

STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE

DECEMBER 3, 2012 - 8:40 A.M. DAY 10
Concord, New Hampshire MORNING SESSION ONLY

IN RE: SITE EVALUATION COMMITTEE:
DOCKET NO. 2012-01: Application
of Antrim Wind, LLC, for a
Certificate of Site and Facility
for a 30 MW Wind Powered Renewable
Energy Facility to be Located in
Antrim, Hillsborough County,
New Hampshire.
(Hearing on the merits)

PRESENT: SITE EVALUATION COMMITTEE:

Amy L. Ignatius, Chrmn. (Presiding Officer)	Public Utilities Comm.
Kate Bailey, Engineer	Public Utilities Comm.
Harry T. Stewart, Dir.	DES - Water Division
Johanna Lyons, Designee	Dept. of Resources & Econ. Dev.
Brad Simpkins, Dir.	DRED-Div. Forests & Land
Ed Robinson, Designee	Fish & Game Department
Craig Green, Designee	Dept. of Transportation
Richard Boisvert, Designee	Div. Historic Resources
Brook Dupee, Designee	Dept. Health & Human Svs.

COUNSEL FOR THE COMMITTEE: Michael Iacopino, Esq.

COUNSEL FOR THE PUBLIC: Peter C. L. Roth, Esq.
Sr. Asst. Atty. General
N.H. Atty.Gen. Office

COURT REPORTER: Susan J. Robidas, N.H. LCR No. 44

I N D E X (CONT'D)

APPEARANCES: Reptg. Antrim Wind, LLC:

Susan S. Geiger, Esq. (Orr & Reno)
Douglas L. Patch, Esq. (Orr & Reno)
Rachel Goldwasser, Esq. (Orr & Reno)

Reptg. Antrim Board of Selectmen:
Galen Stearns, Town Administrator
Michael Genest, Selectman

Reptg. Harris Center for Cons. Edu.:
Stephen Froling, Esq.

Reptg. Antrim Planning Board:
Martha Pinello, Member

Reptg. Abutters Intervenor Group:
Susan Duley

Reptg. Audubon Society of N.H.:
Frances Von Mertens

Reptg. Intervenor Allen/Edwards:
Mary Allen

Reptg. Industrial Wind Action Group:
Lisa Linowes

Reptg. North Branch Group
of Intervenor:
Loranne Carey Block

Reptg. Stoddard Conservation Comm.:
Scott Simmons

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WITNESS: SUSAN MORSE

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(Exhibits NB 58 and NB 59 marked for
identification.)

CHAIRMAN IGNATIUS: Good morning.
I'd like to open the hearing. Ms. Bailey's
been keeping track of the days. Are we on
Day 10 at this point?

MS. BAILEY: We are.

CHAIRMAN IGNATIUS: We're on Day 10
of the Docket 2012-01 Site Evaluation
Committee's consideration of the Application of
Antrim Wind Energy for a Certificate of Site
and Facility.

We will first begin with
identification of Members of the Committee and
then take appearances.

My name is Amy Ignatius. I'm
Chairman of the Public Utilities Commission and
also Vice-Chair of the Site Evaluation
Committee, and Presiding Officer in this case.

DIR. STEWART: Harry Stewart,
Director of Water Division, Department of
Environmental Services.

MS. LYONS: Johanna Lyons, Department

1 of Resources and Economic Development.

2 DIR. SIMPKINS: Brad Simpkins,
3 Department of Resources and Economic
4 Development.

5 MR. ROBINSON: Ed Robinson, New
6 Hampshire Fish and Game Department. And I
7 apologize for missing Thursday and Friday's
8 sessions, but I assure you I will look at the
9 transcripts and read them.

10 MS. BAILEY: Kate Bailey, Public
11 Utility Commission.

12 MR. DUPEE: Brook Dupee, Department
13 of Health and Human Services.

14 MR. GREEN: Craig Green, New
15 Hampshire Department of Transportation.

16 DR. BOISVERT: Richard Boisvert, New
17 Hampshire Division of Historical Resources.

18 CHAIRMAN IGNATIUS: Thank you,
19 Committee Members. We have a full committee.
20 Clearly we have a quorum.

21 And appearances, Ms. Geiger.

22 MS. GEIGER: Yes. Good morning.
23 Susan Geiger, Douglas Patch and Rachel
24 Goldwasser from the law firm of Orr & Reno,

1 representing the Applicant, Antrim Wind Energy.

2 Good morning.

3 MR. FROLING: Good morning, Stephen
4 Froling, representing the Harris Center for
5 Conservation Education.

6 MR. STEARNS: Good morning. Galen
7 Stearns, Town of Antrim. With me today is Mike
8 Genest, selectman.

9 MS. VON MERTENS: Francie Von
10 Mertens, New Hampshire Audubon.

11 MR. SIMMONS: Scott Simmons from the
12 Stoddard Conservation Commission.

13 MS. BLOCK: Lorraine Carey Block,
14 North Branch Intervenors.

15 MR. ROTH: Good morning. Peter Roth,
16 Counsel for the Public.

17 CHAIRMAN IGNATIUS: Good morning,
18 everyone, and welcome.

19 Our first witness is Ms. Morse. And
20 is there anything before we begin with taking
21 evidence that we should address?

22 (No verbal response)

23 CHAIRMAN IGNATIUS: I'm not seeing
24 anything.

1 MR. IACOPINO: No. The only thing I
2 had to report is resolved because Mr. Roth is
3 here.

4 MR. ROTH: Thank you. I am.

5 CHAIRMAN IGNATIUS: All right. Then
6 we will begin with Ms. Morse.

7 Mr. Iacopino -- oh, no. I'm sorry.
8 Sue, can you swear the witness.

9 (WHEREUPON, SUSAN MORSE was duly sworn
10 and cautioned by the Court Reporter.)

11 SUSAN MORSE, SWORN

12 CHAIRMAN IGNATIUS: And I'll just
13 note for the record that Ms. Pinello from the
14 planning board and Ms. Allen are also here.
15 Welcome.

16 So, Ms. Block.

17 DIRECT EXAMINATION

18 BY MS. BLOCK:

19 Q. Good morning. Please state your name and
20 address.

21 A. My name is Susan Morse, M-O-R-S-E. My
22 address is 55A Bentley Lane, Jericho,
23 Vermont, 05465.

24 Q. What is the name of your business?

1 A. Morse & Morse Forestry and Wildlife
2 Consultants.

3 Q. What services do Morse & Morse Forestry &
4 Wildlife Consultants provide?

5 A. We assist landowners, and in some cases NGOs,
6 and aid public agencies with habitat
7 analysis, so that it can be compatible with
8 forest management practices and, in fact, be
9 enhanced by them, and in some cases protected
10 by avoiding such practices.

11 Q. Please provide information about your
12 qualifications to the Committee that would be
13 helpful.

14 A. I have submitted that in my prefiled
15 testimony. And since then, we have two
16 letters that have been provided us, for you
17 to provide to the Committee. So I would ask
18 that the Committee Members, as well as the
19 Applicant, refer to those documents.

20 CHAIRMAN IGNATIUS: All right. And
21 we don't need to go through all of your
22 prefiled. So, thank you. We have that. And
23 this is really just a summary of your -- in
24 your direct presentation.

1 We do have two letters that have just
2 been marked as North Branch 58 and 59 --

3 MS. BLOCK: Yes.

4 CHAIRMAN IGNATIUS: -- from a Mr.
5 Johnson and Mr. Shaw; is that right?

6 WITNESS MORSE: Right.

7 CHAIRMAN IGNATIUS: Why don't you
8 just describe briefly who those people are,
9 what the letters are. You don't need to read
10 all of them.

11 But go ahead, Ms. Block.

12 BY WITNESS MORSE:

13 A. Well, given the fact that I have the
14 education I do, which is kind of unique for
15 what I'm now doing in life 49 years later, I
16 felt it helpful to ask two of my senior
17 colleagues, who are nationally known, to
18 weigh in on my behalf, and that's what
19 they've done. They know me and they know my
20 work both here in New England and throughout
21 the country. So...

22 Mr. Shaw is a senior mountain lion
23 biologist. I started out all this studying
24 cats and worked with him for over 20 years.

1 And he's seen me both in the field and, as
2 you say, behind the desk. So he knows what I
3 can do.

4 And Mr. Johnson is Vermont's former
5 state naturalist. He's retired now. And,
6 again, in my various capacities in Vermont,
7 he's seen my work.

8 CHAIRMAN IGNATIUS: Thank you. Was
9 there any discussion among the parties about
10 submission of these as late documents?

11 MS. GEIGER: No. I was -- may I
12 address that?

13 CHAIRMAN IGNATIUS: Yes, please.

14 MS. GEIGER: Thank you. I was just
15 handed these two documents by Ms. Block this
16 morning. The Applicant would respectfully
17 object to them. They could have been marked
18 much earlier in the process. Thank you.

19 CHAIRMAN IGNATIUS: Ms. Block?

20 MS. BLOCK: I did bring them to the
21 last tech session. And when I talked to Mr.
22 Iacopino, he thought it was better that they
23 come in this morning with Ms. Morse. So that's
24 why. I've been holding on to them for that

1 much time.

2 CHAIRMAN IGNATIUS: Mr. Iacopino, do
3 you want to address that?

4 MR. IACOPINO: I think --

5 MR. ROTH: I have no objection.

6 (Court Reporter interjects.)

7 MR. IACOPINO: Peter and I are
8 talking at the same time.

9 MR. ROTH: Sorry. I have no
10 objection.

11 MR. IACOPINO: I think she does
12 correctly state the conversation that we had at
13 the time. I did suggest that she bring them to
14 the hearing.

15 CHAIRMAN IGNATIUS: Well, why don't
16 we do this: Since you haven't had a chance --
17 any of the parties haven't had a chance to read
18 through it yet, do so. All of the
19 identifications right now -- all the markings
20 are for identification. And if, after
21 reviewing it, you want to make a request that
22 it not be admitted as a formal exhibit, we'll
23 take that up later. Thank you.

24 All right. Please continue.

1 BY MS. BLOCK:

2 Q. Ms. Morse, please respond to Antrim Wind
3 Energy, LLC's rebuttal to your testimony's
4 concerns about habitat fragmentation.

5 MS. BLOCK: For the benefit of the
6 Site Evaluation Committee, the opinions offered
7 by Mr. Valteau and Mr. Gravel are found on
8 Pages 11 to 13 of their first supplemental
9 prefiled testimony submitted on October 11th,
10 2012.

11 A. I'm only, in this case, going to ask the
12 Committee's permission to read it. I am
13 dyslexic. And so with my handicap, it's
14 really important for me to be able to convey
15 this information to you in as concise and
16 exact a manner as I labored on. All other
17 questions I will endeavor to handle as is.
18 So I'd like to take a moment to just read
19 this brief answer.

20 BY MS. BLOCK:

21 Q. So this is -- what you're reading is a
22 response to that question that you've written
23 out.

24 A. Yes, I am.

1 Q. Okay. That's fine.

2 A. "Unfortunately, Mr. Valteau and Mr. Gravel
3 have misinterpreted my comments about habitat
4 fragmentation, and as a consequence have
5 provided the Committee with information which
6 is inaccurate and misleading. Nowhere in my
7 testimony did I claim that the proposed
8 Antrim Wind facility would result in a
9 completely isolated habitat fragment.
10 Instead, in keeping with how the scientific
11 concept of 'island biogeography'... has
12 become integrated into today's 'conservation
13 biology,' my conclusions appropriately
14 described concerns about localized 'edge
15 effects'; the invasion of exotic plants,
16 animals and pathogens, and altered wildlife
17 behavior and consequent energy losses.
18 However, I also deliberately included brief
19 mention of other acknowledged perturbations
20 that exacerbate the stresses of fragmentation
21 throughout a much larger matrix of
22 surrounding habitats. These include
23 disruption of plant and animal dispersal and
24 colonization and the sustenance of

1 landscape-scale ecosystem services and
2 species diversity. No scientist using the
3 term 'habitat fragmentation' today would
4 limit its impacts to a particular habitat
5 being impacted. Conservation scientists
6 today recognize that habitat discontinuities
7 collectively stress local species richness
8 and resilience, as well as the functions and
9 services of whole ecosystems. Throughout New
10 Hampshire, New England, and worldwide, 'small
11 incisions,' collectively diminish limited
12 core and connective habitats, and as such,
13 cumulatively compromise species diversity and
14 resilience. Conservation scientists are in
15 agreement that the preservation and
16 restoration of core and connective habitats
17 is crucial if we are to successfully endure
18 the inevitable stresses that climate change
19 will surely pose, severely challenging human
20 and natural economies alike."

21 Q. Is this why you stressed the importance of
22 considering cumulative effects assessment and
23 its relevance to Antrim Wind, LLC's proposed
24 industrial intrusion into an acknowledged

1 core habitat?

2 A. Yes. Absolutely. I carefully prepared for
3 the Site Evaluation Committee's consideration
4 a description of "cumulative effects
5 assessment," including brief mention of this
6 growing science's deepening appreciation of
7 the dynamic and cumulative nature of
8 human-caused disturbances and their dangerous
9 impacts on wildlife and habitats over time.

10 Q. Okay. Excuse me for just a second. Let me
11 figure out where the notes go.

12 Do you have any further comments in
13 rebutting Mr. Valleeau's testimony?

14 A. No. I think the next series of questions
15 that we're preparing to address are the ones
16 that you and Rich have written.

17 Q. Okay.

18 MS. BLOCK: Excuse me for just a
19 second.

20 CHAIRMAN IGNATIUS: That's all right.

21 WITNESS MORSE: Can I come help you?
22 Is that all right?

23 CHAIRMAN IGNATIUS: Well, let me ask
24 what it is that -- what's the problem?

1 WITNESS MORSE: As I see it, the
2 problem is she's misplaced the paper that she
3 should be reading from at this time with the
4 questions that --

5 CHAIRMAN IGNATIUS: All right. What
6 I'm concerned about is something a little bit
7 different, which is, what we normally do, and
8 you wouldn't know this, not having been part of
9 these hearings before, is we have very limited
10 direct testimony. It's not a summary of -- or
11 a restatement of everything in the prefiled.

12 WITNESS MORSE: Yeah.

13 CHAIRMAN IGNATIUS: And we address
14 anything in rebuttal, which I think you just
15 did --

16 WITNESS MORSE: Well, I think that's
17 what these questions are now going to do in
18 particular. They're going to address --

19 CHAIRMAN IGNATIUS: All right. I
20 misunderstood the question, "Do you have
21 anything else to add?" I thought that meant --

22 WITNESS MORSE: No.

23 CHAIRMAN IGNATIUS: Well, why don't
24 you go ahead. If you can help sort out the

1 papers, that would be fine.

2 (Pause in proceedings.)

3 CHAIRMAN IGNATIUS: Sue, back on the
4 record. Thank you.

5 BY MS. BLOCK:

6 Q. On Page 13, Line 8, Mr. Valteau states, "The
7 presence of species such as moose and black
8 bear in a particular area can be considered
9 to be an indication that large blocks of
10 'core' habitat are in the area. After
11 project construction, the large blocks of
12 habitat will remain, and it is unlikely that
13 either species will be displaced to any
14 significant degree by the project." Do you
15 concur with this statement?

16 A. It feels a little out of context. Moose and
17 bear and bobcat and numerous other species --
18 in my prefiled testimony, I maintain that
19 habitat fragmentation and all the things that
20 go with that will influence these animals in
21 a multitude of ways, not just in some cases
22 displacing them; in some cases interrupting
23 their migration; in some cases stressing
24 them, such that their energy budgets are

1 challenged; in some cases causing them to
2 flush and flee and use energy that they can't
3 afford; in some cases causing them to forsake
4 preferred habitats, either for feeding or
5 nesting.

6 These are just a few of the examples
7 that I gave in my prefiled testimony. So I
8 think it's a little unfair to isolate one
9 issue -- i.e., displacement -- and have it be
10 thought that this facility won't impact
11 wildlife in a much, much larger way. It
12 will. And the science is certainly proving
13 that.

14 Q. On the same page, on Line 13, Mr. Valleau
15 states, "Disturbance caused by road use from
16 vehicles will also be restricted to
17 operations personnel and will be low in
18 volume compared to a state or county road.
19 Road footprints are narrow enough, that there
20 will still be ample opportunity for wildlife
21 to traverse the area unimpeded, similar to
22 gravel logging roads."

23 Should the project access roads be
24 compared to a state or county road? Do you

1 believe that the access road will have an
2 impact on wildlife?

3 A. Absolutely. Not so much because of its
4 physical footprint, but it, in conjunction
5 with the wind towers themselves, will cause
6 all manner of problems, not the least of
7 which is the fact that roads invite more
8 people to visit an area. And people and pets
9 are known to cause problems, even on hiking
10 trails. There's just volumes of literature,
11 unfortunately, pointing out that the minute
12 we start intruding into a core habitat with a
13 lot of regularity, a lot of visitations, we
14 really cause all kinds of harm to wildlife,
15 the likes of which I enumerated a moment ago.

16 So, again, my testimony wasn't so much
17 talking about the physical footprint of the
18 road and its size and whether or not animals
19 will cross it, so much as I was addressing
20 the universally held concerns that biologists
21 now have about the impacts on roads in core
22 habitat.

23 Again, we're talking about a core
24 habitat here. We're not talking about a

1 place where a road should be -- say, for
2 example, a highway. This is a core habitat.

3 Q. Mr. Valleau continues on Page 13, Line 17,
4 "...several large parcels of land will be
5 conserved as part of the project, providing
6 for protection to 685 acres of habitat that
7 will not be developed. This habitat
8 conservation effort coming directly from the
9 project developers will ensure that a
10 significant portion of this habitat block
11 will remain intact."

12 Do you consider this conserved land to
13 be sufficient mitigation for the project
14 construction?

15 A. Well, as a biologist and practitioner in the
16 field, so to speak, I will say I've never
17 been a big fan of mitigation, quite honestly.
18 To me, it's not appropriate to offer a bushel
19 of apples to take the place of a bushel of
20 potatoes. They're not the same thing. And
21 as wonderful as these additional lands may
22 be, I'm not convinced that they couldn't
23 otherwise be conserved in time. And indeed,
24 the whole wonderful process of the Super

1 Sanctuary and other conservation measures in
2 the community, and the wonderful position of
3 the conservation commission, and the Town of
4 Antrim itself, certainly points to the fact
5 that conservation is in the blood of this
6 community. So I think it's unfair to suggest
7 that these lands wouldn't otherwise become
8 conserved if it weren't for this deal, so to
9 speak.

10 And last, but not least -- and I have
11 papers which I am prepared to provide the
12 Committee and the Applicant on this -- there
13 are two new fields of inquiry in conservation
14 biology that I find fascinating, both of
15 which point to the importance of higher
16 elevation, topmost elevation within a given
17 habitat. So, ranging from the highest
18 summits of the High Sierras, or even the
19 Himalayas, to the lower summits of our
20 ridgelines here in Antrim, there is
21 definitely a recognized appreciation for the
22 wisdom of conserving these areas so as to
23 capture a greater amount of biodiversity in a
24 regional conservation planning effort.

1 So, in one case it's called "land
2 facets," which physically the higher
3 topography of our ridgelines are key,
4 according to Paul Beyer and his colleagues in
5 the one paper. And then the other is
6 fascinating, and that is the geophysical
7 importance of conserving the mountain
8 summits, just simply because of their geology
9 which is different than the soils and
10 geologic features that exist down-slope
11 oftentimes.

12 So these are ways that scientists have
13 figured out we can capture more effective
14 conservation on the ground. It used to be,
15 we conserved what we thought was beautiful
16 and what we liked to hike in and walk our
17 pets in. But now, conservationists are
18 realizing that in order to save the fabric of
19 life on this planet, we need to aggressively
20 get on with conserving core and connective
21 habitats. And these are just two elements
22 within that, that are now recognized as
23 important.

24 And again, I want to stress this is core

1 habitat, and it deserves to be thought of as
2 such.

3 CHAIRMAN IGNATIUS: Let me just
4 mention something before we go on any further.
5 We've been strict with other parties, and so I
6 don't want to be interrupting too much. And I
7 want to give as much assistance and leeway to a
8 lay questioner, who's doing a fabulous job, by
9 the way, all throughout this case. But we
10 really -- on direct, it really should be direct
11 response to statements made by others that
12 couldn't have been addressed before. And so,
13 as you remember, we were strict with others in
14 really framing their questions to respond to
15 specific testimony. And if you can do that in
16 your responses as well, that would be
17 appreciated. Then we'll move to
18 cross-examination, and that's a little looser.

19 WITNESS MORSE: Okay. Thank you.

20 BY MS. BLOCK:

21 Q. Continuing on, starting on the bottom of
22 Page 14, Mr. Valleau challenges your position
23 on the assessment of cumulative impacts to
24 birds and bats. On the next page, on Line 5,

1 he states that direct impacts to wildlife
2 from construction and operation of the
3 project are not expected to be significant
4 and that birds and bats are at a low risk of
5 collision with project wind turbines. Would
6 you agree with this statement?

