

BLACK SWAMP BIRD OBSERVATORY

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TEAMING RESEARCH WITH EDUCATION TO PROMOTE BIRD CONSERVATION

July 3, 2020

Submitted online: <http://www.regulations.gov>, Docket No. FWS-R3-ES-2020-0046

To Whom It May Concern:

Comments re: Indianan Bat and Northern Long-eared Bat Habitat Conservation Plan, Hog Creek Wind Project, Hardin County, Ohio, February 2020, Western EcoSystems Technology, Inc.

General comments: The HCP is heavily dependent upon two kinds of information: (1) the Evidence of Absence software manipulations to optimize the mitigation and minimization efforts to be employed at the project site; (2) upon the past mortality data generated by other wind projects. Some of the assumptions of the EoA software are debatable, and to that extent, the conclusions drawn are questionable. The data from other wind projects should not be compared with each other or with the Hog Creek project since they were generated by unknown methods, in different environments, and with different mortality estimators. Finally, the level of knowledge of bat behavior around turbines and the methods of performing good mortality searches is simply out of date, and seriously lacking.

1. P.1., §1.1.1. – “...to enable the operation of a financially viable Project.” This is not a legitimate reason for applying for an ITP. The financial viability of the Project is the sole responsibility of the owner/developer, and should have been established before the operations began. If the economics are not living up to the expectations of the owner then they should resort to the PUCO for relief, not USFWS. This violates General Criteria #3 of the “Issuance Criteria for Incidental Take Permits” for the FWS and NMFS which states “**The applicant has failed to demonstrate a valid justification for the permit and a showing of responsibility**”.
2. P.1., §1.1.1. – “This HCP is designed to provide for a financially viable Project while addressing potential take of the Indiana bat...” Legitimizing an increased take is not the purpose of an ITP. Take levels of Indiana bat and NLEB are already established under current operating conditions, and would increase under the proposed operating alternatives. This is not allowed under MBTA, BGEPA, or ESA. The economics of the Project is not the concern of the USFWS.
3. P.1., §1.1.1. – “...minimize and mitigate the impacts of the authorized take to the maximum extent practicable (MEP)...” Is it not possible to increase power rates to consumers by an estimated \$1.20/mo (by our calculation) in order to assure economic viability of the Project? MEP does not equate to “economic viability” under ITP law; however, it may equate to “technologically possible.”
4. P.6-8., §1.4. – Table 1.1 is misleading because it does not account for any carcasses outside the 100 m search radius. 100% is assumed to be all carcasses, and are to be found within 100 m. That is the erroneous assumption made by EoA software presented in the “Midwest Wind Energy Multi-species Habitat Conservation Plan” and in the Hog Creek data. These assumptions must be corrected before any serious consideration of an ITP. From direct discussions with WEST and later re-analysis of Timber Road mortality data, several invalid assumptions were made by WEST in development of mortality estimates, all of which were designed to underestimate

actual mortality. Pertaining to this Table and questions related to take, the following data manipulations must be corrected before establishing correct take estimates and mitigation needs. One, WEST arbitrarily determined 100 m to be the extent of carcasses. A carcass count of "0" for distances beyond 100m was assumed. However, re-analysis of the data set indicated a linear fit line didn't intersect the "0" lower limit until ~130 m. Hence, there were additional carcasses falling in a region that was not surveyed, their count was arbitrarily set at "0". This has a major effect on the EoA software predictions and all estimators. This is just one of many data manipulations conducted by WEST in the analyses reviewed to date that underestimates actual mortality. In addition, the proposed monitoring protocol for take compliance under the ITP will only search out to 50 m with no sound statistical application to extended distances. (We recommend that the search radius be 1.5x the height of the highest point of the turbine. This recommendation has been supported elsewhere.)

