 2/3 of the carcasses found at these turbines, including those fatalities they happened to find beyond 105 meters, were located beyond 63 meters.**

Now look close at this search methodology taken from the study conducted at Hatchet Ridge. With the search methodology used for Hatchet Ridge, they set it up so that at least 2/3 of the carcasses would be missed or if found, could be classified as **“incidental”**.

#### **2.1.2 Incidental Fatalities**

When a bird or bat carcass was found outside of the designated search plot and/or outside of the standardized search period, it was recorded as an incidental fatality. Incidental fatalities were documented with the same level of detail as survey finds; however, they were excluded from statistical analyses. All fatalities documented during the initial sweep survey and during the monthly searches were considered incidental.

“Non-searchable area varied between search plots. Four plots were fully searchable, 12 had non-searchable area between 0.5 and 10 percent, and 6 had non-searchable area between 10 and 19 percent, for a total of 7.8 percent of search plots designated as non-searchable. Non-searchable areas were generally located in the outer most third of the established search plot.”

Most of the so called “unsearchable” areas were located where increasing numbers of carcasses could have been found in this study. Even if 10,000 carcasses were seen outside of designated search areas, the outcome of the study would have remained the same.

It is not hard to imagine the multitude of wind turbine carcasses and scattered remains that were there to be found, but were never reported from the Hatchet Ridge turbines. Then there are all those special status carcasses picked up by wind personnel that are then carted off by USFWS agents from wind farms **that can't be reported**. Endangered species and thousands of eagles killed by wind turbines across America are not being reported because USFW agents can't discuss this regular government activity of carcass removal from wind farm freezers.

The word “**incidental**” is very important here because it is again, that unscientific trump card for data exclusion being used in wind industry studies. Dead eagles found beyond contrived search areas, or on days when searches should be conducted, are Incidental data. Wind industry personnel are at liberty to handle, move, or even hide carcasses before infrequent searches are conducted. When studies have a week, two weeks or even a month interval, wind personnel have reams of time to locate carcasses ahead of searchers.

These fake wind energy research activities produce fraudulent research data. For example, at Altamont Pass during years of formal studies, dozens of golden eagles killed by turbines were excluded from mortality estimates because they have been placed in the incidental category. How did these dead eagles get placed in the incidental category? Wind personnel went around and picked them up ahead of the people doing the once a month standardized surveys or they were spotted outside the industry's “designated” and unscientific search areas.







The truth is that the wind industry's mortality research across America has changed from bad to worse over the years. As America's turbines grew larger, the research has become more fraudulent. For several years now, carcass or mortality searches used in the industry's fake studies, have eroded into searches conducted about once per week on roads and clear gravel pads of turbines.

In order to understand the absurdity of all this, imagine a mailman pulling up to a mailbox then glancing at your driveway. In a fraction of a second, a carcass sitting there in a mangled heap would be incredibly easy to spot. Now think of the hundreds of stops a mailman makes every day. It is about that easy to pre-scan for carcasses ahead of formal searches.

Yet in the wind industry's research now being produced, the industry makes it seem so difficult to find anything from the size a bat to an eagle in their search areas. At one time, there was some truth to this it but this is no longer the case when search areas have been conveniently reduced to roads and cleared areas around turbines. Looking for a carcass on a sliver of road out 100 meters from a turbine and then making a ridiculous calculation for an actual area that can be a thousand times bigger, is not research. But this garbage meets the standards for wind energy research.

**Below is more credible information and data taken from the 3-year study conducted in Solano County.**

**Table 12. Number of incidents per size grouping versus distance from wind turbine tower (Shiloh I)**

Range	# Incidents			Ring Area	Fall Density		
	Small & Medium	Large	 Bats		Small & Medium	Large	Bats
0-10	23	4	6	314.29	0.07	0.01	0.02
11-20	12	1	8	942.86	0.01	0.0011	0.01
21-30	12	5	16	1571.43	0.01	0.0032	0.01
31-40	20	1	18	2200	0.01	0.0005	0.01
41-50	18	6	25	2828.57	0.01	0.0021	0.01
51-60	34	6	25	3457.14	0.01	0.0017	0.01
61-70	43	2	 7	4085.71	0.01	0.0005	0.0017
71-80	54	6	 16	4714.29	0.01	0.0013	0.0034
81-90	32	2	 6	5342.86	0.01	0.0004	0.0011
91-100	63	4	 4	5971.43	0.01	0.0007	0.0007
101-105	20	5	 1	3221.43	0.01	0.0016	0.0003

388 of 505 found beyond 38 meters

Avian carcasses of all size groups tended to be located somewhat evenly over a larger distance range than bat carcasses, which tended to be located closer to the towers. The average distance to the tower for bat incidents was ~50m, while the average distance to tower base for bird incidents was ~65m.

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3 year study with undersized 105 meter search areas  
100 turbines searched -76 with 80 meter towers and 24 with 65 meter towers  
77 % of birds and bats were found beyond 38 meter turbine blade length

Had a proper search areas of 150 meters been used well over  
90% of the carcasses would have been found beyond the blade length

Searches took place were about once a week and crops were tilled planted and growing in the outer search areas.  
Farming hid many of the carcasses and many more would have been found with daily searches.

Even so bat carcasses were still found more than 100 meters from towers

# What was reported

**Turbine Blade length about 38 meters. Total turbine height 103-118 meters**

Table 12. Number of incidents per size grouping versus distance from wind turbine tower

Species Size Group	Distance Range (meters)														Total
	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-200	
Small Bird	5	1		1	2		1	6	3	8	3				30
Medium Bird	9	6	2	8	6	15	15	14	3	21	9	1			109
Large Bird	3	1	2	1	1	1	1	1	2	3	1	1	2	1	21
Unknown Bird Species*						1	1	2	1	4					9
Bat	3		4	7	15	9	3	6	4	1					52
<b>Total</b>	<b>20</b>	<b>8</b>	<b>8</b>	<b>17</b>	<b>24</b>	<b>26</b>	<b>21</b>	<b>29</b>	<b>13</b>	<b>37</b>	<b>13</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>221</b>

\* All unknown bird species were small or medium sized passerines

## What should have been reported

Table 12. Number of incidents per size grouping versus distance from wind turbine tower

Species Size Group	Distance Range (meters)													Avoided area	
	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-105	106-110	111-120	121-130	131-200	
Small Bird	5	1		1	2		1	6	3		<b>NOT formally searched and ignored. Carcasses found by accident or easily spotted from a distance</b>				
Medium Bird	9	6	2	8	6	15	15	14	3						
Large Bird	3	1	2	1	1	1	1	1	2						
Unknown Bird Species*						1	1	2	1						
Bat	3		4	7	15	9	3	6	4						
<b>Total</b>	<b>20</b>	<b>8</b>	<b>8</b>	<b>17</b>	<b>24</b>	<b>26</b>	<b>21</b>	<b>29</b>	<b>13</b>	<b>51</b>					

\* All unknown bird species were small or medium sized passerines

**This study should have expanded formal search areas out to 200 meters from towers**

Data from 2006-2007 mortality studies with 105 meter search areas around 1.5 MW wind turbines. Some were mounted on 65 meter towers and others were mounted on 80 meter towers. Large and medium species found beyond 105 meters were seen due to periods of high visibility during crop rotations. Search intervals were approximately once a week allowing many of the fatalities occurring at this site to be missed.

**Bats - 73 percent found past 38 meters (turbine blade length) from towers.**

**All Birds - 78 percent or 179 carcasses were found 38 or more meters from towers.**

**Had formal search areas included even an area of up to 150 meters, it would be reasonable to expect 85-90% of carcasses beyond 38 meters.**

With this Solano study, carcasses were being found out to 200 meters even though intense formal carcass searches had stopped at 105 meters. Read below.

1. March 10, 2007. One adult male Golden Eagle was found incidentally 200 meters WSW of Tower F3. Its primaries on left wing were gone, it had fractured metacarpals and could not fly (but was still mobile), was therefore non-releasable. As per our protocols the bird was transferred to the Lindsay Wildlife Hospital, Walnut Creek, CA. We were subsequently informed that it had been euthanized.

100 meters (Table 11). Small carcasses that were found beyond the 100 meters radius included an American Pipit, Horned Lark and Wilson's Warbler, and were found at 102 meters, which is within the 105 meter scanned region. Of the 10 medium sized birds seen beyond 100 meters, 8 were found within 103m, one at 106m (Red-winged Blackbird), and one at 120m (Western Meadowlark, feathers only, was found in grazed pasture). The 5 large carcasses found beyond 100m, all raptor species, were all beyond the 105m search range, with one as far away as 200m (Barn Owl). Raptor carcasses are often easier to find because they are large and thus obvious,

None of the carcasses or injured birds found is listed as federally or state threatened or endangered, however one juvenile male Peregrine Falcon was found 102 meters southeast of tower E2R on November 13, 2007. The status of the Peregrine Falcon, previously federally and state endangered, is currently "delisted", and classified as "SDC", or a state delisting candidate species. Nine incidents were California Species of Special Concern, including a Merlin, 2 Northern Harriers, a Tricolored Blackbird, 4 Yellow Warblers and a Yellow-breasted Chat. Two Burrowing Owl incidents were also found during standardized searches, but were considered caused by "Other" means, and not deemed wind turbine tower (or met tower) related. One Prairie Falcon was found incidentally, at tower C12R. One Golden Eagle, a Protected Species, was found during the second year of this study within the standardized search area. Another Golden Eagle was found incidentally outside the standardized search area.

As I mentioned earlier, wind turbine carcasses disappear at the hands of industry insiders or by beast. Besides limiting search intervals and search distance out from turbine bases, one of the easiest ways to rig a study, is to limit search areas to small test or study plots located in the clear areas around turbines. These monitoring protocols effectively ensure that mortality searches around turbines are now conducted primarily on the gravel areas or clear areas and even away from the primary direction of carcass throw. These areas are the easiest areas for wind personnel to pre-scan for bodies ahead of formal searches. In other words, research protocols are specifically designed to focus on the areas around turbines that are least likely to have bird and bat carcasses or body parts.

At Hatchet ridge, I could easily scan every one of the 43 cleared areas around every turbine at once or twice a day and so could anyone else including researchers. But this isn't done for studies and carcasses can then be easily moved out of these areas ahead of formal searches.

### **Dr. Kerlinger's opinions and bogus research**

An eagle nest fails, and Dr Kerlinger just can't bring himself to mention that wind turbines located nearby, likely killed one of the adult eagles leading to this nesting failure. They also could have built a new nest because one of the original adults had been killed from this nesting pair. Nesting failures near wind projects and not reporting them or the abandonment of habitat, is a common

occurrence taking place in the vicinity of wind projects. Dr Kerlinger probably knows the history of Altamont and that this 86 square mile wind resource area, lost all its nesting eagle decades ago.

At **Erie Shores** (James 2008), construction activity displaced a pair of Bald Eagles nesting 400 m (1,310 feet) of a proposed turbine location, but the pair established a new nest about 900 m (2,950 feet) away and successfully raised two young. This pair returned to the new nest the following year, but the nest failed for unknown reasons. These adults and juveniles were seen

In CA not far from Altamont, an adult golden eagle is found during one of Dr. Kerlinger's studies. Not only is it said to be incidental, he just can't bring himself to mention that this eagle killed in March during the egg incubation period, probably ended in a failed nest.

In addition to the six injured birds found during standardized surveys, one **Golden Eagle** was found far outside the study range, and was thus categorized as an incidental find.

1. March 10, 2007. One adult male Golden Eagle was found incidentally 200 meters WSW of Tower F3. Its primaries on its left wing were gone, it had fractured metacarpals and could not fly but was still mobile. As per our protocols, the bird was transferred to the Lindsay Wildlife Hospital, Walnut Creek, CA, for treatment. We were subsequently informed that it was euthanized.

Watch List species: one Merlin; one Prairie Falcon (found incidentally, at tower C12R) and one Golden Eagle, a Protected Species, was found during the second year of this study within the standardized search area. Two other Golden Eagles were found incidentally outside the standardized search area. Both were found outside the prescribed search area. One Golden Eagle,

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SHILOH I WIND POWER PROJECT

THREE YEAR REPORT

found injured on March 10, 2007, is described above. The other was found on August 14, 2007, dead at 155m away from the towers.) The March 2007 golden eagle incident was wrongly included as a turbine incident in the Year 1 report but moved to "incidental" in this report as it was found outside the search area.

Nothing about these exclusionary statements above is scientific, but it is typical of Dr. Kerlinger study. Dr Kerlinger's 3-year study in Solano County had formal search areas out to 105 meters, but this was still not adequate because a large proportion of fatalities were still being found much further out. The report never suggests that the formal search area size should be increased to account for all the carcasses missed beyond 105 meters. In the table below a few numbers are put down for the (easy to see) "incidental" carcasses found out to 200 meters but this huge area was not searched for the study.

SHILOH I WIND POWER PROJECT

ONE YEAR REPORT

**Table 12. Number of incidents per size grouping versus distance from wind turbine tower**

Species Size Group	Distance Range (meters)														Total
	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-200	
Small Bird	5	1		1	2		1	6	3	8	3				30
Medium Bird	9	6	2	8	6	15	15	14	3	21	9	1			109
Large Bird	3	1	2	1	1	1	1	1	2	3	1	1	2	1	21
Unknown Bird Species*						1	1	2	1	4					9
Bat	3		4	7	15	9	3	6	4	1					52
<b>Total</b>	20	8	8	17	24	26	21	29	13	37	13	2	2	1	221

\* All unknown bird species were small or medium sized passerines

In 2003 a flock of migrating birds travels through a wind farm while a Dr Kerlinger mortality study is taking place. It is classified as a multiple fatality event. It was written in the Dr. Kerlinger study, that it was nearly impossible that these fatalities were related to wind turbine collisions and that it was believed that every one of these birds had collided with the building shown in the image. Formal searches scheduled for that day were also canceled, which raise even more questions about what really took place.

### **From the Mountaineer study.....**

We believe this event to be an anomaly in the annual data and therefore these carcasses are not included in the annual estimates of avian mortality. Carcass removal



Weather conditions and the location and distance of carcasses found on May 23, 2003 suggest that the 27 songbirds and songbird-like species were attracted to the bright sodium vapor lights present at the substation. This hypothesis is supported by the presence of 3 carcasses within the substation fence (>60 m from a turbine) and the presence of two carcasses outside of the substation that were located >100 m from a turbine. It is nearly impossible that these individuals collided with a turbine, but rather it is believed that they collided with the structure of the substation itself. Location of bird

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Estimates of total avian fatalities were calculated excluding the fatalities from the May event. Mean carcass removal rate was 6.7 days and the detection probability for

We believe this event to be an anomaly in the annual data and therefore these carcasses are not included in the annual estimates of avian mortality.

This bogus wind energy research is from 2003. This study had infrequent searches only 60 meters out from the bases of these huge 350 ft tall turbines. With crazy twisted logic, Dr. Kerlinger's study failed to mention is that just turbine 23 could

have easily killed and launched every one of these carcasses from May 23 into and beyond the substation area. This study also does not mention finding a single carcass beyond 60 meters. While it is possible for researchers following nonscientific guidelines to not find carcasses beyond 60 meters, it is **absolutely impossible** that there were no carcasses to be found beyond 60 meters. Dr Kerlinger also said nothing about the need to increase this study's tiny search areas.

**An important review of two supposedly “scientific” Kerlinger wind energy studies. Both have fatal flaws, but one has far more. This comparison of Dr Kerlinger’s work was originally written for a group of concerned citizens in the state of New York.**

## **A scientific review of the Maple Ridge, New York wind turbine mortality studies**

### **MAPLE RIDGE WIND POWER AVIAN AND BAT FATALITY STUDY REPORT**

**Prepared by: Aaftab Jain Paul Kerlinger Richard Curry Linda Slobodnik  
Curry and Kerlinger, LLC**

#### **EXECUTIVE SUMMARY**

“The Maple Ridge Wind Power Project consists of 195 wind turbines and three permanent meteorology towers on the Tug Hill Plateau of Lewis County, just west of Lowville, New York. In 2005, a total of 120 Vestas wind turbines were constructed within the Phase I project area; the remaining 75 turbines in Phase IA and II of the project were constructed in May to December 2006. **Each 1.65 MW turbine** consists of an 80-meter-(262-foot)- tall tubular steel tower; a maximum 82-meter-(269-foot)-diameter rotor; and a nacelle which houses the generator, transformer, and power train. The towers have a base diameter of approximately 4.5m (15 feet) and a top diameter of 2.5 m (8 feet). The tower is topped by the nacelle, which is approximately 2.8m (9 feet) high and 7.6m (25 feet) long, and connects with the rotor hub. **The rotor consists of three 41-m(134-foot)-long composite blades.** Approximately 30% (38 out of 120) of the nacelles are equipped with L-864 FAA aviation obstruction beacons (lights) consisting of flashing strobes (red at night) and with no beacon illumination during the day. With a rotor blade oriented in the 12 o’clock position, each turbine has a maximum **height of approximately 400 feet** (122meters). All components of the turbine are painted white.”

