

**RESULTS OF WILDLIFE MOVEMENT MONITORING  
USING AN INFRARED SENSING REMOTE CAMERA LOCATED  
UNDER WIND TURBINE 7, SEARSBURG WIND PROJECT  
DURING OCTOBER, 2005**

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**BACKGROUND**

At the June 20, 2005 meeting of the Black Bear Sub-Group of the Green Mountain National Forest Deerfield Wind Project (“Project”) wildlife review team, the use of a remote camera to document wildlife movement at or near the existing Searsburg Wind Facility was discussed. Previous focus has been on human activities within the Project bounds and not the potential disturbances resulting from the operation of the Project. The Sub-Group suggested, and accepted, that a remote sensing camera be erected within close proximity of the turbines to record wildlife movement. Each photo frame was time- and date-stamped for correlation to operating records of the existing Searsburg Project. The camera was set up and maintained during the month of October 2005; October is generally the month of highest bear activity in the area because it coincides with beechnut production; it is also above average in terms of wind speed. During the study period, Wind Turbine 7 was available 95% and generating 80% of the time.

**METHODS**

An old logging road which crosses in the saddle of the Searsburg Wind Facility access road has been considered an active game trail since the project was built in the mid 1990’s. A camera location on this trail 40m southeast of the north access road and 80 m south of Wind Turbine 7 (WT7) was selected. The turbine blades of WT7 were visible from the camera location even with the foliage in place. The proposed camera location (See Map 1 Deerfield Wind Wildlife Movement Monitoring Through the Searsburg wind Facility) was circulated to the Sub-Group for comment and acceptance. The camera was installed on September 29, and removed November 7, 2005.

The Reconyx Silent Image digital camera with infrared illuminator, passive infrared motion detector and date/time stamp capabilities was mounted approximately 3m above ground in a balsam fir tree. The camera lense was positioned with a slight downward angle, and in a general northwest direction toward the target area. The camera focused on a wide opening in the log road/game trail ("woods road") next to a small palustrine open water wetland. The gravel access road was visible from the camera target location (Photo 1; the dark green band of vegetation in the photo across the far end of the trail is the vegetation on the west side of the access road).

## RESULTS

During the 38-day period the camera was in operation, 14 different wildlife targets were recorded representing 5 different species: moose (2 occasions), deer (9), wild turkey (1), black bear (1) and coyote (1) (Table 1). Both moose shots and those of the wild turkeys (7+) were taken during daylight hours while the remaining shots occurred in the dark.

PHOTOS					WIND TURBINE 7	
#	DATE '05	TIME	TEMP °F	SPECIES	GENERATING	BLADE RPM
A	30-Sep	11:23	50	Moose	No	12
B	3-Oct	3:20	56	Deer	Yes	29
C	4-Oct	1:49	58	Deer	Yes	29
D	5-Oct	21:08	63	Deer	Yes	29
E	11-Oct	8:34	52	Moose	No	8
F	21-Oct	12:43	47	Turkeys	Yes	27
G	27-Oct	1:31	31	Coyotes	Yes	29
H	31-Oct*	Night	52	Deer	Yes	20-29
I	01-Nov*	Night	45	Deer	Yes	20-29
J	02-03-Nov*	Night	34	Deer	Yes	20-29
K	05-06-Nov*	Night	55	Bear	Yes	20-29
L	05-06-Nov*	Night	55	Deer	Yes	20-29
M	05-06-Nov*	Night	52	Deer	Yes	20-29
N	05-06-Nov*	Night	56	Deer	Yes	20-29

Table 1. Wildlife species photographed on woods road below Wind Turbine 7.

The camera was originally programmed to take 2 consecutive shots one second apart. After the first week, this was re-programmed to 4 consecutive shots to offer a more near-video perspective of the wildlife movement. The 3 day-time shots showed the moose and wild turkeys passing along the woods road and they appear to continue west to the gravel access road. The night shots are more difficult to determine if the animals came from or progressed to the access road as the flash was limited to the immediate focal area on the woods road. Three of the deer shots certainly suggest that movement was either from the access road or to the access road. Six of the deer shots were inconclusive. The one black bear simply appears at the top of the frame, is shown in 4 frames and then gone.

