

BEECH RIDGE ENERGY WIND PROJECT
Habitat Conservation Plan
FINAL ENVIRONMENTAL IMPACT STATEMENT

Appendix J: Wind power project data

Table J-1. Comparison of bird and bat mortality at existing wind farms in the Eastern and Midwestern United States

Table J-2. Summary of available fall avian radar survey results for wind power projects in the northeastern United States, 1998-2007

Table J-1. Comparison of bird and bat mortality at existing wind farms in the Eastern and Midwestern United States.

Site	Habitat type (# turbines)	Dates surveyed	Search interval	# BATS found during surveys (incidental)	Estimated total BAT fatalities / turbine / study period (total)	# BIRDS found during surveys (incidental)	Estimated total BIRD fatalities / turbine / study period (total)	Reference
Buffalo Ridge, Minnesota	agricultural grassland (73)	Apr 1994 - Dec 1995	30-50 weekly	n/a	n/a	7	0.33-0.66 (36)	Osborn et al. 2000
Buffalo Ridge, Minnesota (Phase 3)	agricultural grassland (138)	15 Mar - 15 Nov 1999	30 every 14 days	n/a	n/a	20	4.45 (613)	Johnson et al. 2002
Buffalo Ridge, Minnesota	agricultural grassland (281)	15 Jun - 15 Sept 2001; 15 Jun - 15 Sept 2002	83 of 103 bi-weekly	151	1.30-3.02 (364-849)	n/a	n/a	Johnson and Strickland 2004
Searsburg, Vermont	forested (11)	30 Jun - 18 Oct 1997	11 total (4 per search) 2 to 6 days per month	0	n/a	0	n/a	Kerlinger 2002
Kewaunee County, Wisconsin	agricultural (31)	1999 - 2001	n/a	n/a	1.16-4.26 (36-132)	25	1.29 (40)	Sagrillo 2003, Sagrillo 2007
Somerset County, Pennsylvania	agricultural (8)	Jan – Dec 2000	n/a	0	n/a	0	n/a	Kerlinger 2006
Mountaineer, West Virginia	forested ridgeline (44)	4 Apr - 11 Nov 2003	2x per week	475	47.53 (2092)	69*	4.04 (178 + 33 due to substation lighting)	Kerns and Kerlinger, 2004
Mountaineer, West Virginia	forested ridgeline (44)	31 Jul - 11 Sept 2004	22 daily, 22 weekly	398 (68)	38 (1,364-1,980)	15 (n/a)	n/a	Arnett 2005
Meyersdale, Pennsylvania	forested ridgeline (20)	2 Aug - 13 Sept 2004	10 daily, 10 weekly	262 (37)	25 (400-660)	13 (4)	n/a	Arnett 2005
Top of Iowa, Iowa	agricultural (89)	24 Mar- 10 Dec 2004	26 every 3-days	44 (n/a)	10.17 (905)	5 (n/a)	0.9 (80)	Koford et al. 2005
Buffalo Mtn, Tennessee	reclaimed mine on ridge (18)	Apr - Dec 2005	18 of 18 every week, every 2 weeks, or every 2-5 days	243 (14)	63.9 (1,149)	9 (2)	1.8 (111.6)	Fiedler et al. 2007
Maple Ridge, New York	woodland, grassland, agricultural (120)	17 Jun – 15 Nov 2006	10 every 3-days, 30 7-days, 10 daily	326 (58)	11.39-20.31 (1,367-2,437)	123 (15)	3.10-9.48 (372-1,138)	Jain et al. 2007
Maple Ridge, New York	woodland, grassland, agricultural (195)	30 Apr – 14 Nov 2007	64 weekly	202 (81)	15.54-18.53 (3,030-3,614)	64 (32)	5.67-6.31 (1,106-1,230)	Jain et al. 2008
Maple Ridge, New York	woodland, grassland, agricultural (195)	15 Apr – 9 Nov 2008	64 weekly	140 (76)	8.18-8.92 (1,595-1,739)	74 (23)	3.42-3.76 (667-733)	Jain et al. 2009a
Mars Hill, Maine	forested ridgeline (28)	23 Apr - 3 Jun 2007, 15 Jul -23 Sept 2007	2 of 28 daily, 28 of 28 weekly, seasonal dog searches	22 (2)	0.43-4.4 (12-122)	19 (3)	0.44-2.5/t/study period (26.8-69.2 total)	Stantec 2008