On the surface wind industry mortality research appears very credible, but upon expert scrutiny, there are always study methodologies to be found that hide mortality data. Then along with these studies I discover the obvious omission of facts, a lack of important information and an avoidance of important follow-up studies. With wind energy research, there really is no true science and the industry makes up research methodologies to suit their needs. It has been this way for decades.

While the Maple Ridge 3-year mortality study was not scientific, I will show, it did adhere to the ongoing wind industry pattern of severely flawed, inconsistent and unscientific research. There is a lot I could add about this flawed study, but I will only touch on enough proof needed to illustrate a lack of science a lack of good judgement and to make it clear to all, that most of the mortality went unreported.

**The lesson from Maple ridge for everyone, is this, just because data is collected and then used in complex calculations, does make it science or the truth. The study methodologies for this study were flawed and true experts should have known better.**

The Maple Ridge wind farm study claimed to use 120 by 130-meter rectangular search plot and then produced calculations for a circular area out to 90 meters from towers. The corners in this imaginary round search plot represented 90 meters. I use the word imaginary because the total average search areas in the study were about 11,300 sq. meters or only 71% of the stated 120 by 130 meters rectangle.

As I will show, this methodology produced severely flawed calculations and left a substantial amount of turbine mortality unreported. I also want to point out that this search area size selected for these large turbines is not much bigger than the search areas used for the thousands of searches used around Altamont's 100kW turbines. The small turbines at Altamont Turbines have a rotor sweep of about 200 sq. meters each. The Maple Ridge turbines, were 26 times larger having 5278 sq. meters of rotor sweep. Going into this study all the researchers involved should have known better than to restrict the carcass study areas and follow-up calculations, to a 120 by 130-meter area around these very large turbines. The unscientific methodology used for this study also restricted searchers to only look at an average search area size of about 60 meters out from towers leaving 81% of the total study area 60-90 meters, not actually searched. The area beyond 60 meters is very important because for a turbine this size, this is the area where researchers should have expected to find the most carcasses.

If study design allowed for searches out to 150 meters and then added appropriate numbers for carcasses out to 200 meters. I could fully understand. Yet this entire area was avoided in the study. The reality in all this is that is that when considering a minimum search area of 150 meter, that should have used, searches missed over 95% of the areas around these turbines where carcass would have been found.

**Is it scientific or credible to expect similar carcass dispersal distances from these wind turbines?**



**Maple Ridge had search areas of about 60 meters, the small turbines 50m  
The Maple Ridge turbines have 26 times the rotor sweep and are 300 ft taller.**

Years of research around small turbines at Altamont, using complete searches of a 50 meter distance out from towers, showed that even this search area size still missed many turbine fatalities. For turbines, the size of the Maple ridge turbines and from the research conducted up to 2007, most of the carcass dispersal for the Maple Ridge study should have expected to found beyond 60 meters from towers. The data shown below proves this point.

Below is carcass distribution data collected from Altamont turbines with approximately 9 meter blades and maximum heights of about 100 feet. Today's turbines are 400-500 feet tall and average carcass distribution is reported to be about 20-25 meters from around turbines with 50-60 meter blade lengths.

**Table 2-5. Number and Percentage of Turbine-Related Avian Fatalities within and beyond 125 Meters from Turbines**

Bird Year	Within 125 Meters	Beyond 125 Meters	Total
2005	545 (99.6%)	2 (<1%)	547
2006	1,185 (99.5%)	6 (<1%)	1,191
2007	1,338 (98.7%)	18 (2%)	1,356
2008	924 (99.1%)	8 (<1%)	932
2009	815 (99.5%)	4 (<1%)	819
<b>Total</b>	<b>4,807 (99.3%)</b>	<b>38 (&lt;1%)</b>	<b>4,845</b>

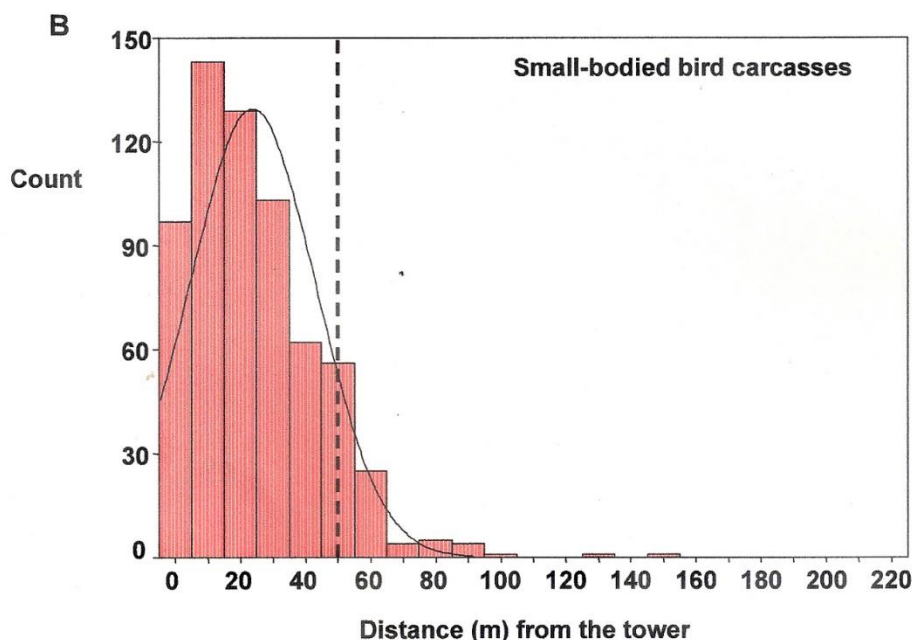
ICF International. 2011. Altamont Pass Wind Resource Area Bird Fatality Study, Bird Years 2005–2009. September. (ICF 00904.08.) Sacramento, CA. Prepared for Alameda County Community Development Agency, Hayward, CA.

## Carcass distribution for 631 small -bodied birds

Average turbine size 103 kW on 24 meter towers with average blade length of 9.25 meters

### *Small-bodied Birds*

Our search radius included 90.5% of the carcasses of small-bodied bird species (Figure 2-9B), of which 75% were located within 34 m of the tower. The mean and standard deviation of these 631 distances was  $23.8 \pm 19.4$  m. Most carcasses were found northeast of the tower, and a considerable number were located southwest (Figure 2-10B), just as the large-bodied bird carcasses had been distributed.



**Figure 2-9.** Frequency distributions of distance from the wind tower among carcasses of large-bodied (A) and small-bodied (B) bird species

<sup>a</sup> Set 1 includes the 1,526 wind turbines (151.165 MW) in the search rotation through September 2002.

<sup>b</sup> Set 2 includes 2,548 wind turbines (267.090 MW) in the November 2002–May 2003 rotation.

<sup>c</sup> Set 3 includes the 1,326 wind turbines (161.750 MW) not included in any search rotation. Mortality for Set 3 was estimated by taking the weighted average from the two sampled sets of wind turbines ((mortality of Set 1  $\times$  151.165 MW) + (mortality of Set 2  $\times$  267.09 MW))  $\div$  418.255 MW.

Smallwood, K. S., and C. G. Thelander, *Developing Methods to Reduce Bird Fatalities in the Altamont Wind Resource Area, Final Report by BioResource Consultants to the California Energy Commission, Public Interest Energy Research – Environmental Contract No. 500-01-019* (L. Spiegel, Project Manager), 2004.  
[http://altamontsrc.org/alt\\_doc/cec\\_final\\_report\\_08\\_11\\_04.pdf](http://altamontsrc.org/alt_doc/cec_final_report_08_11_04.pdf)

## Carcass distribution for 468 large bodied birds

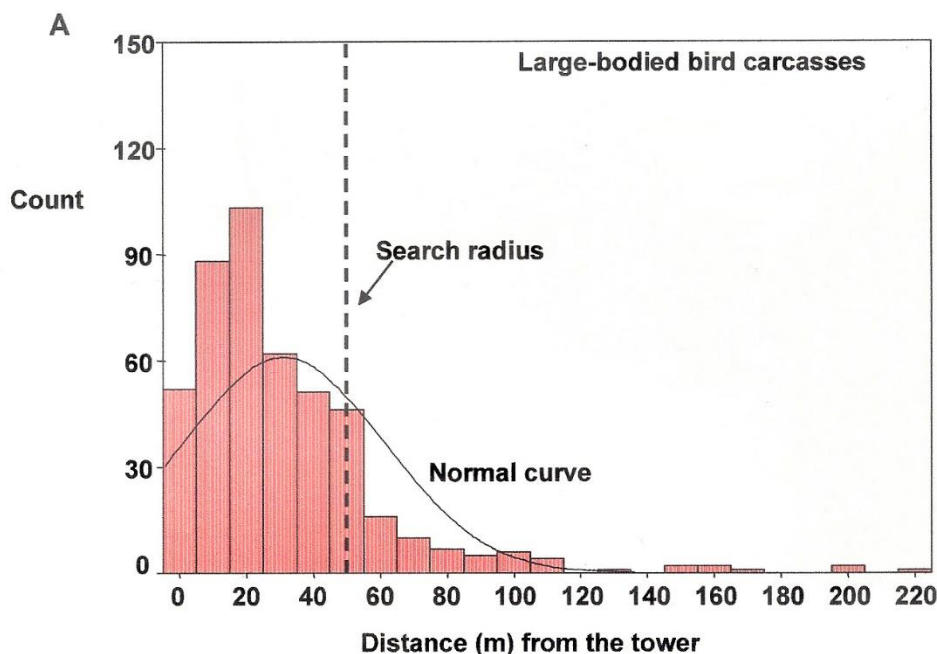
Average turbine size 103 kW on 24 meter towers with average blade length of 9.25 meters

### 2.3.2 Distances of Bird Carcasses from Wind Turbines

#### Large-bodied Birds

Our search radius included 84.7% of the carcasses of large-bodied bird species determined to be killed by wind turbines or unknown causes (Figure 2-9A). Of these, 75% were located within 42 m of the tower. The mean and standard deviation of these 468 distances was  $31.1 \pm 30.0$  m. Most carcasses were found northeast of the tower, and a considerable number were located southwest of the tower (Figure 2-10A).

Carcass locations of large-bodied bird species differed significantly by distance from wind turbines according to five ranges of tower heights (ANOVA  $F = 3.66$ ;  $df = 4, 456$ ;  $P = 0.006$ ), and post-hoc LSD tests revealed that fatalities were located farther from 25-m and 32-m towers (means = 33 m and 57 m) than shorter towers (mean = 28 m for 14-m towers, and 26 m for 18.5-m towers) or 43-m towers (mean = 28 m). Distance from tower increased with tower height, according to linear regression analysis, although the precision of the model was poor (Figure 2-11A).



**Figure 2-9.** Frequency distributions of distance from the wind tower among carcasses of large-bodied (A) and small-bodied (B) bird species

<sup>a</sup> Set 1 includes the 1,526 wind turbines (151.165 MW) in the search rotation through September 2002.

<sup>b</sup> Set 2 includes 2,548 wind turbines (267.090 MW) in the November 2002–May 2003 rotation.

<sup>c</sup> Set 3 includes the 1,326 wind turbines (161.750 MW) not included in any search rotation. Mortality for Set 3 was estimated by taking the weighted average from the two sampled sets of wind turbines ((mortality of Set 1  $\times$  151.165 MW) + (mortality of Set 2  $\times$  267.09 MW))  $\div$  418.255 MW.

Smallwood, K. S., and C. G. Thelander, Developing Methods to Reduce Bird Fatalities in the Altamont Wind Resource Area, Final Report by BioResource Consultants to the California Energy Commission, Contract No. 500-01-019 (L. Spiegel, Project Manager), 2004.  
[http://altamontsrc.org/alt\\_doc/cec\\_final\\_report\\_08\\_11\\_04.pdf](http://altamontsrc.org/alt_doc/cec_final_report_08_11_04.pdf)

**The graphic below should be noted by all.** It was produced from Altamont decades ago. It shows the carcass dispersal recorded in relation to the small turbines in use at Altamont at that time. These were turbines 60-100 feet tall and had blades about 8 meters long.

The search area size of 120 by 130 meters, which was selected for the Maple Ridge Studies, has been superimposed in blue on the carcass dispersal graphic from 1992. As anyone can see, the search plots used for Maple ridge probably would not have even found or reported all these Altamont carcasses.

Wind turbine carcasses distribution from Altamont pass around small turbines. Most of the carcasses found were reported far beyond turbine blade lengths.

Prepared for the:

Planning Departments of  
ALAMEDA, CONTRA COSTA and SOLANO Counties  
and the CALIFORNIA ENERGY COMMISSION  
Grant #990-89-003

Prepared by:

BoiSystems Analysis, Inc.  
Tiburon, CA

Principal Authors:

Susan Orloff  
Anne Flannery

***Wind Turbine Effects on Avian Activity,  
Habitat Use, and Mortality  
in Altamont Pass and Solano County  
Wind Resource Areas  
1989-1991***

*Final Report  
March 1992*

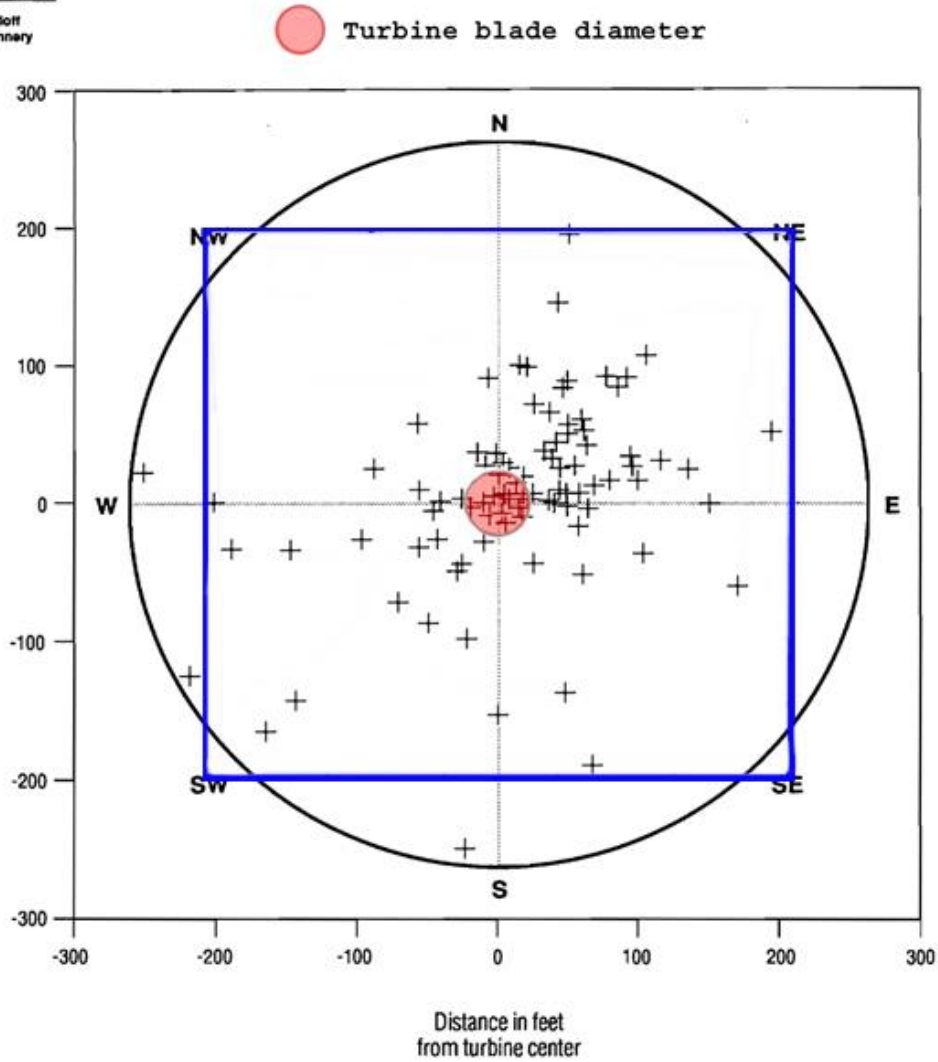


Figure 3-22. Locations of mortalities in relation to turbine centers.

page 107

For the Maple Ridge mortality studies, a search area size of 120 meters by 130 meters may have been acceptable for Small turbines at Altamont, but it was many times too small. Then with this study methodology researchers had the nerve to calculate carcass totals out to 90 meters when 81 % of the

outer reaches of their declared study area (beyond 60 meters) were not even looked during this study. It is also no surprise that the Maple Ridge Study reported no birds or bats carcasses in the search area annulus of 80-90 meters because searchers during this study, only looked at about 1.5% of this total area or just 90 square feet, 80-90 meters out per turbine. This study by design, missed most of the carcasses.