7 A. I would have to say, with all appropriate
8 caution, no, because I don't know the sources
9 of their information. And I frankly don't
10 have confidence in the mere collection of
11 dead bodies at the bottom of turbines to
12 adequately capture all of the negative
13 impacts that are going to be had here. I
14 mean, they go way beyond the mortalities of
15 individual animals.

16 What I addressed in my testimony, which
17 they apparently didn't understand, is a much,
18 much bigger subject involving a much, much
19 more complex array of life and life
20 processes.

21 Q. On Page 15, Line 17, Mr. Vallean states,
22 "Ms. Morse suggests that projects that create
23 even low levels of mortality are
24 unjustifiable because they add to the overall

1 mortality... Applying Ms. Morse's logic would
2 result in virtually no human development,
3 which is untenable." Would you comment on
4 this statement.

5 A. Well, first of all, again, it's totally out
6 of context and totally misleading. My
7 comments relevant to the unacceptability of
8 mortality pertain to bat species, which in
9 our region are either endangered or fast
10 becoming endangered because of White Nose
11 Syndrome. So there, it was simply an honest
12 appraisal of the relative importance of not
13 having any mortalities, that we would add to
14 the one that already exists, which is a
15 flatout pandemic. It's probably one of the
16 most sincere -- severe wildlife disease
17 epidemics in our country. So I wasn't -- I
18 guess enough said.

19 Q. In his conclusion to the section on Page 16,
20 Line 10, Mr. Valteau says, "Thus, even if it
21 were possible to quantify the project's
22 cumulative impacts, the mitigation measures
23 would still be appropriate." Do you feel
24 that the potential mortality to birds and

1 bats can be mitigated?

2 A. No. Again, that feels awfully arbitrary to
3 me and unfair to the public. Just because an
4 industrialist says that it is so doesn't
5 necessarily mean it will be so. And that
6 doesn't even begin to address the larger
7 subject of cumulative effects assessment,
8 which I introduced in my testimony.

9 In fact, parenthetically, I will say
10 that I believe I am the first biologist in
11 the region to bother to even comprehensively
12 describe what "cumulative effects assessment"
13 is. It's not something that New England
14 biologists and agencies are on, for some
15 reason. It's very much a science that other
16 parts of the country are aware of. But for
17 some reason, we're behind the times on that
18 one.

19 Q. Ms. Morse, do you have any additional
20 comments specific to the supplemental
21 testimony that you would like to make?

22 A. At this time, no. But perhaps after all the
23 other questions, on redirect or whatever, I
24 may, yes.

1 MS. BLOCK: Thank you very much. The
2 witness is now available for cross-examination.

3 CHAIRMAN IGNATIUS: Thank you. We'll
4 begin with Mr. Roth.

5 MR. ROTH: Thank you.

6 CROSS-EXAMINATION

7 BY MR. ROTH:

8 Q. Good morning, Ms. Morse.

9 A. Good morning.

10 Q. I think you have before you -- maybe not --
11 AWE 15?

12 MR. IACOPINO: In the bucket.

13 CHAIRMAN IGNATIUS: That was AWE 15,
14 if the people didn't hear it.

15 (Pause in proceedings)

16 BY MR. ROTH:

17 Q. I've just shown you AWE Exhibit 15. These
18 are some photographs that were presented by
19 the Applicant, and they represented that
20 these photographs were taken at various wind
21 projects. And can you -- have you seen these
22 pictures before?

23 A. No, I have not.

24 Q. Okay. Can you take a moment to quickly flip

1 through them. There are only nine pages, I
2 think.

3 (Witness reviews documents.)

4 A. Okay.

5 Q. Would you agree with me that these pictures
6 at least appear to be various species of
7 local wildlife present at wind farm
8 facilities?

9 A. I would, with the exception of Page 7 of 9,
10 the fox. I'm not seeing that fox in the
11 context of the wind facility. It could be
12 beside the highway we just came in on.

13 Q. Okay. Fair enough.

14 Do you have some explanation, in light
15 of your testimony and your opinions? How do
16 you explain the presence of these animals in
17 what appears to be a fairly significantly
18 impacted habitat right here at the turbine
19 basis?

20 A. Yeah. Well, we know that moose, for example,
21 might occasionally show up in downtown
22 Burlington on their way to Lake Champlain and
23 points west, the Adirondacks, I believe,
24 which is now enjoying a growing population

1 because of that phenomenon.

2 All these animals at one time or another
3 will put themselves in stressful situations
4 to either get somewhere or maybe even to
5 feed. But what's interesting about these
6 pictures is, for example, Page 4, that moose
7 is -- if everybody will look at this
8 picture -- that moose is the one at the
9 bottom of Tower A10. That moose is in a
10 decided stressed condition. Its whole mane
11 is roached and erected, and its ears are back
12 and head is down. It is clearly intimidated
13 or angry -- I couldn't tell you which, maybe
14 both -- by the circumstances in which it
15 finds itself.

16 So, I guess what I emphasized in my
17 testimony --

18 Q. If I can stop you there, because I want to
19 ask about this. If you look at the picture
20 before that, it looks like the same moose in
21 the same place, perhaps a moment before or a
22 moment after; we can't really tell. Does
23 that moose look to be distressed?

24 A. No, that moose is probably curious about the

1 photographer who's taking the picture.

2 Q. So is it possible that, by the picture on
3 Page 4, the moose, assuming it's the same
4 moose and it's a little bit later, was scared
5 by the photographer?

6 A. Yeah, it's scared by the whole situation.
7 It's -- you know, I think the point -- I'll
8 just continue with what I started to say.

9 The point I tried to make in my
10 testimony before is that cumulatively all
11 these stresses that these animals will have
12 to experience in a former core habitat in
13 which they weren't disturbed in this way, or
14 very infrequently, will cumulatively add up.
15 And moose declines, for example, in the
16 Northwest and parts of Canada are now being
17 attributed to an ugly combination of stress
18 factors associated with recreation and stress
19 factors associated with global climate change
20 and increased parasitism.

21 So, those three things are converging on
22 these animals. Same thing with caribous in
23 the north. So, like I say, this is -- go
24 ahead.

1 Q. Is it possible that all of those things that
2 you just described could be happening, and
3 yet the presence of wildlife at and using
4 Tuttle Hill and the project site could
5 continue pretty much as it does now?

6 A. No, because we're not measuring the stresses.
7 We're not measuring all the times where an
8 animal, a bird, an amphibian, a mammal choose
9 not to use the ridgeline that they've always
10 used because of the facility.

11 I mean, it's easy enough to gather a
12 handful of pictures to prove that they use
13 it. But how about the thousands of instances
14 that we don't have photographs of?

15 I mean, again, I want to emphasis that
16 this is a core habitat. And we have an
17 opportunity here to protect that core
18 habitat, as we should for biodiversity
19 conservation, and not intrude into it.

20 Q. Have you -- did you conduct a population
21 study of this location?

22 A. No. The description of what I did is in my
23 testimony.

24 Q. Okay. Have you conducted population studies

1 of any particular place in the past?

2 A. I have co-directed a 20-year-long
3 track-and-science survey, which in part
4 addresses some of the population indices in
5 an area. But I wouldn't -- that's not my
6 field of expertise. I'm a conservation
7 biologist, and so I'm aware of the sciences.
8 You know, conversation biology brings
9 together numerous sciences. So no one person
10 is all these things.

11 Q. Now, I understand from your testimony a
12 moment ago that you don't think much of
13 post-construction mortality surveys. Is that
14 fair to say?

15 A. I -- yeah, that's fair to say.

16 Q. And so maybe I'll just ask you. Do you think
17 that -- or have you ever done a
18 post-construction mortality survey?

19 A. No, I haven't.

20 Q. Have you read any of the post-construction
21 mortality surveys?

22 A. I'm aware of some of the conclusions that
23 have been made in post-mortality construction
24 surveys. But again, I want to emphasize that

1 I'm not just talking about mortality on site.
2 I'm talking about mortality off site, and
3 that's not being measured at all.

4 Q. How would we measure that?

5 A. Well, that's just -- that's the big
6 conundrum, and that's why we should step back
7 and conserve core connective habitats and not
8 have to answer that.

9 Q. And I guess this is the -- another question
10 similar to that. There's been a lot of
11 testimony here about fragmentation, and now
12 you have introduced this notion or concept of
13 habitat discontinuity. Is there a way to --
14 is there an accepted scientific definition
15 for either fragmentation or habitat
16 discontinuity?

17 A. Well, fragmentation is the introduction into
18 wild lands or core habitats of roads and
19 other human -- permanent human installations
20 and visitations that cause a whole litany of
21 changes, of which I have enumerated in my
22 testimony, and then, for that matter,
23 enumerated earlier this morning.

24 So, habitat fragmentation today has

1 grown away from the mere notion, as was
2 posited in 1967 by Wilson and MacArthur, that
3 in island biogeography, what we're talking
4 about, somehow is an island that features a
5 population of animals that are isolated.
6 That's not what conservation biologists today
7 are simply dwelling on. What they're
8 realizing has much, much broader
9 implications. And so all the little slices
10 and cuts and fissures and cracks collectively
11 add up and influence wildlife in ways that
12 we're beginning to appreciate are significant
13 and cumulative.

14 Again, if you'll refer to my testimony,
15 you'll read in detail, as concise as I could
16 make it, a description of just what that is.
17 It's big.

18 Q. Is there an accepted scientific definition
19 for "habitat discontinuity"?

20 A. It's the same thing, really. It's
21 synonymous.

22 Q. Is there -- if this Committee were to order
23 the Applicant to do it, is there a way to
24 design a study to determine the effects of

1 fragmentation or habitat discontinuity on
2 this project -- caused by this project?

3 A. Again, it's apples and oranges. On behalf of
4 the intervenors, I am not proposing that the
5 Applicant design or redesign or even execute
6 studies of what their impacts will be. I'm
7 proposing that this is an inappropriate place
8 for an industrial facility.

9 Q. I understand, but this is a different
10 question.

11 If they were to require it, is there a
12 way to design and conduct a study on the
13 effects of fragmentation or discontinuity?

14 A. I'm sure that the Applicant could dive into
15 the literature and seek to find such a thing.
16 But the fundamental tenant of conservation
17 biology is that core and connective habitats
18 should be secured and conserved by us, not
19 intruded in any way.

20 Q. Have you had an opportunity to review the
21 Applicant's Avian and Bat Protection Plan?

22 A. No, I haven't.

23 Q. Okay.

24 A. And the reason for that, in the partition of

1 all of our tasks here representing the
2 Intervenor, it's my understanding that the
3 folks at Audubon and other testifiers would
4 be covering that.

5 Q. Thank you very much. I have no further
6 questions.

7 A. Thank you.

8 CHAIRMAN IGNATIUS: Thank you.

9 Mr. Froling, questions?

10 MR. FROLING: No questions of this
11 witness. Thank you.

12 CHAIRMAN IGNATIUS: Mr. Beblowski.

13 (No verbal response.)

14 CHAIRMAN IGNATIUS: Mr. Jones.

15 (No verbal response.)

16 CHAIRMAN IGNATIUS: Well,

17 Mr. Simmons, is it?

18 MR. SIMMONS: Yes.

19 CHAIRMAN IGNATIUS: Do you have
20 questions?

21 CROSS-EXAMINATION

22 BY MR. SIMMONS:

23 Q. I'm sorry. This is the first day I've been
24 at these hearings, so I may be asking

1 questions that have been asked before.

2 But Sue, can you tell me what you find
3 unique about this particular core habitat
4 that you may want to address?

5 A. Yeah. I was really floored by how rugged it
6 was, especially with the glacial features and
7 the botanical features that nestle themselves
8 in and amongst all that. And I was, as was
9 the Applicant's consultant, I was also
10 impressed with the diversity of forest
11 community types and habitats that one could
12 see up there in a relatively finite area.
13 It's very special. It should become a park.

14 Q. Speaking about the forest habitat, was there
15 something you saw unique about the kind of
16 forest habitat that was there that you would
17 find surprising in this particular area?

18 A. I wouldn't say surprising. I mean, I was
19 delighted to see the softwood habitat at the
20 top, the spruce and fir.

21 What was neat about that, and I find
22 this to be true in a lot of New Hampshire
23 wild lands, is the tremendous potential for
24 mass and habitat productivity at the same

1 time that you have softwood cover, really
2 thick higher-elevation softwood cover. So
3 you have the oaks and cherry and all that
4 right in amongst the spruce and fir. That
5 was very special to me, and the shrubs as
6 well. I believe I mentioned a lot of this in
7 my testimony.

8 Q. Yes. Now, in terms of some of the damages
9 that are difficult to see -- in other words,
10 you were talking about just not only kind of
11 birds on the ground or the bats on the
12 ground, but once you put the turbines in
13 there, are there some other impacts due to
14 the sound, perhaps the low-pressure area that
15 is created on the avian habitat that might
16 exist?

17 A. Yes. Again --

18 MS. GEIGER: Excuse me. I apologize.
19 I'm going to object to this because I think
20 this witness has covered this information in
21 her prefiled testimony. I think the question
22 is in the form of a direct question as opposed
23 to a cross-examination question. So I think
24 we're going to start developing some unduly

1 repetitious information in the record.

2 CHAIRMAN IGNATIUS: Mr. Simmons, is
3 there -- maybe narrow your question a little
4 bit?

5 MR. SIMMONS: Not at this time.

6 CHAIRMAN IGNATIUS: Okay. Thank you.
7 Anything else?

8 MR. SIMMONS: No, thanks.

9 CHAIRMAN IGNATIUS: All right.
10 Ms. Sullivan.

11 (No verbal response).

12 CHAIRMAN IGNATIUS: Ms. Longgood is
13 not here. But Ms. Duley, questions?

14 MS. DULEY: Yes.

15 CROSS-EXAMINATION

16 BY MS. DULEY:

17 Q. My question is rather naive. But I wondered
18 if you could comment on or sort of talk about
19 how the impact on wildlife is transmitted
20 through the area -- i.e., high impact maybe
21 right where the towers are proposed to go?
22 But how wide-ranging would you anticipate the
23 effects on wildlife to extend through the
24 area?

1 A. Well, this is one of the areas that
2 scientists are very concerned about, because
3 in each situation, in each assemblage of
4 habitats and each assemblage of animals and,
5 you know, insects and birds and everything,
6 the answers are going to be different.

7 But a generalization that I feel
8 comfortable making is, it's extensive, you
9 know, certainly echo-system wide. And I
10 would argue that throughout New England more
11 of the same impacts across wild mountains
12 will just really compound the problem.

13 You take moose, for example. We have
14 global climate change. It's happening.
15 Nobody can deny that today. Well, nobody
16 knows that better than the moose with its
17 dark coat and its adaptations for a somewhat
18 colder climate, a boreal forest,
19 technically -- boreal and subboreal habitats.
20 Suddenly, now these animals are being
21 confronted with a world that is warmer, that
22 stresses them; a world that may offer more
23 parasitism, that stresses them. And now, in
24 core habitats where these things shouldn't

1 be, there'll be all this human footprint of a
2 variety of sorts, which I have enumerated in
3 my testimony.

4 And so cumulatively, all these things
5 working together are hammering moose
6 populations. In North America, iconic
7 populations in places like Minnesota are
8 plummeting; places the Rockies are
9 plummeting. And you can't point to one
10 culprit. And the consensus is that these
11 animals are succumbing to a complex,
12 synergistic variety of stresses.

13 And so I'm going to boil it down to
14 stress. And everybody here knows what that's
15 like. We're under severe stress sometimes in
16 what we do out there. And if you're an
17 animal with a finite home to live in, the
18 last thing you need is a constant number of
19 stresses out there that don't need to be
20 there. I mean, global climate change doesn't
21 need to be there. We have to hope that we
22 can do something meaningful about that. But
23 we certainly don't need to introduce into
24 core habitat any more stresses. There's

1 already enough out there.

2 Q. And can I take that to infer or state that --
3 and you may have said this before, so excuse
4 me -- but what you are talking about is,
5 quote, core habitats?

6 A. Yeah. Precisely. Core habitats and also
7 connective habitats. I mean, I think in New
8 England, some smaller ridgelines and
9 mountains even close to town that might be
10 subject to a similar industrial activity are
11 really -- it's really well-minded to do it
12 because they function as corridors and
13 because they are part of what we know to be
14 connective habitats, ridges and riparian
15 areas are two sort of go-to places for
16 preferred travel routes of animals and birds.

17 Q. And how should me as a layperson, how should
18 I sort of think of ecosystem as it pertains
19 to this project? Because I'm familiar with
20 that word, but I'm familiar with it in a very
21 broad sense or a very narrow terrarium world.

22 A. Exactly. Well, it's kind of a two-fold
23 thing. And you're right. It has both a very
24 finite meaning, but also a very expansive

1 meaning.

2 Yeah, "ecoregion" is a word I prefer for
3 the larger picture. And so that will include
4 many ecosystems. So I would say that we're
5 talking about an ecoregion here, one that,
6 you know, as I said in my prefiled testimony,
7 is really remarkable for its already laudable
8 achievements in conservation. So --

9 Q. Thank you. No further questions.

10 A. Thank you.

11 CHAIRMAN IGNATIUS: Mr. Stearns.

12 MR. STEARNS: No questions.

13 CHAIRMAN IGNATIUS: Ms. Pinello.

14 MS. PINELLO: No questions.

15 CHAIRMAN IGNATIUS: For Audubon, I
16 know Ms. Manzelli is not here. Ms. Von
17 Mertens.

18 MS. VON MERTENS: I do have a
19 question relating to the wildlife sanctuary.

20 CROSS-EXAMINATION

21 BY MS. VON MERTENS:

22 Q. Willard Pond's Wildlife Sanctuary to the
23 south of the project area. Are you somewhat
24 familiar with that sanctuary?

1 A. I've been there a couple of times through
2 programs with the Harris Center.

3 Q. Oh, of course. Tracked in there. Goodhue
4 Hill.

5 A. Yeah, right.

6 Q. I went there with you tracking. Silly
7 question. Sorry.

8 A. No problem.

9 Q. Thank you.

10 Can you make a comment about wildlife
11 impacts to that area? And I'm wonderfully
12 happy to be reminded that you are familiar
13 with it.

14 A. Yeah. Well, it's a wonderful jewel, you
15 know, in a string of other wonderful jewels.
16 And I think the whole region will be
17 ill-served by an intrusion of this scale
18 within the core habitat. You know, it can't
19 help but affect the whole region. If you
20 listen to the science and consider the
21 concerns, there's no question in my mind that
22 the whole region will be harmed by yet
23 another slice in core habitats.

24 Q. This isn't a question. But the pictures

1 there of Goodhue Hill on that map, "Sue Morse
2 led the tracking area up to that specific
3 area perhaps ten years ago, and her
4 recommendation was that there be a
5 re-establishment of habitat there." And I
6 think you'll be pleased to see that that was
7 done last year.

8 A. Oh, wonderful.

9 Q. Thank you. That's...

10 CHAIRMAN IGNATIUS: Anything further?

11 MS. VON MERTENS: No, thank you.

12 CHAIRMAN IGNATIUS: Thank you.

13 Ms. Allen.

14 MS. ALLEN: No questions.

15 CHAIRMAN IGNATIUS: Dr. Kimball.

16 (No verbal response.)

17 CHAIRMAN IGNATIUS: Ms. Linowes.

18 MS. LINOWES: Thank you, Madam

19 Chairman. I do have some questions.

20 CROSS-EXAMINATION

21 BY MS. LINOWES:

22 Q. Good morning.

23 A. Good morning.

24 Q. To begin with, I wanted to ask you to -- if

1 you -- and I don't know if you have the
2 Application in front of you. But I will --
3 what I'd like to do is go down the list of
4 wildlife studies that were conducted by the
5 Applicant and ask you a couple of questions,
6 at least in terms of the types of studies
7 that were conducted. Okay?

8 MS. LINOWES: And for everyone here
9 who has access to the Application, I'm looking
10 at Section I.5.C of the actual Application. I
11 believe that would be AWE 1. My apologies if I
12 have that wrong.

13 BY MS. LINOWES:

14 Q. Okay. In that section, it lists the wildlife
15 studies that they conducted. They were a
16 breeding bird survey, diurnal raptor
17 migration survey, radar studies for nocturnal
18 avian migration, rare raptor nesting surveys,
19 acoustic bat monitoring, and bat mist nesting
20 survey.

21 Do you see here anything in that list of
22 wildlife studies conducted that have to do
23 with bear, moose, bobcat or any other game,
24 large game or otherwise, that might be

1 utilizing the project site?

2 A. I'm afraid I'm at a disadvantage because I
3 don't have the list, and I haven't had it
4 beforehand, such that I could be prepared to
5 answer this. So my ability to re-auditorize
6 here is challenged.

7 Q. You want me to give you the list?

8 A. On the top of it, I don't think so. But I
9 will add that I would expect all of those
10 studies to have yielded wonderful information
11 about the rich quality of habitat up there
12 and its residents. All the more reason why
13 that core habitat should not be fragmented.