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Mars Hill, Maine	forested ridgeline (28)	19 Apr - 6 Jun 2008, 15 Jul - 8 Oct 2008	28 of 28 weekly, seasonal dog searches	5	0.17-0.68 (5-19)	17(4)	2.4-2.65 (57-74)	Stantec 2009a
Munnsville, NY	agricultural and forested uplands (23)	15 Apr - 15 Nov 2008	12 of 23 weekly, seasonal dog searches	9 (1)	0.70-2.90	7 (3)	1.71-2.22 (39-51)	Stantec 2009b
Stetson Mountain I, Maine	forested ridgeline (38)	20 April - 21 Oct 2009	19 weekly	5 (0)	2.11 (80)	30 (9)	4.03 (153)	Stantec 2010a
Stetson Mountain II, Maine	forested ridgeline (17)	19 Apr - 15 Oct 2010	17 weekly	14	2.48 (42)	11	2.14 (36)	Normandeau Associates, 2010 preliminary estimates, unpubl. data
Mount Storm, WV	forested ridgeline (82)	18 Jul – 17 Oct 2008	18 weekly, 9 daily	182 (27)	7.76-24.21 (636-1,985)	29 (8)	2.41-3.81 (198-312)	Young et al. 2009
Clinton, NY	agricultural, woodland (67)	26 Apr - 13 Oct 2008	8 daily, 8 every 3-days, 7 every 7-days	39 (14)	3.76-5.45 (252-365)	14 (9)	1.43-2.48 small birds (96 -166); 0.88 med-large birds (59)	Jain et al. 2009b
Ellenburg, NY	agricultural, woodland (54)	28 Apr - 13 Oct 2008	6 daily, 6 every 3-days, 6 every 7-days	34 (25)	3.37-6.59 (226-441)	12 (10)	0.92-1.10 small birds (62-74); 0.77 med-large birds (51)	Jain et al. 2009c
Bliss, NY	agricultural, woodland (67)	21 Apr – 14 Nov 2008	8 daily, 8 every 3-days, 7 every 7-days	74 (15)	7.58-14.66 (508-983)	20 (7)	0.74-4.04 small birds (50-271); 0.25-0.66 med-large birds (17-44)	Jain et al. 2009d
Lempster, NH	forested ridgeline (12)	15 April - 1 June 2009, 15 July – 31 Oct 2009	4 daily	10 (2)	0.58 (7) spring; 5.51 (66) fall	9 (4)	0.80 (10) spring; 5.95 (71) fall	Tidhar et al. 2010
Cohocton and Dutch Hill, NY	agricultural, woodland (50)	April 15 - Nov 15, 2009	5 daily, 12 weekly	62 (7)	13.8-40.4 (804-2,002)	15 (3)	2.9-4.7 (147-235)	Stantec 2010b
Cohocton and Dutch Hill, NY	agricultural, woodland (50)	April 26 - Oct 22, 2010	17 weekly; 5 daily/12 weekly from July 15 to Sept 17	58 (5)	5.04-25.62 (252-1,281)**	8 (1)	0.82-2.06 (41-103)**	Stantec 2010c

*33 birds found on May 23, 2003 at turbines near a substation and at substation associated with sodium vapor lights

**Estimates based on 2010 daily searches are only representative of the period from mid-July to mid-September and are therefore not directly comparable to other sites' estimates where daily searches were conducted during the full study period.

Table J-2. Summary of available fall avian radar survey results for wind power projects in the northeastern United States, 1998-2007.

Project site	Number of survey nights	Number of survey hours	Landscape	Average passage rate (t/km/hr)	Range in nightly passage rates (t/km/hr)	Average flight direction (degrees)	Average flight altitude (m)	(Turbine height) % targets below turbine height	Citation
Fall 1998									
Harrisburg, NY	35	n/a	Great Lakes plain, Adirondack foothills	122	n/a	181	182	45	Cooper and Mabee 2000
Wethersfield, Wyoming County, NY	35	n/a	Agricultural plateau	168	n/a	179	154	57	Cooper and Mabee 2000
Fall 2003									
Westfield, Chautauqua County, NY	30	180	Great Lakes shore	238	10-905	199	532	(125 m) 4 %	Cooper et al. 2004c
Mt. Storm, Grant County, WV	45	270	Forested ridge	241	8-852	184	410	n/a	Cooper et al. 2004b
Fall 2004									
Franklin, Pendleton County, WV	34	349	Forested ridge	229	18-643	175	583	(125 m) 8%	Woodlot 2005a
Prattsburgh, Steuben County, NY	30	315	Agricultural plateau	193	12-474	188	516	(125 m) 3%	Woodlot 2005b
Prattsburgh, Steuben County, NY	45	292.5	Agricultural plateau	200	18-863	177	365	(125 m) 9.2%	Mabee et al. 2005a
Martindale, Lancaster, County, PA	n/a	n/a	Reclaimed minelands	187	n/a	188	436	(n/a) 8%	Young 2006
Casselman, Somerset County, PA	n/a	n/a	Reclaimed minelands	174	n/a	219	448	(n/a) 7%	Young 2006
Deerfield, Bennington County, VT (Existing Facility)	28	300	Forested ridge	175	7-519	194	438	(100 m) <1%	Woodlot 2005c
Deerfield, Bennington County, VT (Western Expansion)	14	159	Forested ridge	193	8-1121	223	624	(100 m) 5%	Woodlot 2005c
Deerfield, Bennington County, VT (Valley Site)	13	136	Forested ridge	150	58-404	214	503	(100 m) < 1%	Woodlot 2005c
Deerfield, Bennington County, VT (3 sites combined)	28	595	Forested ridge	178	7-1121	212	611	(100 m) 3%	Woodlot 2005c
Sheffield, Caledonia County, VT	18	176	Forested ridge	114	19-320	200	566	(125 m) 1%	Woodlot 2006a
Fall 2005									
Churubusco, Clinton County, NY	38	414	Great Lakes plain/ADK foothills	152	9-429	193	438	(120 m) 5%	Woodlot 2005l

