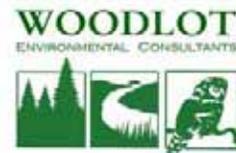


**2007 Winter Track Survey at the
Proposed Windpark in Coos County, New Hampshire
By Granite Reliable Power, LLC**

October, 2007

**Prepared For:
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Noble Environmental Power
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Executive Summary

Granite Reliable Power, LLC (Granite) has proposed the construction of a wind development project (the Project) located in Coos County, New Hampshire (Figure 1). The Project layout would include the erection of up to 67 wind turbines with a height of approximately 125 m (410 ft) on or near the summits of Mt. Kelsey, Owlhead Mountain, Dixville Peak, and Fish Brook Ridge, located within the Project Area, defined by the general geographic area that was considered for wind turbine placement and ancillary facilities necessary for operation and maintenance of the Project. These facilities include but are not limited to access roads, an electrical collection system, and turbine construction areas.

Initial consultation with the New Hampshire Fish and Game Department (NHFGD), New Hampshire Natural Heritage Bureau (NHNHB), and United States Fish and Wildlife Service identified two rare mammals that could or were known to occur in the vicinity of the Project, American pine marten (*Martes americana*), a state-listed Threatened species, and Canada lynx (*Lynx Canadensis*), a federally-listed Threatened and state-listed Endangered species.

To document presence of these species, Woodlot Alternatives Inc. (now Stantec Consulting) conducted three sets of winter snow track surveys on five ridgelines within the Project area to provide information on the number of occurrences, habitat use, and distribution. The surveys, conducted between February 20 and March 20, 2007, followed protocols recommended by NHFGD. Each survey included two transects, one along the ridgeline and a second ¼ mile downslope to provide a comparison of elevation difference in occurrence of the American marten and Canada lynx.

Total survey time equaled 41.7 hours and resulted in documentation of 94 marten tracks and 0 lynx tracks. Nine tracks could not be distinguished as either marten or fisher and were labeled as unidentified mustelid. The Mount Kelsey transects had the highest level of marten occurrence (34%) of the five ridgelines and Fish Brook Ridge and Dixville Peak had the least amount of marten occurrence (14%). The Mt. Kelsey high transect also had the most marten tracks observed for a single one kilometer transect (15). A higher number of marten track occurrences were observed in deeper snow conditions.

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WAI# 106195

1.0 Introduction

1.1 PROJECT CONTEXT

Granite Reliable Power, LLC (Granite) has proposed the construction of a wind power project located in Coos County, New Hampshire (the Project). The Project layout would include the erection of up to 67 wind turbines on or near the summits of Mt. Kelsey, Owlhead Mountain, Dixville Peak, and Fish Brook Ridge (Figure 1). The Project would include turbine construction areas, turbines, access roads to and along the ridgelines, and an electrical collection system. The proposed turbines would have a height of approximately 125 meters (m) (410 feet [ft]).

Topography within this region of New Hampshire is mountainous with elevations ranging from approximately 305 m (1,000 ft) to 1,036 m (3,400 ft). These mountains occur within a landscape dominated by industrial forestry practices. High elevation spruce-fir forest exists at some of the summits; surrounding side slopes and valleys are predominately yellow-birch (*Betula alleghaniensis*), American beech (*Fagus grandifolia*), and sugar maple (*Acer saccharum*), species typically found in northern hardwood-conifer forests. The climate in this region is characterized by warm temperatures in the summer with a mean annual precipitation of 91 to 179 cm (36 to 70 inches) and cold temperatures during the winter with mean annual snowfall of 243 to 406 cm (96 to 160 inches) (Kelley 2005).

1.2 SURVEY RATIONALE

To help address potential wildlife and habitat concerns, Granite contracted Woodlot Alternatives, Inc. (now Stantec Consulting)¹, to conduct targeted winter tracking surveys. Other studies conducted to date by Woodlot Alternatives, Inc. (Woodlot) within the Project area have included: two seasons of radar migration surveys, one full year of bat surveys (ongoing), wetland and vernal pool reconnaissance surveys, and rare plant surveys. As part of the development of survey methodology, Woodlot initiated consultations with the New Hampshire Fish and Game Department (NHFGD), New Hampshire Natural Heritage Bureau (NHNHB), and the United States Fish and Wildlife Service (USFWS). These agency consultations identified two significant mammals that could potentially occur or are known to occur in the vicinity of the Project area — the American pine marten (*Martes americana*), a state-listed Threatened species, and the Canada lynx (*Lynx canadensis*), a federally-listed Threatened and state-listed Endangered species.

A meeting, attended by NHFGD biologists, Woodlot staff, and Granite representatives, was held at the NHFGD regional offices in Lancaster, NH on February 9, 2007 to discuss concerns about any potential impacts to the Canada lynx (lynx) and American pine marten (marten) from the proposed Project. At the meeting, NHFGD recommended winter tracking surveys as the most effective means of determining whether these species are present in the Project area (at least

¹ Stantec Consulting, Inc. formally acquired Woodlot Alternatives, Inc. on October 1, 2007.