#### MAPLE RIDGE WIND POWER AVIAN AND BAT FATALITY STUDY REPORT – 2008

**Figure 12. Examples of searched towers showing searchable area divided into concentric annuli.**



**Table 13. Area Adjustment Factor (bird and bat incidents from standardized surveys conducted from April 30 to November 9, 2008 (not including ‘added incidentals’).**

**Below are the totals given for the areas searched at different distances for all 64 turbines.**

**Table 9. Number of incidents (Birds) versus total area searched per 10m distance annulus at 64 searched sites, April 30 to November 14, 2007.**

Buffer	Area Searched	Bird Incidents	Bird Incident Density
0-10	20004	9	0.00045
10-20	60010	9	0.00015
20-30	98736	5	0.00005
30-40	132303	6	0.00005
40-50	144686	10	0.00007
50-60	153565	6	0.00004
60-70	123132 ●	4	0.00003
70-80	52701 ●	2	0.00004
80-90	5771 ●	0	0.00000

**60-90 meter annulus**  
**Total area for 64 turbines**  
**approx. 940480 sq meters**

**Total area searched - 181604**  
**Total of area not searched - 81%**

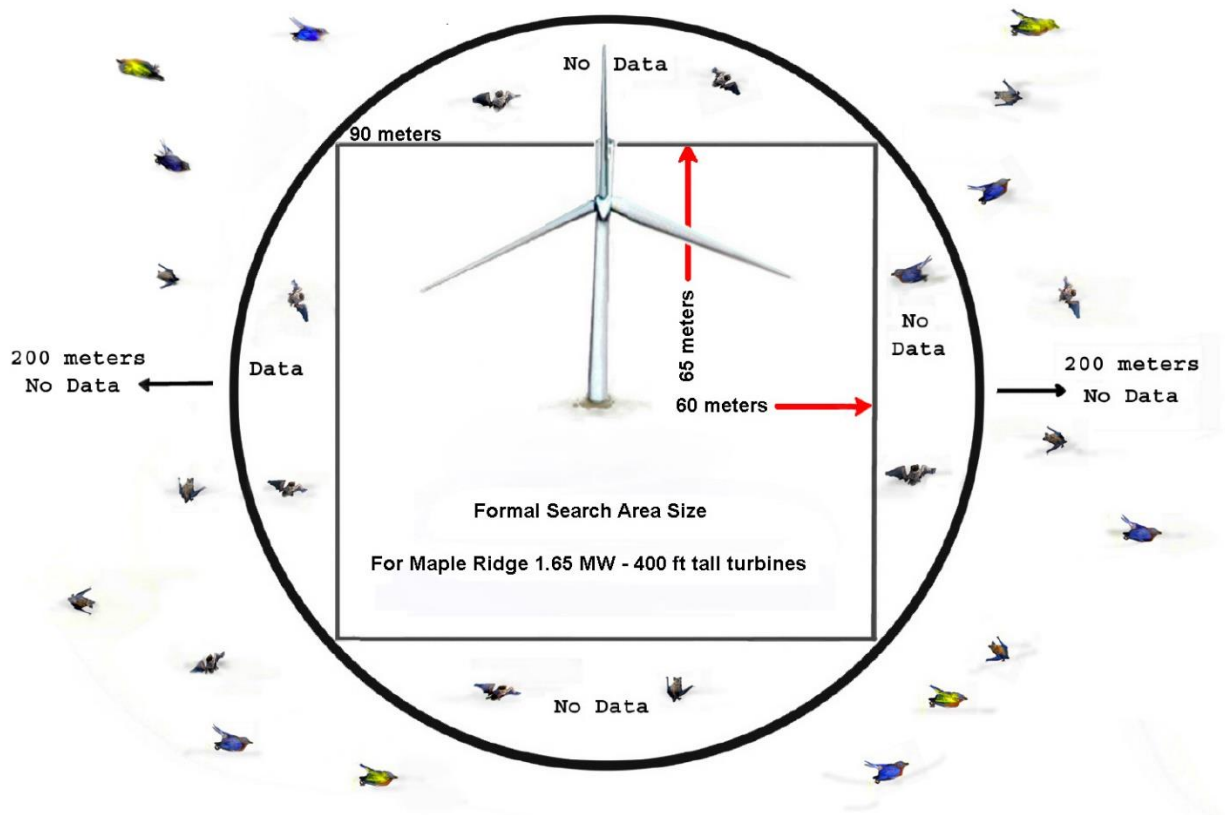
**Table 10. Number of incidents (Bats) versus total area searched per 10m distance annulus at 64 searched sites, April 30 to November 14, 2007.**

Buffer	Area Searched	Bat Incidents	Bat Incident Density
0-10	20004	18	0.00090
10-20	60010	55	0.00092
20-30	98736	45	0.00046
30-40	132303	43	0.00033
40-50	144686	23	0.00016
50-60	153565	13	0.00008
60-70	123132 ●	4	0.00003
70-80	52701 ●	1	0.00002
80-90	5771 ●	0	0.00000

**80-90 meter annulus**  
**Total area for 64 turbines**  
**approx. 353800 sq meters**

**Total area searched - 5771**  
**Total of area not searched - 98.5%**

## How square search plots produce deceptive wind turbine mortality data



For a turbine this size, most carcasses can be expected to fall beyond 60 meters.

The Maple Ridge wind farm study declared 120 by 130 meters rectangular search areas and then produced calculations for a circular area out to 90 meters. But searchers only looked at a total average search area size of about 60 meters out from towers. By no surprise, this study reported no carcasses in the search annulus of 80-90 meters because searchers only looked at about 1.5% of this total area. Missed data leaves nothing to calculate.

The average recorded bird carcass distance for Maple Ridge was 42.5m. The average recorded bat carcass distance was 25.9m. When thousands of turbine carcass have reported distances in the range of 2 times the length of a turbine's blade, these Maple Ridge 400 ft turbines, having 41 meter blades are not possible.

## **An inconsistent and disturbing revelation**

By the time the Maple Ridge study got underway, another mortality study in California was already being conducted in California, by some of the very same people involved with New York's Maple Ridge fatality study.

### **Post-Construction Avian Monitoring Study for the Shiloh I Wind Power Project Solano County, California**

Prepared by:  
CURRY & KERLINGER, LLC

Paul Kerlinger, Ph.D.  
Richard Curry, Ph.D.

Curry and Kerlinger, L.L.C.

#### **“EXECUTIVE SUMMARY**

The Shiloh I Wind Power Project Area is situated on roughly 6,800 acres of agricultural land in the Montezuma Hills, near Rio Vista in Solano County, California. The project consists of 100 wind turbines rated at 1.5 MW each for a total capacity of up to 150 MW. All one hundred turbines went on-line in March 2006.”

“The hub height of each wind turbine is 65 meters (213 feet) and the rotor diameter is 77 meters (253 feet), for a total height of approximately 103.5 meters (339.5 feet) above ground level (AGL) when the rotors are in the 12 o'clock position. At the 6 o'clock position the tip of the rotors are approximately 26 meters AGL.”

The Maple Ridge turbines at 1.65 MW are 10% larger than the 1.5 MW turbines installed in California. The New York turbines are 60 feet taller and their rotating blades about 3 meters longer. In other words, being taller with longer blades, birds and bats hit by the Maple ridge turbines will be launched from higher elevations and catch more wind as they drift from towers. Bird and bats will sustain impacts sending them from further away from towers,

The Shiloh turbines had search areas that extended 105 meters out from towers and 50 turbines were searched. The Maple Ridge turbines had partial searches of areas around 64 turbines that amounted to

a total area about 60 meters out from towers. Total search area for the Shiloh study allowed for more than three times more search area per turbine area, **34636 square meters vs. 11300 sq meters** for the Maple ridge study.

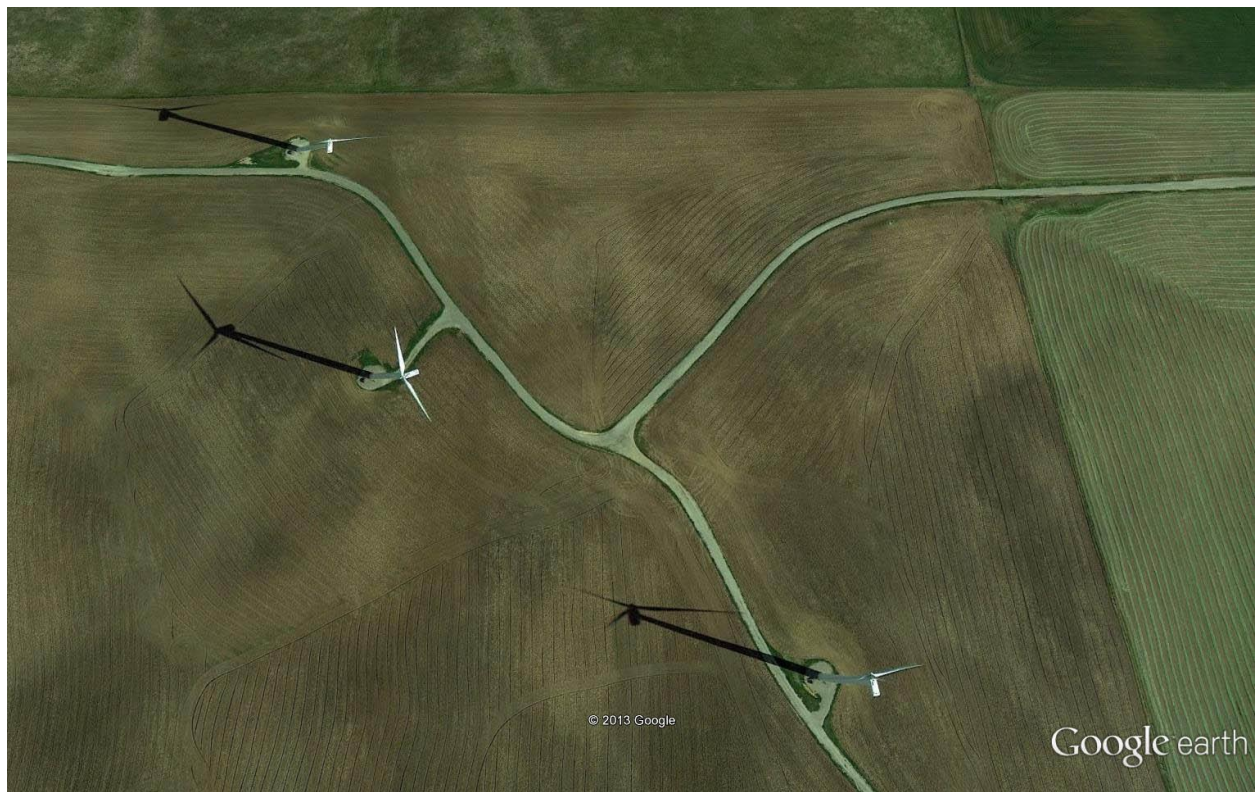
**The 3-year Maple Ridge carcass searches began on June 17, 2006, the 3-year Shiloh Monitoring studies for carcass had over 2 months earlier on April 10 ,2006.**

By the time the Maple Ridge surveys had begun, the Shiloh surveys had already recovered several carcasses at distances beyond 90 meters from towers. At the end of year one, **124 of the 225** turbine casualties reported from weekly surveys, **55 % were found beyond 60 meters. Sixty-one were found at 90 meters and beyond.** Had formal search areas been larger than 105 meters, many more turbine victims than 225 reported would have been found.

Also impacting this formal study, were intense farming practices taking place around these turbines.

**“Where turbines and project roads are located the land use is rotating agricultural crops and grazed pastures. Crops include wheat, barley, hay, safflower and fallow fields. A multi-year rotation is the norm with wheat, fallow, and grazing alternating being the regime used most often.”**

Plowing the soil, dense crop growth and harvesting close to towers surely had a negative impact on the total carcass numbers found during searches. This impact was not discussed.



SHILOH I WIND POWER PROJECT  
Mortality list- page 3 of 7

ONE YEAR REPORT

ID#	Report Date	Estimated Month Death	Species Name	Fatality /Injury	Species Group	Tower	Dist (m)	Deg (GN)*	Days Since Death
SH-053-07	2/15/2007	FEB	European Starling	Fatality	Passerine	C1	9	301	7
SH-153-06	12/5/2006	DEC	European Starling	Fatality	Passerine	C25	2	85	4
SH-116-06	10/12/2006	OCT	Golden-Crowned Kinglet	Fatality	Passerine	B14	80	81	4
SH-132-06	10/25/2006	OCT	Golden-Crowned Sparrow	Fatality	Passerine	A12	100	271	4
SH-137-06	10/27/2006	OCT	Hammond's Flycatcher	Fatality	Passerine	C5	19	173	1
● SH-001-06	4/10/2006	● MAR 06	Horned Lark	Fatality	Passerine	A12	102	248	14
SH-029-07	1/29/2007	JAN	Horned Lark	Fatality	Passerine	C8	95	10	7
SH-136-06	10/27/2006	OCT	Horned Lark	Fatality	Passerine	C8	72	262	4
SH-152-06	12/4/2006	NOV	Horned Lark	Fatality	Passerine	A22	100	296	7
SH-157-06	12/13/2006	DEC	Horned Lark	Fatality	Passerine	B7	71	48	7
SH-016-06	6/5/2006	JUN	House Sparrow	Fatality	Passerine	C4	5	118	1
SH-017-06	6/11/2006	JUN	Northern Mockingbird	Fatality	Passerine	E7	73	300	7
SH-006-07	1/9/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	91	180	7
SH-007-07	1/9/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	95	182	7
SH-008-07	1/9/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	102	181	7
SH-009-07	1/9/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	102	181	7
SH-010-06	5/15/2006	MAY	Red-winged Blackbird	Fatality	Passerine	B20	51	177	14
SH-011-06	5/17/2006	APR 06	Red-winged Blackbird	Fatality	Passerine	H10	61	136	30
SH-012A-07	1/9/2007	JAN	Red-winged Blackbird	Fatality	Passerine	E3	14	294	7
SH-014-06	5/24/2006	MAY	Red-winged Blackbird	Fatality	Passerine	A9	43	74	1
● SH-019-06	6/17/2006	● JUN	Red-winged Blackbird	Fatality	Passerine	D1	92	254	7
SH-019-07	1/23/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	80	248	7
SH-028-06	7/17/2006	JUL	Red-winged Blackbird	Fatality	Passerine	A6	0	38	7
SH-029-06	7/19/2006	JUL	Red-winged Blackbird	Fatality	Passerine	B7	96	154	7
SH-032-07	1/29/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	45	7	7
SH-033-06	7/26/2006	JUL	Red-winged Blackbird	Fatality	Passerine	B7	74	286	4
SH-033-07	1/29/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	55	10	7
SH-034-06	7/26/2006	JUL	Red-winged Blackbird	Fatality	Passerine	B4	0	38	4
SH-034-07	1/29/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	38	255	7
SH-036-07	1/29/2007	JAN	Red-winged Blackbird	Fatality	Passerine	C5	56	113	7
SH-037-06	7/28/2006	JUL	Red-winged Blackbird	Fatality	Passerine	E7	99	340	30
SH-040-06	8/7/2006	UNK	Red-winged Blackbird	Fatality	Passerine	A6	22	220	UNK
SH-040-07	1/30/2007	JAN	Red-winged Blackbird	Fatality	Passerine	E7	106	294	7
SH-059-07	3/1/2007	FEB	Red-winged Blackbird	Fatality	Passerine	C1	52	346	7
SH-065-07	3/10/2007	MAR 07	Red-winged Blackbird	Fatality	Passerine	G2	93	237	4
SH-067-07	3/13/2007	MAR 07	Red-winged Blackbird	Fatality	Passerine	A23	2	284	4
SH-073-07	3/20/2007	MAR 07	Red-winged Blackbird	Fatality	Passerine	C1	3	240	4
SH-090-06	9/28/2006	UNK	Red-winged Blackbird	Fatality	Passerine	A24	66	12	UNK
SH-139-06	11/3/2006	OCT	Red-winged Blackbird	Fatality	Passerine	B18	63	310	7
SH-056-07	2/28/2007	FEB	Savannah Sparrow	Injury	Passerine	A9	90	176	1
SH-079-06	9/15/2006	SEP	Savannah Sparrow	Fatality	Passerine	B4	62	144	7
SH-159-06	12/14/2006	DEC	Savannah Sparrow	Fatality	Passerine	E3	1	68	4
SH-036-06	7/27/2006	JUL	Tree Swallow	Fatality	Passerine	C3	43	20	4
SH-046-07	2/5/2007	JAN	Tree Swallow	Fatality	Passerine	E3	99	48	7
SH-066-06	9/6/2006	AUG	Tree Swallow	Fatality	Passerine	C8	10	275	7
SH-037-07	1/29/2007	JAN	Tri-colored Blackbird	Fatality	Passerine	C6	100	284	7
SH-020-07	1/23/2007	JAN	Unidentified Sparrow spp.	Fatality	Passerine	C8	87	174	7
SH-135-06	10/26/2006	OCT	Unidentified Sparrow spp.	Fatality	Passerine	C13	86	112	7



60-90 meters



90 meters and above

With science, proper study design and adjustments are made when looking for the truth. The researchers involved with both the Maple Ridge and the Shiloh study, knew over half the carcasses were flying past 60 meters at Shiloh's 1.5 MW turbines. Small birds were being smashed nearly 3 times further out from towers than those reported killed around Altamont's small 100 kW turbines. Some were inadvertently found out to 200 meters even though this area was not being formally searched.