14 Q. Ms. Morse, I would like to show you the list
15 because it is an important answer.

16 A. Okay.

17 Q. If I may.

18 MR. IACOPINO: Could you tell us the
19 section of the Application again?

20 MS. LINOWES: Yes. It's I.5.C, and
21 it's on Page 81 of the original Application.

22 MR. IACOPINO: Thank you.

23 CHAIRMAN IGNATIUS: Before you begin,
24 you can take a look at that, but we're still

1 struggling. Our Page 81 of the Application is
2 something different. So I don't think I'm
3 there yet.

4 MS. LINOWES: It's not -- it's PDF
5 Page 81. It's the actual page number, if that
6 helps.

7 CHAIRMAN IGNATIUS: I bet it will.

8 MR. IACOPINO: I believe it's Page 88
9 in the electronic version.

10 CHAIRMAN IGNATIUS: Yes, thank you.

11 BY MS. LINOWES:

12 Q. So, Ms. Morse, to repeat my question: Is
13 there anything in that list that you can tell
14 of what you know of studies that can be done
15 to evaluate wildlife impacts? Do you see
16 anything that looks like it contemplated
17 impacts on -- or at least the utilization of
18 the project site by moose, bobcat, bear or
19 any other wildlife that you may expect to be
20 resident in that area?

21 A. This list wouldn't, in my estimation, include
22 activities that would monitor those species,
23 no.

24 Q. So, absent pre-construction survey of current

1 activities of such wildlife that I'm
2 mentioning -- again, moose, bear -- can we
3 know the effect of this project
4 post-construction, at least some means of
5 measuring the effect on wildlife after the
6 project is constructed and operational?

7 MS. GEIGER: I'm going to object to
8 this question because it assumes an erroneous
9 fact. While it's true that Page 81 does not
10 contain of Applicant's wildlife survey, the
11 Applicant did, in fact, conduct a wildlife
12 survey that was submitted in a supplement to
13 the Application. So the premise of the
14 question is faulty, and I'd object to it.

15 WITNESS MORSE: And I will add that I
16 wasn't provided with any of that, so I guess my
17 ability to comment is limited accordingly.

18 CHAIRMAN IGNATIUS: I think for the
19 sake of the record it would be appropriate to
20 identify if there are additional wildlife
21 studies, so that we don't have questions based
22 on a hypothetical that really isn't accurate.

23 MS. LINOWES: Yes. Well, I'm not
24 aware that another -- that a wildlife study was

1 done supplemental to that. So I would like to
2 come back on that after my -- I believe Mr.
3 Roth is going to check that for me, and I will
4 come back during my question period, if I may.

5 CHAIRMAN IGNATIUS: That's fine.

6 BY MS. LINOWES:

7 Q. Okay. Now what I'd like to do --

8 MS. LINOWES: And again, for the
9 Committee, I want to apologize. I do not have
10 the exhibit numbers as they were -- I would
11 like to direct the witness to Exhibit SM8A,
12 which would be an exhibit that is now an NB
13 exhibit.

14 CHAIRMAN IGNATIUS: Let's hold on
15 here and try to figure out what that just
16 meant. North Branch exhibit, and within the
17 North Branch document it's SM8?

18 MS. LINOWES: SM8A.

19 CHAIRMAN IGNATIUS: Oh, as in Susan
20 Morse?

21 MS. LINOWES: Yes.

22 CHAIRMAN IGNATIUS: I'm getting the
23 code.

24 MR. IACOPINO: You're talking about

1 an attachment to her testimony.

2 MS. LINOWES: Correct.

3 CHAIRMAN IGNATIUS: Oh, and these are
4 the photographs; is that right?

5 MS. LINOWES: Yes, these are
6 photographs of a walk that was taken through
7 the project site.

8 CHAIRMAN IGNATIUS: All right.

9 Ms. Morse, do you have that?

10 (Ms. Block handing document to witness.)

11 WITNESS MORSE: Yeah. Actually, my
12 submissions in this original testimony pertain
13 to another section of photographs, which is
14 entitled "SM4." So I am prepared to address
15 those questions.

16 BY MS. LINOWES:

17 Q. Okay. But you were on the -- you walked this
18 site with other people --

19 A. Yes, I did.

20 Q. -- and observed the tree clearing that had
21 taken place.

22 A. Yes.

23 Q. And now, Mr. Jones, Geoffrey Jones, was on
24 the witness stand last week. And he had

1 stated that what he observed, in spite of any
2 characterization by the Applicant and the
3 landowner, what he observed appeared to be
4 unusual in terms of the clearing that had
5 taken place; it appeared to be following a
6 road.

7 A. Oh, yeah. True.

8 Q. Was that your observation?

9 A. Yes, definitely.

10 Q. Now, if you would look in some of those
11 photographs, there was -- there are stakes
12 marked along the road. You followed that
13 road; is that correct?

14 A. Yeah. Correct.

15 Q. And some of those stakes are marked "WTG368"?

16 A. Oh, yes, I'm looking at that now. Yes.

17 Q. And do you know what the "WTG" stands for?

18 A. Wind tower something?

19 Q. Wind Turbine Generator?

20 A. Oh, good. Thank you.

21 Q. Now, would it be standard practice for
22 someone who was timbering in that area to
23 also place stakes and identify the location
24 where they are going to put turbines?

1 MS. GEIGER: I'd object to this
2 question. I think it calls for speculation on
3 the part of the witness. Furthermore, I don't
4 think there's anything in the record that
5 indicates what "WTG" stands for. So I'd
6 object.

7 CHAIRMAN IGNATIUS: Well, let's --

8 WITNESS MORSE: Well --

9 CHAIRMAN IGNATIUS: Hold on. The
10 question about speculation -- let me know where
11 you're going with your question about would a
12 logger mark things. What's the relevance of
13 that question?

14 MS. LINOWES: The question is that,
15 if somebody's going through the process of
16 logging, we've -- I believe Mr. Jones, and now
17 Ms. Morse, indicated that the form of cutting
18 seemed unusual, in terms of what you would see
19 in New England forested areas, and that it
20 seemed to follow a road. In addition, we're
21 seeing these stakes having been sited -- "WTG"
22 meaning wind turbine generator.

23 I'm trying to understand why -- what
24 is the purpose of -- what does it appear was

1 happening, in spite of what we heard from a
2 letter last week that said that the landowner
3 undertook his own -- he made his own decision
4 about where he was cutting.

5 CHAIRMAN IGNATIUS: All right. If
6 you're going to go there, you're going to have
7 to demonstrate some way that Ms. Morse would
8 have any clue of what a landowner was doing or
9 why things were cut in a certain way. And I'm
10 not sure you're going to be able to make that
11 link. But I'll let you give it a shot.

12 As to what "WTG" stands for, it may
13 be as you say. I don't know if we have any
14 evidence of that. But if there's some contrary
15 evidence of what those letters stand for, we'll
16 accept that upon further questioning.

17 MS. BLOCK: Madam Chair, may I make a
18 statement? It's Lorraine.

19 CHAIRMAN IGNATIUS: Yes.

20 MS. BLOCK: Ms. Morse is a licensed
21 forester; so therefore, I do feel like Lisa's
22 question is relevant to a relevant person.

23 CHAIRMAN IGNATIUS: Well, that's sort
24 of along the lines I was thinking. If you can

1 make a basis for how she might have more than
2 just a guess, but more informed speculation
3 that would be useful here, I'm willing to let
4 you head down that path and see where we go.

5 MS. LINOWES: Thank you, Madam Chair.

6 BY MS. LINOWES:

7 Q. So as a forester, as one who has consulted
8 with landowners on forest practices, would
9 that be -- well, let me just say, is that an
10 accurate characterization of what you have
11 done?

12 A. I have, yes, certainly done that.

13 Q. So what you observed, would you have advised
14 a landowner to cut -- to implement tree
15 cutting on his property that appears to be in
16 an effort to clear for a road?

17 A. Yeah, I was there, and I certainly joined my
18 colleagues that day in pondering what was
19 going on. And we also saw
20 wetland-delineation flagging and other things
21 that were clearly a footprint of the
22 Applicant and not a traditional logging
23 operation necessarily.

24 No, it felt to me like it was a road,

1 and it was cut to be a road. And in
2 conjunction with the stakes that were labeled
3 W -- whatever it was, it felt to me like the
4 road was put in place, even though the
5 Applicant doesn't officially have permission
6 to do this project.

7 Q. And Ms. Morse --

8 A. So, putting the cart before the horse.

9 Q. Ms. Morse, when a logger is laying out a road
10 for tree cutting, is it typical that they
11 would have wetland impacts, or would they do
12 what they can to avoid wetland impacts?

13 A. Well, a good forester marking a cut and
14 marking the delineation of roads, which the
15 logger will interpret and perform, typically
16 a good forester would certainly take all of
17 that into consideration. And I'm sure you
18 have -- and by the way, I should say, I'm not
19 a licensed forester. Vermont doesn't have
20 such an inspired system. I wish we did. New
21 Hampshire does, and I regularly work with New
22 Hampshire foresters in providing courses that
23 they take for credit to help them maintain
24 their licenses. But we don't have that in

1 Vermont. So, c'est la vie.

2 We have in Vermont, and no doubt you
3 have here in New Hampshire as well, best
4 management practices with respect to wetlands
5 protection and water-course protection,
6 erosion prevention and things of this nature.
7 So, yes, I would expect that that would
8 definitely be embraced by a good forester and
9 a logger. Yeah.

10 Q. Okay. So then, in addition, there are some
11 photographs -- now, I'm going to jump now to
12 Exhibit 8B, SM8B. And these are additional
13 photographs from that visit.

14 (Witness reviews document.)

15 CHAIRMAN IGNATIUS: And Ms. Linowes,
16 help me out here. Those were not part of the
17 same package. I take it, that came -- those
18 were filed at a later date?

19 MS. LINOWES: I'm going to consult
20 with Ms. Block, if I may.

21 A. Yeah, mine just goes from Exhibit SM8 to SM9.
22 There is no SM8B in this particular document.

23 BY MS. LINOWES:

24 Q. Okay. I'll be right with you on that.

1 (Pause in proceedings.)

2 MS. LINOWES: I'll move on. I'll
3 withdraw that question then.

4 CHAIRMAN IGNATIUS: All right.

5 BY MS. LINOWES:

6 Q. Now I want to direct your attention to
7 Appendix 12A of the Applicant's -- and this
8 would be his breeding bird survey. Do you
9 have a copy of that in front of you?

10 A. No, I don't. And I again want to defer to
11 the questions pertaining to birds to the bird
12 experts here in this -- in other words, there
13 were several of us that did this
14 reconnaissance together. So, it's my
15 understanding that I would not be addressing
16 issues related to birds.

17 Q. Okay. Actually, I think my questions are
18 simple. So if it's something that you cannot
19 answer, then --

20 A. There may be simple answers. But go ahead.

21 Q. Okay. There was -- let me give you a copy of
22 the document, if I may.

23 A. Sure.

24 MS. LINOWES: For everyone, I'm

1 specifically looking at Appendix B of that
2 appendix.

3 MR. IACOPINO: Just for the
4 Committee's sake, I believe that we're in AWE
5 3, electronic Document 18. It's Appendix 12A.
6 But I haven't gotten to the appendix to the
7 appendix yet.

8 CHAIRMAN IGNATIUS: Hold on a minute,
9 Ms. Morse.

10 WITNESS MORSE: Sure.

11 CHAIRMAN IGNATIUS: I think we start
12 with Appendix AWE 3, which is the Volume 3 of
13 the Application. Then, within that Document
14 18, which is Appendix 12A, Breeding Birds
15 Survey -- oh, no. Wait a minute. That's a
16 data response. I apologize. There it is.

17 MR. IACOPINO: Are you showing her
18 the protocol, Ms. Linowes?

19 MS. LINOWES: I'm looking at the
20 list -- this would be a table on Appendix B of
21 that appendix that shows a list of birds that
22 were located or observed at the project site.

23 CHAIRMAN IGNATIUS: Do you know what
24 page of the document that was?

1 BY MS. LINOWES:

2 Q. Ms. Morse, I don't think that has a page
3 number on it.

4 A. It's Table 1 of Appendix B. And none of
5 these have page numbers.

6 MR. IACOPINO: It's electronic
7 Page 30 of the document, I believe.

8 CHAIRMAN IGNATIUS: Thank you.

9 BY MS. LINOWES:

10 Q. Okay. Now, while you're looking at that
11 table, I would also like to draw your
12 attention to your Exhibit SM7.

13 A. Hmm-hmm.

14 Q. And these -- this is a listing of -- in SM7,
15 it is a listing of birds that were either
16 observed or heard at the time that you were
17 on your visit, which would be July 10th of
18 2012. Do you recognize that document?

19 A. Yes, I do.

20 Q. Okay. Now, I appreciate that you are not
21 here as a bird expert, okay. I just wanted
22 to ask you a couple of questions, though.

23 There are several birds listed on your
24 document or on your exhibit that do not

1 appear in the table that are -- that is in
2 the breeder list, specifically: The Pileated
3 Woodpecker, Eastern Phoebe, the
4 White-Breasted Nuthatch, the Black-Throated
5 Green Warbler, the Pine Warbler, the
6 Rufous-sided Towhee. And then going to the
7 second page there were two: The
8 Golden-Crowned Kinglet and the Brown Creeper?

9 A. Hmm-hmm.

10 Q. And now, when you were on this visit, was
11 your purpose to observe birds, or were these
12 sightings or, you know, audio observations
13 incidental to your visit? You were in tuned
14 to it, but you were not specifically looking
15 for birds?

16 A. We all were looking for everything. As
17 naturalists and as professionals, lay and
18 professional alike, we were all looking
19 intently for anything that would be -- would
20 reveal the biological richness of the place.

21 But we had among us at least two people
22 who are accomplished birders, Francine and
23 Bruce Hedin. So I would defer particular
24 questions about the birds themselves to them.

1 Q. Okay.

2 A. But I will say that we were all thrilled to
3 hear a nighthawk, not once but twice. And we
4 actually managed to get a recording of that,
5 which was quite special.

6 Q. So then, would it be fair to say that the
7 table you see before you from the Applicant's
8 Application, the appendix, is not
9 comprehensive of what is actually resident at
10 the birds -- at the project site?

11 A. Well, birds are not necessarily -- even some
12 of our favorites are not necessarily
13 all-season residents, anyway, No. 1; and
14 No. 2, depending on the seasons during which
15 surveys are conducted, one may expect to see
16 different assemblages of birds. But yeah,
17 it's curious that there are so many of the
18 more common species that are mentioned
19 here --

20 Q. Now --

21 A. -- for sure.

22 Q. Thank you. Sorry.

23 Now, their study was conducted on two
24 days, June 7th and June 16th of 2011. So

1 your visit was a year later on July 10.

2 Do you have -- I'll ask you. I don't
3 know if you know the answer to this. But is
4 there anything to say about early to mid-June
5 versus mid-July, in terms of some of these
6 species, that they might have been missed, or
7 were they simply just missed?

8 A. Well, I can't speak for what they were able
9 to see or not see. But I know in our case,
10 we actually felt disadvantaged by coming as
11 late as almost mid-July because a lot of the
12 singing which would cue you to look for
13 certain birds was pretty much a done deal by
14 then. So, if anything, we should have
15 expected to see less than what they did.

16 Q. Okay. So that -- thank you. That's very
17 helpful.

18 Now, going back, one question in terms
19 of the -- what you observed in terms of the
20 road, what appeared to be a road. I don't
21 know if you actually walked through, but
22 there was some photograph that showed quite
23 significant boulders.

24 A. Oh, yes, I was very much there.

1 Q. You were there, so you observed them. And
2 based on what you observed, there appeared to
3 be the track of where a road would go?

4 A. Well, the stakes and flagging would have us
5 believe that that was where the road was
6 proposed to go. I mean, understand a good
7 part of the road had been built, you know, as
8 a supposed logging project. And I don't mean
9 to offer a parenthetical remark like that.
10 But I did, so be it.

11 But part of it had not been built. And
12 when we got there, we were floored by the
13 beauty, the specialness of that area of great
14 big boulders, erratics and rough talus and
15 the like. And we immediately appreciated
16 what a monumental task it would be to build a
17 road there. One would have to blow all that
18 up and, I guess, spread it on the ground and
19 use it as a base of gravel. I don't know.
20 But it would be terrible.

21 Q. Really? Okay. Thank you.

22 Now, I want to talk to you a little bit
23 about habitats for bear. You observed
24 bear-scarred beech trees.

1 A. Yes.

2 Q. Do you have a sense of how many you observed?

3 A. I wasn't counting. But the normal amount.
4 We didn't encounter a critical bear-feeding
5 area. We didn't go through a beech stand of
6 significance, such that we might have seen
7 that. But we certainly saw what I believe is
8 more important than that; and that is,
9 throughout the whole of the habitat, we saw
10 ample evidence of bird -- I mean of bear uses
11 of the habitat in all seasons. I think this
12 is one of the areas where we get into
13 trouble, and especially with our agencies
14 having to compartmentalize and really render
15 measurable impacts, you know, for mitigation
16 purposes or just documentation of avoidance
17 purposes. We get into trouble when we talk
18 about the critical feeding habitats, because,
19 frankly, to my way of thinking, all the other
20 places in a forest are just as critical to
21 the bears who are eating in April, May and
22 June and July, as well as obviously late
23 summer and August and September when they're
24 feeding on beechnuts. So I was delighted to

1 see a diversity of mass-producing trees and
2 shrubs throughout the habitat, certainly
3 impressing me with the importance of it to
4 bears in all seasons.

5 And then, of course, denning cover in
6 higher elevations, in softwood stands, that
7 seems to be the trend that we're still
8 seeing. I can see the bears may change their
9 ways with global climate change and who knows
10 what, and with habituation, too. Deer are
11 already doing that.

12 But for now, we do recognize throughout
13 the Northeast that bears prefer remote
14 locations for denning and softwood mixed-wood
15 habitats so they can have concealment cover
16 and also thermal cover for their den site.

17 Q. If I may, then, because you just gave, I
18 think, a very good description of critical
19 habitat for bear, I would like to read you a
20 description from -- this would be words of
21 Dr. Kilpatrick from Vermont. Do you know
22 Dr. Kilpatrick?

23 A. Yes, I do.

24 Q. His definition of "critical habitat of bear"

1 is, as he states, "Critical habitat for black
2 bear includes mass-producing forest
3 stands" -- in parentheses he says "beech,
4 hickory, cherry and oaks" -- "forest wetlands
5 and extensive connectivity among forest
6 habitats to allow for movements among patches
7 of seasonally important foods. It also
8 includes secluded habitat with suitable
9 denning sites." That sounds like what you
10 said.

11 A. Yeah, pretty much.

12 Q. Does that definition only apply to Vermont,
13 or would it be --

14 A. Oh, no.

15 Q. -- a definition you would find in New
16 Hampshire, Massachusetts?

17 A. You know, the specific trees and shrubs that
18 offer the mass might change a little bit,
19 depending on where you are in New Hampshire
20 or Vermont, relatively speaking. But no, the
21 principles are the same.

22 Q. Now I want to read you a quote. This is from
23 Forrest Hammond of Vermont's Agency of
24 Natural Resources. Do you know Forrest

1 Hammond?

2 A. Yes, I do.

3 Q. And he is an expert on black bear?

4 A. Yes.

5 Q. He states this regarding beech trees and
6 bear-scarred beech trees. He said there's a
7 distinct -- he says, "Not all beech trees
8 provide suitable habit [sic] for black bears
9 in Vermont. There's a distinction between
10 beech trees and bear-clawed or scarred beech
11 trees as habitat for bears. Bear utilize
12 beech trees that are remote in secure
13 locations. Although beech is located
14 throughout the state" -- in this case,
15 Vermont -- I'm sorry, I'm going to jump down.
16 "Bear behavior through clawing and scarring
17 demonstrates where they feel secure feeding.
18 Bear-clawed beech is important habitat for
19 bears because it is only a small portion of
20 the total beech available in the state, and
21 bear feel secure feeding in that habitat."

22 So, to that statement, would you
23 agree -- or would you state that the fact
24 that bear-scarred beech was identified at the

1 project site indicates, in fact, that is a
2 very important area for bear that they've
3 demonstrated themselves by utilizing those
4 trees?

5 A. Yeah, I would certainly agree with that,
6 although I would caution us against
7 extrapolating too much from what Mr. Hammond
8 has said. I don't completely agree with him,
9 that bears are limiting themselves to certain
10 trees because they feel comfortable there.
11 I've seen bear at trees in the backyards of
12 my neighbors in West Bolton. Now, mind you,
13 it's a remote and very rural area.

14 So, bears are dynamic creatures. And
15 some of their habits are changing. But
16 apropos to this Application, regardless of
17 what Mr. Hammond says, I would say that the
18 diversity and abundance of mass-producing
19 trees and shrubs in a core habitat in which
20 bears really can relax and be themselves is
21 what is special and what should not be
22 compromised by a project of this nature.