The camera experienced technical difficulties at the end of the study period. The camera defaulted to a date and time stamp of 2000-01-01 12:00:00 for the 7 photos taken between October 27<sup>th</sup> and November 7<sup>th</sup>. This turned out to be a firmware fault within the product and eventually corrected by the manufacturer. In addition to date and time, the unit recorded ambient temperature on every frame. During the last 10 days of camera installation temporal fluctuations were dramatic, ranging from the low 20°F to the high 50°F. By following the sequence of the photos, ground characteristics on the photos (snow vs. no snow, day or night) and photo temperature tag fluctuations as they compared with recorded temperatures from the meteorological tower, a photo date with reasonable confidence was assigned to the 7 photo incidences which had no date/time tag (Photos H through N). Based on weather conditions and available turbine operation data, date/time parameters for Photos J through N were narrowed to a potential two day span, in which time WT7 was generating 78% of the time.

WT7, though 80m to the north, is visible above from the target area of the camera (Photo 2; note the blade and nacelle through the vegetation over the tree mounted camera). WT 7 was generating electricity on 12 of the 14 days of photographed wildlife activity. On the other two days of photo activity, winds were insufficient to generate, however the blades were rotating on average at 12 rpm on 30-Sep and 8 rpm on 11-Oct; during which times a moose passed through the target area.

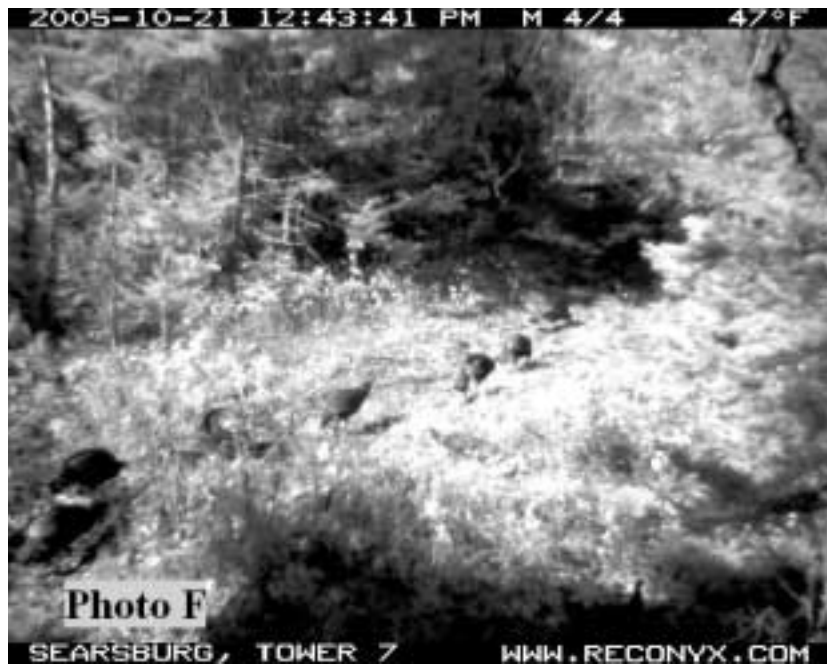
Only one black bear was recorded by the camera during the study period, and at that time WT 7 was operating. The lack of bear activity through the area cannot necessarily be attributed to wind project disturbance. Bears would typically be seeking fall beechnut feeding sites on either side of VT Route 8 this time of year, however, this past fall, like the previous several falls, beechnut production was very low.

The decision to photo document wildlife was made in June, 2005, well in advance of a beech mast crop. A beech mast crop would be necessary to entice bears to cross between the habitat blocks. By early fall it was becoming apparent that another year of poor mast production may be shaping up. This notion became clear with the initiation of a bear scarred beech sample plot study covering an estimated 8 square miles of habitat surrounding the proposed project during October and November. During that study, specific attention was given to the availability of beech nuts, either on the ground or in the trees, and to signs of recent (fall 2005) climbing of beech trees by bears; neither were found throughout the study area. This lack of food source accounts for the lack of bear sign, which also accounts for the lack of bear movement through the photo documentation site.