Yet no changes were made to expand formal search areas in either the Maple Ridge or Shiloh 3-year studies. Nor were there any new (more than appropriate) mathematical adjustments to account for the many long-distance carcasses obviously being missed.

**Instead of making logical suggestions or adjustments to either of these 3-year studies, I found changes like this .....**

**“The March 2007 golden eagle incident was wrongly included as a turbine incident in the Year 1 report but moved to “incidental” in this report as it was found outside the search area.”**

When comparing these two studies, the Shiloh carcass searches beyond 80 meters from towers, looked at about 15000 sq. meters per turbine, the Maple Ridge study about 90 sq. meters per turbine.

Both of the studies I have I discussed here were flawed for various reasons and both underreported turbine mortality. Of the two, the New York Maple Ridge study was more severely flawed. This study clearly concealed far more mortality, with under grossly undersized search areas, deceptive search methodologies and inappropriate calculations

## **Examples of unscientific research conducted by Western Technologies Inc.**

If Ohio wants a credible opinion about wind turbine risks to birds and bats, they certainly do not want to rely on Western Ecosystems Technologies Inc, because I have also not ever seen one scientifically credible wind turbine related study from this company. They have been in the business of putting out their biased brand of bogus research for decades.

In this 2007 study an attempt was made to determine the effectiveness the seasonal shutdown of turbines at Altamont on raptor mortality.

**Interim Summary on the Effectiveness of the Winter Period Turbine Shutdown in the Altamont Pass Wind Resource Area**

**Un-reviewed Draft**

April 8, 2007

Authors: Wallace Erickson and Dale Strickland. WEST Inc., 2003 Central Ave., Cheyenne Wyoming 82001

**INTRODUCTION**

The following report contains preliminary analyses designed to estimate the initial effectiveness of the winter shutdown of turbines in the Altamont Pass Wind Resource Area (APWRA). This report describes and summarizes standardized fatality data collected within the APWRA from January 2005 – October 2006 that are most relevant for understanding the effectiveness of the shutdown of turbines for reducing overall raptor mortality in the APWRA. This report can be considered an addendum to the report

**What were the results from this unscientific study?**

These West Inc researchers were still finding raptor carcasses even though turbines that are not spinning will not kill them. In their summary they just can't imagine or write that the dead raptors they were finding, had to be coming from turbines that were spinning. If the turbines they were studying were not spinning, then these raptors before dying, had traveled great distances after being hit by other turbines.

## SUMMARY

While there was some measured effect of seasonal shutdown on raptors overall, the fact that some raptor casualties were observed during the shutdown periods is somewhat puzzling. For some of the records, it is possible the fatalities occurred during a period when the turbines were operational, since some of the searches used for estimating the shutdown effect were conducted after the turbines had been turned back on. In other cases, the fatalities that occurred in areas where turbines are shutdown may have been caused by something other than a collision with a moving wind turbine. For example, there were four raptors found at the Santa Clara site in 2006 when turbines were not operating for long periods of time. One of the great horned owls had grease on its flight feathers. It is difficult to ascertain whether the fatalities occurred by collision with a non-moving structure and therefore wind project related, or whether the fatalities were caused by factors not related to the wind project. A 2<sup>nd</sup> more complete report will be completed by the end of May that includes the results of the 2<sup>nd</sup> winter of the seasonal shutdown experiment.

**At Fowler Ridge** West Inc. did a mortality study around 118 huge turbines, Look at this Image. With the crazy methodology they chose to only look at the just the clear turbine pads and roads out to 80 meters, all these turbines could have easily been searched daily. Instead they searched just once a week and looked at less than 1% of their so called 80- meter search areas. Search areas should have been 200 meters and 50,000 carcasses including 100 eagles could have been in the fields around these turbines, but because this is a wind industry study it would not have mattered.



Carcass searches at 118 turbines were conducted along access roads and turbine pads within 80 m (262 ft) of the turbine. The results of the 2010 FRWF study supported the use of road and pad searches for generating comparable and unbiased overall bat casualty estimates (Good et al. 2011).

### **Search Frequency**

Turbines were searched weekly (i.e., each turbine was searched once per week). The search interval was based on mean carcass removal times of 9.93, 10.34, and 13.02 days observed during monitoring at FRWF in 2009, 2010, and 2011, respectively (WEST unpublished data, Good et al. 2011, 2012).

For these Fowler Ridge turbines, this reported distribution (shown below) for bird and bat carcasses, **after being hit by 400 ft tall turbines is not possible**. The results of this study are not scientific or even remotely credible.

Table 5. Distribution of distances from turbines of bird and bat casualties found during scheduled searches or incidentally on turbine search plots at the Fowler Ridge Wind Farm from August 1 to October 11, 2012.

Distance to Turbine (m)	% Bird Casualties	% Bat Casualties
0 to 10	50.0	38.7
10 to 20	12.5	25.3
20 to 30	37.5	17.3
30 to 40	0	8.0
40 to 50	0	6.7
50 to 60	0	2.7
60 to 70	0	1.3
70 to 80	0	0
>80	0	0

## Another Western Ecosystems Technologies Study in Maryland a the Criterion wind Project.....

Here is more about the killing potential of this industry's new modern turbines.

In my evaluation of one 7-month wind industry study, I believe many thousands of bat and bird fatalities were concealed in a Post construction study at the Criterion Wind project. This represents an estimated death rate of 111 birds/MW and 357 bats per/MW or nearly 468 birds and bats killed per MW per year. This was my estimated mortality from just 28 - 2.5 MW turbines in Maryland. The study methodology called for fragmented tiny search areas around these huge turbines with the total of the searched areas equaling about **a complete 50-meter distance from towers**. These ridge line turbines had blades 47 meters in length and search areas calculations should have allowed for launched

carcasses out to at least 200 meters from the turbines.

2011 Post Construction Monitoring  
Criterion Wind Project

### **Bat Fatalities**

A total of 664 bat fatalities were found during scheduled turbine searches, representing seven identifiable species. The bat species most commonly found during searches were eastern red bat (*Lasiurus borealis*; 231 carcasses) and hoary bat (*L. cinereus*; 216 carcasses). Other bat species found during the scheduled searches included silver-haired bat (*Lasionycteris noctivagans*; 96 carcasses), tricolored bat (*Pipistrellus subflavus*; 47 carcasses), big brown bat (*Eptesicus fuscus*; 37 carcasses), little brown bat (*Myotis lucifugus*, 30 carcasses), and Seminole bat (*L. seminolus*, one carcass). A total of 42 bats were found **incidentally** within search plots (Table 3).

In the mortality report for these turbines it was claimed that searchers systematically searched along predetermined in transects in their search plots. **I was told something completely different by an eyewitness (written statement).** He told me that he had access to the property and that he observed on two occasions wind personnel/employees, randomly picking up carcasses from around turbines. Two people were seen quickly picking up carcasses from the clear areas (roads and graveled areas) around the turbines. These areas were also the designated search areas for the study.

They were seen dumping carcasses in a bucket and driving off to the next turbine. They were not seen with a pen, no hand-held devices, a computer, no notebooks, they did nothing but run around, grab bodies and drive off. This eyewitness even talked with them and saw bat carcasses in their bucket. They did not appear to be professional and barely spoke English. He also said he would be willing to testify to what he saw. This reported activity was likely an organized pre-scan for carcasses ahead of formal searches.

This observed activity was nothing close to being scientific and took place when formal searches were being conducted on these turbines in Maryland. These turbines are also located in the known habitat of the endangered Indiana bat. I have notified the Interior Department on several occasions about this activity and this witness, but they have never responded back.

The Criterion wind project is interesting because it was designed with mortality research methodologies set up so that carcasses searches would be daily. This is almost unheard of with the wind industry's mortality research. I suspect developers thought they had their bases covered with the grossly undersized search areas. The tiny search/mortality areas that were chosen at this wind farm site were at least 25 times too small for these 420 ft tall turbines spinning with their 47-meter blades.

But as researchers would soon find out, those tiny search areas, that did not even cover full areas out to 40 meters from turbines, would still produce hundreds of carcasses that would have to be explained away.

"The monitoring study period was about 7 months, from April 5 to November 15, 2011. Search plots were established around all 28 turbines in the project and the carcass search schedule was for daily searches at all turbines (weather and safety permitting). Search plots were generally up to 40 m (~130 ft) radius totaling roughly 80 m<sup>2</sup> (~860 ft<sup>2</sup>). **The shape of the search plots was variable due primarily to the size of the area cleared for construction.**"

The project used the 2.5 MW Liberty Wind Turbine and at that time was the largest wind turbine manufactured in the United States. The turbine was developed through a partnership with U.S. Department of Energy and its National Renewable Energy Laboratory for Clipper Windpower. They refer to this arrangement as a partnership, I would call it collusion.

After reading through the facts, I believe most will agree that the research at this site was rigged and likely so at the highest levels, to hide mortality. But even with the most diehard of sceptics, when seeing the basic facts, it should be very obvious, **that thousands of carcasses went unreported.**

It is my opinion, when all the flawed research factors are taken into consideration, the fatalities hidden in this research could have been 20,000 -

25000 fatalities. This study reported 1540.

**Table 2. Proportion of plots searched within the Criterion Wind Energy Project.**

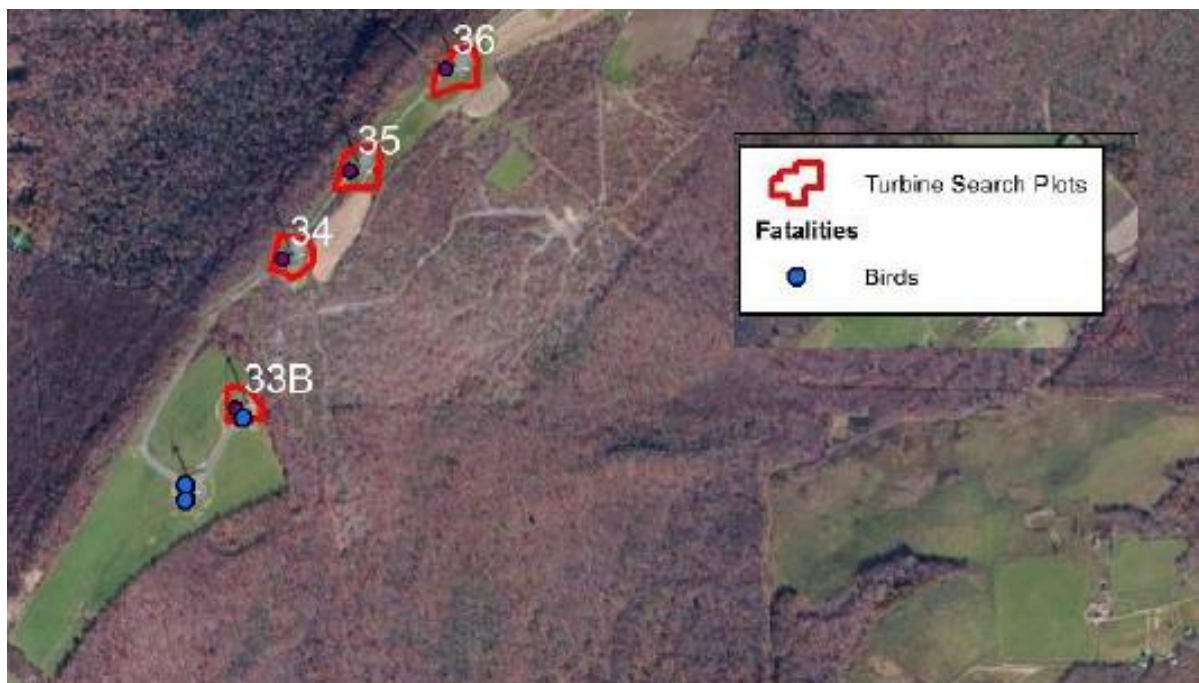
Distance (m)	Area Searched (sq. m)	Total Area (sq. m)	Percent Area Searched
10	8,181.64	8,788.17	93.1
20	24,195.94	26,364.50	91.8
30	37,237.17	43,940.83	84.7
40	42,986.84	61,517.16	69.9
50	37,637.84	79,093.50	47.6
60	27,358.02	96,669.83	28.3
70	17,224.81	114,246.16	15.1
80	8,663.08	131,822.50	6.6
90	2,590.51	149,236.64	1.7
100	696.75	165,890.29	0.4

A total of 262 birds (246 small birds and 16 large birds) and 706 bats were found during standardized carcass surveys or incidentally (Table 3). A full listing of casualties found and the locations of casualties are presented in Appendix A and Appendix B.

**The research reported a total of 968 carcasses** but if you study the percentages of the areas searched, the areas where the most carcasses would be found were primarily avoided. This is the area beyond the turbines blade lengths. For this study just 52 birds and bats were reported beyond 47 meters. Based upon past studies in CA, this is an area where 85-90% of all carcasses would have been found.

Of the areas out 47 meters, searches only looked at about 75% of this total area. Adjusting mortality for this lack of search coverage brings the 7-month Criterion carcasses total up to 1221. **But this reported 968 total, was just the beginning of**

the actual carnage that took place around these turbines.



**How important are all carcasses?** Very important: and waiting a week or more allows more than enough time for scavengers, lease holders or wind personnel to pick up most carcasses. Just finding a single carcass and flicking a few feet away from a designated search area excludes very important carcasses data from a study. But it gets much worse because a single carcass found 100-200 meters away from a turbine base on a narrow road, **could actually represent 200 or more carcasses in an honest study** when calculations are conducted for

missed carcasses in the proportion of search areas not scanned by researchers.

The data from hundreds of carcasses collection at Altamont produced consistent dispersal patterns from towers. Turbines under 100 ft tall and with 9-meter blades, launched about 50% of carcasses over twice the length of turbine blades.

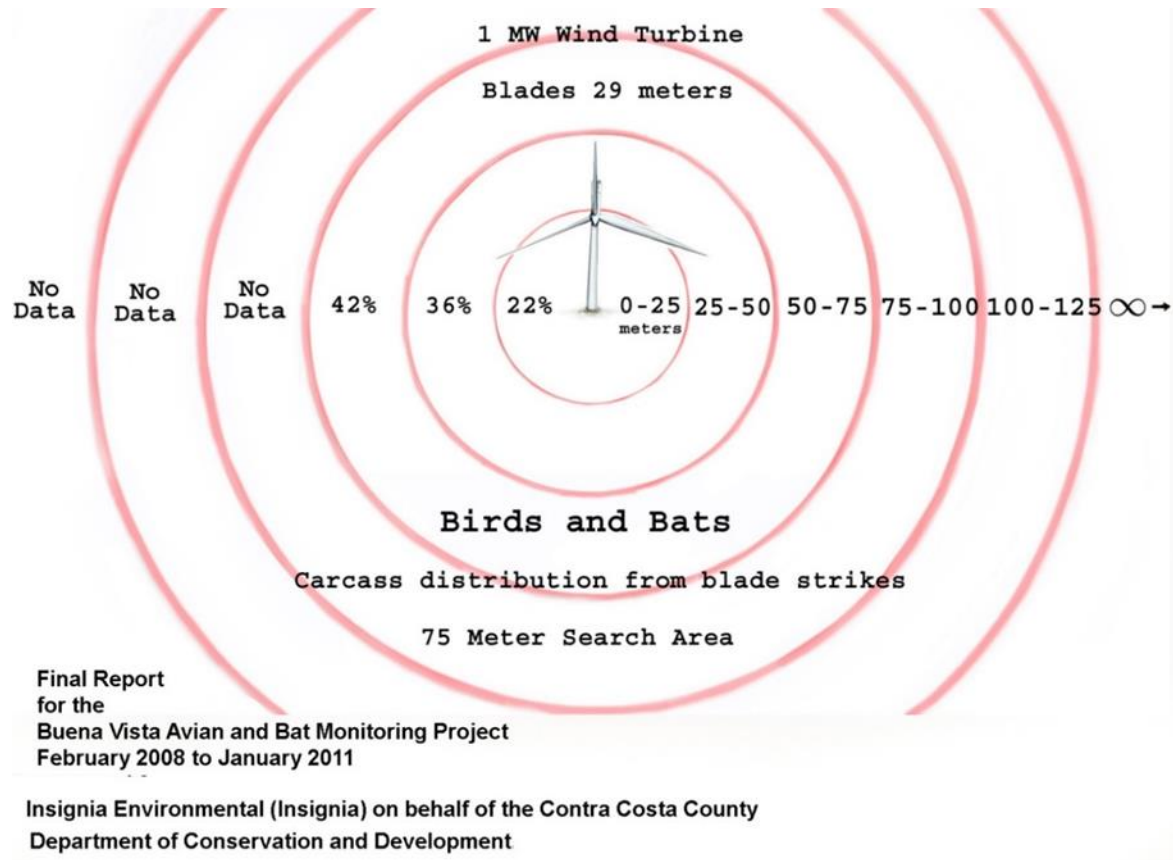
With the 7-month Criterion research, the carcass total with their fraudulent data adjustment reported only 1221 fatalities with the tiny searches that were used. If search areas and calculations accounted for missed fatalities launched out to 200 meters, it is easy to understand how thousands of turbine fatalities occurred during this terrible study and were missed. Were 10,000 fatalities missed in this bogus study or was the real number closer to 20,000 or 30,000?