23 MS. LINOWES: Madam Chair, I just
24 have a few more questions and I'll be done.

1 CHAIRMAN IGNATIUS: That's fine. I'm
2 still thinking about the image of a bear
3 relaxing and being itself. I'll work on that
4 for a moment while you --

5 WITNESS MORSE: Thank you. I'll
6 remember that.

7 MR. IACOPINO: Hey, Boo-boo.

8 [Laughter]

9 WITNESS MORSE: I'll send you some
10 photos.

11 BY MS. LINOWES:

12 Q. Are you familiar with "snag studies"?

13 A. Yeah.

14 Q. And can you explain what the purpose is of a
15 snag study, or how it's done or what you --

16 A. Well, as I understand it -- and my
17 understanding might be different from where
18 you're going. Different people use these
19 terms differently sometimes. But as I
20 understand it, we literally can quantify
21 snags throughout a given habitat and seek to
22 imagine what wildlife species would benefit
23 from them structurally.

24 And from a forestry management

1 standpoint, you know, I will prescribe for my
2 customers, for example, that a minimum number
3 of standing snags and recruitment snags, you
4 know, dead snags, all kinds of snags be
5 retained for the benefit of wildlife.

6 Q. I might be -- maybe we're not using the term
7 correctly or the same way.

8 The snag study which was conducted --
9 required in the Deerfield Wind Project in the
10 state of Vermont entailed leaving markers
11 where we can observe at least the presence of
12 a bear through leaving patches of its hair in
13 some wires that would be put in place.

14 A. Oh, hair snags.

15 Q. Yeah.

16 A. You left out the word "hair."

17 Q. Oh, I'm sorry.

18 A. If you said "hair," I would have known what
19 you're talking about.

20 Okay. Yeah. Hair snags, often catching
21 deliberately bear hair on barbed wire strands
22 that are placed in front of an area. Yeah,
23 I'm familiar with the science, yes.

24 Q. And is that one way of identifying the -- an

1 area that is utilized by a bear and perhaps
2 counting the size of the population -- or at
3 least identifying the utilization of a space
4 by the bear?

5 A. Yeah, again, this is my profession. I am who
6 I am. I'm a nationally known tracker, in
7 addition to being a biologist and a forester.
8 And I will say that it's really a whole lot
9 more simple than that. It's what we did that
10 day. It's simply going in the right places
11 and looking for scent-marking signs that
12 bears leave and evidence of feeding that is
13 lasting, because it's represented by scars on
14 trees. And those two features, in and of
15 themselves, with or without femoral tracks
16 and scat, can tell you that bears are
17 present.

18 But more importantly, scent marking can
19 tell us that bears are present over time.
20 And you can look at the ages of the scars
21 associated with bear-scent marking and
22 appreciate that it's an ongoing phenomenon.

23 Q. Okay. So then, maybe perhaps the Public
24 Service Board of Vermont was overstressing a

1 quantification of hair, looking for hair
2 snags. But the goal -- if the goal is to
3 identify pre-construction utilization of the
4 site and then post-construction utilization
5 of the site, what kind of
6 post-construction -- pre-construction and
7 post-construction surveys should be done to
8 identify if bear have been harmed -- or at
9 least if they've lost their habitat? And I
10 believe you identified what pre-construction
11 would be, exactly what you did on that day.

12 A. Well, much more of that probably. But yes.

13 Q. Much more of that?

14 A. Well, quantitatively, I mean, to take one
15 linear walk through a habitat on one day in
16 one season in one year only gives you a
17 snapshot of what's out there. I believe
18 Bruce Hedin said that in his bird report.

19 So, certainly for an Application of this
20 nature, even if it were -- I mean, if it were
21 assumed to be appropriate, which I don't
22 believe it is, it would certainly want to do
23 much, much more than that even and look at
24 that habitat in all seasons and look at that

1 habitat multiple days in each season and have
2 specialists on board who can recognize and
3 detect a sign of multiple species using that
4 resource of that habitat.

5 Q. Since the project is not built yet, would you
6 say that there's still time to require
7 studies to be done to identify the
8 utilization of that site by bear?

9 A. I think it would be a waste of the
10 Applicant's time. I personally feel that,
11 fundamentally, industrial facilities do not
12 belong in core habitat. So that would be my
13 answer. My answer would be that the
14 Applicant relocate and find another site.

15 Q. And I appreciate that, and I understand where
16 you're coming from.

17 But if that ends up not being the case,
18 if it ends up getting approved, as the
19 Deerfield project was, is there still time to
20 go through and understand better what the --
21 at least what the size of the impact could be
22 so that we can measure post-construction?

23 A. Yeah, we're not measuring cumulative effects
24 and stresses. We're not measuring what

1 happens to an underweight female because it
2 was poor last year and she's going to go to
3 bed in her den and she's been stressed 14
4 different times during the month of October
5 and November before she goes to bed, causing
6 her to -- do you see where I'm going? No
7 studies are going to capture that, which is
8 why we have to be conservative about what
9 core habitat is and why we should avoid
10 intruding into it.

11 Q. One last question for you then. If we do not
12 do additional studies to identify -- to
13 better quantify, or at least qualify the
14 location for bear habitat, the project gets
15 built and now we have a noise intrusion, we
16 have spinning turbines, we have lots of
17 things going on, it's a very active location
18 where today it's quiet, what can we expect to
19 happen with the bear?

20 A. No one knows. That's the thing. That's what
21 I'm trying to say. I mean, we can expect
22 that in hard years, additional stresses on
23 all wildlife will cause their energy budgets
24 to be challenged. How that will be measured

1 by scientists in the field is just
2 mind-numbing.

3 Q. Will they die off? Will they move on? Will
4 they --

5 A. In the case of caribou and moose, we're
6 seeing declines of populations, declines of
7 recruitment. These are all known scientific
8 causes of mortality, either long-term in
9 population ecology or short-term in actual
10 losses. So, again, the concept here is this
11 is core habitat.

12 Q. Okay. Thank you very much.

13 MS. LINOWES: Thank you, ma'am.

14 CHAIRMAN IGNATIUS: Thank you.

15 Ms. Geiger.

16 MS. GEIGER: Thank you.

17 CROSS-EXAMINATION

18 BY MS. GEIGER:

19 Q. Good morning, Ms. Morse. I'm Susan Geiger,
20 and I represent the Applicant, Antrim Wind
21 Energy, LLC. And I'd like to ask you a few
22 questions.

23 Could you please turn to the top of
24 Page 4 of your prefiled testimony. Do you

1 have it?

2 A. I do, but it's not -- there aren't page
3 numbers on it.

4 Q. I think if you look at the -- at least the
5 copy I have, if you look at the very top of
6 the page, there's some labeling there.

7 A. Oh, I see Page 4. Yeah.

8 Q. And it's dated July 31st, 2012; is that
9 correct?

10 A. Yeah. Thank you.

11 Q. And there you've indicated that fragmentation
12 results in habitat patches that are too small
13 and too insular to provide adequate food and
14 security for wildlife. Did I read that
15 correctly?

16 A. Yes, you did.

17 Q. Could you please take a look at the map
18 contained under Tab 1 of your prefiled
19 testimony.

20 A. The maps are -- were submitted by my
21 colleagues, so I'm not familiar with where
22 that is.

23 Q. Well, I have a Tab 1. And it's a map that
24 has pink, yellow, green areas on it --

1 A. Can I see the map?

2 CHAIRMAN IGNATIUS: Okay. So this is
3 SM1?

4 MS. GEIGER: Correct.

5 WITNESS MORSE: Can you work with me,
6 Lorraine, and provide me with these things?
7 Yeah, this is not -- that was not part of my
8 testimony. So I --

9 BY MS. GEIGER:

10 Q. Oh, so this is not part of your testimony?

11 A. The map? No.

12 Q. Oh. So you're not familiar with it?

13 A. My testimony includes the comments that were
14 made in a couple of pages that you read from,
15 plus the articles that I submitted for the
16 convenience of the Committee, plus a number
17 of photographs, all of which are included in
18 SM4, Photographs by Susan Morse.

19 Q. Hmm. So --

20 WITNESS MORSE: If you can get me
21 what she's referring to? Well, here's the
22 whole thing here.

23 (Ms. Block handing document to the
24 witness.)

1 BY MS. GEIGER:

2 Q. So let me -- maybe I can save some time and
3 I'll show it to you.

4 Are you saying, Ms. Morse, that this map
5 that was submitted with your prefiled
6 testimony and marked as Exhibit SM1 was not
7 submitted by you?

8 A. This was -- this whole testimony was
9 submitted by a number of us. And I described
10 that in my testimony, how -- the evolution of
11 how we did our work. And so the local people
12 rightly are the folks that are responsible
13 for providing the local maps and so on. I
14 don't live here.

15 Q. Okay. Well, even though you did not provide
16 this map, could you demonstrate or show us
17 where on that map that was submitted with
18 your prefiled testimony you believe that
19 habitat fragmentation will occur?

20 A. Well, as I said in my testimony, habitat
21 fragmentation was one of several
22 perturbations that I was listing in my
23 testimony.

24 Q. I understand that. But I'm asking -- you

1 used the term "habitat fragmentation"
2 synonymously with "habitat disuse" or --
3 Mr. Roth had a word for it.

4 A. Discontinuity.

5 Q. Discontinuity. Could you show me where on
6 that map that you believe habitat
7 fragmentation will occur?

8 A. Look, the entire corridor of the proposed
9 wind facility will introduce into a core
10 habitat what is now today known as a habitat
11 fragmenting influence. I never said in my
12 testimony that it would result in an island,
13 however --

14 MR. ROTH: Madam Chairman, I don't --
15 I'm sorry to interrupt. But we have, like, two
16 people crowding the witness.

17 CHAIRMAN IGNATIUS: Thank you.
18 Please proceed.

19 MS. GEIGER: If I could just ask the
20 witness for an answer to my question, whether
21 she can tell from the map that was provided
22 with her testimony where habitat fragmentation
23 will occur on that map?

24 A. I defined "habitat fragmentation" in my

1 testimony to go way beyond "island
2 biogeography," which is what your consultants
3 zeroed in on as a flaw in my testimony, and
4 it's not a flaw.

5 Q. So is your answer to my question --

6 A. If I can finish my answer.

7 (Court reporter interjects.)

8 CHAIRMAN IGNATIUS: Please allow the
9 witness to respond because she is trying to
10 answer your question, Ms. Geiger.

11 MS. GEIGER: I apologize.

12 A. Yeah. It is not a flaw in my testimony,
13 because if your consultants were aware of
14 just how the science of conservation biology
15 has evolved since 1967, they would be aware
16 that conservation biologists today use the
17 phrases "habitat fragmentation" and "habitat
18 loss" concomitantly as we defined the whole
19 phenomenon of our continual nibbling away at
20 the edges and sometimes slicing into core
21 habitats.

22 So we are today no longer trying to say,
23 as they did in Wilson and MacArthur's
24 treatise, that this is a problem of island

1 biogeography, that there's somehow going to
2 be an isolated remnant. No, I never said
3 that, nor would I, because today it's now
4 recognized to be much bigger than that.

5 And, in fact, a paper which I have
6 copied for the Committee's convenience talks
7 about how even national parks today, for lack
8 of apex carnivores, which is a human-caused
9 perturbation, are today fragmented, if you
10 will, by that, that their biodiversity is
11 compromised by that. And so even the whole
12 Yellowstone ecosystem will not be completely
13 -- of course, thank God it is today with the
14 return of apex carnivores.

15 But do you see where I'm going? So
16 these people are thinking landscape scale at
17 how these things work.

18 Q. Ma'am, perhaps I can help -- I can try to get
19 at this a different way.

20 On the map that we just showed you that
21 was submitted with your prefiled testimony
22 and identified as SM1, can you identify where
23 core habitat exists?

24 A. The whole place.

1 Q. Are you saying the whole map is core habitat?

2 A. What was described in my testimony as "the
3 region of conservation projects" -- again,
4 not counting the town and the villages and
5 the highways and all of the -- I mean, if you
6 look at the land use map -- and again, I
7 didn't submit this map, so I'm not familiar
8 with it -- if you look at the land use map
9 and you look at volume of conserved lands and
10 forest cover and wetlands and ridgelines,
11 including the Tuttle-Willard ridgeline,
12 you're looking at a huge, wonderful block of
13 core habitat, yes.

14 Q. Well, I guess I apologize. I'm still
15 confused. Are you saying that the pink areas
16 constitute core habitat?

17 A. I'm not -- I'm going to say that I don't know
18 that map, and I don't -- I can't comment on
19 it.

20 Q. Okay.

21 A. Perhaps we should ask another one of our
22 witnesses.

23 Q. Who is the witness responsible? Maybe I'll
24 ask Ms. Block that.

1 MS. GEIGER: Who is the witness from
2 the North Branch Intervenors that's responsible
3 for answering questions about this map that was
4 submitted with her testimony?

5 MS. BLOCK: You can ask those
6 questions of either Richard or myself. We went
7 over the characteristics with Susan and
8 provided the map, as well as other things. I
9 was not on the hike. Richard was on the hike.
10 So there are other things from people on the
11 hike, and that is described in Susan's
12 testimony.

13 CHAIRMAN IGNATIUS: So the Blocks
14 will be testifying on Thursday.

15 MS. GEIGER: Okay. Thank you.

16 BY MS. GEIGER:

17 Q. While we're on the subject of the exhibits
18 that were submitted with your prefiled
19 testimony, could you please repeat for me
20 which documents you're responsible for, in
21 terms of exhibits?

22 A. Well, conceptually, you know, as Loranne has
23 just mentioned, I certainly suggested to the
24 Blocks that they include the State's maps of

1 priority wildlife habitats, or whatever the
2 term is, I forget. It varies from state to
3 state. Why, I don't know. And I certainly
4 was responsible for helping the Blocks choose
5 the participants in the walks, such that we
6 could have a distribution of experts there to
7 help us look --

8 Q. Excuse me, Ms. Morse. I asked you a very
9 simple question. Could you please go through
10 the exhibits that were submitted with your
11 prefiled testimony and tell me which ones you
12 are familiar with and responsible for
13 answering questions about.

14 A. Well, again, conceptually, I'm familiar with
15 all of the things, except for the maps and so
16 on, which I didn't assemble. But what I
17 probably should address today is my
18 testimony, which is -- that's my supplemental
19 testimony. So, my written testimony and its
20 accompanying exhibit, which I believe is
21 called SM4.

22 Q. SM4. And that's the only one that you're
23 responsible for; correct?

24 A. Yes.

1 Q. Okay. So, earlier this morning you were
2 answering some questions about photographs
3 that were labeled SM8; is that correct?

4 A. Yes.

5 Q. And so is it fair to say that you were not
6 responsible for or did not take these
7 photographs?

8 A. No. It's fair to say that I suggested that
9 they be taken, because, as a biologist, I
10 recognized that they would be important in
11 this case. So in that sense, I certainly
12 influenced their inclusion in this report,
13 although I didn't physically take the
14 pictures, no.

15 Q. Did you see the photographs after they were
16 taken?

17 A. Oh, of course.

18 Q. Okay.

19 CHAIRMAN IGNATIUS: And I think Ms.
20 Morse noted that when they were first being
21 discussed. She said she hadn't taken those;
22 she had taken the ones that are in SM4.

23 MS. GEIGER: Okay.

24

1 BY MS. GEIGER:

2 Q. And do you know, in terms of some of the
3 markers that you spoke about this morning, do
4 you know who put them there?

5 A. I don't know who put them there, no.

6 Q. Okay. Now, at the top of Page 10 of your
7 testimony -- could you please go there.

8 A. Okay.

9 Q. And there you've indicated that the Tuttle
10 and Willard Mountain ridgeline should be
11 conserved; correct? I believe you testified
12 to that this morning.

13 A. Yes.

14 Q. All right. And are you aware of the
15 project's intention to conserve 685 acres of
16 land in and around the project area?

17 A. Yes.

18 Q. And are you aware that the Applicant intends
19 to conserve 275 acres of the highest-ranked
20 New Hampshire habitat?

21 A. No, I wasn't aware of that.

22 Q. And are you aware that the project itself is
23 located in only 5.4 acres of the
24 highest-ranked New Hampshire habitat?

1 A. I'm aware that it's a portion -- it's
2 adjacent to it, yes.

3 Q. Are you aware that the Applicant intends to
4 conserve 148.9 acres of highest-ranked
5 habitat in the biological region?

6 A. No, I wasn't aware of that.

7 Q. And are you aware that the project itself is
8 located in only 6.4 acres of the
9 highest-ranked biological habitat in the
10 region?

11 A. I remember reading that in supplemental
12 testimony. I don't know that for a fact, but
13 yes.

14 Q. Okay. In light of those conservation and
15 habitat statistics, is it still your belief
16 that the project will create habitat
17 fragmentation?

18 A. Well, again, it's apples and oranges. In
19 light of the Applicant's intention to
20 conserve parcels of land outside of this
21 area -- which could be conserved in other
22 ways, I might add, and I think I addressed
23 this earlier -- that still doesn't alter the
24 fact that this is core habitat and it should

1 not be intruded at all. And it should not
2 be -- it should not feature an industrial
3 development of any kind.

4 Q. If this Committee were to certificate this
5 project, do you believe that the project
6 would be better with conservation or without
7 it?

8 A. Well, that's -- that's a little like asking
9 me if I have a cut, do I believe it will be
10 better if I put a Band-Aid on it or not. I
11 don't believe it's appropriate to have this
12 project here. Unfortunately, if it is to
13 happen, certainly the conservation will be a
14 good thing. But I think the precedent that
15 this will set throughout New England will be
16 most regrettable.

17 Q. Are you aware of other wind projects that
18 have been certificated by this Committee?

19 A. No, I'm not talking about this Committee.
20 I'm talking about New England, other projects
21 generally.

22 Q. Let's talk about the state of New Hampshire.
23 Are you aware of any other wind projects that
24 this Committee has approved?

1 A. Again, I don't know the politics of New
2 Hampshire's -- no, I do not know the
3 particulars of that. I'm talking in
4 generalities here. I'm talking about, you
5 know, if you close your eyes and you picture
6 New England that we all know and love and
7 that we all are immensely proud of when we
8 drive along any of our roads and visit some
9 of our rural areas, if you imagine, you know,
10 what will probably be hundreds and hundreds
11 of miles of proposed wind facilities on many
12 mountains throughout New England, I just
13 think that will be very, very devastating
14 to --

15 Q. Do you know who is proposing all of those
16 wind turbines in New England?

17 A. Several companies just like yours.

18 Q. Okay. And so when you say, "This will set a
19 dangerous precedent," could you please
20 explain what you mean by that. Let me
21 withdraw that.

22 Are you aware that there are other wind
23 farms that are -- that have been constructed
24 and are operating in the state of New

1 Hampshire?

2 A. I'm aware of that, yes.

3 Q. Now, you're saying, I believe, on Page 8 of
4 your testimony, that the assumption that
5 animals will adjust and possibly even benefit
6 from these habitat modifications is utterly
7 unfounded. Is that your testimony?

8 A. Yes, it is.

9 Q. Okay. So are you saying that it is
10 implausible that moose, beer --

11 CHAIRMAN IGNATIUS: It's a little
12 early for that I think, Ms. Geiger.

13 DIR. STEWART: That would be
14 Moosehead. Moosehead beer.

15 [Laughter]

16 MS. GEIGER: Thank you.

17 BY MS. GEIGER:

18 Q. Are you saying that it is implausible that
19 moose beer -- moose, deer --

20 A. Bear.

21 Q. -- deer and bear -- thank you -- for example,
22 will not adjust or become accustomed to areas
23 in which wind turbines are operating?

24 A. I think it is dangerous to choose a few

1 examples of animals that may become
2 habituated to feeding beneath wind towers,
3 for example, and extrapolate that to mean
4 that all animals will benefit. That is not
5 the case.

6 Q. I'm not asking about all animals. I just
7 asked you about the moose, the bear and the
8 deer. Is it implausible to think that they
9 could adjust to a habitat in which wind
10 turbines are introduced?

11 A. I think if you reread my testimony and you
12 add up all the stressors which I believe are
13 associated with an industrial footprint of
14 this nature in a core habitat, you would have
15 to conclude, generally speaking, most animals
16 will not benefit; they will be harmed.

17 Q. What are the stressors that you just
18 mentioned?

19 A. We're repeating my testimony. It's all
20 there. Stress --

21 Q. Stress is a stressor?

22 A. Stress is a stressor.

23 Q. What else?

24 A. Stress affects an animal's energy budget,

1 flight response, lack of fidelity to your
2 nesting site if you're a bird, for example,
3 forsaking a habitat to feed within because
4 you're intimidated by all this. And it isn't
5 just that. Add the wideness of the road.
6 You're intimidated maybe by the people that
7 are going to show up on their ATVs or
8 bicycles or their skis.

9 Q. So are you -- can I ask you: Are you saying
10 that any human activity in and around the
11 project area is going to create stress on
12 these animals?

13 A. Yeah. Of course.

14 Q. So do you believe the day that you went out
15 on your tour of the project area, that you
16 and your party created stress?

17 A. Undoubtedly. Undoubtedly.

18 Q. And you did it, anyway.

19 A. Well, we had to stop the bigger problem.

20 Q. Okay. I understand.

21 A. Or we had to work on defining why it should
22 be stopped. There you go.

23 Q. Could you please turn to Tab 4 of the
24 attachment to your prefiled testimony. I

1 believe that's the one that you did assume
2 some responsibility for earlier; is that
3 correct?