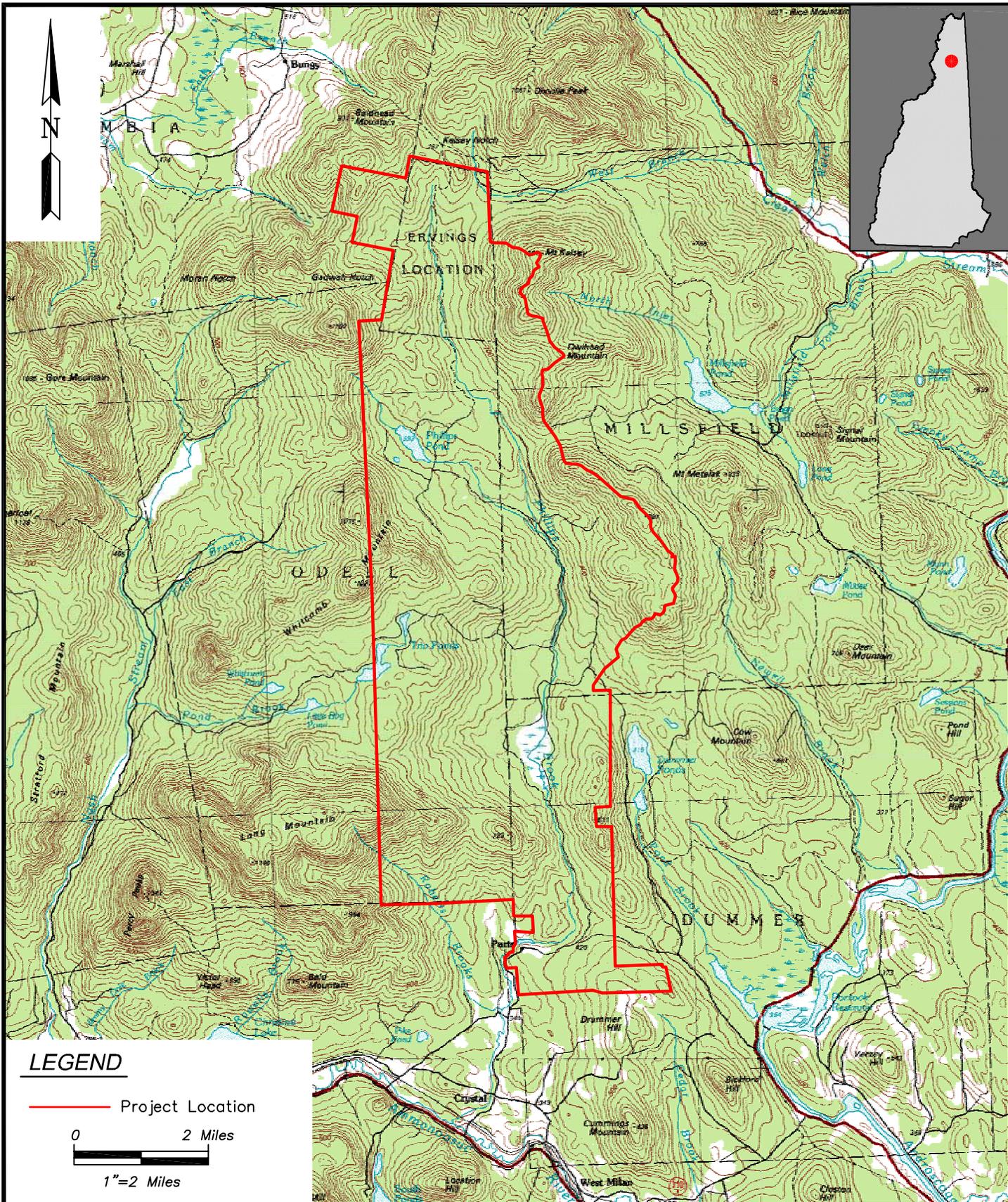
2007 WINTER TRACK SURVEY

Coos County, New Hampshire



during the winter months). The protocol recommended by NHFGD consisted of walking a series of paired 1 kilometer (km) (0.62 miles) transects, one on the summit of each of the ridgelines and one approximately ¼ mile down slope of each summit transect. The recommended survey protocol mainly targeted marten and lynx use of the Project area ridgelines; however, the roads and snowmobile trails used to access the ridgelines were also searched.

Winter track surveys were subsequently conducted by Woodlot on February 21-23, March 12-13, and March 19-20, 2007 following the protocols recommended by NHFGD.



PREPARED BY:



WOODLOT
ALTERNATIVES, INC.
ENVIRONMENTAL CONSULTANTS

106195-F101-Location.dwg

SHEET TITLE:

Project Location Map

PROJECT:

Noble Windpark
Coos County, New Hampshire

DATE: Oct. 16, 2007

SCALE: 1"=2 Miles

PROJ. NO.: 106195

FIGURE:

1

2.0 Background on Species of Concern

Marten and lynx occurrence in the northeast can be directly associated with forested habitats within regions of heavy snowfall accumulation. Both have a large foot size relative to body size, making them better suited than habitat and prey competitors for deep snow conditions, such as the fisher, bobcat, or coyote (Rain 1983, Hoving *et al.* 2005).

2.1 PINE MARTEN

The marten has been a species of concern in New Hampshire since its population decline began in the 1800s, due to over trapping and habitat alteration. Northeast populations of marten, nearly driven to extirpation in the past, have been on the increase in northern New Hampshire since the 1980s due to conservation efforts in specific regions. Current research suggests recolonization is occurring in northern New Hampshire in regions along the eastern border with Maine, where populations are stable (Kelley 2005). Despite these conservation efforts marten are still listed as a threatened species in New Hampshire. A further challenge to the marten's stability in the region is its direct natural competitor, the fisher (*Martes pennanti*), who also inhabits this same region; it is, therefore, conjectured that high fisher densities could limit the marten's reoccupation of its former coniferous habitats (DeGraaf and Yamasaki 2001).

In northern New Hampshire, pine marten inhabit a variety of forested habitats, including residual forest patches within industrial forest landscapes (DeGraaf and Yamasaki 2001). During winter, marten utilize conifer forests with dense clusters of small diameter spruce/fir stems and downed coarse woody debris. Marten are among a group of other small mammals, such as shrews and moles, that rely on winter snow cover for survival. These mammals move under the snow in a "subnivean zone" for protection from heat loss and predators, like foxes and large owls; this subnivean zone also provides them with access points to prey and winter resting places (DeGraaf and Yamasaki 2001).

2.2 CANADA LYNX

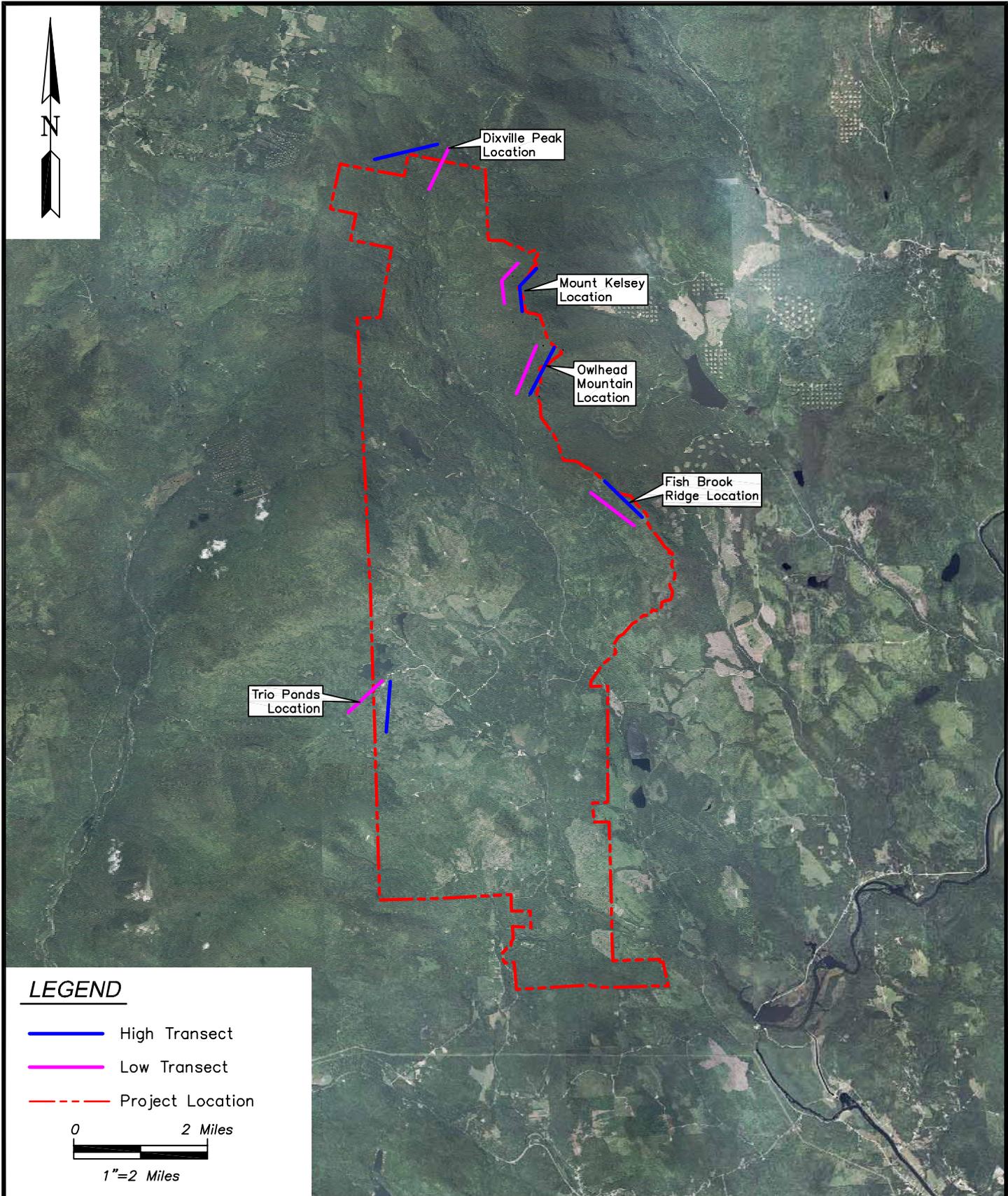
Like marten, lynx seem to prefer habitat with a heavy snow depth in which it can locate prey. Recent work predicts that 92 percent of lynx habitat located in the northeastern United States exists in northern Maine, with habitat reaches extending to adjacent Canadian provinces (Hoving *et al.* 2005). Although small patches of suitable lynx habitat do occur in northern New Hampshire, these habitats are not likely to support a stable population of lynx, as it is on the southern edge of their range (Ray *et al.* 2002; Litvaitis *et al.* 1991). However, it is possible that lynx would travel through regions in northern New Hampshire due to habitat suitability, thus track surveys were attentive to this possibility.