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## Fake “green” research avoids this wind turbine carcass data

**New wind industry search areas sizes of 50-75 meters approved with unscientific USFWS and Canadian monitoring guidelines**

38



### Western Ecosystem Technologies Inc. and Stantec Research

Stantec has a long history of conducting nonscientific research yet their **fake research is cited numerous times by Western Ecosystem Technologies Inc. to bolster false mortality impact opinions given for the Icebreaker project.**

Laboratory, US Department of Energy, Boulder, Colorado.

Stantec Consulting, Inc. (Stantec). 2009. Post-Construction Monitoring at the Munnsville Wind Farm, New York: 2008. Prepared for E.ON Climate and Renewables, Austin, Texas. Prepared by Stantec Consulting, Topsham, Maine. January 2009.

Stantec Consulting, Inc. (Stantec). 2010a. Cohocton and Dutch Hill Wind Farms Year 1 Post-Construction Monitoring Report, 2009, for the Cohocton and Dutch Hill Wind Farms in Cohocton, New York. Prepared for Canandaigua Power Partners, LLC and Canandaigua Power Partners II, LLC, Portland, Maine. Prepared by Stantec, Topsham, Maine. January 2010.

Stantec Consulting Ltd. (Stantec Ltd.). 2010b. Wolfe Island Ecopower Centre Post-Construction Followup Plan. Bird and Bat Resources Monitoring Report No. 2: July - December 2009. File No. 160960494. Prepared for TransAlta Corporation's wholly owned subsidiary, Canadian Renewable Energy Corporation. Prepared by Stantec Ltd., Guelph, Ontario. May 2010.

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*West, Inc.*

30

*November 2016*

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Stantec Consulting Ltd. (Stantec Ltd.). 2011a. Wolfe Island Wind Plant Post-Construction Followup Plan. Bird and Bat Resources Monitoring Report No. 4: July - December 2010. File No. 160960494. Prepared for TransAlta Corporation's wholly owned subsidiary, Canadian Renewable Energy Corporation. Prepared by Stantec Consulting Ltd., Guelph, Ontario. July 2011.

Stantec Consulting, Inc. (Stantec). 2011b. Bat screening analysis and pre-construction bat survey. Pioneer Trail Wind Farm, Iroquois and Ford Counties, Illinois. Prepared for E.ON Climate and Renewables, Chelmsford, MA.

Stantec Consulting, Inc. (Stantec). 2011c. Cohocton and Dutch Hill Wind Farms Year 2 Post-Construction Monitoring Report, 2010, for the Cohocton and Dutch Hill Wind Farms in Cohocton, New York. Prepared for Canandaigua Power Partners, LLC, and Canandaigua Power Partners II, LLC, Portland, Maine. Prepared by Stantec, Topsham, Maine. October 2011.

Stantec Consulting Ltd. (Stantec Ltd.). 2012. Wolfe Island Wind Plant Post-Construction Follow-up Plan. Bird and Bat Resources Monitoring Report No. 6: July-December 2011. File No. 160960494. Prepared for TransAlta Corporation's wholly owned subsidiary, Canadian Renewable Energy Corporation. Prepared by Stantec Consulting Ltd., Guelph, Ontario. July 2012.

Stantec Consulting, Inc. (Stantec). 2013. Steel Winds I and II Post-Construction Monitoring Report, 2012, Lackwanna and Hamburg, New York. Prepared for First Wind Management, LLC, Portland, Maine. Prepared by Stantec, Topsham, Maine. April 2013.

**Stantec's history of conducting nonscientific research. This section was also written previously for a group of citizens in the state of New York.**

It is important to bring this up because I have seen a very consistent pattern with Stantec's research. They consistently choose research methodologies that exclude important data.

I first became acquainted with Stantec research after I read over a 2009 survey conducted on behalf of Iberdrola concerning peregrine falcon use in the region of the proposed Groton New Hampshire Wind project. The [peregrine falcon survey](#) for the project was severely flawed because researchers did not even try to observe the falcons when they would be the most active. Peregrine falcons are very active during their daily dawn and dusk hunting activity. They are also very active during courtship rituals in the Spring.

Yet the stated objective of the survey was to investigate whether peregrine falcons use the Project area. These observations were critical because it is during these behaviors the falcons are the most likely to be using the project site. It is also during these distractive behaviors that a collision with a turbine is the most likely.

Even the observers themselves noted this flaw in the survey methodology with the following statement; "Therefore, the results of the 2009 surveys cannot describe peregrine activity during all daylight hours during the period of interest, or describe activity across the entire Project area."

Yet Iberdrola, in their Executive Summary for the project, boldly makes the following statement based upon this survey; " Rare, threatened, or endangered bird species that were documented in the Project area during these surveys include peregrine falcon (state- listed threatened), bald eagle (state-listed threatened), and common loon (state- listed threatened). **None of these species** reside within the project area.

No federally-listed threatened or endangered birds were observed during any of the field surveys."

This statement is false. I am an expert on Peregrine Falcon behavior and know with complete certainty, these falcons did utilize the air space located in their hunting territories above the proposed Groton Wind Project site.

## Impossible post operational wind turbine research

**What I am presenting next is about the easiest to understand and crystal-clear proof pertaining to Stantec's nonscientific research.** As I will show, using the data from past wind turbine mortality studies, the results from Stantec's wind turbine mortality studies are not even remotely possible with operating wind turbines spinning with tip speeds of 175-200 mph. Stantec's reported carcass distances around turbines defies all logic including Newton's laws of motion, inertia and gravity. Stantec may be following Canadian Ministry or USFWS wind turbine research guidelines with their studies, but this research isn't scientific and their results have been consistently impossible.

Below are a few of published distance locations for thousands wind turbine carcasses collected over a several decades period. There are many studies with similar carcass distance data. When looking over this wind industry mortality data, notice the recorded carcass distance locations. With this data, about 50-80% of all carcasses were reported at distances beyond the turbine rotor sweep or the turbine blade length out from turbine towers. This data represents what a turbine blade does to birds and bats upon impact. Carcasses are launched with great force into wind currents.



Wind turbine carcasses distribution from Altamont pass around small turbines. Most of the carcasses found were reported far beyond turbine blade lengths.

Prepared for the:

Planning Departments of  
ALAMEDA, CONTRA COSTA and SOLANO Counties

and the CALIFORNIA ENERGY COMMISSION  
Grant #990-89-003

Prepared by:

BoiSystems Analysis, Inc.  
Tiburon, CA

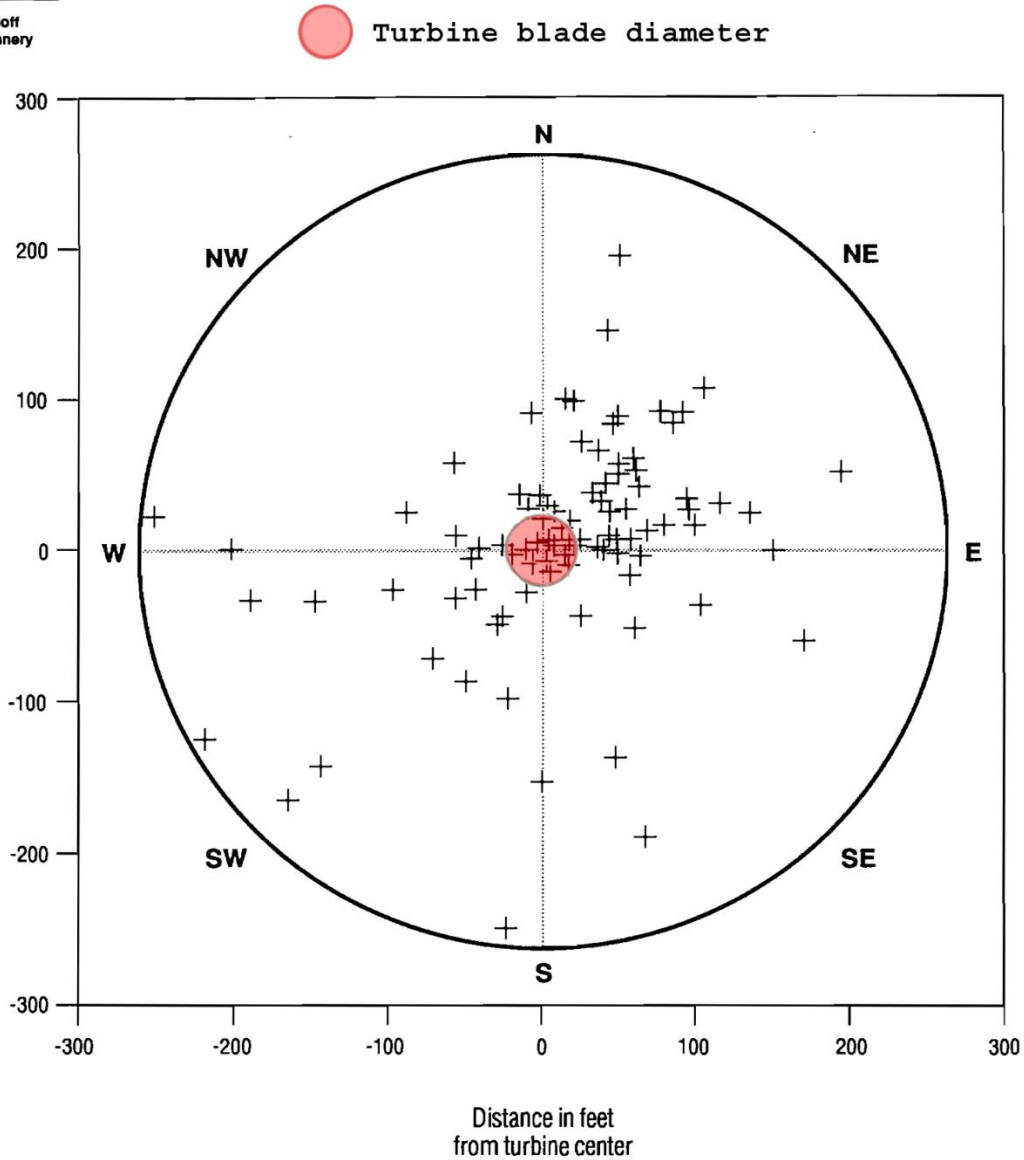
Principal Authors:

Susan Orloff  
Anne Flannery

***Wind Turbine Effects on Avian Activity,  
Habitat Use, and Mortality  
in Altamont Pass and Solano County  
Wind Resource Areas***

**1989-1991**

*Final Report  
March 1992*



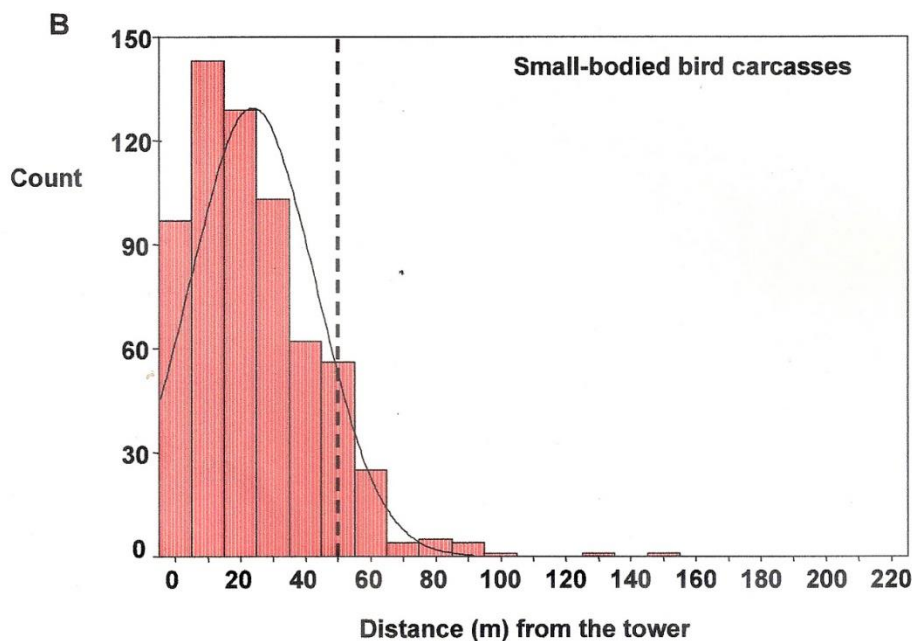
**Figure 3-22.** Locations of mortalities in relation to turbine centers.

## Carcass distribution for 631 small - bodied birds

Average turbine size 103 kW on 24 meter towers with average blade length of 9.25 meters

### *Small-bodied Birds*

Our search radius included 90.5% of the carcasses of small-bodied bird species (Figure 2-9B), of which 75% were located within 34 m of the tower. The mean and standard deviation of these 631 distances was  $23.8 \pm 19.4$  m. Most carcasses were found northeast of the tower, and a considerable number were located southwest (Figure 2-10B), just as the large-bodied bird carcasses had been distributed.



**Figure 2-9.** Frequency distributions of distance from the wind tower among carcasses of large-bodied (A) and small-bodied (B) bird species

<sup>a</sup> Set 1 includes the 1,526 wind turbines (151.165 MW) in the search rotation through September 2002.

<sup>b</sup> Set 2 includes 2,548 wind turbines (267.090 MW) in the November 2002–May 2003 rotation.

<sup>c</sup> Set 3 includes the 1,326 wind turbines (161.750 MW) not included in any search rotation. Mortality for Set 3 was estimated by taking the weighted average from the two sampled sets of wind turbines ((mortality of Set 1  $\times$  151.165 MW) + (mortality of Set 2  $\times$  267.09 MW))  $\div$  418.255 MW.

Smallwood, K. S., and C. G. Thelander, *Developing Methods to Reduce Bird Fatalities in the Altamont Wind Resource Area, Final Report by BioResource Consultants to the California Energy Commission, Public Interest Energy Research – Environmental Contract No. 500-01-019* (L. Spiegel, Project Manager), 2004.  
[http://altamontsrc.org/alt\\_doc/cec\\_final\\_report\\_08\\_11\\_04.pdf](http://altamontsrc.org/alt_doc/cec_final_report_08_11_04.pdf)

## Carcass distribution for 468 large bodied birds

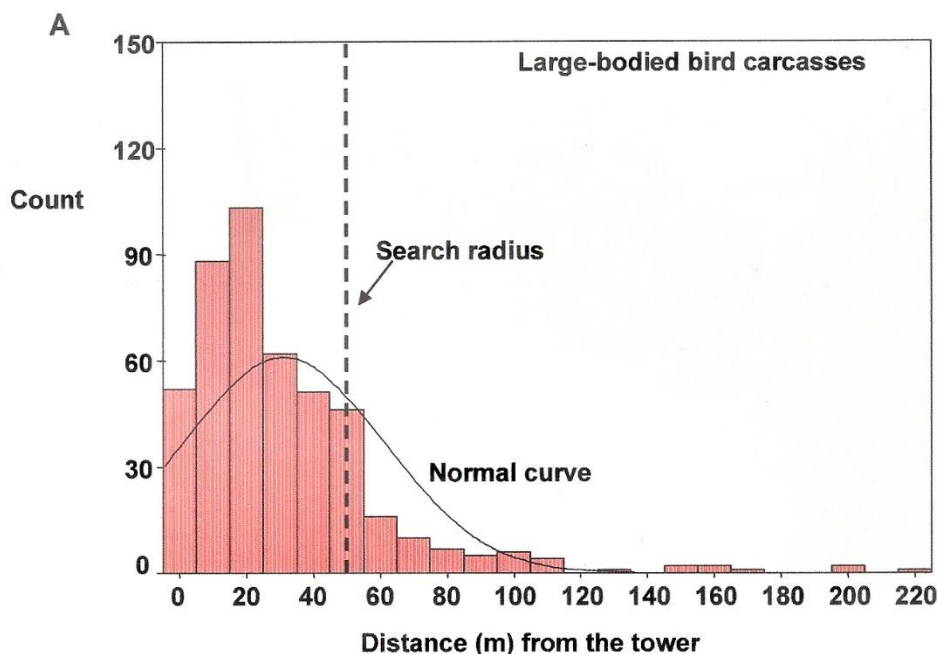
Average turbine size 103 kW on 24 meter towers with average blade length of 9.25 meters

### 2.3.2 Distances of Bird Carcasses from Wind Turbines

#### Large-bodied Birds

Our search radius included 84.7% of the carcasses of large-bodied bird species determined to be killed by wind turbines or unknown causes (Figure 2-9A). Of these, 75% were located within 42 m of the tower. The mean and standard deviation of these 468 distances was  $31.1 \pm 30.0$  m. Most carcasses were found northeast of the tower, and a considerable number were located southwest of the tower (Figure 2-10A).