4 A. Yeah, SM4 is my work, yes.

5 Q. Okay. And I'll just wait for you to get
6 there.

7 A. Yeah. Bear with me. This is not -- SM5.
8 Okay. Getting there.

9 Q. The page I'm looking at has -- the very first
10 page has three pictures on it, and the middle
11 and the bottom pictures are -- the narrative
12 next to them indicates that they are pictures
13 of power poles; is that correct?

14 A. Yes.

15 Q. So there you have two pictures that depict
16 utility poles or power poles with markings by
17 bear; is that correct?

18 A. Hmm-hmm.

19 Q. Okay. Where were these photos taken?

20 A. They were taken below the project area, on
21 the way up to it, along that power line
22 corridor.

23 Q. So they're existing high-voltage transmission
24 lines in that power corridor, is that

1 correct, where these photos were taken?

2 A. I don't know if these are high voltage,
3 because I don't know what that is. But,
4 yeah, these are power poles. That's as far
5 as I'll go.

6 Q. Okay. And the text in the middle box there
7 says, "Resident bears regularly set marks
8 throughout their habitat"; is that correct?

9 A. Correct.

10 Q. So, do these pictures show that bears reside
11 in or have become accustomed to areas in
12 which utility poles have been installed?

13 A. Yeah. And that's a known phenomenon all
14 over. I mean, all over, any place I've been,
15 curiously, bears appear to -- where power
16 line corridors are found within or near
17 wildlands, bear will scent-mark them,
18 probably because of the creosote. And when
19 they bite into the poles, they release still
20 more of a powerful creosote scent, which,
21 analogous to our flashing bulletin boards,
22 announces to other bears the presence of a
23 mark.

24 Q. So the installation of utility poles aren't

1 going to affect bear use of the area, are
2 they?

3 A. The which?

4 Q. The installation of utility poles, such as
5 the ones depicted in your photograph.

6 A. It depends. In this case, no. But if we
7 were to grid the habitat with utility
8 corridors that would invite more people to
9 use these corridors as trails or get to a
10 summit for a view or picnic, you know, these
11 things could become a problem cumulatively.
12 Again, it's not one incident; it's over time.

13 Q. Okay. So you're saying the creation of
14 hiking trails is also of concern to you?

15 A. Well, hiking trails that aren't well-sited.
16 And, I mean, everybody here appreciates the
17 importance of siting and how important that
18 can be for properly doing anything it seems.

19 But certainly hiking trails today that
20 always want to go beside a wetland edge or
21 always want to traverse the highest terrain,
22 you know, the whole length, shouldn't be
23 allowed. Not to say the trails that are
24 already there and the trails that

1 periodically take a view from the high
2 country are a problem.

3 But certainly as we look at animal
4 responses to global climate change and their
5 need to move about the larger landscape and
6 find where they're going to be able to live
7 and how, we've got to do the best we can
8 towards assuring them a private and safe
9 means of traveling. You know, it's like
10 asking your kindergartners to walk to school;
11 you have a choice between a busy highway or a
12 country road. And what I'm saying is, the
13 busy highway doesn't belong in these wild
14 habitats.

15 Q. Okay. Speaking of busy highways, have you
16 studied -- I believe on Page 6 of your
17 testimony you talk about concerns or possible
18 concerns that the effects of wind turbine
19 noise might have on wildlife; is that
20 correct?

21 A. Yeah. I have to get there. Excuse me.

22 Q. Page 6.

23 A. Yes. Hmm-hmm.

24 Q. Have you studied the effect of sound on

1 wildlife in Lempster, New Hampshire, from the
2 Lempster project?

3 A. No, that's not what I do. All I did here --
4 and I still am completely assured that this
5 is of important utility to the Committee as
6 they review this project. All I did here was
7 I enunciated the issues that scientists have
8 discovered as they relate to noise and their
9 impacts on wildlife. And then I submitted
10 SM2 and SM3, two papers that give examples of
11 the degree to which this is a real deal here
12 and that it's not something I'm conjuring up.

13 Q. Have you studied the effect of traffic noise
14 from Route 9 in Antrim on the wildlife in
15 that area?

16 A. Again, I don't -- that's not what I do.

17 Q. Okay. Now, at the top of Page 11 of your
18 testimony, you state that millions of wind
19 energy units are being proposed nationwide;
20 is that correct?

21 A. Yes.

22 Q. What do you mean by "millions of wind energy
23 units"?

24 A. Just that.

1 Q. What's a "unit"? How do you define a "unit"?

2 A. Well, let me see where this is so I can read
3 it in context. Where on the page?

4 Q. Top of Page 11.

5 (Witness reviews document.)

6 A. Yeah. Maybe I meant "facilities." That's a
7 good catch.

8 Q. So is your testimony that millions of wind
9 energy facilities are being proposed
10 nationwide?

11 A. Yeah.

12 Q. Meaning projects like the Antrim Wind
13 Project?

14 A. Not all are ridgelines. Some may be out in
15 the ocean or some may be on flat ground in a
16 prairie or a desert. Yes.

17 Q. But it's your belief that the number of wind
18 projects in the United States, or nationwide,
19 is in the millions?

20 A. Yeah. I have to confess, I believe I read
21 that statistic. And I would need to, with
22 the Committee's permission, go back to my
23 sources and see if I can find where I read
24 that. In other words, I didn't read -- I

1 didn't read the whole statement verbatim. I
2 made the statement. But the phrase "millions
3 of wind energy" I believe I read somewhere,
4 yeah. I know there are hundreds and hundreds
5 in New England alone. So I have to conclude
6 that there probably are millions.

7 Q. Okay. And this is in the United States?

8 A. Yes.

9 MS. BLOCK: Madam Chair, may I
10 interrupt for a second?

11 I think there's a question there
12 between "units" as a wind turbine versus wind
13 farms. And I'm not sure that that's being
14 differentiated.

15 WITNESS MORSE: Well, I won't use the
16 word "wind farm" because I think that's an
17 inappropriate term.

18 MS. GEIGER: I think the question
19 that I asked is whether it was her statement or
20 belief that there were -- or that she intended
21 to say that there are "millions of projects
22 like the Antrim wind project" --

23 WITNESS MORSE: No, I won't say that.
24 And I don't believe I did say that. I will say

1 that with millions of wind energy facilities --
2 I will make that word-choice change -- millions
3 of wind energy facilities being proposed
4 nationwide, the cumulative environmental
5 effects may be considered -- must be
6 considered. And I'm comfortable with that.

7 CHAIRMAN IGNATIUS: Well, this may
8 not be necessary anymore. I was going to say,
9 we're about to take a break soon. And if you
10 wanted to check and see if it was "facilities"
11 or "turbines" or "megawatts" or whatever it
12 was --

13 WITNESS MORSE: You know, I wasn't
14 prepared for questioning quite like that. So I
15 don't have all my, literally, two file cabinets
16 full of papers with me.

17 CHAIRMAN IGNATIUS: Okay. That's
18 fine.

19 Ms. Geiger, how much more do you
20 suspect you have?

21 MS. GEIGER: I have a few questions,
22 at least probably 10 or 15 minutes.

23 CHAIRMAN IGNATIUS: All right. Why
24 don't you continue then.

1 MS. GEIGER: Thank you.

2 BY MS. GEIGER:

3 Q. Now, Ms. Morse, on Page 9 of your testimony,
4 you state that professional forester,
5 Geoffrey Jones, and yourself were both deeply
6 moved by the impressive diversity of plant
7 community types and habitat types which one
8 encounters along the Tuttle-Willard ridgeline
9 and adjacent habitats; correct?

10 A. Hmm-hmm.

11 Q. Yes?

12 A. Yes.

13 Q. Are you aware that the New Hampshire Natural
14 Heritage Bureau has indicated to this
15 Committee that it has determined that it is
16 unlikely that the project will impact any
17 rare plant species or exemplary natural
18 communities?

19 A. I'm not aware of that. But I have two
20 reactions to that. One --

21 Q. Excuse me. I just asked you the question if
22 you were aware of it. You said "No"; is that
23 correct?

24 A. I'm not -- ask the question again, and I'll

1 try to follow you.

2 Q. I just need a "Yes" or a "No" answer to the
3 question.

4 Are you aware that the New Hampshire
5 Natural Heritage Bureau has indicated to this
6 Committee that it has determined, meaning the
7 Natural Heritage Bureau, that it is unlikely
8 that the project will impact rare plant
9 species or exemplary natural communities in
10 the project area?

11 A. I wasn't aware of that conclusion.

12 Q. Okay. Thank you.

13 A. However, if I may, I'd like to elucidate my
14 point; and that is, it's been my experience
15 as a field ecologist that, unless you're
16 really in the field looking, you don't always
17 find. And with no disrespect to the Natural
18 Heritage Committee or the biologists and
19 botanists involved, I'm sure they would agree
20 with me if they were sitting here, that time
21 sometimes doesn't permit our agencies the
22 luxury of doing these things.

23 Q. Do you know whether the Natural Heritage
24 Bureau went out into the field in this

1 project?

2 A. I do not.

3 Q. Okay. Would it surprise you to learn that
4 they did?

5 A. It might not surprise me that they made a
6 brief visit, much as I did. But it would
7 surprise me that there were no unusual plants
8 and special features of that habitat that
9 should be recognized as such. It would
10 surprise me a great deal.

11 Q. Okay. So you disagree with the conclusions
12 of the New Hampshire Natural Heritage Bureau?

13 A. Well, what was the word they used?
14 "Unlikely"?

15 Q. Yes.

16 A. "Unlikely" is an ambiguous word.

17 Q. Okay. Is that your opinion?

18 A. Yes.

19 Q. Okay. Have you studied whether habitat
20 fragmentation has been created by the
21 Lempster Wind Project?

22 A. No.

23 Q. Have you studied whether habitat
24 fragmentation has been created by the Granite

1 Reliable Wind Project?

2 A. No.

3 Q. And yet, you're stating that habitat
4 fragmentation will, in fact, result by the
5 Antrim Wind Project; is that correct?

6 A. Yes, and undoubtedly has a result of --
7 habitat fragmentation and/or habitat
8 destruction, again, if you re-read my
9 testimony, there's a much, much bigger thing
10 that I was describing there, not just habitat
11 fragmentation. Your consultant made that
12 mistake, and I would beg you not to.

13 Q. I'm just asking you the question about
14 fragmentation.

15 So, is it your position that any human
16 development or any construction by human
17 beings along the Willard-Tuttle Ridge would
18 result in habitat fragmentation?

19 A. Precisely.

20 Q. And you're saying it should be avoided?

21 A. Precisely.

22 Q. Okay. I think you've also said something
23 along the lines this morning -- I may not get
24 this correctly, so please correct me if I'm

1 wrong -- that we have to do something about
2 global climate change?

3 A. Hmm-hmm.

4 Q. Do you believe that reducing the consumption
5 of fossil fuels is a good step toward
6 addressing global climate change?

7 A. Absolutely.

8 Q. Okay.

9 A. And --

10 Q. Now, you said that -- now, I believe you said
11 earlier that you had some -- that the biggest
12 threat to the bat population here in New
13 Hampshire is the White Nose Syndrome; is that
14 correct?

15 A. Yes. Yes, it is.

16 Q. And so you're not necessarily saying that
17 this project will, in fact, contribute to bat
18 mortality, are you?

19 A. Oh, undoubtedly it will. It's certainly not
20 to the proportions of the disease. But as I
21 acknowledged in my report, any mortality of
22 bats above and beyond the monstrous loss of
23 bats due to the disease is what I would call
24 an "additive mortality." It really makes the

1 overall crisis of bat population declines
2 that much more severe.

3 So, whether it's killing bats in your
4 attic because you don't like them and you
5 think they're going to land in your hair or
6 wind turbines killing a percentage of bats
7 every year, it's all got to change. It's
8 all -- we've got to get educated about bats
9 in our homes and around our barns and farms
10 and so on. And we certainly need to seize
11 every opportunity we can to conserve core
12 habitats so that the wild habitats these
13 animals need is there for them. And if
14 there's to be a recovery from a disease like
15 that, it will spring from a population that
16 somehow lives to tell about it.

17 Q. Is it your testimony that the Antrim Wind
18 Project is proposed to be sited on core
19 habitat for bats?

20 A. No. No, it's to be sited on core habitat.
21 I'm not a bat expert.

22 MS. GEIGER: Okay. Just need a
23 moment, please.

24 CHAIRMAN IGNATIUS: That's fine.

1 (Pause in proceedings)

2 BY MS. GEIGER:

3 Q. Thank you, Ms. Morse. I don't have any
4 further questions for you.

5 A. Thank you.

6 CHAIRMAN IGNATIUS: All right. This
7 will be a time for a break then, and then we
8 will return with some Committee questions. So
9 let's resume in about ten minutes, at 10:45.
10 Thank you.

11 (Whereupon a recess was taken at 10:34
12 a.m., and the hearing resumed at 10:55
13 a.m.)

14 CHAIRMAN IGNATIUS: We're back on the
15 record after a break, and we now have questions
16 of Ms. Morse from the Committee members. All
17 right. Hands are going up. It's like an
18 auction.

19 All right. Mr. Stewart.

20 DIR. STEWART: Thank you.

21 INTERROGATORIES BY DIR. STEWART:

22 Q. I'm going to try to pull this up to a higher
23 level for a while, and then we'll get into
24 specifics. And this is in the context of

1 we've got two of these -- three that are
2 already approved in New Hampshire, of these
3 wind energy facilities, a couple in Vermont,
4 and Maine has them. So there's the question
5 of impacts from these facilities.

6 So my first question is: Are there any
7 ridgelines that are not core habitat, as
8 you've defined it, where you think that these
9 facilities would be acceptable?

10 A. I see where you're going, and I really
11 respect that and would argue that that's the
12 way we need to think.

13 I don't know that I would want to limit
14 it to ridgelines, because I have an
15 uneasiness about ridgelines, per se, because
16 of their utility for wildlife or for movement
17 corridors, preferred travel routes, migration
18 and the like.

19 So, in general, not using ridgelines as
20 a surrogate here. I would say we should be
21 definitely looking for other more appropriate
22 sites for wind. I'm not opposed to wind. I
23 think wind, along with solar and, most of
24 all, conservation, is the way we've got to

1 go. But I'm just -- I'm just really, really
2 very worried about the proliferation of these
3 facilities on ridgelines anywhere.

4 Q. Okay. So, probably not is what you're
5 suggesting.

6 A. Probably not if it's a ridgeline.

7 Q. Okay. Thank you.

8 I'm concerned about impact measurement.
9 And again, this is -- I'm not prejudging this
10 project, but we also have these other
11 facilities that exist. And so I'm trying to
12 understand, in the long term, how we measure
13 the real impacts from these projects, in
14 terms of, you know, pre- and
15 post-construction studies. And again, it's
16 not just for this project, but... so how do
17 we do that? How do we measure the impacts
18 going forward for the facilities that are
19 constructed?

20 A. Well, my answer will, I guess, be helpful in
21 general, but it will really require that we,
22 you, whomever, do the homework for the
23 specifics.

24 I would recommend a thorough literature

1 review for all of the sort of categories of
2 stress and harm that are known to occur as a
3 result of any human footprint of significance
4 in a core habitat. And once I've enumerated
5 all those things, and once I've done all that
6 reading, which is going to be a significant
7 exercise, I would then work with professional
8 biologists, perhaps a mix of private
9 consultants and, you know, agency personnel
10 to kind of come up with a post-construction
11 protocol of measurements. It certainly
12 wouldn't be just simply counting dead bodies
13 at the bottom of turbines.

14 But I'll warn us all that some of this
15 stuff is very complex and it unfolds over
16 time. In other words, the whole point of
17 cumulative effects assessment is that lots of
18 separate, isolated events that happen to you
19 over time can cause you to have a shorter
20 lifespan. It can cause you to not make it
21 through the winter. It can cause you to
22 abort your fawns. It can cause you to give
23 birth to underweight offspring. You know,
24 you see where I'm going? It's all very hard

1 to pin down and -- which is why conservation
2 thinkers who are really, really good at what
3 they do, people like Michael Soule and Paul
4 Beyer and others, some of whose papers I've
5 prepared for the Committee, they're really
6 cautioning us against going into these places
7 and destroying them in the first place. And
8 that obviates the need to measure anything,
9 because we're going to agree at some point
10 that we're going to stay out, you know.

11 I just read a statistic the other day in
12 preparation for this morning that, you know,
13 75 percent of the world is within earshot of
14 industrial noise. That's -- or traffic,
15 noise, human noise. You know, so that --
16 they call it the "soundscape." And the
17 purpose of this paper which I have provided
18 the Committee members, and will give to you,
19 is to simply say that even noise has an
20 impact on wildlife. And of course, it does.
21 The paper I included in my report, "The
22 Chronic Noise Paper," illustrates that.

23 So I haven't really specifically
24 answered your question, except to suggest

1 that what we haven't done well enough as we
2 seek to judge the merits of these industrial
3 applications in wild habitats is we haven't
4 really come up with a comprehensive way of
5 measuring what's out there beforehand and
6 measuring what happens after. And so maybe
7 the most appropriate way to deal with that is
8 to have a moratorium on developments in core
9 habitats until we do have such a protocol in
10 place. And even then, I'd be uneasy with
11 that, just knowing what I know.

12 Q. I understand your recommendation. I'm trying
13 to, as a regulator -- again, we have existing
14 facilities and we have prospective
15 facilities. I mean, is it possible, for
16 example, to develop a committee of
17 professionals to develop a protocol and
18 analyze impacts for these projects? Or is it
19 too squishy to do that? I'm an engineer as
20 well as a regulator --

21 A. Yeah, yeah, yeah.

22 Q. -- so squishy is something I have trouble
23 with sometimes.

24 A. Yeah, I do, too, unless they're soft and

1 furry at the same time.

2 Q. I mean, how do we do this? How do we
3 evaluate the impacts from the existing
4 facilities? And then, if facilities were
5 approved, how do we evaluate and set
6 protocols for evaluating future approved
7 facilities? I'm trying to understand what --
8 so we get this right in the long term for the
9 existing and prospective facilities, if any
10 are approved.

11 A. Well, I'll take it as a twofold question.
12 For existing facilities, again, the extensive
13 literature review and the consultation with
14 multiple scientists who can weigh in on the
15 subject -- and I would suggest that to keep
16 that objectivity foremost in the panel,
17 you'll really need to draw from state and
18 federal officials, as well as private
19 consultants and university consultants to
20 really get a mix of authorities there.

21 But then, here's the piece that you're
22 not going to like. Here's the squishy piece:
23 Really, really thoughtful research of this
24 nature is by definition over space and time.

1 It's very expensive, very complicated. And
2 it's going to involve, you know, teams of
3 university researchers and others doing a
4 multitude of projects over time. It's not a
5 quick and dirty. It can't be done, you know,
6 within the time frame of a normal regulating
7 board sometimes. So that's the first answer.

8 The second answer is -- it's simple.
9 For now, I think it was -- it was. It was
10 Aldo Leopold who said, "The first rule in
11 intelligent tinkering is to save all the
12 pieces." And so the best way we can save all
13 the pieces is to not fragment that plate and
14 drop it on the ground and cause it to become
15 fragmented. It just becomes that much more
16 complicated to even have a baseline for
17 what's out there. And we're still learning
18 that. I mean, we've identified millions of
19 species on the planet. But giants in the
20 fields, like E. O. Wilson, who is my God, he
21 tells us, and I believe him, that there could
22 be, you know, many, many scores of millions
23 of more species out there that we haven't
24 even identified yet.

1 Q. So, from your answer, I assume that there
2 aren't any of these kinds of studies going
3 on, you know, nationally or internationally
4 that you're aware of that we could draw upon?

5 A. Well, you could certainly draw some
6 inferences from some of the studies that are
7 being done with some of the aspects of
8 cumulative effects assessment; in particular,
9 in the artic looking at impacts on caribou,
10 that might be a start. That's why I say a
11 literature review would be helpful. You
12 know, there are numerous books and papers on
13 cumulative effects assessment. There's a
14 relatively new book, published by CRC Press,
15 that I think just came out a couple of years
16 ago. I have it in my library.

17 But those are just starting places. You
18 really need to, because this -- you really
19 need to pull it all together from your local
20 expertise and whether or not you have the
21 budget or the Applicant has the budget or the
22 inclination to want to engage in such a
23 thing. But it's really -- it's the price of
24 doing business, I suppose, in core habitat.

1 Of course, my reaction to that is no, we
2 don't need to do this in core habitat. We
3 need to stay out.

4 Q. Okay. With regard to, under an approval
5 scenario -- again, it could be this project
6 or it could be future projects -- again, I'm
7 a regulator. The wetlands program is one of
8 the programs that I manage under the Clean
9 Water Act. Federal, there's "avoid,
10 minimize, mitigate" as kind of the tiers. So
11 if a project goes, at first you minimize and
12 then mitigate.

13 So the question I've been pondering, and
14 this is not just a question I've asked of
15 you, is what is "adequate mitigation" for
16 these kinds of projects? In this case, we've
17 got, you know, 600-odd acres, and it has
18 various values as proposed. And I don't know
19 if that's adequate or not. It's 68 -- again,
20 I'm an engineer -- 68 acres per turbine of
21 various values. So I ask the question: What
22 is adequate mitigation for these kinds of
23 projects?

