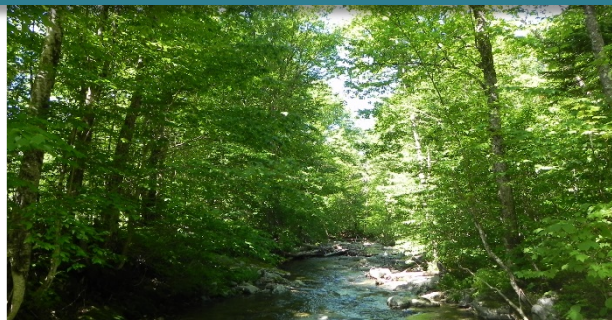


# Atlas Timberlands and short winters: Stuck between a river and hard place



Robert Turner

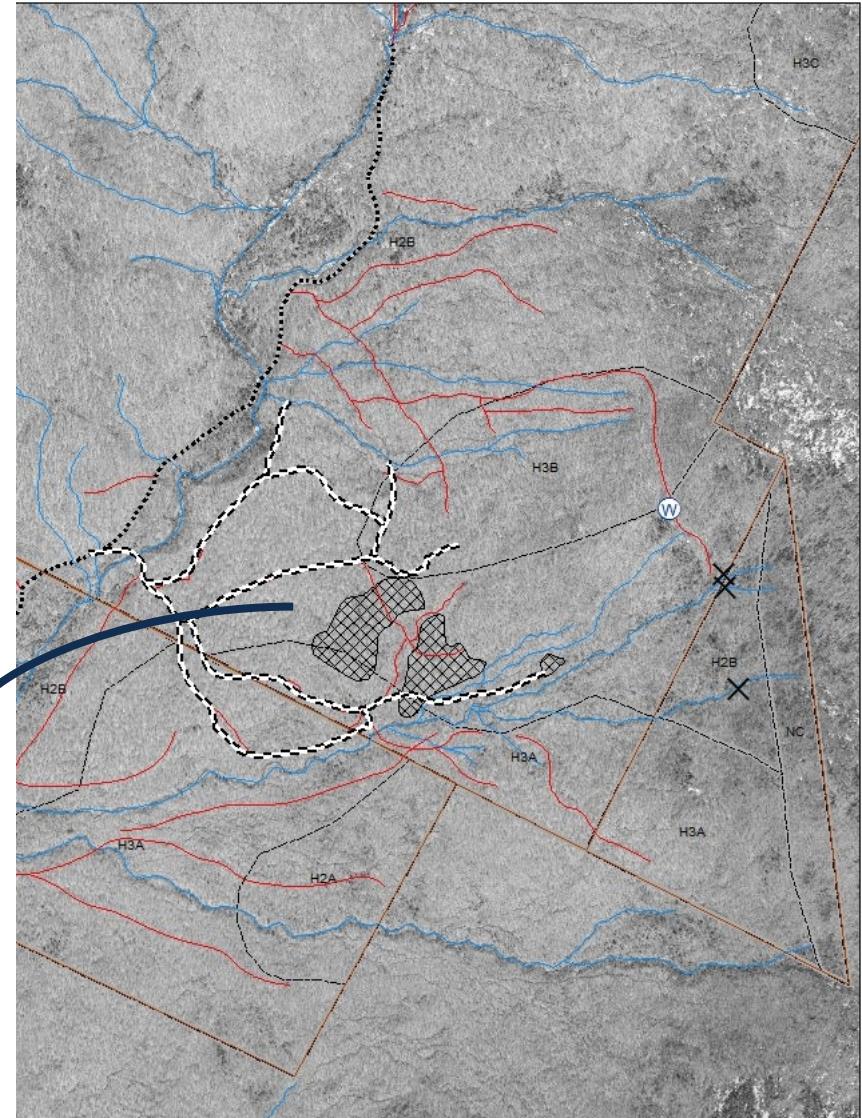
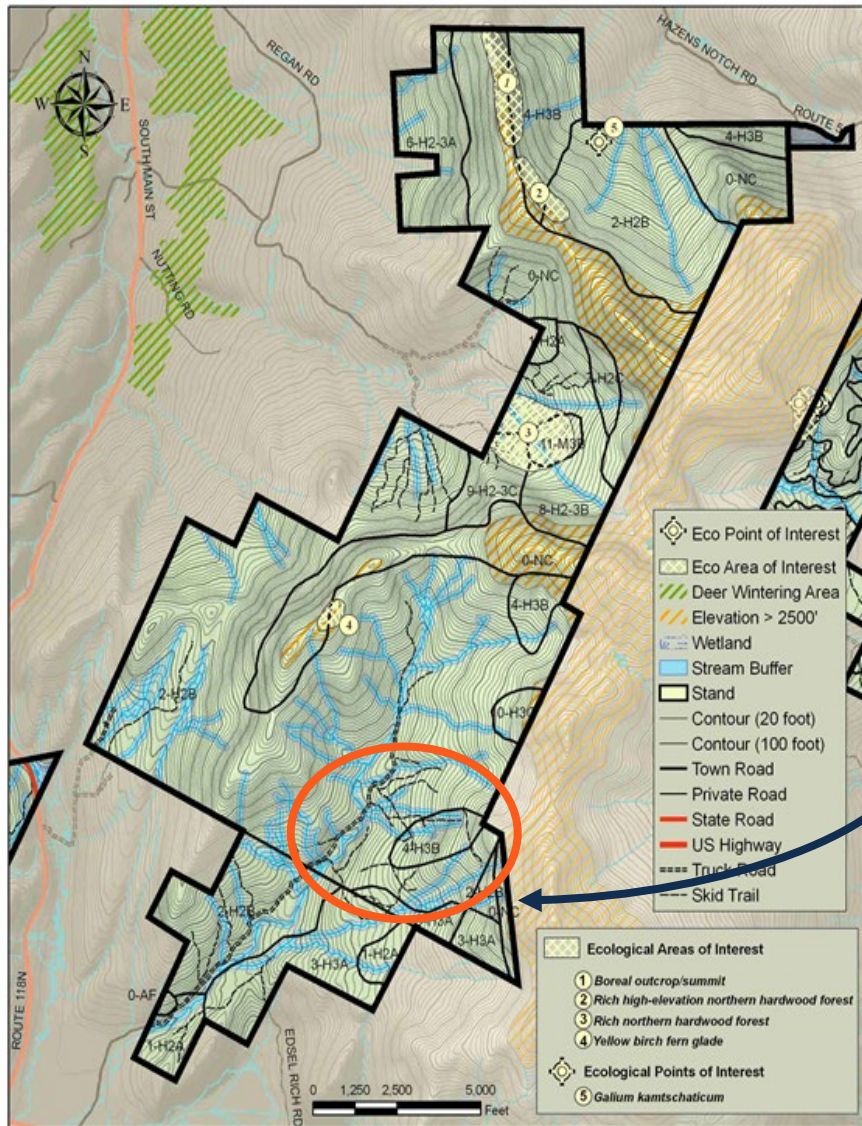
R J Turner Company, Bristol, VT