Carcass locations of large-bodied bird species differed significantly by distance from wind turbines according to five ranges of tower heights (ANOVA  $F = 3.66$ ;  $df = 4, 456$ ;  $P = 0.006$ ), and post-hoc LSD tests revealed that fatalities were located farther from 25-m and 32-m towers (means = 33 m and 57 m) than shorter towers (mean = 28 m for 14-m towers, and 26 m for 18.5-m towers) or 43-m towers (mean = 28 m). Distance from tower increased with tower height, according to linear regression analysis, although the precision of the model was poor (Figure 2-11A).



**Figure 2-9.** Frequency distributions of distance from the wind tower among carcasses of large-bodied (A) and small-bodied (B) bird species

<sup>a</sup> Set 1 includes the 1,526 wind turbines (151.165 MW) in the search rotation through September 2002.

<sup>b</sup> Set 2 includes 2,548 wind turbines (267.090 MW) in the November 2002–May 2003 rotation.

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Smallwood, K. S., and C. G. Thelander, *Developing Methods to Reduce Bird Fatalities in the Altamont Wind Resource Area*, Final Report by BioResource Consultants to the California Energy Commission, Contract No. 500-01-019 (L. Spiegel, Project Manager), 2004.  
[http://altamontsrc.org/alt\\_doc/cec\\_final\\_report\\_08\\_11\\_04.pdf](http://altamontsrc.org/alt_doc/cec_final_report_08_11_04.pdf)

## November 1998 - June 2002

This initial construction phase of the Foote Creek

Rim wind plant (hereafter referred to as FCR I) is comprised of 69 600-kilowatt Mitsubishi turbines (41.4 MW capacity)

During this study 43 of 79 bats were found at or beyond the 21 meter turbine blade length.

Appendix B. Bat mortalities found in Foote Creek Rim Construction Unit I (FCR I), November 3, 1998 - June 5, 2002.

Log No. <sup>a</sup>	Species	Date	Found During Carcass Search?	Plot <sup>b</sup>	Distance from tower (m)	Comments
232	Hoary Bat	8/29/01	Yes	T 50	10	Intact carcass
233	Silver-haired Bat	9/3/01	No	T 58	15	Intact carcass, found by Jeff Gruver (UW) during bat studies on FCR
234	Hoary Bat	9/13/01	Yes	T 22	57	Intact carcass but decomposed
253	Little Brown Bat	6/3/02	Yes	T14	40	Intact carcass

<sup>a</sup> matches log no. on Figure 1

<sup>b</sup> T = turbine; M = meteorological tower (met tower)

At turbine plots, avian casualties were located between 4 and 77 m from the turbines with an average distance of 37.7 m.

<sup>1</sup> The carcasses found at distances too great to determine if they were associated with a wind plant turbine or met tower were all found incidentally during other wildlife studies (e.g., raptor point counts).

Appendix A. Avian mortalities found in Foote Creek Rim Construction Unit I (FCR I), November 3, 1998 - June 5, 2002.

Log No. <sup>a</sup>	Species	Date	Found During Carcass Search?	Plot <sup>b</sup>	Distance from tower (m)	Comments
158	Common Nighthawk	7/27/00	No	unk	-	Intact carcass; 1m south of road; compressed by truck tire, 140m from T 40
175	Rock Wren	8/29/00	Yes	T 23	47	Intact carcass; left eye scavenged; broken left wing, broken ribs
179	Horned Lark	9/5/00	No	unk	-	Feather spot; possible mammal scavenging; 168 m from T 68
182	Townsend's Warbler	9/11/00	Yes	T 11	28	Dismembered carcass; torso, head, wings missing
183	Wilson's Warbler	9/12/00	Yes	T 31	30	Dismembered carcass; part of head, most of tail, 1 wing and body feathers
185	Townsend's Warbler	9/12/00	Yes	T 40	61	Dismembered carcass; head and torso missing
188	White-crowned Sparrow	9/26/00	No	unk	-	Intact carcass; fresh carcass, no visible injuries; 184 m from T 36

FCR I. The Mitsubishi turbines in FCR I are approximately 131 ft (40 m) tall at the nacelle with a rotor diameter of 138 ft (42 m). Tower (turbine) spacing in FCR I is approximately 276 ft (84 m).

**Post-Construction Avian Monitoring Study for the Shiloh I Wind Power Project  
Solano County, California  
Year One Final Report September 2007**

**Table 12. Number of incidents per size grouping versus distance from wind turbine tower**

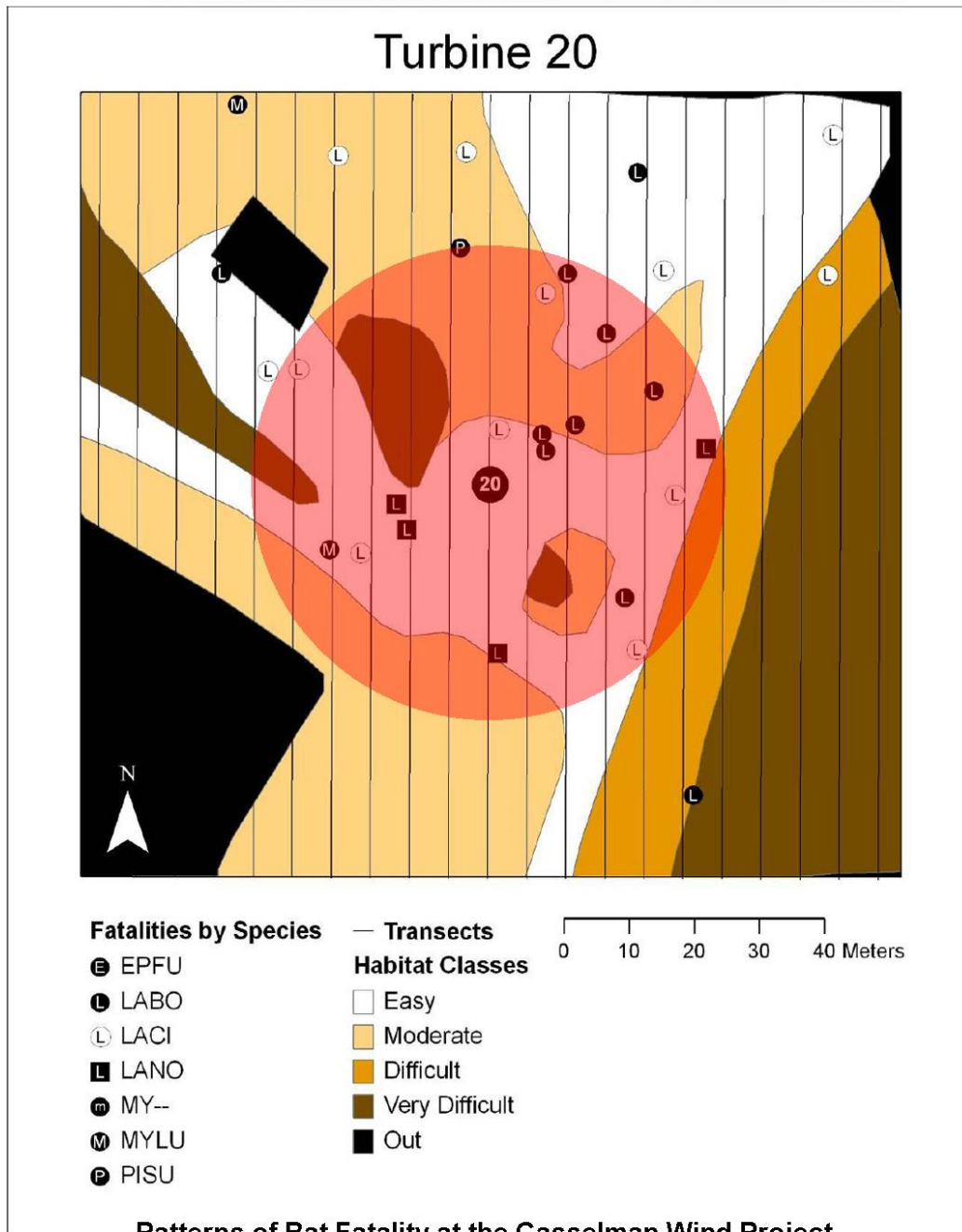
Species Size Group	Distance Range (meters)														Total
	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-110	111-120	121-130	131-200	
Small Bird	5	1		1	2		1	6	3	8	3				30
Medium Bird	9	6	2	8	6	15	15	14	3	21	9	1			109
Large Bird	3	1	2	1	1	1	1	1	2	3	1	1	2	1	21
Unknown Bird Species*						1	1	2	1	4					9
Bat	3		4	7	15	9	3	6	4	1					52
<b>Total</b>	<b>20</b>	<b>8</b>	<b>8</b>	<b>17</b>	<b>24</b>	<b>26</b>	<b>21</b>	<b>29</b>	<b>13</b>	<b>37</b>	<b>13</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>221</b>

\* All unknown bird species were small or medium sized passerines

**Data from 2006-2007 mortality studies with 105 meter search areas around 1.5 MW wind turbines. Some were mounted on 65 meter towers and others were mounted on 80 meter towers. Large and medium species found beyond 105 meters were seen because of temporary high visibility conditions periods during crop rotations. Search intervals were approximately once a week and as a result many of the fatalities were missed.**

**Of these reported carcasses 163 or 76% were found beyond the 38 meter blade lengths.**

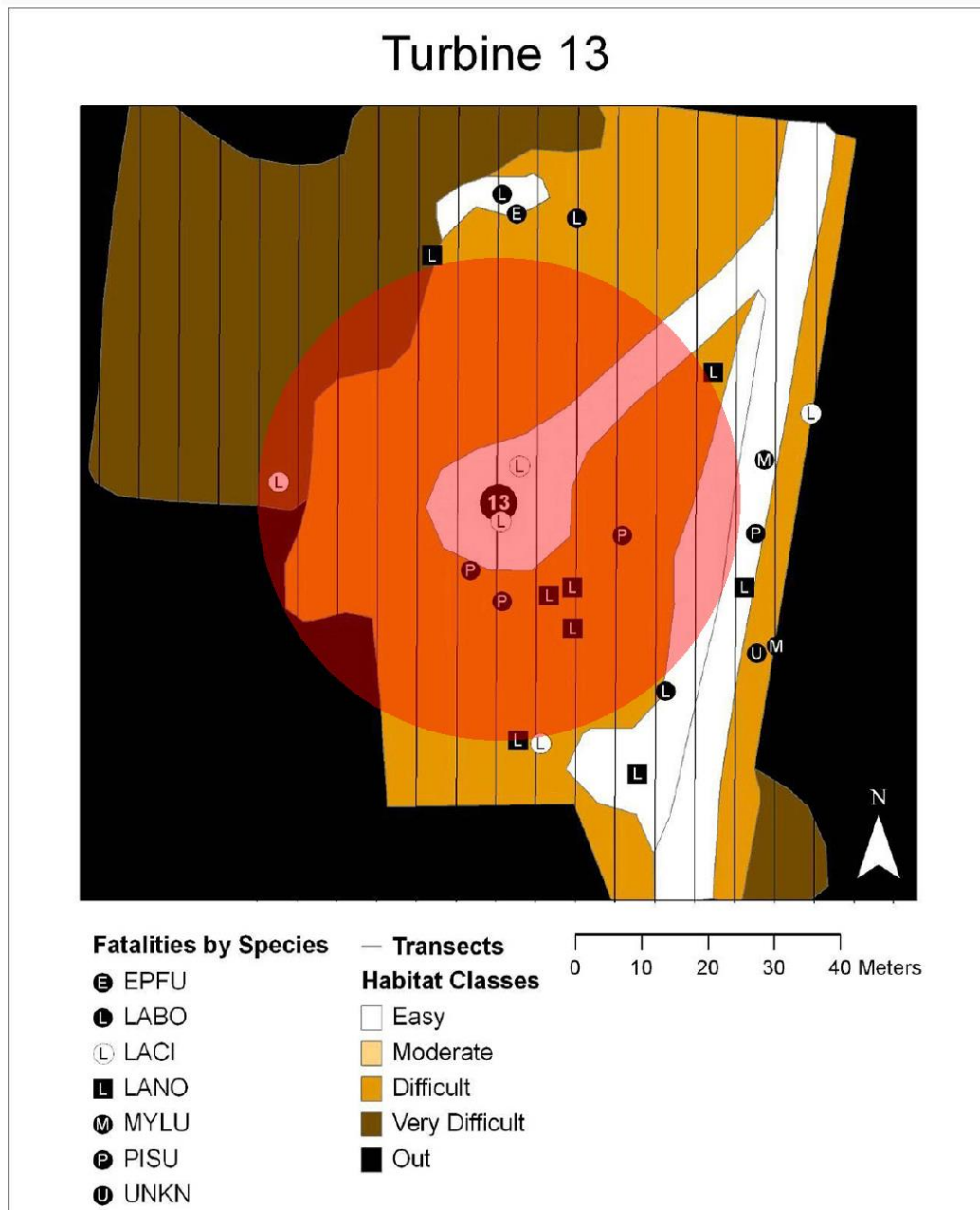
Here is more proof showing wind turbines of just 1.5 MW launching tiny bat carcasses far beyond turbine blade length. The red circle represents rotor sweep. As seen here, when searching in easy terrain many more bats were found far beyond the turbines rotor sweep.



**Patterns of Bat Fatality at the Casselman Wind Project  
in south-central Pennsylvania  
2008 Annual Report**

Arnett, E. B., M. R. Schirmacher, M. M. P. Huso, and J. P. Hayes. 2009. Patterns of bat fatality at the Casselman Wind Project in south-central Pennsylvania.

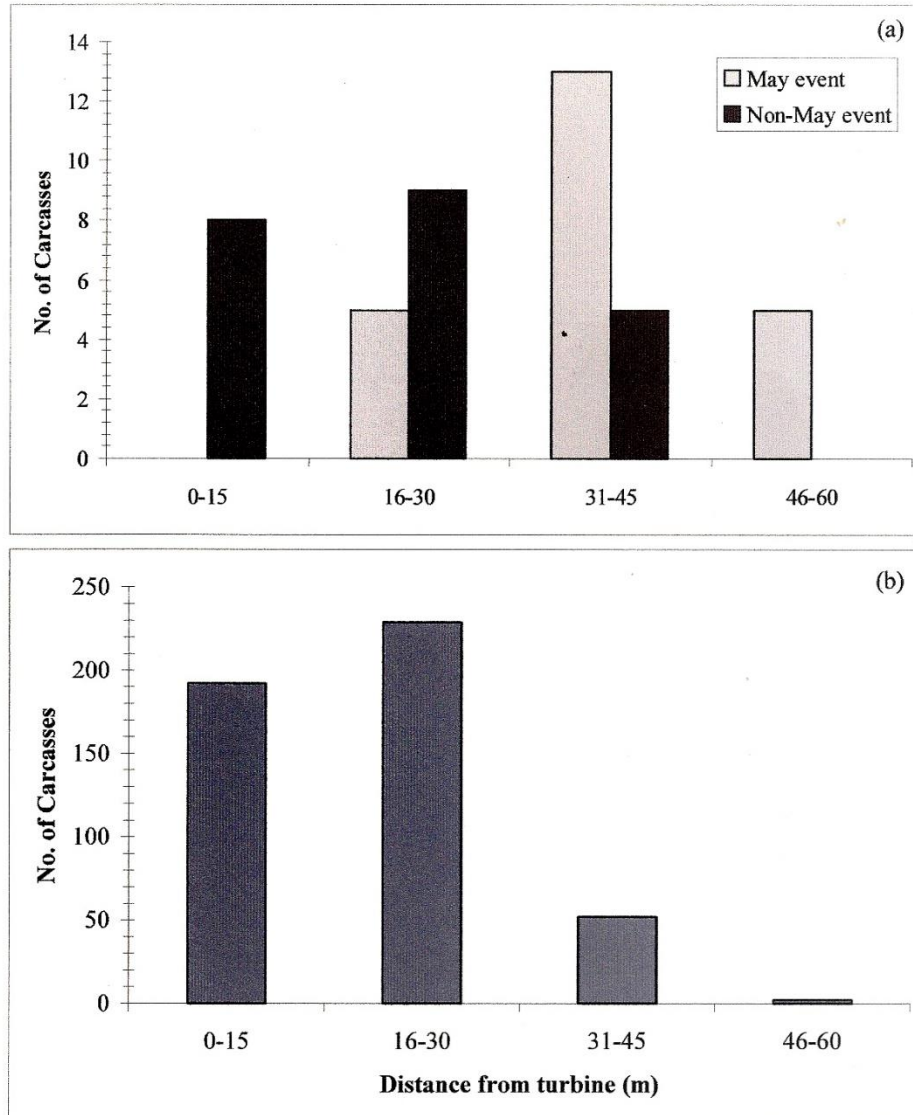
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Figure 7. Distances of (a) nocturnal migrant songbirds and (b) bat carcasses from the turbine base (in meters).