5. P.6., §1.4. – The Permit Area is a 100 m radius circle around each turbine. Will this also be the search area? If so, bat carcasses will not be counted that lie outside the 100 m radius, and EoA software will assume there are none. If a bat carcass is found outside the 100 m radius is it still covered by the ITP, or will it be ignored by the searchers? As stated above, this is not adequate to address potential take. The Permit Area should contain all areas within 1.5x the height of the highest point on each turbine. For acreage not under developer control a statistical model can be developed using 10 m band widths to estimate take in the unsearched areas. To use "0" carcasses beyond the Permit Area should not to be tolerated as it violates sound science. In addition, this violates General Criteria #2 of the "Issuance Criteria for Incidental Take Permits" for the FWS and NMFS which states "**The applicant has failed to disclose material information, or has made false statements as to any material fact in connection with the application**".
6. P.9., §2.1.1.1. – Vestas V110 total ht. = 150 m or ~ 490 ft. We recommend a search radius of 1.5x height or 225 m (~725 ft), whereas the search radius proposed in this application is only 50 m (~150 ft), for which the area from 100 m to 225 m will be assumed to have no carcasses. Clearly this is a wrong approach.
7. P.13., §2.2.1., footnote (1) – It appears that most of the science used to prepare the HCP is out of date with respect to bat behavior around turbines, causes of mortality, and mortality search protocols. Recent works by Smallwood published in 2020 improve our understanding greatly and should be taken into consideration by the HCP. Smallwood, K.S., et. al., "Effects of Wind Turbine Curtailment on Bird and Bat Fatalities," The Journal of Wildlife Management 1-12, 2020, DOI: 10.1002/jwmg.21844; Smallwood, K.S., et.al., "Relating Bat Passage Rates to Wind Turbine Fatalities," Diversity 2020, 12, 84.
8. P.16., §3.2.1. – What is the life expectancy of an Indiana Bat? How many offspring can be expected over an average lifetime? This is important for calculating loss and mitigation needs.
9. P.25., §3.2.2.5. – While temperatures below 10°C appear to correlate to low bat activity, it is not equivalent to "0" and needs to remain a stratum to address. While we have not had the ability to review field design at FRWR, it was conducted by the same consultants that conducted Timber Road and Blue Creek studies which have shown errors and failures of sound science.
10. P.43., §3.4.1. – Mist net locations and study design poorly represented the study area and did not have the rigor to make broad assumptions of the entire area.
11. P.47., §3.4.2. Table 3.4 – There is considerable variation in survey time periods and all have had considerable data manipulations prior to entry in the estimators. The study designs were completely inadequate to be able to make conclusions on rare occurrences.
12. P.48, 49., §3.4.3. – ["Based on the studies summarized above and the biological information presented..."](#) While a large amount of data exists regarding bat mortality at wind farms, the