Workshop: Climate Change Adaptation in  
New England Forested Watershed Management

*November 7, 2019*



# Atlas Timberlands





# Atlas Timberlands











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## Northern forest winters have lost cold, snowy conditions that are important for ecosystems and human communities

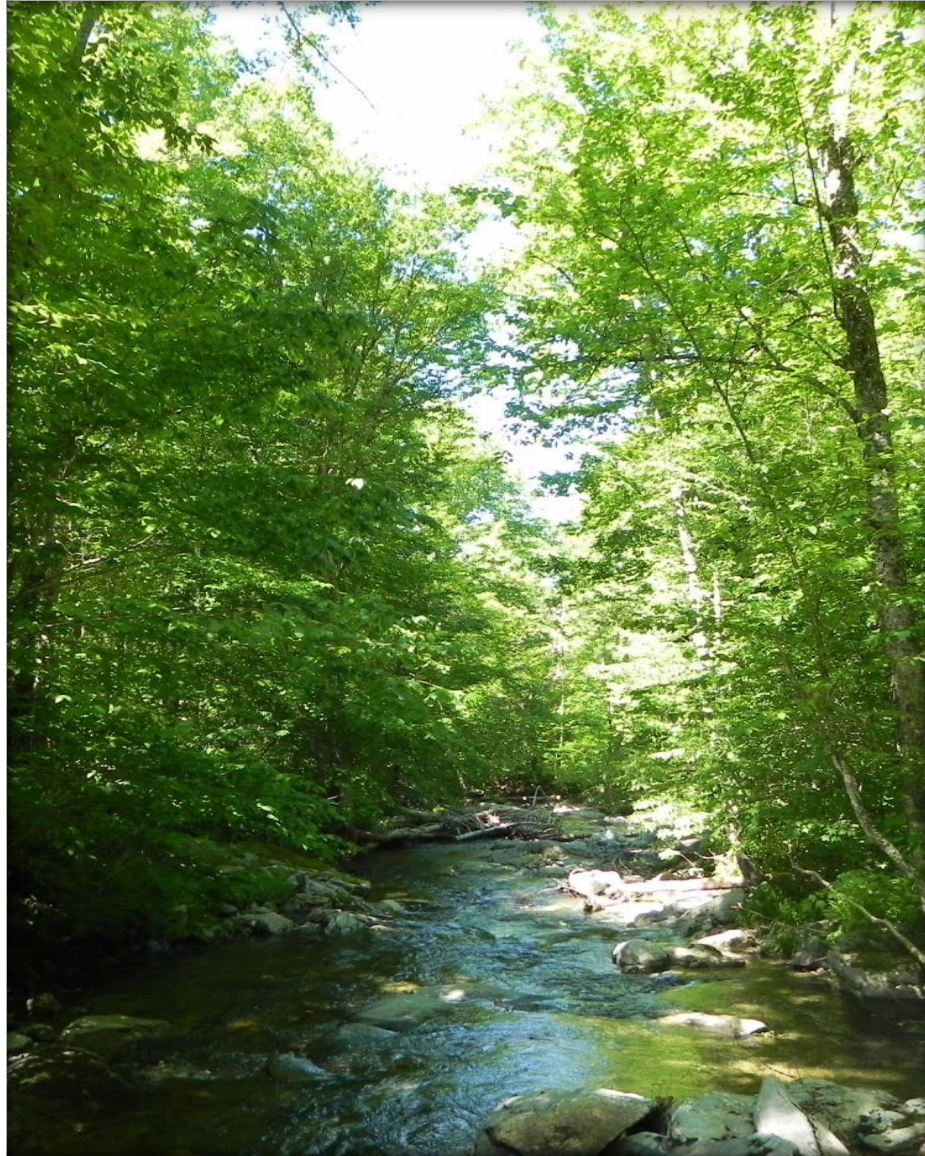
ALEXANDRA R. CONTOSTA <sup>1,18</sup> NORA J. CASSON <sup>2</sup> SARAH GARLICK,<sup>3</sup> SARAH J. NELSON,<sup>4</sup> MATTHEW P. AYRES <sup>5</sup>  
ELIZABETH A. BURAKOWSKI <sup>1</sup> JOHN CAMPBELL,<sup>6</sup> IRENA CREED <sup>7</sup> CATHERINE EIMERS,<sup>8</sup> CELIA EVANS,<sup>9</sup>  
IVAN FERNANDEZ,<sup>10</sup> COLIN FUSS,<sup>11</sup> THOMAS HUNTINGTON <sup>12</sup> KAIZAD PATEL,<sup>4,13</sup> REBECCA SANDERS-DEMOTT <sup>1</sup>  
KYONGHO SON <sup>14</sup> PAMELA TEMPLER,<sup>15</sup> AND CASEY THORNBRUGH<sup>16,17</sup>

# Vulnerability: Infrastructure and Access

- Review existing conditions and “stressors” (**Sensitivity**)
  - 5,400 acres—one main road in.
  - Shallow soils, many wet areas, numerous streams
  - 95% winter harvesting--we need dependable snow and cold
  - Low quality dominates—improvement cutting, not high value
  - Small patches—spread out. Tracked harvesters, grapple skidders
- Consider observations and trends (**Exposure**)
  - More extreme rain events. Higher peak flows increase vulnerability.
  - Patterns are likely to be uneven, operating windows uncertain. Some areas may experience “helpful” changes in hydrology; some may see worsening conditions.