3.0 Winter Track Survey Methods

3.1 IDENTIFICATION OF TRANSECTS

Woodlot reviewed Delorme map software (© Delorme Topo USA 6.0) and 2003 aerial photographs from the NH Granite National Agricultural Imagery Program (NAIP) prior to the field surveys to identify transect locations based on accessibility, habitat type, and elevation within the Project area. High elevation spruce-fir forests were targeted, as they are known to be high value marten habitat.

For the purpose of this study, Woodlot selected five ridgelines with characteristics representative of both the Project area and known habitat preferences to investigate for the presence of marten or lynx during winter 2007. The ridgelines include: Mt. Kelsey, Fish Brook Ridge, the saddle south of Trio Ponds (Trio Ponds), Owlhead Mountain, and Dixville Peak (Figure 2). On each of the five selected ridgelines, one transect was located on the summit, and a second parallel, lower transect was located approximately 400 m (1312 ft) down slope. Transects were established remotely using Delorme map software (© Delorme Topo USA 6.0) and uploaded to a Global Positioning System (GPS) prior to field surveys.



PREPARED BY:



SHEET TITLE:

Transect Location Map

PROJECT:

Noble Windpark
Coos County, New Hampshire

DATE: Nov. 5, 2007

SCALE: 1"=2 Miles

PROJ. NO.: 106195

FIGURE:

2

3.2 FIELD SURVEYS

Paired transects on each of the five ridgelines were surveyed during three separate periods: February 21-23, March 12-13, and March 19-20, 2007. Days with optimal snow tracking conditions were targeted for each survey period. Optimal snow tracking conditions included days following a recent snow or wind event substantial enough to cover old tracks on the transects.

Surveys were conducted using snowshoes or skis to document animal tracks following methods similar to those described by Zelinski and Kucera (1995). Each paired transect (high and low elevation transects) was traveled simultaneously, thus maintaining consistent tracking conditions between the two for better comparison. Two Woodlot staff traversed the transect pair simultaneously, one person walking the summit, the second walking the lower transect, each starting at the same time. The time a traveler started on the transect and their compass bearing was then recorded. Once in the field, some adjustments were made to the remotely mapped transects based on accessibility, habitat, or elevation contour. Areas that had been naturally cleared or had been recently cleared were avoided when possible, as they are not known to be high value marten habitat. Additionally, adjustments were made to some ridgeline transects due to steep grades or changes in contour direction. These adjustments were accomplished in the field using Garmin Rhino Global Positioning System (GPS) units, which monitored the movement of each individual as they traveled on each transect. For those summit transects that were adjusted, modifications were also made to most low transects to remain parallel.

Handheld GPS units were also used to maintain a bearing and to document the location of the target species. Tracks that occurred within six feet of the center of each transect were counted, and a distance from the starting waypoint was recorded. Other information collected included species or family, track condition, and representative track measurements (when identification was uncertain). Non-target species were also recorded along the one kilometer transects. Dense pockets of prey species such as snowshoe hare (*Lepus americanus*) and red squirrel (*Tamiasciurus hudsonicus*) were estimated when runs became too cluttered to count. Information on snow quality and depth was also recorded to correlate any effect snow depth may have on the number of tracks encountered along a particular transect.

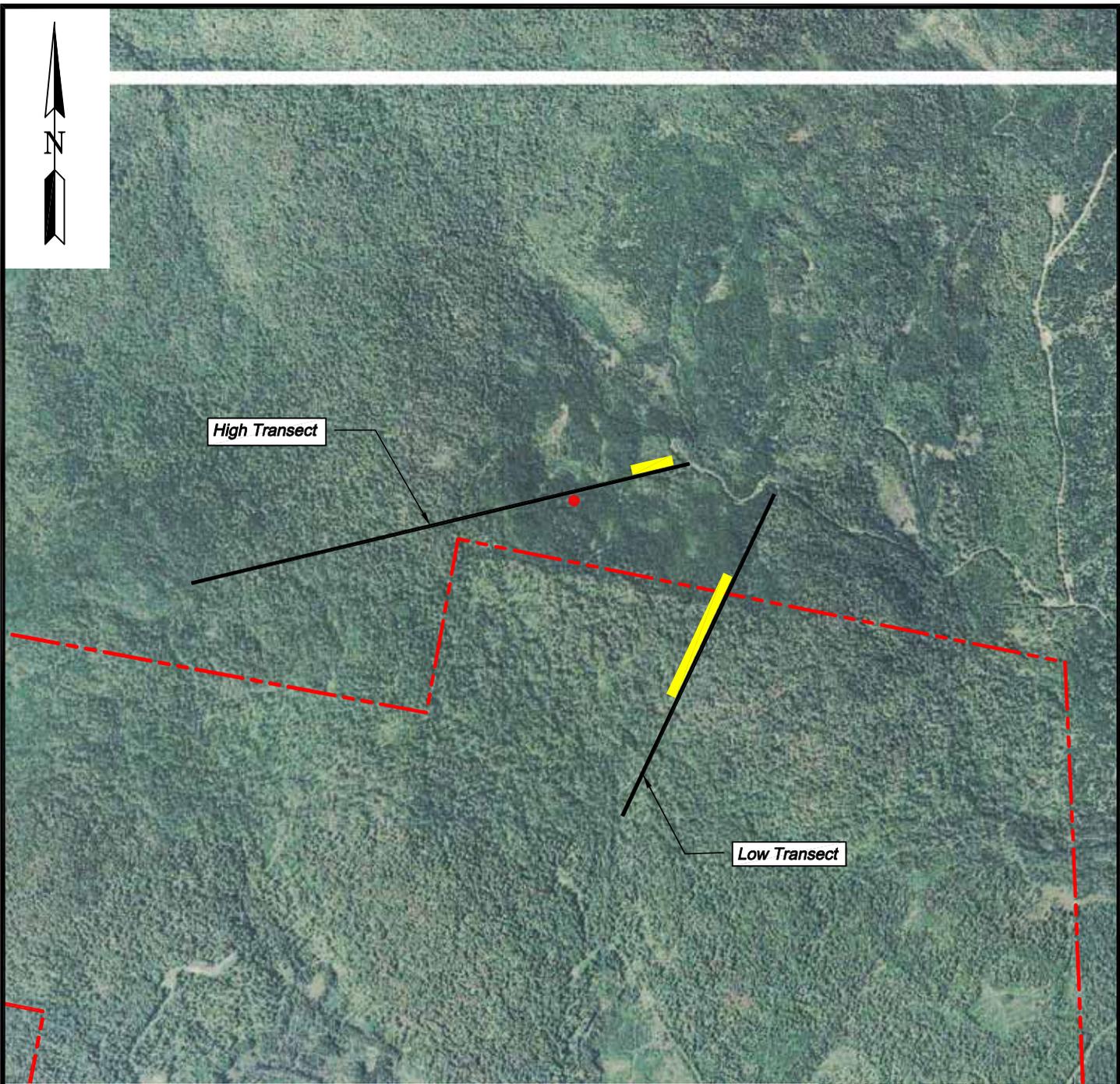
4.0 Habitat Descriptions Along Transect Lines