24 A. Well, you know, where wetlands are concerned,

1 we sometimes have wetlands in situations
2 where mitigation might be adequately used to
3 compensate for their loss or degradation.

4 But whole habitats, like core habitats,
5 I really shy away from that notion, because
6 then we're really talking, you know, about
7 replacing apples with oranges. And I've
8 worried about that.

9 I understand this particular proposed
10 conservation constellation of lands that the
11 Applicant will conserve involves the very
12 lands that the turbines are going to be sited
13 on. And I wouldn't call that conserved
14 lands. I would call that --

15 Q. The other lands is what I'm --

16 A. But even still, you know, core habitat is a
17 finite thing. We don't have very much of it.
18 And guess what? We're not going to make
19 more. Well, maybe we could again if we all
20 went away and the forestry grew back and so
21 on. I don't mean to be glib, but... core
22 habitat is so finite in our region, that we
23 really need to take our cue from this and
24 realize that, oh, wow, all of a sudden, in

1 our lifetimes there's a major industrial
2 footprint that wants to put itself on our
3 mountains. Is that really a good thing? And
4 I would argue, from a biological standpoint,
5 it's not and that there is no mitigation
6 that, you know, will take the place of that.

7 In higher elevation, ridgelines and even
8 the highest summits, there's no substitute
9 for them. They are those places where the
10 land, you know, comes to the top. And so
11 replacing them with downslope habitat has a
12 nice ring to it, but it's not the same
13 animal.

14 Q. Okay. I'm going to get lower now.

15 A. Okay.

16 Q. The glacial erratics, these provide habitat
17 for, you know, various mammals --

18 A. Yeah.

19 Q. -- I assume?

20 A. Yeah, and insects.

21 Q. And I'm an engineer, so I don't know much
22 about these things.

23 A. Yeah.

24 Q. Again, under an approval scenario, is there

1 an appropriate buffer around these older
2 fields for a road to ensure that the habitat
3 is preserved?

4 A. If there is, I'm not aware of it. But I
5 would just think, practically, if I put
6 myself in the body of a bobcat seeking a den
7 site or an escape habitat or a thermal
8 habitat, or even a salamander seeking a
9 thermal habitat, I would have to say that
10 being anywhere near a road is not going to be
11 good for me.

12 Q. What does "near" mean?

13 A. You know, I'm conservative on this. I'm
14 going to take the position of the animals, I
15 suppose. Somebody has to, you know. I
16 don't -- core habitat is so limited, I would
17 say nowhere near it. I would say nowhere
18 near it. I would say put the wind
19 facility --

20 Q. Well, again, that's not the scenario --

21 A. I know.

22 Q. -- I'm trying to elicit data on.

23 A. Well, sometimes we have answers that don't
24 give us the answers we want, too. You know,

1 and I'm not saying I'm God and I have all the
2 answers. I certainly don't. But I'm saying
3 that I would be extremely grateful to the
4 Committee to really seriously ponder whether
5 or not this particular proposal is the right
6 thing for this wonderful exemplary piece of
7 land. Simple as that.

8 DIR. STEWART: Thank you.

9 CHAIRMAN IGNATIUS: Questions,
10 Mr. Robinson.

11 MR. ROBINSON: Thank you, Madam
12 Chair.

13 INTERROGATORIES BY MR. ROBINSON:

14 Q. I have five questions. I'm going to try not
15 to ask the same questions that other folks
16 have asked, but there might be some
17 similarities. My first question is actually
18 a follow-up to one of Ms. Geiger's questions
19 relative to habitat fragmentation.

20 Can you provide the Committee with any
21 evidence of wildlife community changes due to
22 habitat fragmentation that have occurred as a
23 result of developed wind projects that are
24 out there now? And part of the reason for me

1 asking this is that, 30 or 40 years ago we
2 were told that habitat fragmentation would
3 cause the demise of the Pileated Woodpecker,
4 and we haven't seen that. So I'm curious on
5 your view on this, and if you actually have
6 some evidence of community changes.

7 A. I would have to really have the privilege of
8 thinking about this and looking in the
9 literature. But I'll -- I will say, off the
10 top of my head, not as a result of wind
11 facilities, because, again, I'm not in
12 business reviewing wind facilities on a
13 day-to-day basis. So I don't -- I don't have
14 all that literature at the tip of my fingers
15 here. But I will say that I've read one
16 instance recently where the edge effects
17 associated with some development caused a lot
18 of significant changes in the plant and
19 animal community adjoining it -- communities
20 I should say, plural.

21 I would really prefer to have the chance
22 to research that and get an answer back to
23 you, you know, because community changes is
24 different than some of the other things I've

1 been talking about.

2 I know it occurs. And I know that, for
3 example, what happens with edge effect, which
4 will certainly happen along this power line
5 corridor -- or this turbine corridor, is
6 temperature regimes, solar radiation,
7 moisture, just to name three, will change.
8 And as a consequence of those changes, the
9 plant and animal communities, some of them in
10 the vicinity of that will change. And in
11 some parts of the world, some of those
12 changes have been devastating. For example:
13 There was a native ant species that got
14 completely overwhelmed by an invasive ant
15 species that was able to come in and exploit
16 that edge habitat and basically displace the
17 native, and that had reverberating effects in
18 the ecosystem that these biologists were able
19 to write about.

20 Q. I'm sorry. I guess my question is: You
21 can't provide any evidence from your work
22 that there have been community changes? Is
23 that what I'm hearing?

24 A. Again, I'll use the same phrase: This is not

1 what I do.

2 Q. Okay.

3 A. Okay.

4 Q. Thank you.

5 A. Sorry.

6 Q. My next question is: Would you agree that
7 any wildlife study of three years in
8 duration, particularly one that's going to be
9 extrapolated out over time, would provide you
10 a better dataset than a one-year study?

11 A. Oh, absolutely. Yeah. But I would also
12 maintain that a study of many years, way more
13 than three, might be necessary to elucidate
14 some of these issues.

15 Q. Okay. Thank you.

16 My third question: You've talked a lot
17 about cumulative impacts to wildlife. And I
18 get that. I understand that. We've talked
19 about cumulative impacts on offshore wind
20 farms to quite a degree, probably more than
21 onshore farms.

22 How do you measure cause and effect when
23 it comes to cumulative impacts? Do you have
24 any idea how we're going to measure that?

1 A. Multiple studies over time. But even that
2 will be an imperfect solution, because, as I
3 said, you know, these things are very
4 complex, and the multiple studies over time
5 would be very expensive.

6 Q. I know we need to study it. But do you have
7 any suggestions on even where you begin?

8 A. You start by conserving the core habitat, and
9 you work to site industrial wind facilities
10 where they will do a lot less harm. I mean,
11 I think any wind facility, like anything we
12 do out there -- I mean, I'm going to get in
13 the car to go home; so hence, I'm going to do
14 harm. So I'm not naive about these things.
15 But relatively speaking, industrial wind, I
16 think over time, can certainly have a place
17 in our energy portfolio. I just don't
18 believe it should be on top of mountains.

19 Q. Okay. My next question actually has a little
20 bit to do with core habitat and home ranges.
21 We've talked quite a bit about moose, bear,
22 and to a degree, bobcat. And you understand
23 that these species have large home ranges
24 where they travel --

1 A. Yes, I do.

2 Q. -- 10, 11, 12 miles --

3 A. Yes, I do.

4 Q. -- in the course of a day?

5 Okay. How would this particular project
6 impact these species differently than
7 existing roads, housing subdivisions and
8 things of that nature that are nearby?

9 A. Okay. Well, let's be a bobcat for a minute.
10 You know where your prey are in different
11 seasons. So, with time and experience you
12 become accomplished at being successful, and
13 you get to live and you get to raise families
14 and all that. Suddenly there's a big change
15 in your world, and the mountaintop that you
16 used to go to, the boulders that you used to
17 find safety and shelter within are changed.
18 There are stressors up there that you shun
19 because, unlike other animals that can become
20 accustomed to edge effects, you're not
21 recognized to be one of them. You're timid
22 in the face of some of these things. Not
23 that bobcats couldn't change over time. But
24 still, core habitat is what you know. It's

1 what -- it's your home address, and it
2 changes radically overnight? And yes, it
3 will certainly affect you. Moose, the same.
4 Bear, the same. Bear may decide to come and
5 eat some of the green growth at the base of
6 the power line corridor. I don't doubt that
7 that won't happen. It appears that bears,
8 along with deer and others, are sometimes
9 habituated to becoming used to our presence.

10 But the question I'm asking on behalf of
11 the intervenors is: Is this appropriate in a
12 core habitat? Do we really need to keep
13 taking away from wild nature? That's what
14 we're talking about here. And it's so ironic
15 and so full of paradox, really, that we're
16 saying that, in order to minimize global
17 climate change and minimize our carbon
18 footprint on the planet, we're going to put a
19 renewable energy facility in core habitat.
20 Now, global climate change and our carbon
21 footprint is devastating to millions of
22 species on the planet, and will certainly be
23 more so in the decades to come. And I think
24 everybody in this room has an increasing

1 appreciation of that sobering reality.

2 So why would we justify injuring still
3 more biodiversity in the name of minimizing
4 these things, when, to my way of thinking, we
5 haven't begun to do an adequate job of
6 looking to ourselves and conserving energy
7 and using less energy and finding productive
8 ways in our communities to share rides and so
9 on. I can't go to my park and ride place to
10 ride with anybody because it's jammed full of
11 cars, and they haven't added to it in all
12 these years. They know it's important. But
13 that's one thing that a community regulator
14 or officer could recommend to happen, or
15 state.

16 So, anyway, I don't mean to lecture to
17 the choir here. But I've said enough I
18 guess.

19 Q. Okay. Thank you.

20 And my final question actually has to do
21 with moose. You've talked a little bit about
22 Minnesota's moose population and winter ticks
23 and whatnot. You do know that it's pretty
24 widely accepted that the demise of the

1 Minnesota moose population is due to winter
2 ticks and wolf predation? I mean, that's
3 pretty well accepted. Are you aware of that?

4 A. You know, I'm not aware of that. But I don't
5 know that I necessarily agree. And I go to
6 Minnesota twice a year to track wolves and
7 study wildlife. So, you know, you're talking
8 about an area that I have familiarity with.
9 So there are two sides to that opinion,
10 certainly. Wolves are coming in and
11 impacting populations that are low enough to
12 be impacted.

13 Q. That's correct.

14 A. But if you look at the Isle Royale studies,
15 for example, over many, many decades before
16 global climate change and before the winter
17 tick problem, moose and wolves were in a
18 dynamic equilibrium. In other words, the
19 predator by itself did not cause moose
20 populations to significantly decline, such
21 that they couldn't recover. And that's the
22 way it is with predators and prey. And I
23 don't need to tell you that.

24 I think the thinking in Minnesota is the

1 combination of global climate change and
2 winter ticks is the ugly combination, and
3 that moose are unnecessarily stressed by
4 warmer temperature regimes which cause them
5 to not be able to conserve their energy
6 budget in ways in which they should.

7 Q. So I guess my question is, how would a wind
8 turbine project have any effect on moose when
9 winter ticks are caused by basically the lack
10 of snow and a moose's inability to groom
11 itself compared to a deer?

12 A. Yeah, mooses -- mooses -- moose don't --
13 they're not obligate groomers like deer. So
14 it's kind of a drag that they acquire as many
15 ticks as they do.

16 But, well, let me answer your question
17 this way: A moose calf going into its first
18 winter that might acquire, say 70- to 100,000
19 ticks, is probably not going to make it
20 because of the volume of ticks, because it
21 might lose 40 to 50 percent of its blood
22 volume just in the months of February and
23 March alone.

24 A moose calf that goes into that same

1 winter with only 40,000 ticks is at a tipping
2 point. And if it experiences a lot of
3 stresses and feels it has to run away more
4 than it should in a natural habitat where it
5 wouldn't, the cumulative stresses of all the
6 situations it may find itself in associated
7 with a wind tower facility could cause that
8 animal to not be able to withstand the
9 impacts of winter tick of a lighter
10 infestation.

11 Q. I can appreciate that. But the fact is that
12 winter tick loads are caused basically to
13 lack of snow in certain years and a moose's
14 inability to groom itself. Would you agree
15 with that?

16 A. I think some of the science -- and I can
17 certainly provide you with some of the
18 literature on this. Some of the science is
19 suggesting that it's a combination of other
20 stresses that influence moose fitness in
21 combination with the ticks. Yes, severe
22 loads, no question. There are definitely
23 more ticks out there because of climate
24 change getting on moose in the fall and

1 getting off successfully to lay their eggs in
2 the early spring. But all the other stresses
3 that add themselves -- I mean, one of the
4 reasons why moose struggle with winter ticks
5 in the first place is, because from an
6 energetic standpoint, when they do finally
7 have a whole bunch of adult ticks feeding on
8 them, they're not eating as much; they're not
9 resting successfully. So, from a stress
10 standpoint, their energy budget is getting
11 hammered, in addition to, you know, the blood
12 loss and so on, although anemia is not
13 necessarily zeroed in on this as an isolated
14 problem. But it's a combination is what I've
15 been saying.

16 MR. ROBINSON: Okay. Thank you. I
17 have no further questions.

18 CHAIRMAN IGNATIUS: All right. Other
19 Committee Member questions? Mr. Simpkins?

20 DIR. SIMPKINS: Thank you. Just a
21 few questions.

22 INTERROGATORIES BY DIR. SIMPKINS:

23 Q. In your exhibit, in Exhibit SM4, the
24 photographs in your testimony, you have a

1 photo of a tracker, a Scott Simmons I believe
2 is his name. And he's kneeling next to what
3 you describe as a large, old-growth hemlock.
4 I was just wondering if you could define what
5 you mean by "old growth" and how you came to
6 the conclusion that that tree was old growth.

7 A. That's a good one. I guess I'm not using
8 "old growth" in the sense that we commonly
9 hear about it out West with, you know, the
10 old Douglas firs and the like. Here in the
11 East, a tree that's, you know, 80 years old
12 and older, especially in this context where
13 it's literally surrounded by a much younger
14 cohort of trees, that's why I used the term.

15 Q. Okay. Thank you.

16 And you discuss forestry several times
17 and that in Vermont foresters aren't
18 licensed. I didn't see a resume or anything.
19 Can you provide a real brief description of
20 your forestry training and education?

21 A. Yeah. I studied forestry at Penn State for
22 two years before I then moved on to study
23 literature at the University of Vermont. But
24 I hail from a family of four generations of

1 foresters, starting with my
2 great-grandfather, and I now run that
3 business.

4 Q. Thank you.

5 And the last question I had is kind of a
6 follow-up to a question by Mr. Stewart and
7 Mr. Robinson, but I wanted to be a little bit
8 more specific.

9 On Page 11 of your testimony, you
10 discuss four specific areas where improved
11 science is most needed to evaluate the
12 impacts of wind energy. And I was just
13 curious. Are you aware if any of these four
14 areas are being researched on any existing
15 wind projects in northern New England?

16 A. I'm not aware that they are. But I'm aware
17 that the paper that I refer you to here
18 certainly has underscored the significance of
19 needing to do a much, much more comprehensive
20 job of assessing these things, yeah. That's
21 why I provided that paper with my testimony.
22 Yeah, it was an eye-opener for me, the
23 research priorities that -- I believe it's
24 called that, "research priorities," and they

1 are necessary.

2 And, for example, documenting lethal and
3 sublethal effects at existing wind
4 facilities, again, unless there's cumulative
5 effects assessment going on somewhere that I
6 don't know about, which is possible, I can't
7 imagine that that's going on, on the scale
8 that it should.

9 Q. Okay. Thank you.

10 A. Thank you.

11 DIR. SIMPKINS: No further questions.

12 CHAIRMAN IGNATIUS: Ms. Bailey.

13 INTERROGATORIES BY MS. BAILEY:

14 Q. Good morning. Can you give me a scientific
15 definition for "core habitat"?

16 A. It's a large, unfragmented block of habitat
17 that -- you know, I suppose there are
18 different practitioners that might define it
19 slightly differently. But in general, it's a
20 habitat that is insulated enough from all the
21 human stuff around, big enough in some
22 respects and complex enough that it also is
23 home to a select group of mammal species that
24 are indicators of such habitats that really

1 don't tolerate human-dominated landscapes to
2 fulfill their life histories. Black bear and
3 bobcat, for example, really need core
4 habitats. They may be large or small,
5 depending on the productivity of that
6 habitat. Some are more productive in terms
7 of food resources, and some are more complex
8 in terms of vegetative structures. So
9 habitats could be smaller or larger according
10 to the habitat attributes they're in. Am I
11 making sense?

12 Q. Sort of. Is it related to or is it specific
13 to certain species?

14 A. It depends on where you are in the world and
15 the country. You know, here in this region,
16 acknowledged species that we associate with
17 core habitats are bobcat and bear, for
18 example, depending on the largeness of the
19 habitat. Certainly animals that are what we
20 call "area sensitive," so they're
21 ill-equipped to deal with a lot of human
22 activities; animals that are wide-ranging, so
23 that might include even something like river
24 otter. River otter, as we all know, can swim

1 through the rivers of town. But on the
2 whole, river otters have to have a percentage
3 of their habitat be private enough to fulfill
4 other aspects of their life history that are
5 important. They can't be in polluted waters,
6 for example, because they biomagnify toxins
7 in the food web and so on.

8 So there are different kinds of animals
9 that are indicator species, flagship species,
10 keystone species. So a suite of these
11 animals will be chosen in a given region
12 because they represent qualities of healthy
13 habitat, larger core habitats. And if
14 they're present there in breeding populations
15 over time, then that helps us appreciate
16 that, gee whiz, we really are looking at a
17 core habitat.

18 Q. Okay. That's helpful. Thank you.

19 So the New Hampshire -- we've seen some
20 other exhibits that I think part of which was
21 copied into your testimony as the exhibit
22 that you said you weren't responsible for,
23 but I think it all comes from a map that
24 talks about "highest-ranked habitat." Do you

1 know how that's related to core habitat?

2 A. I believe I said in my testimony -- and I
3 want to qualify something here. The
4 questioning that I responded to earlier had
5 me a bit confused. But I'm responsible as a
6 senior biologist in the direction that this
7 testimony took, in terms of trying to collect
8 all of the various pieces about wildlife,
9 including birds and forest ecology and so on.

10 So, all of the participants in our
11 outing that day contributed their parts of
12 this. To keep cost down for my clients,
13 which of course is a perfectly legitimate
14 consideration, I relied upon them to provide
15 the maps. But it was I who suggested that
16 they avail themselves of the information that
17 I knew existed. So, if that helps you.

18 Q. So, as a biologist, what's the difference
19 between highest-ranked habitat and -- or is
20 it the same thing as a core habitat?

21 A. No, not necessarily. You'd have to read
22 their definition for what they -- I believe I
23 addressed that in my report.

24 WITNESS MORSE: Yeah, help me out

1 here, Lorraine, if you know where it is. Let me
2 see here.

3 BY MS. BAILEY:

4 Q. Well, I think --

5 A. I just -- go ahead.

6 Q. I think the discussion about core habitat
7 starts around Page 4.

8 A. Yeah, but what I did was I listed what the
9 State's criteria were. Yeah, here it is, on
10 Page 2 of 11, "What is the purpose of your
11 testimony?"

12 And going right to the chase here,
13 "Furthermore, my findings in the field have
14 convinced me that development of an
15 industrial wind project in this area would
16 severely and negatively impact exemplary
17 habitat which has been described by the State
18 of New Hampshire as 'highest-ranked wildlife
19 habitat by (as assessed by) ecological
20 condition.' These highest-ranked habitats in
21 New Hampshire were analyzed by professional
22 biologists. Major considerations included
23 the biological landscape, as well as human
24 impact factors which could most affect a

1 given landscape type. Biological factors,"
2 which is one of their terms, "included
3 consideration of rare plant and animal
4 species, as well as overall biodiversity.
5 Landscape factors included the size of a
6 given habitat and how close it is to other
7 patches of habitat."

8 And the last descriptor is, "Human
9 impact factors included measuring the density
10 of roads around the habitat, as well as the
11 relative presence of other anthropogenic
12 influences, including dams, recreational use
13 and pollution."

14 So, if I understand your question, no,
15 these definitions aren't synonymous with
16 "core habitat." They're descriptors of
17 qualities that they were looking for in their
18 ranking system.

19 Q. So is a highest-ranked habitat a subset of
20 core habitat?

21 A. I'd have to think about that. It seems like
22 it certainly can be most of the time. But
23 there may be similar cases of exemplary
24 habitat that are -- you know, that are

1 isolated. I'm thinking in Vermont, we have a
2 habitat type called the "sandplain" habitat
3 type, with pitch pine and lots of sand. It's
4 a very xeric habitat type. And it's not a
5 core area anywhere. It's too fragmented by
6 cities and towns and roads and gravel pits
7 and the like. But nonetheless, there is a
8 piece of it that is today cherished as an
9 exemplary habitat and recognized by the state
10 that, you know, it needs to be protected.