- data is only as good as the searchers and the protocols. Recent work by Smallwood suggests that human searchers may, in fact, only discover 10% of the available bat carcasses.
13. P.54., §4.1. – EoA predictions may not adequately account for actual carcass distribution from the turbine base, or for searcher inefficiencies due to search intervals, condition of search area, crippling bias.
 14. P.55., §4.2.1. - What would mitigation look like if actual take was 10x the predicted take (as found based on using dog searchers)? Would the ITP application proceed, be adjusted, or be scrapped? This is not a hypothetical question, but one based upon data presented by recent research by Smallwood cited above (note 7).
 15. P.55., §4.2.1. – There is a considerable problem with the thought process presented for evaluating take and calculating an equivalent mitigation. WEST calculates 97 Indiana bats will be killed in 30 years; of these 73 are calculated to be females. These would produce 117 female pups. That calculation come up with 190 Indiana bats lost over 30 years (73+117=190). But where are males and male pups in this calculation? Just adding males and one generation of male pups (assuming birth sex ratio 1:1) calculates as 331 Indiana bats, and this does not even include multi-generational losses. Furthermore, there is no indication that more than one generation of pups are accounted for, so it appears multi-generational loss over the life expectancy of all lost females (including pups and pups of pups) are not counted.
 16. P.57., §4.2.2. – “[The EoA software approach requires monitoring data to inform the model outputs...](#)” All comparisons should be in relation to the TAL and 6.9 m/s cut-in speeds. The EoA model will have the same problems and bias that other as other estimator models have when data manipulations are conducted prior to insertion into the software.
 17. P.58., §4.2.2. – EoA model uses searcher efficiency rates, carcass persistence data, search schedule, % of area searched, search interval. These parameters are all major examples of problems with the Timber Road data as used here and discussed in above bullets. Regardless of the validity of the EoA model it is only as accurate and useful as the data inputs used to populate its assumptions. If Timber Road data is to be used as a surrogate for this ITP those data inputs need to be recalculated using sound scientific methodology and integrity.
 18. P.60., §4.2.3. – “[...to minimize the impact of take of Indiana bats.](#)” The project take has already been minimized; the ITP will allow for an increase in take, not a minimized take. This misleading and dishonest language is used throughout the HCP and should be corrected accordingly (see Comment 5).
 19. P.60., §4.2.3. – “[...the results of these curtailment studies...confirm raising cut-in wind speeds and feathering turbine blades at low wind speeds can substantially reduce bat mortality.](#)” While the precision of the studies cited is not known, the fact remains that this Application for an ITP is an attempt to use questionable data to quantify and justify an increase in take, not a minimization of take. This is fundamentally dishonest and should be cause for rejecting the ITP and its associated HCP outright (see Comment 5).
 20. P.63., §4.2.3. – “[If this hypothesis is correct...](#)” Pure speculation, and of no merit or importance to the ITP. This hypothesis about Indiana bat behavior only admits to scientific ignorance, not rationality.
 21. P.63., §4.2.3. – This analysis uses means when the medium may be a better statistic due to the extreme variability that is lost by calculating a mean. This is representative of just one step in a series of questionable data manipulations that compromise scientific integrity. FRWF data show considerable variation that is not reflected in final calculations that could greatly influence the optimal take and mitigation requirements. Sound science analysis would have tested the methods against each other to see if there were differences and how much. Considerable

overlap of the 3 tests at 90% CI is evident, none of this is really informative or relevant to ITP, as 6.9 m/s is the only other option considered in this HCP.