#### Bat Fatalities.

**Summary of Fatalities of Bats.** A total 475 bat carcasses of 7 species were found during the 23 rounds of searches at the MWEC (Table 5). Red bats were most numerous, accounting for 42.1% of all carcasses found, with hoary (18.5%), eastern pipistrelle (18.3%), little brown (12.6%), silver-haired (5.9%), northern long-eared (1.3%), big brown (0.4%), and unidentified (0.8%) bats accounting for the remainder.

Curry & Kerlinger, LLC-2-14-04

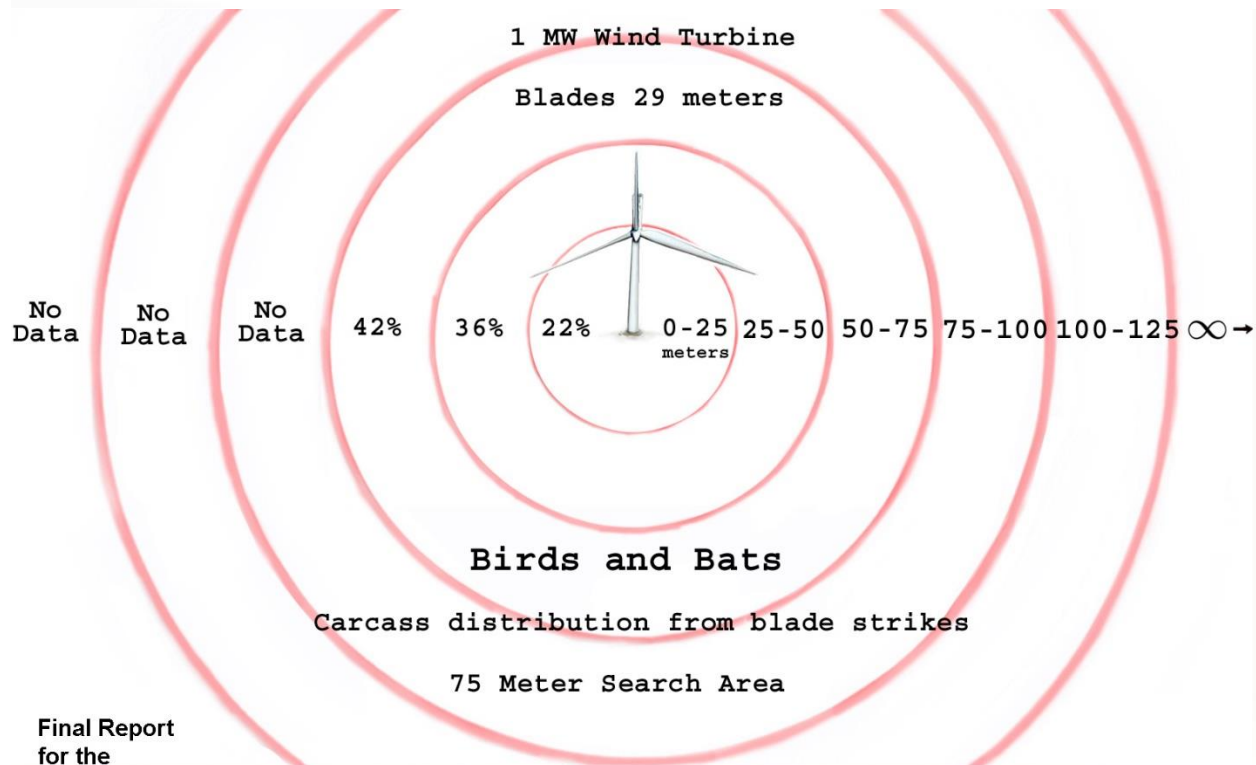
**NEG Micon 1.5 MW wind turbine, 34 m rotor blades**  
**Using undersized search areas in difficult search terrain**

Below is carcass distribution data collected from Altamont turbines with approximately 9 meter blades and maximum heights of about 100 feet. Today's turbines are 400-500 feet tall and average carcass distribution is reported to be about 20-25 meters from around turbines with 50-60 meter blade lengths.

**Table 2-5. Number and Percentage of Turbine-Related Avian Fatalities within and beyond 125 Meters from Turbines**

Bird Year	Within 125 Meters	Beyond 125 Meters	Total
2005	545 (99.6%)	2 (<1%)	547
2006	1,185 (99.5%)	6 (<1%)	1,191
2007	1,338 (98.7%)	18 (2%)	1,356
2008	924 (99.1%)	8 (<1%)	932
2009	815 (99.5%)	4 (<1%)	819
<b>Total</b>	<b>4,807 (99.3%)</b>	<b>38 (&lt;1%)</b>	<b>4,845</b>

ICF International. 2011. Altamont Pass Wind Resource Area Bird Fatality Study, Bird Years 2005–2009. September. (ICF 00904.08.) Sacramento, CA. Prepared for Alameda County Community Development Agency, Hayward, CA.



Final Report  
for the  
Buena Vista Avian and Bat Monitoring Project  
February 2008 to January 2011

Insignia Environmental (Insignia) on behalf of the Contra Costa County  
Department of Conservation and Development

" Turbine and tower characteristics are as follows: 80-meter (m; 262.5 feet [ft]) hub height, 41-m (134.6 ft) blade length, 5,281-square meter (m<sup>2</sup>; 56,844 square feet [ft<sup>2</sup>]) rotor swept area, and 14.4-rotations per minute (rpm) rotor speed. The rotor swept area extends from 39 m (127.1 ft) above ground level (agl) to 121 m (396.1 ft) agl. "

Table 9. Number of bird carcasses found at each range of distances from the turbine during the 2010 mortality surveys at the Cedar Ridge Wind Farm.

Distance to Turbine (m)	Number of Bird Carcasses	Proportion of Bird Carcasses (percent)
0 to 9	0	0.0
10 to 19	0	0.0
20 to 29	3	12.5
30 to 39	2	8.3
40 to 49	3	12.5
50 to 59	4	16.7
60 to 69	1	4.2
70 to 79	5	20.8
80 to 89	4	16.7
90 to 99	1	4.2
100 to 109	1	4.2

Estimated carcasses beyond 41 meter blade length 79%

### **Final Report**

**Prepared for:**

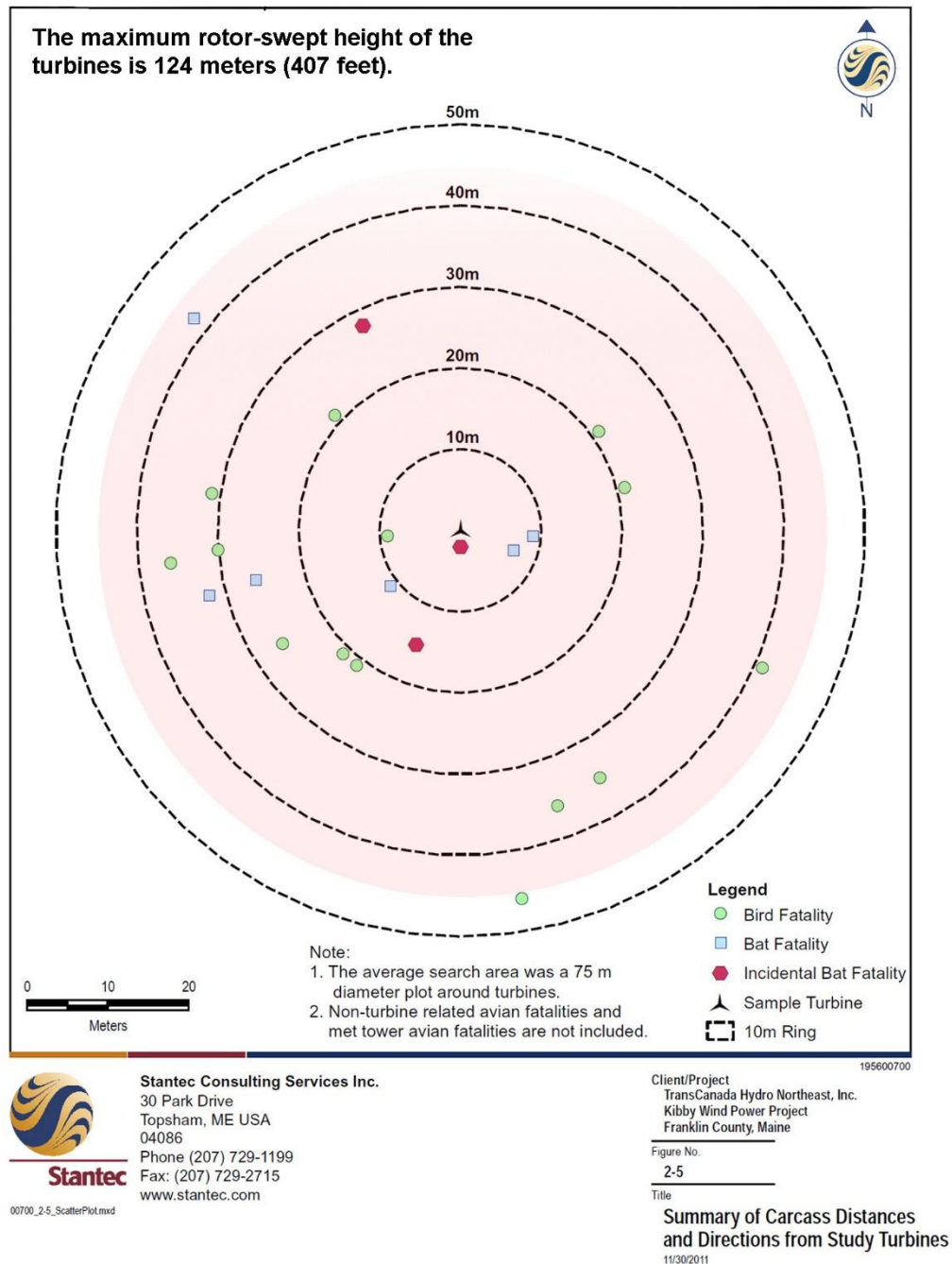
**Wisconsin Power and Light**

**4902 North Biltmore Lane**

**Madison, Wisconsin 53718-2148**

**Now look at a few results from Stantec research**

## One carcass was reported beyond 44 meter blades



As the turbines have grown in size, the blade impact points are reach further out from turbine bases. Industry blades that were once 5-9 meters long are now 50-60 meters long. These new turbines are also 4-5 times taller. **Stantec's mortality research data does not account for bird or bat impact points that are now 50-60 meters out from turbine bases.** In fact, of the hundreds and hundreds of carcasses reported by Stantec, about 99% are reported at distance locations from towers less than the length of

the turbine blades. Instead of reporting 50-80% of carcasses being found at distances beyond the blade lengths, they report the opposite with an average distance of about 1/2 a turbine's blade length.

#### Mortality Data - Detailed Results Birds

Date	# checks/ week	Turbine #	GPS Location Zone Easting Northing	Observer	Species	Guild	Condition/Estimated Time Since Death	Injuries Sustained	Distance (m)	Direction (°)	Direction (compass)	Ground Cover
01-Feb-10		46	0389918 4890696	CF	Bird Sp.	bird	old - at least 3 days		13	62	E	Soil
08-Feb-10		81	0389704 4894002	WS	Red-tailed Hawk	bird	frozen - less than 5 days	bent wing	23	253	W	Soil
09-Feb-10		30	0384145 4890364	WS	Bird Sp.	bird	complete - >30 days		44	40	N	Soil
16-Feb-10		69	0384733 4886852	WS	Bird Sp.	bird	Fresh, partially scavenged - 1-2 days		12	18	N	Soil
22-Feb-10		72	0385840 4892986	CF	European Starling	bird	Fresh, 1-2 days	Wing	16	166	S	Gravel
04-Mar-10		55	0387550 4889924	JL	Bird Sp.	bird	Skeleton w/ Feathers, >30 days		40	270	W	Soil / Veg
10-Mar-10		65	0384733 4886852	WS	Bird Sp.	bird			43	110	E	Swamp
11-Mar-10		61	0390023 4894173	CF	European Starling	bird	Fresh, 1-2 days	Neck	15	194	S	Soil
23-Mar-10		43	0390564 4891503	JL	Killdeer	bird	Fresh, 1-2 days	Wing / Neck	34	350	N	Gravel
29-Mar-10		1	0381112 4890726	CF	Starling	bird	Fresh, 1-3 days	Neck	12	270	W	Soil
31-Mar-10		29	0384748 4886878	JL	Blue Jay	bird	Old, 3-4 days		14	210	SW	Soil / Veg
31-Mar-10		41	0387552 4886656	CF	Starling	bird	Fresh, 1-2 days	Neck	44	44	NE	Soil / Soybean / Veg
05-Apr-10		72	0387700 4892945	WS	Horned Lark	bird	Fresh, < 3 days	Trauma, left side	31	215	S	Soil
06-Apr-10		30	0385820 4892985	WS	Killdeer	bird	Fresh, 3-5 days	Chest trauma	15	319	N	Grass
08-Apr-10		18	0381634 4888714	JL	Grackle	bird	Fresh, 1-2 days	Neck (?)	19	110	E	Mud/Veg
09-Apr-10		81	0384123 4890372	JL	Red-tailed Hawk	bird	Fresh, < 2 days	Neck / Leg	31	105	E	Veg / Soil
12-Apr-10		38	0387277 4888061	JL	Horned Lark	bird	Fresh, 1-2 days	Head	9	90	E	Gravel
13-Apr-10		9	0380923 4890046	JL	Wilson's Snipe	bird	Fresh, 1-2 days	Beak / Body	19	270	W	Gravel
14-Apr-10		29	0384729 4886854	WS	Red-tailed Hawk	bird	Fresh, < 3 days	Decapitated	26	110	E	Soil
14-Apr-10		30	0384732 4886839	WS	Wilson's Snipe	bird	Old, > 5 days		6	160	SE	Grass
15-Apr-10		27	0382244 4891308	JL	Red-tailed Hawk	bird	Fresh, < 1 day	Neck (?)	8	330	N	Soil / Rock
16-Apr-10		64	0388550 4893697	JL	Red-tailed Hawk	bird	Fresh, 1-2 days	Wing / Neck	40	330	N	Hay / Mud
21-Apr-10		49	0387565 4886688	CF	Wilson's Snipe	bird	Fresh, 1-2 days	Neck	1	158	S	Gravel
22-Apr-10		9	0380924 4890065	WS	Wilson's Snipe	bird	Decaying, >3 days		28	260	W	Grass
23-Apr-10		56	0385846 4890236	JL	Mallard ♀	bird	Fresh, < 1 day	Neck / Head	10	235	SW	Soil
23-Apr-10		79	0384852 4889368	JL	Wilson's Snipe	bird	Fresh, 2-3 days	Neck	10	50	NE	Soil / Veg
26-Apr-10		2	0382125 4891651	WS	Double-crested Cormorant	bird	Fresh, 3-5 days	Headless	31	320	N	Swamp
26-Apr-10		1	0380953 4891108	WS	Mallard ♀	bird	Fresh, < 3 days	Footless	35	320	N	Grass
26-Apr-10		65	0381077 4890730	WS	Ring-billed Gull	bird	Unknown	Bodyless, wings only	31	60	N	Grass
26-Apr-10		28	0382110 4891660	WS	Wilson's Snipe	bird	Fresh, < 3 days	Broken neck	0	40	N	Tower base
28-Apr-10		63	0388780 4893376	JL	Tree Swallow	bird	Old, 2-3 days		40	350	N	Soil / Veg
29-Apr-10		73	0387728 4892954	WS	Bird Sp.	bird	Fresh, < 3 days	Broken neck	22	100	E	Soil
29-Apr-10		24	0382773 4890019	JL	Ring-billed Gull	bird	Fresh, 1 day	Split in half	49	300	NW	Veg / Soil
03-May-10	2	43	0390538 4891543	JL	Osprey	bird	Really Fresh, < 12 hours	Head	15	135	SE	Soil
04-May-10	2	71	0384293 4883473	WS	Ring-billed Gull	bird	Unknown		40	110		Mud
05-May-10	1	31	0384867 4886113	CF	Mallard ♂	bird	Fresh, 1-3 days	Neck	27	62	E	Soil
05-May-10	1	72	0385878 4892975	CF	Upland Sandpiper	bird	Fresh, 1-2 days	Wing	44	262	W	Vegetation
06-May-10	2	34	0384070 4887239	WS	Black & White Warbler	bird	Fresh, < 3 days	Nothing visible	38	220		Rock
06-May-10	2	34	0384008 4893473	WS	Savannah Sparrow	bird	Fresh, 3-5 days		27	86		Soil
07-May-10	2	71	0386358 4894067	JL	Nashville warbler	bird	Fresh, 1-2 days	Neck?	31	315	NW	Soil
11-May-10	1	4	0380294 4890715	CF	Chimney Swift	bird	Fresh, 1-2 days	Neck?	40	238	W	Vegetation
12-May-10	1	72	0385868 4892992	CF	Yellow Warbler	bird	Fresh, 1-2 days	Neck	36	244	W	Soil / Veg
13-May-10	2	46	0383933 4893057	WS	Northern Harrier	bird	Fresh, 3-5 days	Broken neck	40	150	S	Gravel
17-May-10	2	85	0381871 4892264	CF	Baltimore oriole	bird	Fresh, 1-2 days	Neck?	21	104	E	Soil