11 So if the same thinking is going into
12 this, which I strongly suspect it is in some
13 cases, no, it wouldn't always be synonymous
14 with core habitat.

15 Q. Okay. Thank you.

16 A. Thank you.

17 CHAIRMAN IGNATIUS: Other questions.

18 Mr. Dupee?

19 MR. DUPEE: Thank you, Madam Chair.

20 INTERROGATORIES BY MR. DUPEE:

21 Q. Good morning, Ms. Morse.

22 (Court Reporter interjects.)

23 By Mr. Dupee:

24 A. Good morning.

1 Q. Talking about ridge habitats, sounds like in
2 most cases you'd consider that to be core
3 habitat?

4 A. Not necessarily. Smaller ridgelines of tiny
5 little hills overlooking a city or a town
6 might not be core habitat simply because it
7 isn't big enough and it doesn't support the
8 complement of species that I talked about
9 earlier. You know, it might be too isolated
10 or, you know --

11 Q. So there might be ridgelines in the state
12 that you would not object to there being wind
13 power facilities built there because there
14 wouldn't be the critical habitat that might
15 be evidenced in other parts of the state?

16 A. Well, I'm uneasy about that, and I'll tell
17 you why. Because as I said in my report, I'm
18 even wanting to champion the small little,
19 you know, over the rural -- I mean, over the
20 urban edge hills because they're the last
21 stand for wildlife. And who am I to say that
22 a deer is any less important than black bear
23 and bobcats, you know.

24 So, any pieces of wild nature that we

1 still have left out there, large and small
2 alike, we better think long and hard about
3 destroying them. We don't have much left.

4 Q. So if you were to weigh that consideration
5 against some earlier testimony you gave about
6 the influence of global warming on just
7 generally, ubiquitously cross species, and
8 you were looking at whether one would
9 introduce wind power, which is essentially a
10 very clean form of energy, how would you
11 assess that?

12 A. Well, I think, as I said earlier -- and I
13 really do believe this, I think there
14 definitely is room on the planet for wind at
15 some point. But I think we need to do more
16 research about how to do it well and minimize
17 its impacts on the rest of life.

18 And this may sound like a cheap shot,
19 but I question whether or not wind is
20 necessarily as clean completely as we'd all
21 like to think it is. I mean, for example:
22 Where are these things made and how are they
23 gotten here and how are they gotten from here
24 to up there or wherever? And, you know,

1 there's a tremendous energy footprint that
2 goes along with installing wind facilities.
3 And weighing that against other forms of
4 energy, you know, I don't know which is
5 better. Again, I'm not an energy expert.

6 But then, philosophically, I'll also say
7 that the time is decidedly now that we need
8 our leaders to lead us into true
9 conservation. We haven't gotten there yet,
10 but we're going to have to.

11 Q. Thank you.

12 A. Thank you.

13 MR. DUPEE: No further questions.

14 CHAIRMAN IGNATIUS: All right.

15 Dr. Boisvert.

16 INTERROGATORIES BY DR. BOISVERT:

17 Q. Going back to your expertise in forestry --
18 or your experience, excuse me, in forestry,
19 you made a field trip up to the ridge and you
20 noted that it had been cut. Did you see
21 cutting on that ridge that, in your opinion,
22 went beyond -- literally, beyond what would
23 be necessary for a road for a wind farm?

24 A. No, I didn't.

1 Q. So that --

2 A. But then again, I will say, with all
3 sincerity, I'm not an expert on what would be
4 necessary for a wind farm road either. But
5 it felt to me like it was a huge footprint
6 already, and it didn't feel to me like it was
7 a legitimate, you know, exercise in
8 silviculture or harvesting of trees, not to
9 say that they didn't go downhill to a mill
10 somewhere.

11 Q. That's all I have for now. Thank you.

12 A. Thank you.

13 CHAIRMAN IGNATIUS: All right.

14 Further questions?

15 I have some questions.

16 INTERROGATORIES BY CHAIRMAN IGNATIUS:

17 Q. When you were on that field visit, you said
18 this morning that you observed wetlands
19 delineation flagging. But I couldn't tell if
20 you also said you saw wetlands disturbance.
21 I just couldn't follow what you had said.

22 A. Yeah. I know my colleagues have addressed
23 that issue. And yes, we all did. We
24 certainly saw a seepage area that had been

1 driven through, and, you know, there was no
2 effort at even remediating that damage. And
3 that was just one, you know, walk down the
4 length of it. I wasn't there to quantify
5 abuses of forest practice laws -- or not
6 laws, but practices.

7 Q. All right. Sticking with the question of
8 roads being put in, do you know the
9 relationship between the proposed road and
10 the glacial -- post-glacial boulders that you
11 talked about in your testimony? I mean --
12 let's back up.

13 You've talked about some impressive
14 boulders. And you have some, I guess
15 photographs of Mr. Block's in the back of
16 your testimony.

17 A. Hmm-hmm.

18 Q. Are those located on the ridgeline or at
19 another place in the Antrim area?

20 A. Yeah, some are on the ridgeline, and some are
21 after we kind of made a turn and went down
22 through the forest a ways off the height of
23 land, I believe. I mean, this is a stretch.
24 But, yeah, I believe that's what I recall.

1 Yes.

2 Q. Do you have any way to show on the map of the
3 proposed road where those areas of these
4 large boulders would be? We have a map of --

5 A. I don't have a way of doing that. But I
6 certainly believe that Rich Block would, so I
7 would defer that question to him. It was
8 agreed among us that I would handle the, you
9 know, sweeping stuff, and they would handle
10 the local stuff.

11 Q. All right. So in your testimony on the
12 bottom of Page 9 and the top of Page 10, you
13 talked about the concern that some of these
14 post-glacial boulders will be blasted. Is
15 that because you know they are in the path of
16 the road, or you're just concerned that that
17 will be taking place somewhere in the
18 vicinity?

19 A. Both. Both. I mean, in some cases the
20 flagging that we were following led us
21 through there. In other cases, still more
22 habitat spilling down below us and rising
23 above us. I'm thinking of the area where we
24 found the solitaire vireo, where we found the

1 vireo nest. So, on both sides of this was
2 extensive post-glacial boulder features that
3 were gorgeous and, you know, will be impacted
4 simply because of the disturbance that goes
5 through there -- disturbances, for example,
6 that are known to introduce invasive plants,
7 which have no business in a place
8 where there's some -- well, you know, they
9 have no business anywhere, I suppose. But
10 they're ubiquitous along our regularly used
11 roads and gravel roads and even logging
12 roads. But it would be ashamed to introduce
13 them in a place as special as that.

14 Q. Well, I'm just trying to understand from you.
15 You've drawn a lot of conclusions. But then,
16 when we look for the backup to how you get to
17 that conclusion, there's -- it seems to me
18 you step away a bit and say, "Well, I'm not
19 sure. I wasn't the one who knew that."

20 You claim that those boulders will be
21 blasted as part of the project, but you're
22 not sure the pathway of where the blasting
23 would be, I take it.

24 A. No, I can visualize it plain as day. But we,

1 as a team preparing this testimony, agreed
2 that we would divide the parts of it that we
3 would address with you. And so I am
4 referring you to the person who will
5 precisely be able to show you that.

6 Q. All right. Thank you.

7 A. I mean, we agreed when we were there that
8 these damages would occur. We were
9 horrified, frankly.

10 Q. Also at Page 10, at the top of that page, you
11 said that there would be -- there were rare
12 plants that you observed that would be at
13 risk. What rare plants were you referring
14 to?

15 A. At the top of that page...

16 Q. It's the last line of the top paragraph. I'm
17 sorry, I misstated. You didn't say that they
18 would be disturbed. You said that it's an
19 area that has --

20 A. Yeah.

21 Q. -- sort of treasures, including rare plants.

22 A. Yeah, that certainly should be studied.

23 Q. What rare plants are you referring to?

24 A. Well, I don't know. But that's what the

1 conservation of that area would help us
2 appreciate.

3 Q. Well, but this is a statement you made, that
4 you observed that there were rare plants
5 there. So I'm asking you what rare plants
6 you observed.

7 A. No, I didn't -- let me -- if I may, with all
8 due respect, let me read what I wrote. "This
9 natural area is too special and deserves much
10 more study of its additional potential
11 treasures, including unique geologic features
12 and rare plants."

13 So what I'm saying -- and maybe that
14 sentence structure is a little awkward. But
15 what I'm saying there is that the area is
16 special and deserves protection so that we
17 could potentially discover unique geologic
18 features, which I know we will, and possibly
19 rare plants. I didn't specifically enumerate
20 any plants that we found that -- I would have
21 loved to have found some rare plants up
22 there, but we didn't.

23 Q. All right. So it's really more, study it
24 because there is a possibility that there

1 could be rare plants.

2 A. Yes, yes. And history certainly has
3 demonstrated that. In habitats like that,
4 with all their little micro habitat regimes
5 associated with the complexity of the
6 topography, that, you know, I'll be a
7 monkey's uncle if they don't find some rare
8 plants there.

9 Q. You've described the moose population
10 declines in Minnesota. Do you know the
11 status of the moose population in New
12 Hampshire?

13 A. Not as such, no. I know that, curiously, in
14 our whole region, moose have not struggled as
15 much with winter tick as they have in points
16 out West or -- although in Maine, they're
17 concerned about the possible ugly duo of
18 winter ticks and lung worm having an impact,
19 although moose populations don't appear to be
20 declining there.

21 So, New England is pretty lucky in that
22 regard. And my hypothesis for that, such as
23 it is, take it or leave it, is that maybe one
24 of the reasons why New England's moose

1 population, relatively speaking, is not as
2 pressured now -- I'm not going to speak to
3 the future; I'm not going to say it's not
4 going to happen -- is that we do have the
5 topographical relief that moose can seek out,
6 and we do have -- and certainly Minnesota has
7 wetlands, so that's not the answer. But, you
8 know, we do have the higher-elevation terrain
9 where, at least in terms of summer stress,
10 moose are not going to be as stressed as they
11 are.

12 I've been in Minnesota in the boundary
13 waters in the summer. And lately it's
14 awfully hot, but they can't climb anywhere
15 to, you know, get away from it. So that
16 might be a safeguard for moose here. I hope
17 it is.

18 Q. In your photographs in your Exhibit SM4, the
19 second page of photographs, the last one in
20 the text box next to it -- do you see where I
21 am?

22 A. Second page. So it's this one (indicating)?

23 Q. Yes.

24 A. Okay.

1 Q. So that bottom photograph in the middle of
2 the text box says that excessive -- the signs
3 of moose throughout indicated to you that
4 moose numbers are perhaps too great for this
5 region. Am I reading that accurately?

6 A. Yes, you are.

7 Q. So that, at least in this area, there was an
8 abundance of moose, maybe more than it really
9 can -- the area can sustain?

10 A. Yeah, although I will qualify that by saying
11 that, on the ridgeline where they are known
12 to move -- you know, an animal movement in a
13 given habitat is certainly random throughout
14 most of it, but more concentrated along
15 preferred travel routes, and of course,
16 ridgelines function that way. So we know,
17 for example, with white-tail deer and moose,
18 browse pressure will be greater along those
19 preferred travel routes and within those
20 habitats where they concentrate themselves
21 for periods of time.

22 And that's why I made that statement,
23 because looking at the browse pressure there,
24 it seemed excessive to me. I have seen that

1 in Maine. It's nuts up there in northern
2 Maine. I don't know how you recruit yourself
3 if you're a balsam fir in some places.

4 Q. Actually, you used the word "recruit" a
5 couple of times, and it's a meaning that I
6 don't get. So what do you mean when you talk
7 about "recruitment" and "pressures on
8 recruitment"? I think of the military, and
9 I'm sure that's not what you mean.

10 A. No, it's the ability of the young of the
11 species to become adults, to go out into the
12 community and become adults and be part of
13 the population; success of the young to
14 survive.

15 And it isn't limited to animals. I
16 mean, one of the papers that I'm going to
17 give you that talks about the impacts of
18 noise on wildlife looks at the ways in which
19 noise has a proven deleterious impact on
20 certain mammal species; normal inclinations
21 to harvest seeds of Pinyon trees and carry
22 them and cash them for eating and
23 consumption, some of which don't get consumed
24 and grow into trees. So they've noted a

1 decline in Pinyon tree recruitment near these
2 places in the West where they have these gas
3 compressors and, you know, industrial noise
4 in what is otherwise a wild place.

5 Q. Let me ask you. You just made a reference to
6 studies you're going to get to us. What are
7 you referring to?

8 A. Okay. I've said this a couple times, and
9 forgive me if I've confused you. But in
10 preparation for today, I expected that some
11 of my comments -- for example, the one I'm
12 now making -- would be of interest to you to
13 read more, so to speak. So I took the time
14 to Xerox four articles for you to have on
15 various aspects of human disturbances and/or
16 appropriate conservation planning. So
17 there's two kinds of subject areas that I've
18 prepared for you.

19 MS. GEIGER: And I apologize for the
20 interruption, but I'm sure, as the chairperson
21 can anticipate, I would object to introducing
22 more material at this late stage of the
23 proceedings. This witness filed testimony back
24 in July. I think she could have appended, or

1 her sponsors could have appended these reports
2 to her prefiled testimony. I think they're
3 coming in too late. I haven't had a chance to
4 review them. I won't be able to cross-examine
5 her about them. So I would object to
6 furnishing any more supplemental information at
7 this time which could have been provided
8 earlier. Thank you.

9 CHAIRMAN IGNATIUS: I'm inclined to
10 agree with you. I think, you know, we are now
11 at sort of the end of the testimony phase.

12 BY CHAIRMAN IGNATIUS:

13 Q. And is there any reason that those things
14 couldn't have been provided earlier?

15 A. Well, with all due respect to this process, I
16 have been sort of yanked around by this,
17 because I was going to be testifying --

18 WITNESS MORSE: When, Lorraine?

19 A. And I was unable to because it wasn't -- it
20 couldn't happen, given everybody's schedule.
21 And the other reason is I wasn't aware of
22 this process. You know, like I said, I don't
23 do this. I didn't even get the Applicant's
24 supplemental testimony until just a month and

1 a half ago or so. So...

2 Q. Well, I'll tell you what. The reason why --

3 MR. ROTH: Madam Chairman.

4 CHAIRMAN IGNATIUS: Yes, Mr. Roth.

5 MR. ROTH: If I can just speak on
6 this question just momentarily.

7 It seems to me that throughout this
8 proceeding we've had a number of record
9 requests of the Applicant to supplement the
10 testimony and information that they've provided
11 when it was suitable and useful to them. And I
12 think it's the kind of process that we've
13 always used in these cases, and I don't see any
14 harm in providing a few more studies.

15 I mean, I look here at, for example,
16 this pile of stuff that was provided by
17 Audubon. And I have no idea why most of this
18 stuff was put in here, but there it is. And I
19 think it would be interesting and useful at
20 least to have something that relates directly
21 to someone's testimony and in support of the
22 things that she's asserting.

23 CHAIRMAN IGNATIUS: Well, when there
24 are some record requests, they tend to be

1 individual facts that are to be run down by any
2 party that the request is made of. To put in
3 whole new studies when there's no opportunity
4 for discovery, the reason it's a concern is
5 that, in the normal course, people have a
6 chance to ask questions, explore the materials
7 on their own, get clarification through data
8 requests and then have cross-examination. To
9 do that at this stage, I think it's too late,
10 and so I'm not going to allow the additional
11 materials.

12 WITNESS MORSE: Can I just make
13 one --

14 CHAIRMAN IGNATIUS: Yes.

15 WITNESS MORSE: -- comment?

16 On behalf of my clients, the whole
17 schedule for this has been very hard to predict
18 and fit into. That, coupled with my travels,
19 which, you know, I apologize, but since I was
20 supposed to be here in September, I've been in
21 the Artic and Minnesota and Maine,
22 respectively, not to mention a few more local
23 travels. So I apologize for not getting these
24 papers to you. But the real answer is, I

1 haven't, until real recently, known that I even
2 might be referencing these papers, and hence,
3 might want you to have them until recently.
4 So, chalk that up to my naiveté. I should have
5 realized that I wouldn't be able to give you
6 these. But the only reason I feel motivated to
7 want you to have them is that they are the
8 background to some of the remarks that I've
9 made today in response to the questions that
10 you all answered [sic].

11 BY CHAIRMAN IGNATIUS:

12 Q. Thank you. I do want to ask you a couple of
13 other questions about your background.

14 You had said today that you were a
15 biologist. You referred to yourself as a
16 "conservation biologist," and you referred to
17 yourself as the "senior biologist" on the
18 submission of materials, I think. So, do you
19 have a degree in biology?

20 A. No. I actually acquired my title by E. O.
21 Wilson, who called me a "biologist" and
22 assured me that I should stand tall with that
23 descriptor because of my obvious knowledge
24 and experience.

1 What I really am is -- and this is, you
2 know, solid and well accepted among my
3 peers -- is I am a wildlife ecologist. I'm
4 really more interested in the relationship
5 between animals and their habitat. And yes,
6 I'm also a tracker and a naturalist. And I'm
7 proud of both of those things.

8 So I bring all of these disciplines to
9 my work, as well as a healthy appreciation of
10 process. I work a lot and give a lot in my
11 community as a member of boards and
12 committees like yours. So I understand the
13 awkwardness of these things.

14 Q. You also had said in your testimony that the
15 introduction of the wind turbines will affect
16 wildlife populations. When Mr. Robinson
17 asked you about any evidence that you'd seen
18 of a wind facility having that effect, you
19 said you didn't know of any and couldn't give
20 any specifics. Is that, again, like the
21 other, the rare plants, that there may be
22 impacts --

23 A. No.

24 Q. -- like there may be rare plants --

1 A. No.

2 Q. -- or are you certain that there will be
3 impacts of populations?

4 A. No. In my prefiled testimony, I did
5 enumerate instances where wind facilities
6 were known to impact wildlife negatively.
7 And particularly as it relates to birds and
8 bats, there were papers that I quoted.

9 And then the whole science of cumulative
10 effects assessment, I know enough from my
11 experience in the Artic to know that, you
12 know, energy extraction and associated roads
13 and development are having a devastating
14 impact on caribou.

15 And so I have seen for myself how these
16 things can play out. I have not studied
17 them. I'm not a quantitative scientist.
18 That's not what I do. But I'm merely
19 imploring the Committee to really think about
20 the implications of these things as you make
21 a decision, because they are real. And the
22 scientific literature is solidly, you know,
23 full of references to it, though I personally
24 have not participated in such studies.

1 Q. You also said in your testimony, I think on
2 Page 8, that cumulative effects need to be
3 assessed and that you need long-term research
4 to really be able to understand the impacts.

5 Is it your view that there should be a
6 moratorium on siting of these sorts of
7 facilities until that research is done, or
8 it's more case-by-case specific?

9 A. I would say where core habitat is concerned,
10 yes. The answer is an un -- a decided yes, I
11 think.

12 Q. Yes for a moratorium?

13 A. Yes for a moratorium.

14 Q. And how long do you mean when you say
15 "long-term research" being needed?

16 A. That's up to the scientists that do that kind
17 of work. And the nature of that research is
18 so variable, that I really would be reluctant
19 to assign a number to it. But it's going
20 to -- that's why it is expensive. And that's
21 why, perhaps in some parts of the country,
22 it's not being more embraced as a way of
23 comprehensively addressing these things
24 before we get into more trouble.

1 Q. All right. Thank you. That's helpful.

2 A. Thank you.

3 CHAIRMAN IGNATIUS: Any other
4 questions from Committee members?

5 Mr. Iacopino has some questions.

6 MR. IACOPINO: Thank you.

7 INTERROGATORIES BY MR. IACOPINO:

8 Q. Good morning, Ms. Morse. You've -- well,
9 I've heard during the course of this
10 proceeding several different sort of
11 breakdowns of what I always consider to be
12 just "plain old biology." So let me go
13 through them with you, and you tell me what
14 they -- well, let me tell you what they are
15 first.

16 I've heard a term that you've used and I
17 believe other witnesses have used,
18 "conservation biology." I've heard the term
19 "wildlife biologist." I've now just recently
20 heard you use the term "wildlife ecologist."
21 And then in your written testimony you make
22 reference to a "new applied environmental
23 science called cumulative assessment." Are
24 they all genuinely fields that are within the

1 overarching field of biology?

2 A. Yeah.

3 Q. Okay. Can you tell me what the difference
4 between a conservation biologist and a
5 wildlife biologist might be?

6 A. Hmm, that's a good one. Wild --

7 Q. If there is a difference.

8 A. Well, it's not -- they're not mutually
9 exclusive. I think a wildlife biologist
10 could also be a conservation biologist, you
11 know, depending upon his or her inclination
12 to do research and with the results of their
13 work espouse certain levels of conservation
14 planning.

15 A conservation biologist took the
16 thinking in ecology and then island
17 biogeography in the '60s, took it to some
18 next levels, which more recently feature a
19 science that is very multi-disciplinary by
20 nature -- in other words, there's lots of
21 participants. There's --

22 Q. Which field are you talking about?

23 A. Conservation biology. And that's also known
24 as "conservation science." So those two

1 terms are synonymous.