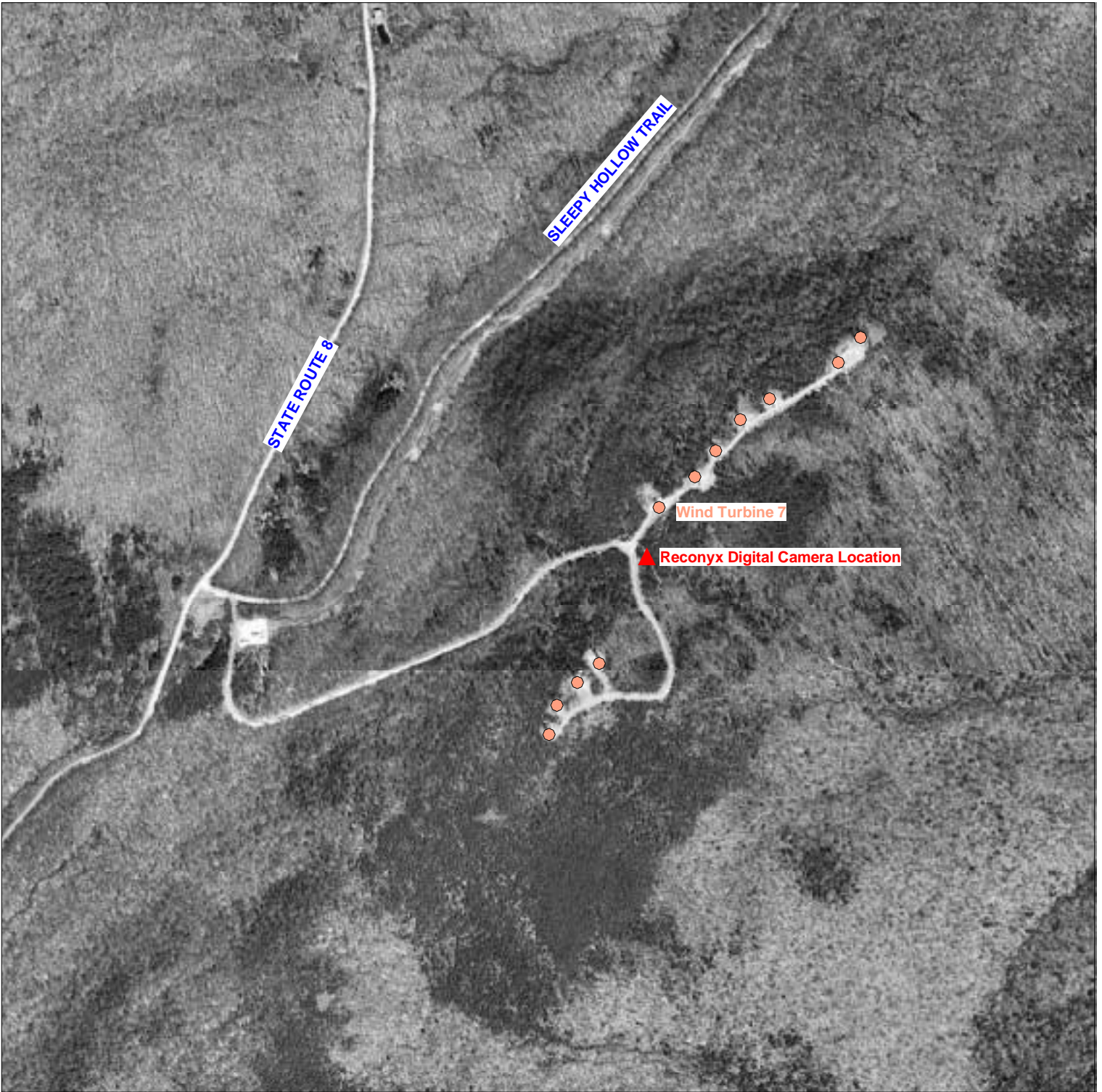












**Map 1: Deerfield Wind Proposal: Wildlife Movement Monitoring Through the Searsburg Wind Facility**

- ▲ Location of Reconyx Silent Image Digital Camera
- Existing Searsburg Wind Turbines