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Ellenberg, Clinton County, NY	n/a	n/a	Great Lakes plain/ADK foothills	197	n/a	162	333	(n/a) 12%	Mabee et al. 2006a
Dairy Hills, Clinton County, NY	n/a	n/a	Agricultural plateau	94	n/a	180	466	(n/a) 10%	Young et al. 2006
Flat Rock, Lewis County, NY	n/a	n/a	Great Lakes plain/ADK foothills	158	n/a	184	415	(n/a) 8%	ED&R 2006a
Clayton, Jefferson County, NY	37	385	Agricultural plateau	418	83-877	168	475	(150 m) 10%	Woodlot 2005m
Bliss, Wyoming County, NY	8	n/a	Agricultural plateau	440	52-1392	n/a	411	(125 m) 13%	Young 2006
Perry, Wyoming County, NY	n/a	n/a	Agricultural plateau	64	n/a	180	466	(125 m) 10%	Young 2006
Sheldon, Wyoming County, NY	36	347	Agricultural plateau	197	43-529	213	422	(120 m) 3%	Woodlot 2005n
Howard, Steuben County, NY	39	405	Agricultural plateau	481	18-1434	185	491	(125 m) 5%	Woodlot 2005o
Fairfield, Herkimer County, NY	38	423	Agricultural plateau	691	116-1351	198	516	(125 m) 4%	Woodlot 2005p
Jordanville, Herkimer County, NY	38	404	Agricultural plateau	380	26-1019	208	440	(125 m) 6%	Woodlot 2005q
Munnsville, Madison County, NY	31	292	Agricultural plateau	732	15-1671	223	644	(118 m) 2%	Woodlot 2005r
Deerfield, Bennington County, VT	32	324	Forested ridge	559	3-1736	221	395	(100 m) 13%	Woodlot 2005s
Kibby, Franklin County, ME (Mountain)	12	115	Forested ridge	565	109-1107	167	370	(125 m) 16%	Woodlot 2006d
Kibby, Franklin County, ME (Range 1)	12	101	Forested ridge	201	12-783	196	352	(125 m) 12%	Woodlot 2006d
Kibby, Franklin County, ME (Valley Site)	5	13	Forested valley	452	52-995	193	391	(125 m) 16%	Woodlot 2006d
Mars Hill, Aroostook County, ME	18	117	Forested ridge	512	60-1092	228	424	(120 m) 8%	Woodlot 2005t
Fall 2006									
Chateaugay, Franklin County, NY	35	327	Agricultural plateau	643	38-1373	212	431	(120 m) 8%	Woodlot 2006j
Wethersfield, Wyoming County, NY	56	n/a	Agricultural plateau	256	31-701	208	344	(125 m) 11%	Mabee et al. 2006c
Centerville, Allegany County, NY	57	n/a	Agricultural plateau	259	12-877	208	350	(125 m) 12%	Mabee et al. 2006c
Lempster, Sullivan County, NH	32	290	Forested ridge	620	133-1609	206	387	(125 m) 8%	Woodlot 2007a

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Stetson, Penobscot County, ME	12	77	Forested ridge	476	131-1192	227	378	(125 m) 13%	Woodlot 2007b
Fall 2007									
Buckeye Wind Power Project, Champaign and Logan County, OH	30	n/a	Agricultural plateau	74	1-404	194	393	(125m) 5%	Stantec 2008

References Cited