2 But conservation biology will include
3 geneticists, population biologists,
4 ecologists, to name just a few. And the one
5 thing that's in common with all these people
6 is that, where they are going with their work
7 is they are seeking to influence what we call
8 "conservation planning" -- in other words,
9 the reserve design. How do we keep together
10 and alive the fabric of life? And that's
11 their shtick. That's what they do.

12 In the words of Michael Soule, who's the
13 founder of the Society for American
14 Conservation Biology -- or Society for
15 Conservation Biology, and sort of the grand
16 dean of the subject, he calls it "scientists
17 in the face of crisis." I mean, they're
18 really driven by their work because they see
19 the urgency of species loss and extinction
20 rates and habitat loss causing all that to
21 happen in one way or another.

22 Q. And how would you define what you just told
23 us you really are, which is a wildlife
24 ecologist?

1 A. Yeah. I'm -- you might say I'm also a
2 conservation biologist. But I'm kind of dumb
3 on the math, and so I don't participate in
4 any applied research of any kind. So I
5 really feel like I can't participate in
6 conservation biology, although I can espouse
7 the outcomes of their knowledge. And I do.
8 There isn't a day that goes by that I don't
9 underscore the importance of conservation
10 planning.

11 But as a wildlife ecologist, I'm
12 interested in wildlife. And I'm
13 knowledgeable about the biology and ecology
14 of the animals that I study, certainly not
15 all animals. But more importantly, I'm
16 interested in their relationship with their
17 habitat. So I have a strong background in
18 forest ecology and so on, so I kind of blend
19 these things in what I do.

20 Q. And then, finally, there is reference on
21 Page 8 of your written testimony to this
22 "cumulative assessment," which you describe
23 as "a relatively new applied environmental
24 service" -- "science which seeks to more

1 comprehensively measure and predict
2 anthropogenic stresses which have negatively
3 influenced wildlife in the past, are now
4 occurring and will harmfully influence
5 wildlife in the future."

6 I take it you do not consider yourself
7 an expert in cumulative assessment?

8 A. I would say I am -- by virtue of having
9 written this in a comprehensive way, which --
10 forgiving what might sound like my ego on
11 parade -- might be plumped into a textbook on
12 the subject, I have a healthy appreciation
13 for what it is. I am not a practitioner. I
14 don't do the field research or the analytical
15 research, really, that goes with that, no.

16 Q. Well, that's my question. I mean, I might,
17 you know, have a good feeling for the stars,
18 you know, the night sky, but it doesn't
19 necessarily make me an astronomer; correct?

20 A. No, but I -- there is no such thing as a
21 cumulative effects specialist that I'm aware
22 of. There is a science --

23 Q. Well, that was going to be my next
24 question --

1 A. Yeah, okay.

2 Q. I mean, you describe this as "a new, sort of
3 applied environmental science." And I guess
4 my question is, how new is it?

5 A. Well, it's -- the term's been around since
6 the '70s, but it's really kicking into high
7 gear, you know, certainly in this century.
8 Within the last decade especially it's
9 showing up more and more in the literature.

10 And as I say, there's a brand new text
11 on the subject that was published by CRC
12 Press. I don't know if I put that in my
13 bibliography.

14 Q. Do you know who the author of that text might
15 be?

16 A. There are two --

17 Q. Or is it one that's edited?

18 A. Yeah, they're edited. There are two editors.
19 Lisa Harris and -- oh, for heaven's sake.

20 WITNESS MORSE: Ed, he's the -- he's
21 the current president of the Wildlife Society.
22 What's his name? He's out West. Do you know
23 who I'm talking about? He's authored a
24 kabajillion books.

1 A. Anyway, I can get you his name.

2 Q. Further down on that same page where you're
3 talking about cumulative effects
4 assessment -- this is Page 8 of your prefiled
5 testimony, and I'd say towards the bottom of
6 that first paragraph -- you write, "To
7 conclude, I believe that cumulative effects
8 assessment should be required of companies
9 seeking to disturb New England's limited core
10 habitat and the wild species that thrive
11 there."

12 And I think some other folks have asked
13 you this question as well, but I don't know
14 if you were asked it directly: What are the
15 studies that you would expect a company who
16 is, as you say, "seeking to disturb the core
17 habitat," to conduct with respect to
18 cumulative effects assessment? I mean, what
19 is it that a body like this should be looking
20 for?

21 A. What I have prepared here for you for your
22 consideration is really a synthesis of what
23 the science is and what it offers to us as we
24 grapple with issues like this, so that we

1 make the right choices.

2 I am not a practitioner of the field.
3 But off the top of my head, I would think
4 that a study, a long-term study, studying,
5 you know, post-construction what happens to
6 populations in and amongst these facilities
7 might be a fruitful study; the impacts of
8 noise on energy budgets and a whole wedge of
9 studies having to do with energy budgets and
10 stress would be in order; seek to measure
11 ways in which we know animals respond to
12 stresses and find it out there if it is.
13 Those are just a couple of thoughts. Again,
14 this isn't --

15 Q. To the best of your knowledge, have studies
16 like that been done in other parts of the
17 country for -- it doesn't have to be wind
18 turbines -- for any type of use of core
19 habitat?

20 A. Well, one of the papers I mentioned I
21 prepared to give out to you is a paper
22 dealing with noise and its impacts on -- not
23 as it relates to wind, but in this case, of
24 gas compressors -- but in a wild setting. In

1 other words, I don't know if you've been out
2 West, but there are lots of places where
3 energy extraction is going on on public lands
4 in the West of all types, oil and natural gas
5 and the like.

6 So these scientists measure the impacts
7 of noise in a very finite setting on a suite
8 of mammal species and birds, and then,
9 really, in particular, trying to get at
10 ecosystem services, which is one of the
11 things I've listed in this long description
12 of cumulative effects that ecosystem serves,
13 as pollination being one of them and
14 dispersal being another. They found,
15 curiously, that pollination actually had a
16 positive correlation with noise. And there's
17 a long, elaborate explanation for that. But
18 they found where seed dispersal was
19 concerned, as I mentioned earlier, there was
20 a notable decline in the recruitment of
21 Pinyon pine.

22 Q. So that's a study that was done of
23 gas-compression plants out West.

24 A. Yeah.

1 Q. Okay. Other than that, are you aware of any
2 other -- I'm looking, trying to look for
3 examples, and not necessarily examples that
4 are generated by people who are doing
5 academic research, but examples where what
6 you're suggesting is required for a project
7 like this has been required in -- whether
8 it's a wind project, an energy project, or
9 any type of project which is going to impact
10 core habitat.

11 A. Where cumulative effects assessment has been
12 undertaken, I'm sure there are bibliographies
13 and case histories that have come out of
14 that. I'm not familiar with any particular
15 titles, but I'm sure they're out there.

16 What I would first suggest, perhaps, is
17 that -- and I can certainly get you the title
18 of that book, and any others that I have in
19 my library that I --

20 Q. Well, you actually cite one in your
21 testimony, Therivel and Ross, 2007.

22 A. Right. Well, that was in the book,
23 cumulative -- yeah.

24 Q. Okay. So you do have -- you've cited us at

1 least one text.

2 A. Yes.

3 Q. But I'm more interested in what has been
4 required from a -- I'm more interested in the
5 types of things that have been required from
6 regulatory bodies such as this in this field,
7 if in fact you know of any.

8 A. Yeah, I think that would be the first place I
9 would look, is for the history of what's
10 going on. There are a number of case
11 histories that are described in that book.
12 Different authors take on different parts of
13 it, so -- and to be honest with you, they
14 certainly get at the pluses and minuses of
15 it, too. It's very expensive and it's very
16 complex and it's very hard sometimes for
17 regulatory bodies to work with.

18 Q. Would you say that your definition of
19 "cumulative effects" that you gave us at the
20 top of Page 8 of your paper -- of your
21 testimony, saying it's "a relatively new
22 applied environmental service [sic]," would
23 you say that that's a statement that is
24 generally accepted in the field of biology,

1 whether it be conservation biology or biology
2 in general?

3 A. My assessment of what cumulative effects
4 assessment is?

5 Q. Yes.

6 A. To the degree to which biologists, which tend
7 to be specialists in their field, are exposed
8 to this stuff or avail themselves of the
9 literature, I'm sure they would be aware of
10 these influences.

11 Really, what I'm describing here is what
12 cumulative effects is trying to grapple with
13 and why.

14 Q. I guess my question is more, is this whole
15 designation of this field of cumulative
16 assessment or cumulative effects, is that
17 something that's generally accepted amongst
18 biologists?

19 A. As I said earlier -- if I may, as I said
20 earlier, I'm a little perplexed that it's not
21 more embraced here in New England. I've run
22 across just a handful of people that
23 understand what I'm talking about.

24 But a lot of biologists, especially

1 agency biologists, work day to day, very
2 hard, few hours -- many hours in a short day,
3 doing an enormous job. And they may or may
4 not have all the time in the world to spend
5 in the library keeping up with every nuance
6 of, you know --

7 Q. Can you name for me a university or a college
8 that has a major area of study of cumulative
9 effects assessment?

10 A. No, but I know the people that wrote the
11 textbook, for example, that I refer to --

12 Q. Which you cited.

13 A. -- that I cited, teach at universities. And
14 both, certainly, their classes are full.
15 And, in fact, their text was intended to be a
16 text, you know, that other professors could
17 certainly use. Whether or not there's an
18 academic program called "Cumulative Effects
19 Assessment," I doubt. It probably would be
20 more apt to be in conservation biology or
21 something like that.

22 Q. Are you aware of whether the area of
23 cumulative effects assessment is the focus of
24 a course, like an individual course in

1 recognized programs in wildlife biology or
2 conservation biology?

3 A. Oh, I'm certain there is. I'm sure that
4 that's why Lisa Harris and her colleagues
5 wrote that -- edited that book.

6 Q. Just so I understand, so if I were to find
7 some college university catalogs that
8 describe the courses, it's likely that I
9 would find a cumulative effects assessment
10 type of course being taught?

11 A. I don't know that you would here in New
12 England. But I think if you started with the
13 book I've mentioned and went to those
14 universities, in that area. Some parts of
15 the country are -- well, yeah. I mean,
16 certainly there are universities out there
17 somewhere that offer this as a field of
18 learning.

19 Q. I have a couple housekeeping questions for
20 you.

21 You attached to your testimony SM2,
22 which is the article by Barker and Brooks
23 about sound. And it was published in --
24 looks like a journal entitled Trends in

1 Ecology & Evolution?

2 (Witness reviews document.)

3 A. Yes.

4 Q. To the best of your knowledge, is that
5 journal a peer-reviewed journal?

6 A. Well, I have to say I don't know.

7 Q. Okay.

8 A. It would have to have been, but I don't know.

9 Q. Similarly with SM3, that's a paper that's
10 written by, I think -- I forget the first
11 name -- Ms. Sadlowski from the U.S. Forest
12 Service, entitled, Effect of Noise, I
13 believe, or something to that effect?

14 A. Yes.

15 Q. I know that she's apparently a U.S. Forest
16 Service employee. But do you know if that
17 paper received any type of peer review?

18 A. No, I do not. I don't know that it was or
19 wasn't.

20 Q. Okay. And finally, I just -- you know,
21 there's been a lot of pictures of alleged
22 cutting that occurred up on the Tuttle --
23 Willard-Tuttle Ridge. Did you or any of the
24 folks that you did your traverse with

1 actually go down to the town to see if there
2 were intent-to-cut permits at one point in
3 time that might correlate with what you
4 observed cut?

5 A. No, I didn't. You'd have to ask the people
6 who live here if they did.

7 Q. What is your understanding of the present
8 human uses of the Willard Tuttle Ridge?

9 A. Well, I'm assuming there's been a history of
10 forest management and cutting there. The
11 present -- other present human uses, I would
12 have to say I'm not sure where you're going.

13 Q. I'm just asking what your understanding of
14 the "human use" of that ridgeline is --

15 A. Well --

16 Q. -- at present.

17 A. At present? I would have to -- given that
18 I've only been there once and really had a
19 purpose which I described in my testimony, to
20 do a field reconnaissance, my knowledge is
21 limited accordingly. But I would say that
22 there's no question that it's had a history
23 of forest --

24 Q. So it's timber harvesting?

1 A. Timber harvesting, yes.

2 Q. Did you see any recreational uses up there?
3 Snowmobile paths? Hiking trails? Things
4 like that?

5 A. Not as such. Not that it certainly couldn't
6 be used that way. I mean, there weren't --
7 there wasn't a trail system.

8 WITNESS MORSE: Was there a mountain
9 biking trail at the bottom?

10 A. I don't -- you know, again --

11 MS. BLOCK: Is it okay for me to
12 respond?

13 MR. IACOPINO: Not really. She has
14 to answer the question. But I can ask you
15 later.

16 MS. BLOCK: Okay.

17 BY MR. IACOPINO:

18 Q. I'll ask her later about the mountain biking
19 trail. But just what you saw, what you
20 observed.

21 A. No. I mean, I didn't see any signage that
22 gave me to believe that I was on a formal
23 snowmobile trail. But certainly...

24 MR. IACOPINO: I don't have any other

1 questions, Madam Chair.

2 CHAIRMAN IGNATIUS: Thank you.

3 Anything else from the Committee?

4 (No verbal response)

5 CHAIRMAN IGNATIUS: If not, then the
6 next thing would be for some very limited
7 redirect questions from Ms. Block to the
8 witness, if there's anything that was brought
9 out on the questioning from any of the parties
10 or the Committee that you feel she needs to
11 clarify. It's not to restate or reinforce any
12 conclusions, but any factual things that you
13 think need further clarification.

14 MS. BLOCK: Could I talk to her for a
15 few minutes?

16 CHAIRMAN IGNATIUS: Certainly. Let's
17 go off the record for five minutes.

18 Whereupon a recess was taken at 12:18
19 p.m., and the hearing resumed at 12:27
20 p.m.)

21 CHAIRMAN IGNATIUS: All right. We're
22 back on the record.

23 Ms. Block, do you have any redirect?

24 MS. BLOCK: Thank you, Madam Chair.

1 I do.

2 REDIRECT EXAMINATION

3 MS. BLOCK: If we look on Page 17 of
4 the original Application, which is AWE 1, also
5 known -- and this is not for you, Sue -- also
6 known as PDF Page 25, you can look at the third
7 paragraph, third sentence, and you'll see where
8 the Applicant defines the term "WTG" to mean
9 wind turbine generator.

10 BY MS. BLOCK:

11 Q. Now, I believe we've already discussed
12 that -- or you've already discussed that.
13 But therefore, where you saw those markers,
14 "WTG1, 2, 3," et cetera, can you conclude,
15 did these appear to be turbine sites?

16 A. Well, I'm not at all familiar with the
17 Applicant's documents or terminology. But I
18 know when we were there, the presence of a
19 long, linear, complete forest cut culminating
20 in a series of circular openings or that were
21 demarked by flagging all around them and
22 having these stakes with W something G on
23 them was highly suggestive of the fact that
24 they were, you know, delineating where the

1 proposed towers might be. But that's about
2 as far as I could go. Certainly seemed
3 logical to all of us. We all came to that
4 conclusion.

5 Q. Thank you.

6 This might also seem a little redundant.
7 But when you visited the project site, you
8 stated that your very presence created stress
9 for the wildlife. Isn't it true that that --
10 is it true that that was a temporary stress?

11 A. Yes, although, in the cumulative effects
12 scenario, depending on the animal's fitness
13 and well-being, you know, what it all -- what
14 it might have to confront in the months to
15 come, it may be a stress that is harmful
16 beyond the immediate effect of running away
17 and/or being frightened or having one's
18 heartbeat go up, et cetera. Yeah, I think
19 that's a reasonable statement.

20 Q. Would you also feel that constructing this
21 project is a far more long-term and permanent
22 type of effect, especially if it means
23 leveling the landscape and building roads?

24 A. Absolutely. But I wouldn't limit it to

1 leveling the landscape and building roads.
2 Certainly the towers themselves and the noise
3 associated with the generation of power will
4 have an effect, absolutely, if I can believe
5 the literature that I have seen and availed
6 myself of.

7 It's a permanent intrusion. I mean,
8 there's a difference between the occasional
9 hiker or deer hunter or snowmobiler and a
10 permanent intrusion on the habitat. There is
11 a very big, qualitative and quantitative
12 difference in the hazards to wildlife.

13 Q. And I apologize that you haven't seen this.
14 But with regard to pre- and
15 post-construction, I would like to read to
16 you an order issued by Vermont Public Service
17 in reference to the Deerfield Wind proposal,
18 which is a 30-megawatt project approved by
19 the State, but unbuilt as yet.

20 CHAIRMAN IGNATIUS: Before you do
21 that --

22 MS. GEIGER: I'm going to object.

23 CHAIRMAN IGNATIUS: -- can you tell
24 me how is -- what is this rebuttal in response

1 to? I'm sorry.

2 MS. BLOCK: Oh, sure. This is in
3 response to the fact that she was asked about
4 different kinds of studies. And this is
5 actually a specific study given by a -- for a
6 specific wind project.

7 CHAIRMAN IGNATIUS: Well, what was
8 the -- what's the purpose of going into what
9 the Vermont Public Service Board ordered that
10 relates to the questioning of Ms. Morse
11 beforehand?

12 MS. BLOCK: Well, just that she had
13 been asked if there were studies, and just to
14 give an example of a type of study.

15 CHAIRMAN IGNATIUS: So you're asking
16 if she's familiar with the study?

17 MS. BLOCK: I wanted to ask her if
18 this type of study would make sense.

19 CHAIRMAN IGNATIUS: Ms. Geiger.

20 MS. GEIGER: Yes, I think in her
21 prefatory comments, Ms. Block told this witness
22 that the witness had not seen the study yet.
23 And I think the witness testified in questions
24 from, I believe the Bench, that she wasn't

1 aware of studies that required -- or orders
2 that required certain types of studies. So I
3 think we're getting a little bit far afield in
4 the questioning, and I think what the -- what
5 Ms. Block is trying to do is supplement the
6 record rather than trying to refresh this
7 witness' recollection with a study that she may
8 not have recalled in her answer to questions
9 from the Bench. So I would object on that
10 basis.

11 CHAIRMAN IGNATIUS: Well, it strikes
12 me as consistent with questions that Mr.
13 Iacopino was asking, and he said he would get
14 back to the Blocks when they were testifying on
15 it. So perhaps that's a better way to go.

16 MS. BLOCK: Okay. That's fine. I
17 can withdraw the question.

18 I do believe if I had told her about
19 it, that she would say, "Oh, yes, I remember
20 that one." So, anyway, thank you on that. And
21 I do have one other question here.

22 BY MS. BLOCK:

23 Q. On the question of numbers of turbines or
24 projects, whether the number is millions,

1 hundreds of thousands or thousands, does the
2 number truly matter? Is the bigger question
3 the one of habitat core impact?

4 A. Would you repeat the last part of that?

5 Q. Well, maybe I --

6 A. Just the question itself.

7 Q. Okay. Is the larger question that of the
8 impact to core habitat? I think I'm -- I'm
9 dyslexic as well, and I think I reversed my
10 words. I apologize.

11 A. Yeah, I mean, I think I remember where I read
12 the word "millions," and it was in a popular
13 journal that wasn't necessarily
14 peer-reviewed. Might have been Defenders of
15 Wildlife, or something like that. I'll try
16 and ferret that out.

17 But, yeah, I see where you're going with
18 this. Yeah, whether it's thousands or
19 hundreds of thousands, it's certainly one or
20 the other of those figures, but probably
21 hundreds of thousands.

22 Cumulatively, collectively --
23 collectively, I'll say the destruction of
24 that much core habitat in the face of North

1 America would be devastating to what really
2 little remains of our core connective
3 habitats in our whole country. I mean, I
4 really think -- I don't think. The science
5 is solidly there. The conservation
6 biologists, if you will, conservation
7 scientists, are solidly in agreement that we
8 need to identify these places and conserve
9 them while we can, in the hopes that they
10 will be able to function for wildlife in the
11 years to come, which are going to be very
12 difficult not just for us but for them.

13 Q. Thank you. Is that all that was -- that was
14 my last question.

15 A. Well, if I --

16 CHAIRMAN IGNATIUS: Well, hold on.
17 This isn't really --

18 MS. BLOCK: Okay. I'm sorry.

19 CHAIRMAN IGNATIUS: -- a chat about
20 other topics time.

21 MS. BLOCK: I might have done it
22 incorrectly. That was my last question. Thank
23 you.

24 CHAIRMAN IGNATIUS: Okay. Thank you.

1 Then you're excused. Thank you very
2 much, Ms. Morse.

3 WITNESS MORSE: Thank you.

4 CHAIRMAN IGNATIUS: It's now 12:30.
5 We should take a lunch break for an hour and
6 resume at 1:30 with testimony from Ms. Linowes.
7 Thank you.

8 (Whereupon the lunch recess was taken,
9 and this MORNING SESSION ONLY ended at
10 12:30 p.m., with the hearing to resume in
11 a transcript to be filed under separate
12 cover so designated as "AFTERNOON SESSION
13 ONLY".)

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