Mortality Data - Detailed Results Birds

Date	# checks/ week	Turbine #	GPS Location Zone Easting Northing	Observer	Species	Guild	Condition/Estimated Time Since Death	Injuries Sustained	Distance (m)	Direction (°)	Direction (compass)	Ground Cover
17-May-10	2	33	0384514 4887219	JL	Magnolia warbler	bird	Fresh, 1-2 days	Wing/Neck	40	315	NW	Soil
17-May-10	2	78	0385183 4890985	CF	Red-tailed Hawk	bird	Fresh, 1-2 days	Neck	31	78	E	Vegetation
18-May-10	2	25	0382723 4890484	CF	Philadelphia Vireo	bird	Fresh, 1-2 days	Abdomen	9	40	NE	Vegetation
20-May-10	2	23	0382112 4890206	JL	Horned Lark	bird	Old, > 7 days		41	180	S	Soil / Veg
21-May-10	2	64	0388499 4893739	JL	Red-winged Blackbird	bird	Fresh, 1-2 days	Neck?	29	130	SE	Gravel
24-May-10	2	65	0382179 4892621	WS	Upland Sandpiper	bird	Fresh, < 5 days	Entirely	39	180		Soil
27-May-10	2	46	0389906 4890719	WS	Mourning Dove	bird	3-5 days	Mangled	37	172		Weeds
31-May-10	2	35	0384235 4887843	JL	Ring-billed Gull	bird	Fresh, 2-3 days	Neck	20	95	E	Soil / Veg
31-May-10	2	24	0389903 4890711	WS	Ring-billed Gull	bird	Old, > 5 days	Entirely	34	220		Grass
08-Jun-10	2	68	0386462 4891880	WS	Bobolink	bird	Old, 2-5 days	Entirely	38	234		Cornfield
10-Jun-10	1	75	0384512 4892590	CF	Red-tailed Hawk	bird	Fresh, 1-2 days	Neck	18	22	N	Soil / Veg
10-Jun-10	2	24	0382751 4890005	JL	Ring-billed Gull	bird	Fresh, 1-2 days	Wing / Neck	35	345	N	Soil / Veg
11-Jun-10	2	38	0387304 4887585	WS	Ring-billed Gull	bird	Unknown, feathers only, body has been scavenged		17	234		Soil
16-Jun-10	1	56	0385779 4890243	CF	Ring-necked Pheasant	bird	Fresh, 1-2 days	Neck?	1	194	S	Soil / Veg
18-Jun-10	2	20	0381832 4889279	WS	Killdeer	bird	Feathers only	? Scavenged	40	249		Grass
21-Jun-10	2	42	0386325 4889071	JL	Tree swallow	bird	Fresh, 1-2 days	Wing / Neck	23	320	NW	Veg / Soil
22-Jun-10	1	9	0380911 4890059	JL	Common Grackle	bird	Old, 3-4 days		16	255	W	Gravel
22-Jun-10	2	67	0386811 4891257	WS	Mourning Dove	bird	Fresh, < 3 days		1	200		Soil
23-Jun-10	1	31	0384874 4886158	WS	Wood Thrush	bird	Old, > 3 days	Entirely	29	185		Gravel
24-Jun-10	2	46	0389914 4890729	CF	Tree swallow	bird	Fresh, 1-2 days	Wing?	30	172	S	Gravel
25-Jun-10	2	42	0386302 4889048	CF	Wilson's Snipe	bird	Completely (maggots) 3-4 d	Neck	32	78	E	Gravel

Mortality Data - Detailed Results Birds

Date	# checks/ week	Turbine #	GPS Location Zone Easting Northing	Observer	Species	Guid	Condition/Estimated Time Since Death	Injuries Sustained	Distance (m)	Direction (°)	Direction (compass)	Ground Cover
01-Feb-10		46	0389918 4890696	CF	Bird Sp.	bird	old - at least 3 days		13	62	E	Soil
08-Feb-10		81	0389704 4894002	WS	Red-tailed Hawk	bird	frozen - less than 5 days	bent wing	23	253	W	Soil
09-Feb-10		30	0384145 4890364	WS	Bird Sp.	bird	complete - >30 days		44	40	N	Soil
16-Feb-10		69	0384733 4886852	WS	Bird Sp.	bird	Bodyless, Wing - >30 days		12	18	N	Soil
22-Feb-10		72	0385840 4892986	CF	European Starling	bird	Fresh, partially scavenged - 1-2 days	Wing	16	166	S	Gravel
04-Mar-10		55	0387550 4889924	JL	Bird Sp.	bird	Fresh, 1-2 days		40	270	W	Soil / Veg
10-Mar-10		65	0384733 4886852	WS	Bird Sp.	bird	Skeleton w/ Feathers, >30 days		43	110	E	Swamp
11-Mar-10		61	0390023 4894173	CF	European Starling	bird	Fresh, 1-2 days	Neck	15	194	S	Soil
23-Mar-10		43	0390564 4891503	JL	Killdeer	bird	Fresh, 1-2 days	Wing / Neck	34	350	N	Gravel
29-Mar-10		1	0381112 4890726	CF	Starling	bird	Fresh, 1-3 days	Neck	12	270	W	Soil
31-Mar-10		29	0384748 4886878	JL	Blue Jay	bird	Old, 3-4 days		14	210	SW	Soil / Veg
31-Mar-10		41	0387552 4886656	CF	Starling	bird	Fresh, 1-2 days	Neck	44	44	NE	Soil / Soybean Veg
05-Apr-10		72	0387700 4892945	WS	Horned Lark	bird	Fresh, < 3 days	Trauma, left side	31	215	S	Soil
06-Apr-10		30	0385820 4892985	WS	Killdeer	bird	Fresh, 3-5 days	Chest trauma	15	319	N	Grass
08-Apr-10		18	0381634 4888714	JL	Grackle	bird	Fresh, 1-2 days	Neck (?)	19	110	E	Mud/Veg
09-Apr-10		81	0384123 4890372	JL	Red-tailed Hawk	bird	Fresh, < 2 days	Neck / Leg	31	105	E	Veg / Soil
12-Apr-10		38	0387277 4888061	JL	Horned Lark	bird	Fresh, 1-2 days	Head	9	90	E	Gravel
13-Apr-10		9	0380923 4890046	JL	Wilson's Snipe	bird	Fresh, 1-2 days	Beak / Body	19	270	W	Gravel
14-Apr-10		29	0384729 4886854	WS	Red-tailed Hawk	bird	Fresh, < 3 days	Decapitated	26	110	E	Soil
14-Apr-10		30	0384732 4886839	WS	Wilson's Snipe	bird	Old, > 5 days		6	160	SE	Grass
15-Apr-10		27	0382244 4891308	JL	Red-tailed Hawk	bird	Fresh, < 1 day	Neck (?)	8	330	N	Soil / Rock
16-Apr-10		64	0388550 4893697	JL	Red-tailed Hawk	bird	Fresh, 1-2 days	Wing / Neck	40	330	N	Hay / Mud
21-Apr-10		49	0387565 4886688	CF	Wilson's Snipe	bird	Fresh, 1-2 days	Neck	1	158	S	Gravel
22-Apr-10		9	0380924 4890065	WS	Wilson's Snipe	bird	Decaying, >3 days		28	260	W	Grass
23-Apr-10		56	0385846 4890236	JL	Mallard ♀	bird	Fresh, < 1 day	Neck / Head	10	235	SW	Soil
23-Apr-10		79	0384852 4889368	JL	Wilson's Snipe	bird	Fresh, 2-3 days	Neck	10	50	NE	Soil / Veg
26-Apr-10		2	0382125 4891651	WS	Double-crested Cormorant	bird	Fresh, 3-5 days	Headless	31	320	N	Swamp
26-Apr-10		1	0380953 4891108	WS	Mallard ♀	bird	Fresh, < 3 days	Footless	35	320	N	Grass
26-Apr-10		65	0381077 4890730	WS	Ring-billed Gull	bird	Unknown	Bodyless, wings only	31	60	N	Grass
26-Apr-10		28	0382110 4891660	WS	Wilson's Snipe	bird	Fresh, < 3 days	Broken neck	0	40	N	Tower base
28-Apr-10		63	0388780 4893376	JL	Tree Swallow	bird	Old, 2-3 days		40	350	N	Soil / Veg
29-Apr-10		73	0387728 4892954	WS	Bird Sp.	bird	Fresh, < 3 days	Broken neck	22	100	E	Soil
29-Apr-10		24	0382773 4890019	JL	Ring-billed Gull	bird	Fresh, 1 day	Split in half	49	300	NW	Veg / Soil
03-May-10	2	43	0390538 4891543	JL	Osprey	bird	Really Fresh, < 12 hours	Head	15	135	SE	Soil
04-May-10	2	71	0384293 4893473	WS	Ring-billed Gull	bird	Unknown		40	110		Mud
05-May-10	1	31	0384867 4886113	CF	Mallard ♂	bird	Fresh, 1-3 days	Neck	27	62	E	Soil
05-May-10	1	72	0385876 4892975	CF	Upland Sandpiper	bird	Fresh, 1-2 days	Wing	44	262	W	Vegetation
06-May-10	2	34	0384070 4887239	WS	Black & White Warbler	bird	Fresh, < 3 days	Nothing visible	38	220		Rock
06-May-10	2	34	0384008 4893473	WS	Savannah Sparrow	bird	Fresh, 3-5 days		27	88		Soil
07-May-10	2	71	0386358 4894067	JL	Nashville warbler	bird	Fresh, 1-2 days	Neck?	31	315	NW	Soil
11-May-10	1	4	0380294 4890715	CF	Chimney Swift	bird	Fresh, 1-2 days	Neck?	40	238	W	Vegetation
12-May-10	1	72	0385866 4892992	CF	Yellow Warbler	bird	Fresh, 1-2 days	Neck	36	244	W	Soil / Veg
13-May-10	2	46	0383933 4893057	WS	Northern Harrier	bird	Fresh, 3-5 days	Broken neck	40	150	S	Gravel
17-May-10	2	85	0381871 4892264	CF	Baltimore oriole	bird	Fresh, 1-2 days	Neck?	21	104	E	Soil

The Wolfe Island studies conducted by Stantec reported hundreds of carcasses with just several reported beyond 50 meters. I believe the furthest carcasses distance reported was 59 meters. For 400 ft tall turbines this is not reality and it is simply not possible. **What is possible is that 50-80% of the carcasses were not reported and this was never disclosed.** The wind industry's own data proves that any carcass hit by a turbine blade has a much better than 50/50 odds or 1 of 2 chance of this carcass

landing at a distance beyond a turbines blade length.

**Below is carcass distribution data collected from Altamont turbines with approximately 9 meter blades and maximum heights of about 100 feet. Today's turbines are 400-500 feet tall and average carcass distribution is reported to be about 20-25 meters from around turbines with 50-60 meter blade lengths.**

**Table 2-5. Number and Percentage of Turbine-Related Avian Fatalities within and beyond 125 Meters from Turbines**

Bird Year	Within 125 Meters	Beyond 125 Meters	Total
2005	545 (99.6%)	2 (<1%)	547
2006	1,185 (99.5%)	6 (<1%)	1,191
2007	1,338 (98.7%)	18 (2%)	1,356
2008	924 (99.1%)	8 (<1%)	932
2009	815 (99.5%)	4 (<1%)	819
<b>Total</b>	<b>4,807 (99.3%)</b>	<b>38 (&lt;1%)</b>	<b>4,845</b>

**ICF International. 2011. Altamont Pass Wind Resource Area Bird Fatality Study, Bird Years 2005–2009. September. (ICF 00904.08.) Sacramento, CA. Prepared for Alameda County Community Development Agency, Hayward, CA.**

According to Altamont research around their 100kW turbines, a fraction of the size of those in Stantec studies, wind turbine carcasses travel much further in California. St Lawrence county can expect similar Post Operational studies from Stantec with their impossible nonscientific results.



**I have yet to read a single wind industry related study or survey conducted by Stantec, that I consider credible. The results and opinions derived from Stantec's wind energy related research , should never be accepted by anyone.**

## **Conclusion**

As I have shown in these comments, Wind Energy research is like a house of cards. Once you start pulling out the research cards with lies, lies by omission and deception, **it all falls down**. The sad truth is that over the years, layer after layer of incestuous and unscientific wind turbine impact research has been produced.

This industry cannot cite one scientifically credible study from the last 30 years related to the species being impacted by wind turbines. Over the years, one of this industry's biggest lies by omission, is the species slaughter taking place during **nocturnal migrations**. In America the first and only truly credible scientific turbine related mortality study I have come across, took place in 1985. It was conducted in Southern CA around a few small turbines and the results were published in 1986. This study estimated a mortality rate of 6800 fatalities annually from about 150-200 MW of wind energy capacity at San Geronimo Pass.

Avian mortality has also been documented at other California windplants. Researchers estimated 6,800 birds were killed annually at the San Geronimo wind facility based on 38 dead birds found while monitoring nocturnal migrants. McCrary *et al.* (1983,1984) estimated that 69 million birds pass through the Coachella Valley annually during migration; 32 million in the spring and 37 million in the fall. The 38 avian fatalities were comprised of 25 species, including 15 passerines, seven waterfowl, two shorebirds, and one raptor.

Using daily searches of 50-meter search areas around these tiny turbines, this study estimated mortality rate of 34-45 birds per MW and the majority of these fatalities were determined to be **nocturnal migrants**. The wind industry has known for decades how vulnerable and deadly wind energy developments are to nocturnal migrations of birds.

Since this study was conducted in 1985, there has never been another such study conducted in North America. This study has also been stripped from the internet and hidden for years.

This lack of credible green energy research on wind turbine mortality to migrating birds is no accident, it is deliberate.

Even a 2009 report from New Zealand took notice of the lack of turbine mortality research that has been conducted on nocturnal migrant birds.

“There appears to have been only one comprehensive study calculating the collision risk for nocturnal migrant birds (Winkelman 1992a). This was performed in The Netherlands, and collision risk was calculated by means of observed collisions (using thermal image intensifiers).” The authors of this report were not aware of McCrary’s 1985 study conducted years earlier in CA. The reason for this lack of scientific research is obvious, the industry already knows what the results will be.

By conducting their version of research, the wind industry’s reported mortality rate to birds, is about 2.5 per MW. These comments prove that these numbers are not only absurd but that every conclusion based upon wind industry research has no scientific credibility.

**From Dr Kerlinger**

“The weight of evidence gathered from studies conducted over many years is quite conclusive,”

I have to correct Dr Kerlinger’s false statement. **“The mountain of contrived evidence gathered from unscientific wind industry studies over many years, is absolutely false. “**

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

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**in**

**Case No(s). 16-1871-EL-BGN**

Summary: Public Comment submitted via website electronically filed by Docketing Staff on behalf of Docketing