A wide variety of habitat types were documented throughout the proposed Project area. The same variety exists between ridgelines and high and low transects. Spruce fir and northern hardwood-conifer forests are the most dominant habitat types within the Project area and were present on each ridgeline. Due to past and recent forest harvesting at the lower elevations, age and forest species composition varied between transects. Habitat descriptions within each transect are briefly described in Table 1, with more detailed descriptions below. Figures 3 through 7 depict the alignment of each transect on aerial photographs as well as the dominant land cover and land uses within and surrounding each transect.

Table 1. Habitat descriptions of snow tracking transects	
Transect	Habitat
Dixville Peak - High Transect	dense young conifer regeneration with pockets of mature trees to more open mixed habitat with pockets of alder swamp
Dixville Peak - Low Transect	thick fir stand with pockets of mature open sugar maple, stream corridor with speckled alder and regenerating spruce/fir - has experienced some recent harvesting activity on the south end-with networks of skidder trails
Mt. Kelsey - High Transect	dense young spruce/fir, with pockets of mature fir/spruce and downed woody debris
Mt. Kelsey - Low Transect	consistent in stand age and composition, pole to board size spruce/fir with some mountain ash and yellow birch
Owlhead Mountain - High Transect	starts at edge of MET tower clearing down the steep spruce/fir side of the Owl Head knob, levels out in moderately spaced mixed spruce/fir and yellow birch woods with small creek drainages
Owlhead Mountain - Low Transect	mature spruce and fir with overgrown skid trails, pockets of young beech and mountain ash, majority of stand is on a moderately steep slope with abundant stream drainage perpendicular to the transect
Fish Brook Ridge - High Transect	ridge top was moderately open hardwood species with small pockets of dense spruce, some yellow birch. Skidder roads and open areas due to harvesting activities in the saddle between the two summits of this mountain
Fish Brook Ridge - Low Transect	mixed/open fir shelter cut with pockets of dense spruce/fir, young hardwood regen. and open cut areas
Trio Ponds - High Transect	regenerating spruce/fir with pockets of young to mature hardwood species - this area has been heavily harvested in the past 5-10 years with networks of skidder trails
Trio Ponds - Low Transect	starts on edge of MET tower clearing and goes along edge of an old skid road young birch and mature or dense regeneration spruce/fir with pockets of open hardwood - Turns into fairly dense spruce/fir near the end of the transect, where it then opens up to open mature sugar maple stand

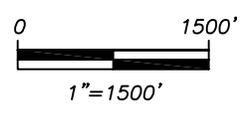
4.1 DIXVILLE PEAK TRANSECTS

The high and low transects in the Dixville Peak part of the Project area are a mix of dense regenerating spruce/fir and mature hardwood forest (Figure 3). Both transects start at the southern edge of the West Branch Road (a marked snowmobile trail during winter) in dense uneven aged spruce. Approximately 610 m (2000 ft) of the high transect and 305 m (1000 ft) of the low transect consists of this type of habitat. At this point mature sugar maple-beech-yellow birch becomes the most dominant habitat type. As elevation increases, the high transect habitat type transitions to northern hardwood-spruce fir, until the summit where spruce/fir becomes more dominant. The lower elevation transect continues down slope where dense regenerating spruce/fir habitat becomes dominant. The regenerating spruce fir habitat is a result of past forest harvesting and consists of a network of uneven aged forest stands and skidder trails.



LEGEND

-  Transect
-  Fisher Occurrence
-  Marten Occurrence
-  Project Location



PREPARED BY:



106195-F206-SnowTrackTransect-edit.dwg

SHEET TITLE: Snow Tracking Transect Map
Dixville Peak Location

PROJECT: Noble Windpark
Coos County, New Hampshire

DATE: Nov. 5, 2007
SCALE: 1"=1500'
PROJ. NO.: 106195
FIGURE:
3

4.2 MT. KELSEY TRANSECTS

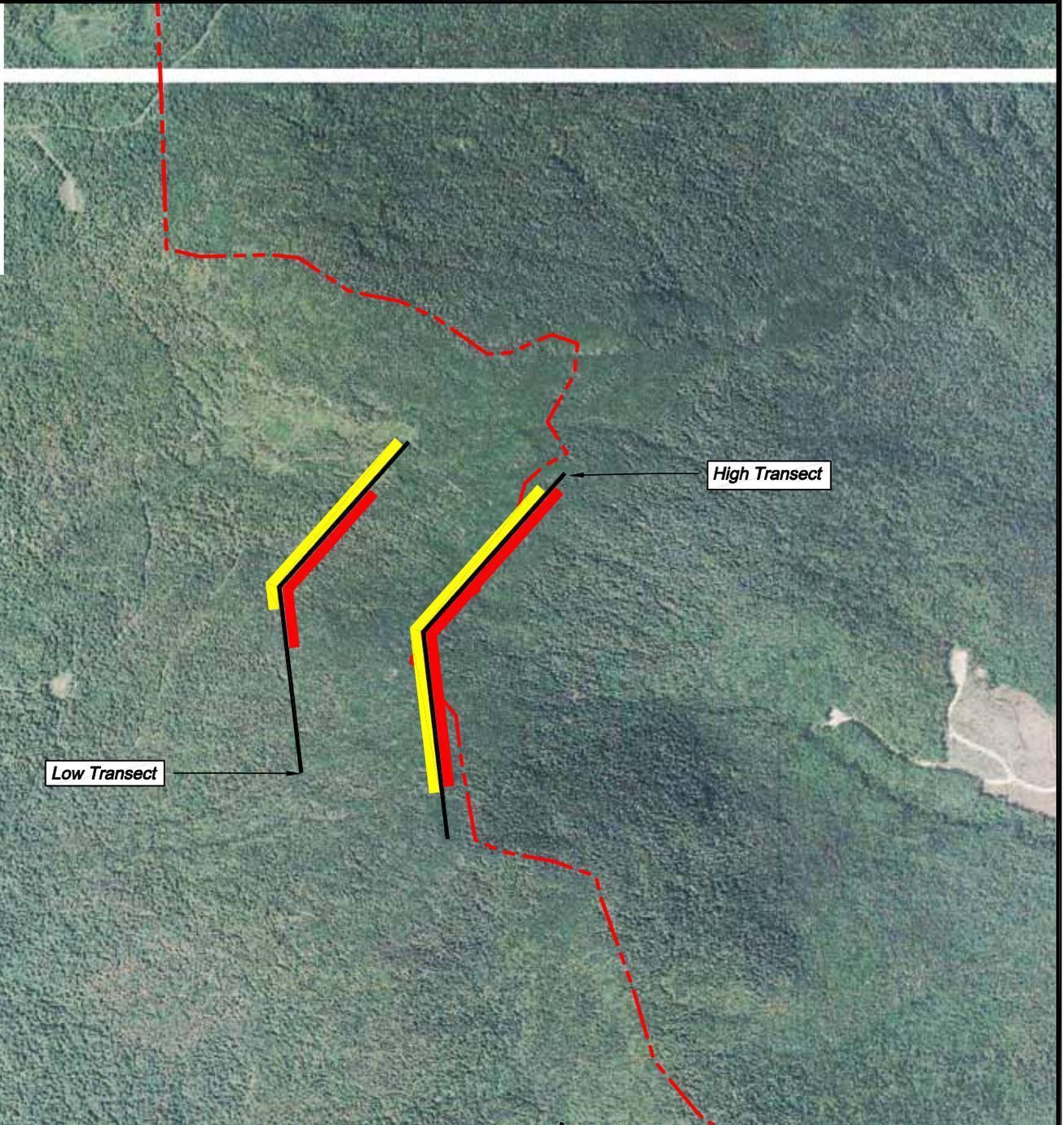
Of all the ridgeline transects, Mt. Kelsey was considered to have the highest value marten habitat. The combination of cover type, accumulations of downed coarse woody debris, and relatively high elevation provided what has been documented to be valuable winter habitat for marten. The transect on the summit of Mt. Kelsey is entirely within dense spruce/fir forest with small natural openings caused by wind throw. Within these small openings, dense regenerating spruce/fir occurs mixed with downed woody debris from the spruce/fir blow downs. This transect follows the southern part of the summit heading north and bends northeast following the contour of the summit. The paired lower transect consists of similar habitat, but transitions to mixed hardwood forest near the southern end. Forestry activities have not occurred on the summit of Mt Kelsey, but evidence of harvesting was present on the side-slopes (Figure 4).

4.3 OWLHEAD MOUNTAIN TRANSECTS

The transect on the summit of Owlhead Mountain started from the proposed on-site meteorological measurement tower (met tower) at the southern end of the ridge. This transect followed a northeast bearing starting in dense spruce/fir forest. This habitat type is dominant for the first ½ kilometer (km), then transitions to dominantly northern hardwood spruce-fir forest at the start of the saddle between the summit of Owlhead Mountain and Mt. Kelsey. The paired lower transect was located on the outer limits of recent harvesting activities. A mix of mature northern hardwood spruce-fir forest is the dominant cover type on this transect with some mountain-ash (*Sorbus americana*) sporadically occurring. The middle portion of the transect is in a low area with a number of stream drainages running perpendicular to the transect (Figure 5).

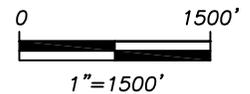
4.4 FISH BROOK RIDGE TRANSECTS

The Fish Brook Ridge transects are located in an area that has received considerable forest harvesting in the past and more recently. Because this ridgeline is one of the lower ridgelines in the Project area, with only the north and south summits exceeding 2700 ft, forest harvesting has occurred on the ridgelines as well as the side slopes. However, forest harvesting was not in the form of a clear-cut but rather a shelter cut which left a patchwork of uneven aged forest stands. The transect on the summit started near the middle of the ridge and followed a northwest bearing ending near the northern summit. This transect started in a mix of mature and regenerating northern hardwood-spruce-fir forest for the first ½ km, then it enters a recently harvested area and bisects a number of skid trails and old cuts with dense regenerating spruce/fir. The end of the transect transitions to primarily dense spruce/fir with some pockets of regenerating spruce fir. The low elevation transect is entirely a mixed northern hardwood-spruce fir forest that has also been harvested in the past. The habitat within this transect is dominated by mature sugar maple with some pockets of dense spruce where topography (or grade) restricted access for timber harvesting. This transect also bisects a number of skidder trails (Figure 6).



LEGEND

-  Transect
-  Fisher Occurrence
-  Marten Occurrence
-  Project Location



PREPARED BY:



Stantec

106195-F206-SnowTrackTransect-edit.dwg



SHEET TITLE:

Snow Tracking Transect Map
Mount Kelsey Location

PROJECT:

Noble Windpark
Coos County, New Hampshire

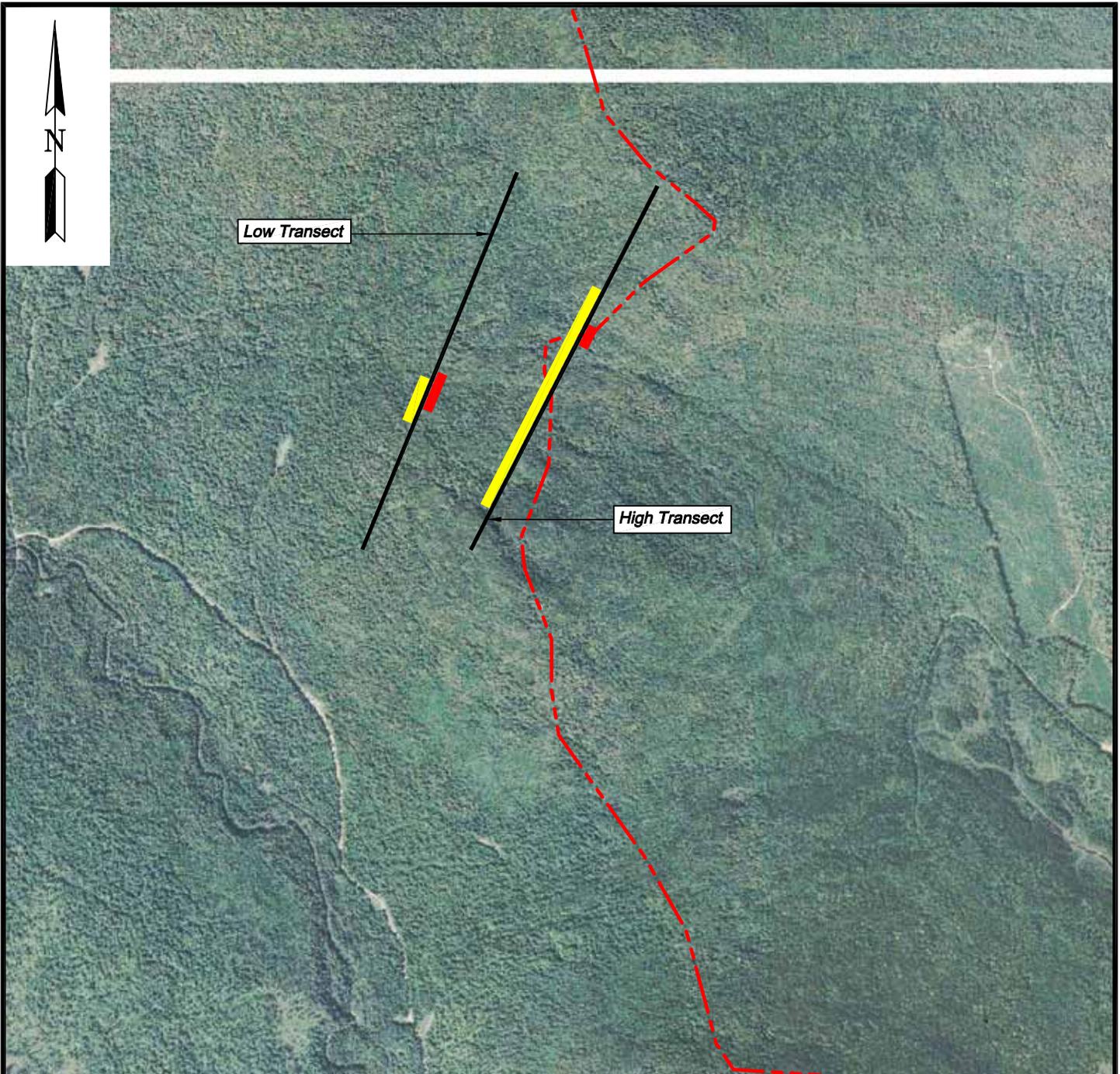
DATE: Nov. 5, 2007

SCALE: 1"=1500'

PROJ. NO.: 106195

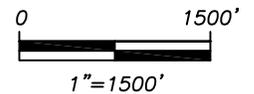
FIGURE:

4



LEGEND

- Transect
- Fisher Occurrence
- Marten Occurrence
- - - Project Location



PREPARED BY:



Stantec

106195-F206-SnowTrackTransect-edit.dwg



SHEET TITLE:

Snow Tracking Transect Map
Owlhead Mountain Location

PROJECT:

Noble Windpark
Coos County, New Hampshire

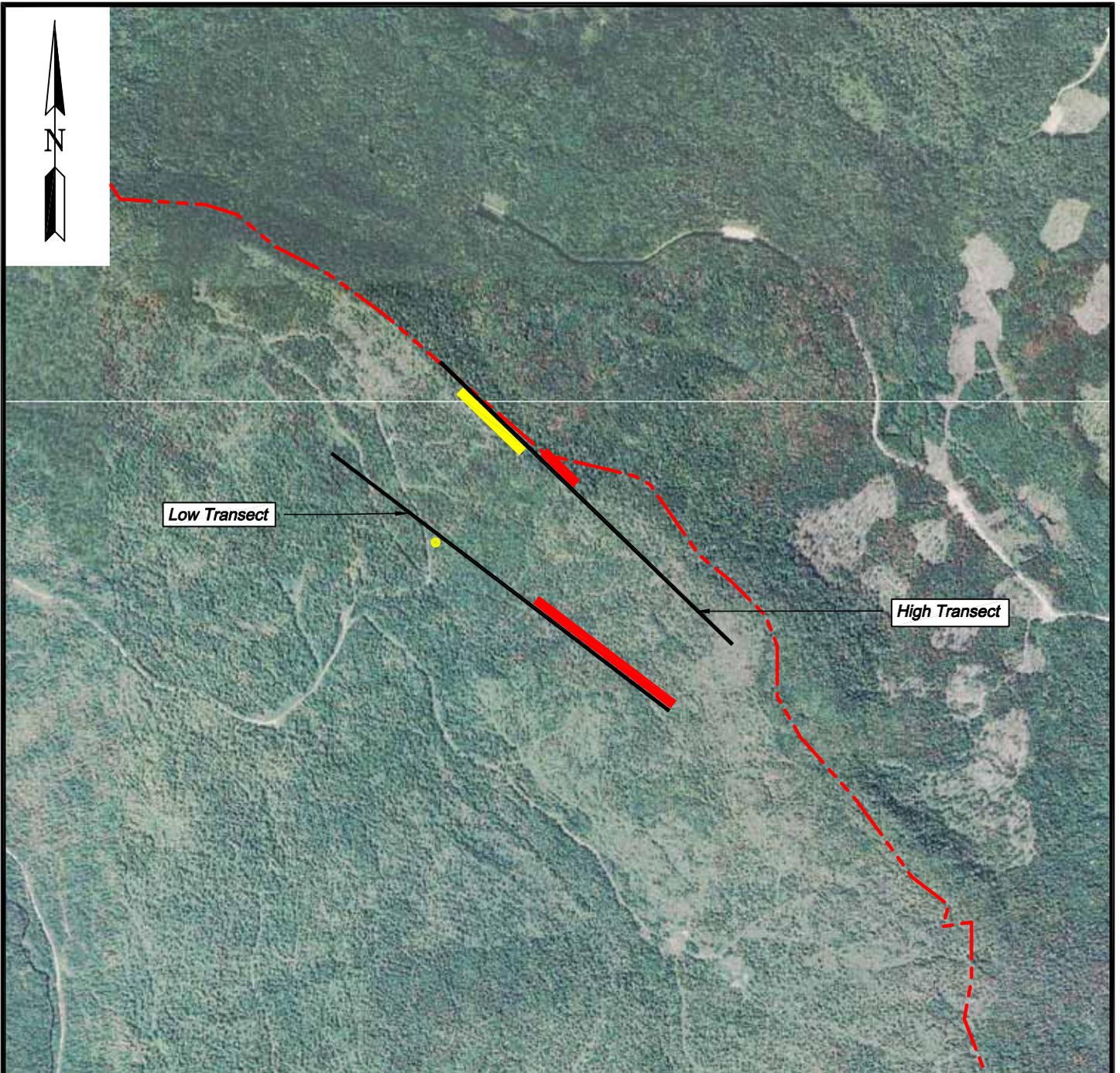
DATE: Nov. 5, 2007

SCALE: 1"=1500'

PROJ. NO.: 106195

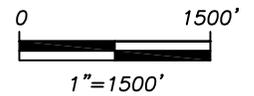
FIGURE:

5



LEGEND

- Transect
- Fisher Occurrence
- Marten Occurrence
- - - Project Location



PREPARED BY:



Stantec



106195-F206-SnowTrackTransect-edit.dwg

SHEET TITLE:

Snow Tracking Transect Map
Fish Brook Ridge Location

PROJECT:

Noble Windpark
Coos County, New Hampshire

DATE: Nov. 5, 2007

SCALE: 1"=1500'

PROJ. NO.: 106195

FIGURE:

6



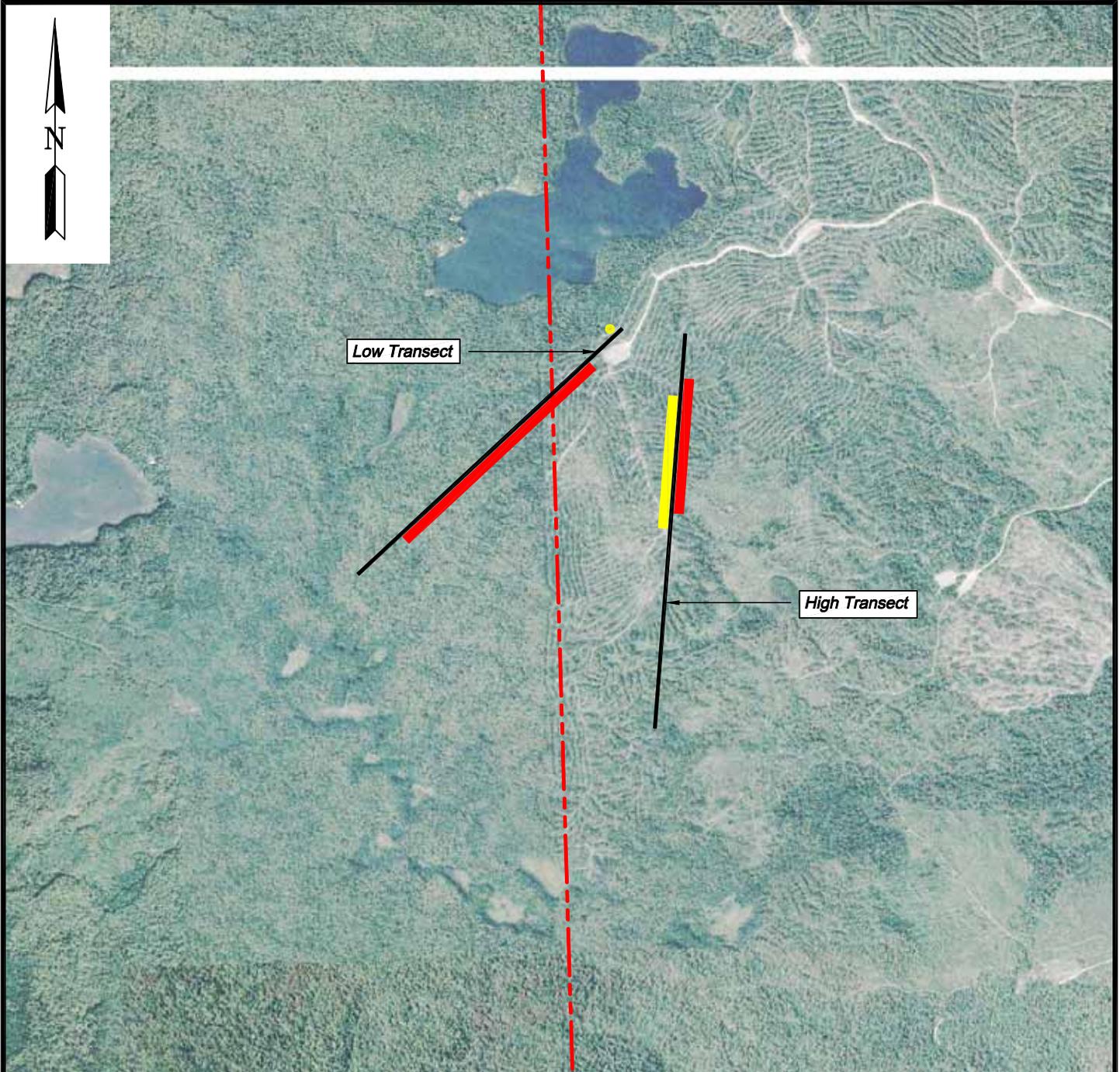
4.5 TRIO PONDS TRANSECTS

Of the five ridgelines selected for track surveys, the Trio Ponds transects have experienced the greatest amount of timber harvesting. At this location there is little difference in elevation between high and low transects. The entire high elevation transect is within a series of strip cuts and dense regenerating spruce/fir, with a network of old skidder trails that bisect it from all directions. The low transect starts at the proposed met tower location and heads south/southwest along the slope of the ridge. This transect starts within the Project area and continues past the Project area boundary into the Nash Stream State Forest where the land is less disturbed from timber harvesting. The low transect also starts at the proposed met tower and heads southwest in dense regenerating spruce/fir for the first 305 m (1000 ft), where it transitions to dense and more mature spruce/fir. The last 305 m (1000 ft) of this transect consists of a more open mature sugar maple stand (Figure 7).

5.0 Field Survey Results

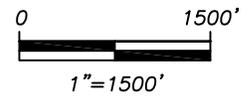
Surveys were conducted on February 21-23, March 12-13, and March 19-20, 2007. The snow conditions at the time of each survey were appropriate for track identification. The survey time between transects and survey periods varied from 35 minutes to 2 hours due to snow conditions, topography, and sinking depth on snowshoes or skis (i.e., the depth to which one sinks) which ranged greatly from 2 inches to 5 ft. The three survey periods cumulated in a total of 41.7 transect hours covering approximately 19 miles.

The results from all transects surveyed yielded 12 distinct species tracks, including: fisher, marten, ermine (*Mustela erminea*), moose (*Alces alces*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), ruffed grouse (*Bonasa umbellus*), red squirrel (*Tamiasciurus hudsonicus*), and snowshoe hare (*Lepus americanus*). (Representative photos are available upon request.) The specific identification of some tracks was not possible due to poor snow conditions and include; an unknown mustelid (weasel family), unknown cat tracks (probably bobcat), and an unknown canine (Appendix A, Table 1.). The most frequent track occurrences were of marten (94 track observations), fisher (66 track observations), moose (89 track observations), and grouse (88 track observations). The next most common track observed was from ermine (with 34 track observations). No definite observations of lynx tracks were documented during the three survey periods.



LEGEND

- Transect
- Fisher Occurrence
- Marten Occurrence
- - - Project Location



PREPARED BY:



Stantec

106195-F206-SnowTrackTransect-edit.dwg



SHEET TITLE:

Snow Tracking Transect Map
Trio Ponds Location

PROJECT:

Noble Windpark
Coos County, New Hampshire

DATE: Nov. 5, 2007

SCALE: 1"=1500'

PROJ. NO.: 106195

FIGURE:

7

2007 WINTER TRACK SURVEY

Coos County, New Hampshire



The track patterns observed indicated that marten use the various ridgelines and transect areas differently. This is likely due to the variation of ridgeline habitats. Of the five ridgelines surveyed, the Mt. Kelsey high and low transects had the highest number of marten tracks, with a total of 32 marten track observations over the three visits (34% of all marten track observations). The high and low transects of both Fish Brook Ridge and Dixville Peak had the fewest observations, with a total of 13 marten track observations each (14%). This notable difference is likely attributed to the more favorable marten habitat conditions on Mt. Kelsey. The Mt. Kelsey high transect also had the highest number of marten observations for one day (February 23) with 15 marten track observations for the one kilometer transect. However, the two subsequent surveys along the same Mt. Kelsey high transect resulted in five and zero marten track observations, on March 12 and 20 respectively. This difference was likely due to the variation in snow conditions between the three different survey periods. The 15 marten observations along the Kelsey high transect were made on a day with a sinking depth of up to 3 ft, while the two days of five and zero observations were made on days with sinking depths of less than 4 inches.