22. P.65., §4.2.5. – “If unidentified bats were divided equally between the two sexes...” If females = 19 (33%), and males = 39 (67%), then the ratio of females to males is 1:2. Shouldn't this ratio be applied to the overall total number of identified and unidentified carcasses, rather than assuming a 1:1 ratio for the unidentified portion of carcasses? This skews the sex ratio even farther toward males.
23. P.73., §4.4.1.1. – Recent European studies show that insects are drawn to turbines, and are being killed in significant numbers by turbines. Presumably bats are simply following the insects. This behavior by bats of circling the rotating blades was observed by Smallwood as well, in his recent study using thermal imaging. (See note 7 above for citation.)
24. P.73., §4.4.1.1. – “...displacement does not occur on a meaningful scale.” Displacement away from turbines may not occur; but displacement toward turbines does occur. There is ample evidence that bats are drawn to turbines, which is, in effect, displacement.
25. P.77., §5.0 – “...the Applicant plans to “minimize and mitigate the impact of take”...”to the maximum extent practicable.”” This statement is absolutely untrue. The Applicant, by virtue of Alternative 2, plans to increase take over current operations. Further, does the definition of “MEP” allow for economic justification, as is the case in this ITP application, or is it defined in terms of technological or engineering possibilities?
26. P.77., §5.1, Goal 1 - should be compared to the TAL take level, Alt 1 from the EA. “No minimization” can occur as an option for Hog Creek. To propose otherwise is misrepresenting the evident outcome of the ITP.
27. P.78., §5.1, Goal 3. – “...to document the likelihood of detecting...” Is this merely a field experiment attempting to verify EoA predictions? While that is a worthwhile goal, it presumably could be accomplished without planning an increased take as part of a poorly conceived ITP. The proposed study design for monitoring is insufficient to accomplish this goal.
28. P.78., §5.1, Goal 4. – The economics of power generation are not the due concern or responsibility of the USFWS, and therefore, do not belong in an ITP application. It doesn't matter whether the energy being generated by the Project is “emission-free, renewable electricity” or not, the economics are the sole concern of the developer/owner, and should not be used to trigger an ITP allocation.
29. P.78., §5.2.1. – The use of one very small field study is not adequate to support or deny probable absence or presence of a rare species.
30. P.79., §5.2.2. – “The Applicant will minimize the impact...” False! Current operation, under Alternative 1 from the EA already has minimized the take. Alts 2 & 3 will only increase take. It isn't even fair to say the Applicant will minimize the increase in take, since Alt 2 has more take than either Alt 1 or Alt 3.
31. P.79., §5.2.2. – “The intention of this HCP is... to minimize and mitigate the impact of the take to the MEP.” Again, this statement is not true since the Applicant intends to increase take to maximize economics, and admits implicitly they have no intention to minimize take.
32. P.80., §5.3. – “...the Applicant will implement operational practices that are expected to reduce mortality...” How can this be true when both Alt 2 and 3 are expected to increase take over current operating conditions? The sole purpose of this ITP and its associated HCP is to increase power generation and improve economics, both at the cost of increased mortality.
33. P.80., §5.3. – The calculations used here includes female bats and one generation of loss. Why is compounded generational loss of females, and loss of males not accounted for in mitigation?
34. P.83., §5.3.1. – This survey design will fail to accurately assess take and mitigation needs. The level of standardized surveys will not provide adequate information to inform mitigation

decision making by virtue of having poor accuracy and precision. Use of means will increase uncertainty and lack of confidence in results. Conducting standardized surveys once every six years has little to no precision and accuracy because of year-to-year variability. There are alternative methods to establish a sound study design and reduce cost: an example being a panel design with intensive years and lower effort, but with sound methodology. Random operational surveys in off years are not informative to the kind of sound scientific methods that should be implemented for a study of take of an endangered species where the ESA states all take is illegal.

35. P.90., §5.3.2.1, item 3) – Is it reasonable to expect a third-party conservation entity to exist in perpetuity, beyond the term of the ITP?
36. P.91., §5.3.2.2 – Agree with FWS in the EA that 100% of any mitigation should be ensured up front, not 50% as planned in the application.
37. P.93., §5.4.1. – “[If new information becomes available to suggest improved methods for estimating bat fatalities...](#)” Use of cadaver dogs as searchers has been shown to be highly effective for monitoring bat mortality compared to human searchers. Searcher efficiencies of 90% have been observed. This should be part of the PCM plan. It may prove that EoA estimates are unnecessary for high levels of carcass discovery. (See Smallwood papers from 2020 cited in note 7 above.) Further, use of cadaver dogs is not new; it began appearing in the literature in the U.S. about 14 years ago. (Arnett EB. [A preliminary evaluation on the use of dogs to recover bat fatalities at wind energy facilities](#). *Wildl Soc Bull* (2006) 34(5):1440–5.10.2193/0091-7648(2006)34[1440:APEOTU]2.0.CO;2 [[CrossRef](#)] [[Google Scholar](#)])
38. P.93., §5.4.1. – The proposed monitoring does not provide robust data or high confidence for take estimates. There is considerable historical support for large variability in take from year to year. Rare species and/or events resulting in high “zero” occasions require large sample sizes and small search intervals. Why not calculate fatality rates for more common species to inform and use as surrogate data? As proposed, once every 6 years is not robust enough to meet the statistical needs here.
39. P.94., §5.4.1.1. – As described in this section this plan indicates that a detection probability of .25 is desired but plans on a probability of detection of .001 for 5 of each 6 years after the first three. Also, there is no explanation on how an average of .25 is attained with a six-year average that appears to be 0.04 for the tranche.
40. P.95., §5.4.1.1. Table 5.4 – This example survey design is inadequate to address the questions being asked here. The design shown here has poor rigor, integrity, and scientific confidence. Assumptions that have been routinely applied by this consultant would weaken the poor design even further. It is highly recommended that any design should incorporate cadaver dogs as searchers for bats in order to improve searcher efficiencies to acceptable levels, and to compensate for low take expectations.
41. P.96., §5.4.1.2. – “[Two types of searches are proposed: cleared plot and road/pad.](#)” Road/pad searches are misleading and should not be used to replace cleared plot searches. Carcass placements are dependent upon orientation of blades to prevailing wind, and thus are too directional to be expected to be found on limited surfaces of road/pad searches.
42. P.96., §5.4.1.2. – “[All carcasses will be...plotted on a map of the search area.](#)” Carcass positions should be used to inform an actual carcass distribution in the EoA software, replacing the smooth, circumferential distribution assumed and used.
43. P.96., §5.4.1.2. – “[Two biases affect fatality estimates...](#)” There is a third bias, the crippling bias, defined and observed in Smallwood, 2020. This where bats do not die from turbine impact immediately, but crawl away from the search area, e.g., into a drain pipe, under a rock, or outside the search radius, and then die soon thereafter, while avoiding detection.

