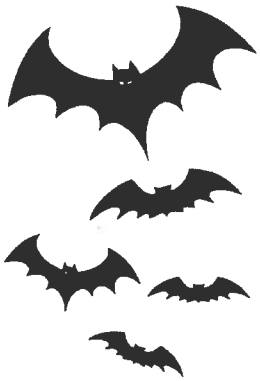

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My name is Michael Gannon. I have been a resident of Pennsylvania for almost 20 years. I am employed as a Professor of Biology at the Pennsylvania State University, and am a senior faculty member at the Penn State Altoona College. In addition I am co-chair of the Pennsylvania Biological Survey (PABS) Mammal Technical Committee (MTC) who advises the Pennsylvania Game Commission (PGC) on all issues related to mammals in the Commonwealth. I have also represented the PABS on the Pennsylvania Wind and Wildlife Consortium, which was a committee formed by Governor Rendell to advise on wind development and wildlife issues in Pennsylvania. I am an acknowledged expert on bats, bat ecology, and bat population biology. I have studied bats all over the world for over 20 years and have published a book, several book chapters, and numerous papers in scientific journals on bat biology. I, and my students, have studied the bats in Pennsylvania for more than 15 years. Lastly I recently testified as an acknowledged expert on bats and wind energy in Federal Court (U.S. District Court for the District of Maryland in December, *Beech Ridge v. Animal Welfare Institute,* Civil docket number RWT-09-1519).

There are several points of information I would like to convey to you today. First, I am pro renewable energy, if it is done in a responsible way, with consideration on how that development will affect our environment and wildlife. My main interest in wind energy development is insuring that it proceed in a way that protects of our valuable wildlife, for the people of Pennsylvania, using the latest scientific methods and information and in a way that follows sound scientific practices.

We now have indisputable evidence that wind power kills bats, and in this part of the country it kills bats in large numbers[1, 2, 3]. That is a fact, not in dispute by anyone. Published estimates have gone from the conservative of 5000 bats per

wind site per year, to the very liberal of about 60,000 bats per site per year for northeastern wind turbine locations.

The economic value of bats has been documented many times. Bats are the major predators of all our nocturnal insects. They consume large numbers of insect pests including many of our most troublesome crop pests. All bats in Pennsylvania feed on insects. The economic value of bats as a biological control agent for insects is estimated to be in the multi billions of dollars annually in the US alone.
As such, they are considered to be ecological keystone species. This being the keystone state, I'm sure many of us might be aware of what that means. The keystone is the stone that bears the majority of the weight in an archway. If it is disturbed or removed, the archway collapses.

Bats are keystone species in our ecosystem. They play a vital role in maintaining it, and if disturbed or reduced, the ecosystem as we know it will collapse and become considerably altered. However, bat populations are declining worldwide, mostly due to the actions of man.

As bats have a very low reproduction rate, where each female produces only one offspring or pup per year, any event that causes a population decline can take many years to recover from. Any event that repeatedly kills bats, year after year, in large numbers, can be devastating to a population. There has been and continues to be a proliferation of numerous wind sites in Pennsylvania and the Northeast US. At the relatively small number of sites where the wind industry has permitted research, large bat kills have been reported. To date, bat kills have been reported at every wind site that has been examined for bat mortality within the US. Unchecked wind energy development along with the newly emerging disease, "White Nose Syndrome" is the most serious threat to our bat populations, our biological insect control, that science has seen. These two events are together devastating at populations in the northeastern United States

The chances that improperly sited wind facility in this area will have a negative impact on our bat populations is now a virtual certainty. As elected government officials, both the Governor and Legislature of Pennsylvania have a responsibility to protect our valuable natural resources when any energy facility is constructed. Coal companies, gas companies and nuclear reactors that produce energy must evaluate their sites both before and after construction and monitor the environmental impact that they have on Pennsylvania. Wind energy currently does not have the same requirements in the Commonwealth.

There is a pressing need insure that wind energy sites in Pennsylvania have been

properly evaluated for their potential impact on bats, other wildlife, and the environment. Sites that have a high potential to negatively impact wildlife should be avoided. Current state requirements and voluntary regulations are simply not sufficient to protect our natural resources when it comes to wind energy development. I would urge that the State Legislature and Governor, who have ultimate responsibility to protect our environment and natural resources, to take on the role of oversight of the wind energy industry and insure that the development of wind energy sites are properly and rigorously monitored in a way that follows the best available science and impartial scientific review[4].

To date, bat fatalities reported in the US have been highest at wind energy facilities along forested ridgetops in the East, including Pennsylvania. Pre- and post construction research at wind energy projects needs to evaluate each site, with fair impartial research that meets scientific ethics and guidelines. Those sites with great potential to have adverse effects on bat populations need to be evaluated further with the goal to reduce bat mortality before construction begins. This should include moving turbine sites, reducing turbine numbers, or abandoning the site altogether. Improved documentation, with emphasis on evaluation of causes and cumulative impacts, needs to be a high priority. In developing wind energy monitoring for bats with the goal of improved documentation on the causes of cumulative impact, the Commonwealth of Pennsylvania needs to insure that the best and most current scientific standards and methods must be employed when doing so.

Based on current published scientific literature and the vast experience of bat research biologists throughout the Commonwealth and the US, any such monitoring must encompass the following standards to be scientifically valid:

A) impartiality by those conducting the study (consultants employed by or advocating for wind energy companies are not impartial).

B) open access of data and reports to the scientific community (at present most of the data collected by wind energy consultants in the State is kept confidential by the PGC).

C) independent peer review (all work submitted by wind energy consultants should be subject to review by impartial experts for accuracy).

D) the use of the most current methods and metrics as recommended by top experts in the field (rather than this decision being made the wind energy companies or their hired consultants),

E) a serious evaluation of data in determining whether such projects should proceed, be mitigated, or be curtailed during either the pre- or post- construction stage.

To date, none of the above 5 objectives has been met by any wind development anywhere within the Commonwealth. At present the PGC requires only minimal effort for all companies participating in the voluntary agreement to do any monitoring. Minimal standards result in minimal results and these are often not appropriate for the sites being examined and do not adequately evaluate any of the turbine sites for their impact on bats. Companies that choose not to participate in the voluntary agreement are not required to do any evaluation or monitoring at all.

As Judge Roger Titus of the U.S. District Court for the District of Maryland in December, *Beech Ridge v. Animal Welfare Institute* (Memorandum Opinion cane No. RWT 09cv1519, page 74) "The development of wind energy can and should be encouraged, but wind turbines must be good neighbors". Unfortunately it is apparent that the People of the Commonwealth of Pennsylvania must look to our elected officials to compel a "good neighbor policy" and protect the natural recourses of the State from hasty and poorly evaluated wind development.

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