Snow conditions played a major role in the number of tracks observed along most transects. The first round of transect surveys (February 21 – 23) across the five ridgelines with associated lower transects had sinking depths of one foot or more (up to 5 ft) and resulted in 64 percent of all marten tracks found during the entire survey period. The remaining two rounds of surveys (March 12 – 13 and March 19 – 20) revealed 36 percent of the total marten tracks and had a sinking depth of less than one foot. The one exception to this was the Owlhead Mountain high transect, which had a sinking depth of eight inches. Results from this transect were placed in the one foot or below category for comparison.

Woodlot gave special attention to distinguishing marten tracks from fisher tracks, both to address NHFGD concerns surrounding the difficulty of this distinction and in recognition of their relationship as habitat competitors. Overall, 30 percent more marten tracks (94) were observed than fisher tracks (64), including both the shallow and deep snow survey conditions. Nine tracks could not be distinguished as either marten or fisher and were labeled as either or. All surveys with a sinking depth of less than one foot were combined and revealed 29 percent more marten tracks than fisher. Surveys conducted when the sinking depth was greater than or equal to one foot found 30 percent more marten tracks than fisher. This trend appears slightly different when the low transects are compared to the high transects during heavy and light snow conditions. In light snow conditions, 26 percent more marten were observed at the high transects than fisher, while the low transect found 36 more marten tracks than fisher. In the deep snow conditions the high transects saw 19 percent more marten than fisher, and the low transects saw 43 percent more marten than fisher (Appendix A, Table 1).

6.0 Discussion

Of the five ridgelines surveyed, Mt. Kelsey appeared to have the overall highest concentration of marten occurrence. Marten track numbers were highest during the first and second transect

2007 WINTER TRACK SURVEY

Coos County, New Hampshire



surveys, when snow conditions were more favorable for tracking and for the marten's surface habitat use. The third survey at Mt. Kelsey, however, resulted in no marten track observations on either the high or low transects, which may have been the result of less than optimal tracking conditions. Mt. Kelsey habitat is a dense growth of young spruce/fir with a substantial amount of coarse woody debris typical of ideal marten habitat (Allen 1982). The first transect survey was conducted less than 36 hours after a major snow event (>30") and deep snow depths may have spurred marten to spend less time in the subnival habitat and more time on the surface, as they have a deep snow advantage over similar mustelid species due to their large feet relative to body size (Raine 1983). Overall, snow levels had a small effect on the number of martens observed on high and low transects. It is possible that martens occur at a higher number than fisher at high elevation transects because they are better suited for deep snow conditions, and, therefore, are not in direct habitat competition.

Although lynx tracks have been sited near the Project area in the past, it is likely this animal was a disperser from more stable northern populations. Annual snow track surveys by NH state wildlife biologists have not discovered evidence to suggest there is currently a resident population of lynx in New Hampshire (Will Staats, Personal communication).

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Appendix A

Table 1. Winter tracking results

Appendix A Table 1. A summary of species observed during the winter track surveys at the Proposed Coos County Wind Project - Winter 2007

Date	Transect	Weather and Snow Conditions	Fisher	Ermine	Marten	Un Id'ed Mustelid	Lynx	Bobcat	UNKN cat	Deer	Moose	Coyote	Fox	UNKN Canine	Grouse	Red Squirrel*	Hare*	UNKN
2/21/2007	Fish Brook Ridge High	windy, overcast	2	1	3	--	--	--	--	--	11	--	--	--	--	2	7	--
2/21/2007	Fish Brook Ridge Low	widn from the NW at ~5-10mph	3	--	5	--	--	--	--	--	6	--	--	--	1	--	12	--
2/22/2007	Dixville Peak High	winds calm, overcast	9	1	4	--	--	--	--	--	4	--	--	--	--	13	98	--
2/22/2007	Dixville Peak Low	calm, cloudy. Light snow flurries	4	1	4	--	--	--	--	--	10	1	--	1	--	--	14	--
2/22/2007	Owls Head High	Cold, partly cloudy	1	4	3	1	--	--	--	--	8	--	--	--	--	11	--	--
2/22/2007	Owls Head Low	mostly sunny	4	--	9	--	--	--	--	--	--	1	--	--	--	3	21	2
2/23/2007	Kelsey High	winds calm, overcast	7	--	15	--	--	--	--	--	1	--	--	--	7	5	25	--
2/23/2007	Kelsey Low	Cold, partly cloudy	1	6	10	1	--	--	--	--	1	--	--	--	--	5	25	--
2/23/2007	Trio Low	sunny, light wind in woods	4	3	--	--	--	--	--	--	11	--	--	--	2	16	1	2
2/23/2007	Trio Ridge	--	8	1	10	--	--	--	--	--	1	--	--	--	--	15	5	--
3/12/2007	Kelsey High	winds calm, overcast	4	--	5	--	--	--	--	--	--	--	--	--	1	--	1	--
3/12/2007	Owlhead High	cool, cloudy	5	3	5	--	--	--	1	--	1	--	--	--	--	1	2	--
3/12/2007	Owlhead Low	cool, cloudy	2	4	3	--	--	--	--	--	4	--	--	--	3	2	6	--
3/13/2007	Fish Brook Ridge High	slight breeze, overcast	2	--	2	--	--	--	--	--	6	--	--	--	6	1	1	--
3/13/2007	Fish Brook Ridge Low	slight breeze, overcast	--	--	1	--	--	--	--	--	5	--	--	--	3	--	1	--
3/13/2007	Kelsey Low	--	4	--	2	--	--	--	--	--	8	--	--	--	--	3	15	--
3/13/2007	Dixville Peak High	overcast with rain showers towards the end	2	--	2	--	--	--	--	--	--	--	--	--	--	--	3	--
3/13/2007	Dixville Peak Low	cool, partly cloudy	--	3	3	--	--	--	--	--	--	--	--	--	1	1	3	--
3/13/2007	Trio Ridge	cool, partly cloudy	1	--	2	4	--	--	--	--	2	--	--	--	2	--	--	--
3/13/2007	Trio Low	--	1	1	1	--	--	--	--	--	--	2	1	--	--	3	7	1
3/19/2007	Fish Brook Ridge High	Clear, wind gusts to 10mph	1	1	1	--	--	--	--	--	2	--	--	--	--	--	--	1
3/19/2007	Fish Brook Ridge Low	Clear, wind gusts to 10mph	--	--	1	--	--	--	--	--	5	--	--	--	3	--	1	--
3/19/2007	Dixville Peak High	Cool, sunny	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7	--
3/19/2007	Dixville Peak Low	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2	--	--
3/19/2007	Trio Low	--	--	--	--	3	--	--	--	--	--	--	--	--	--	1	1	--
3/19/2007	Trio Ridge	Cool, partly cloudy	1	2	2	4	--	--	--	--	3	--	--	--	1	--	--	--
3/20/2007	Kelsey High	high winds covering tracks	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/20/2007	Kelsey Low	high winds covering tracks	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
3/20/2007	Owlhead High	Windy, partly sunny, new snow	--	1	1	--	--	--	--	--	--	--	--	--	1	1	1	--
3/20/2007	Owlhead Low	Windy, partly sunny, new snow	--	2	--	--	--	--	--	--	--	--	--	--	--	3	3	--
Total			66	34	94	13	0	0	1	0	89	4	1	1	31	88	260	6

* Due to the abundance of these species tracks individual tracks were not counted consitantly therefore these results do not reflect actual numbers of individuals.