44. P.97., §5.4.1.2. – “...four to five carcasses per search area...” This is saturation with planted carcasses, which will alert searchers to the trial being performed and will bias the results toward artificially high efficiencies. It would also bias concurrent scavenger retention rates to longer average retention times. Both of these results would tend to inappropriately reduce mortality estimates.
45. P.97., §5.4.1.2. – A thirty-day scavenger persistence trial exceeds the expected viability of a carcass and only serves to inflate persistence estimates. Sample design of survey days also will bias persistence factors upward as well. Much of this design is destined to push the scavenger persistence factor to “1,” which will reduce the correction and will inappropriately lower mortality estimates.
46. P.98., §5.4.1.2. – It is doubtful that previously frozen carcasses are as attractive to scavengers as fresh kill, which will tend to bias results toward longer persistence and lower mortality estimates. This is an effect that is difficult to compensate for, or avoid; but it needs to be acknowledged.
47. P.101., §5.4.4. – “The Applicant will submit a compliance monitoring report to the USFWS...” Will these reports be made public and available for peer review?
48. P.109., §7.0 – “This alternative was not selected because it would not meet the purpose and need...to maximize energy production using wind...” It is not the intention of an ITP to promote the economic viability of a project. The economics of the project were discussed in the application to the OPSB at the onset. Loss of power of ~1% is recoverable by a rate increase to households of ~\$1.20/mo. The intent of ITP is to define an EA and HCP such that take can be properly quantified and minimized, and mitigation can be appropriately determined.
49. P.110., §7.0 – “the Project is projected to generate 578 million kilowatt hours...annually...” How much energy has the project produced in the ~3 years of operation? This is purely a boiler plate capacity, not a projected energy production level. The efficiency of wind projects is historically well below boiler plate capacity.
50. P.110., §7.0 – “...wind at 6.0 m/s has 73% more power than wind at 5.0 m/s...” According to the power curve for the Vestas V110, the stated 73% more power available at a cut-in speed of 6.0 m/s is actually only 12% more power based on the total operating capacity, which is not reached until wind speeds of 10 m/s.
51. P.110. – At full capacity (24/7, 10 m/s, no idle time) the capacity of 30 Vestas V110 is about 578 million kWh; but it is certainly not achievable and should not be used to promote the so-called “green” aspects of the project. This is purely marketing, and certainly not science or engineering, though it poses as such.

Thank you for the opportunity to comment on this Draft HCP.

Sincerely,



Don Bauman
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Board of Trustees, Chair
Conservation Committee, Chair