- Examine options (**Adaptive Capacity**)
  - Decommission some roads.
  - Improve resilience of necessary roads
  - Analyze harvest timing, optimal harvest season, silvicultural options, access alternatives



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## Adaptation Tactic: Summer harvest



- Road layout
- Pre-sale road work
- Temporary bridge installation



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“The area operated was considerably different in the winter vs summer, but ... it’s safe to say our infrastructure costs per unit sold were considerably higher in the summer than winter. There was also far more down time because we had a great winter for operating and problematic rains in the summer.” ...David McMath



# Road Costs---Winter

Task	Cost estimate	Notes
<u>Lower Truck Road</u>		
Fill/elevate—500' along wetland	\$4,500.	Material from ATP pit
Armor ditches	\$1,000.	
Stone 2 crossovers	\$1,000.	Shot rock
<u>Upper Truck Road</u>		
Cut back brush/trees	\$1,500.	
Ditching, stumping, widening	\$3,000.	
Replace culverts (3)	\$2,000.	
Stone crossover (1)	\$ 500.	
<u>Misc.</u>		
Skid road construction (main)	\$500.	
Plowing	\$500.	
<b>TOTAL (Winter)</b>	<b>\$14,500.</b>	



# Road Costs--Summer

Task	Cost estimate	Notes
<u>Lower Truck Road</u>		
Fill/elevate—500' along wetland	\$4,500.	Material from ATP pit
Armor ditches	\$1,000.	
Stone 2 crossovers	\$1,000.	Shot rock
<u>Upper Truck Road</u>		
Cut back brush/trees	\$1,500.	
Ditching, stumping, widening	\$3,000.	
Replace culverts (3)	\$2,000.	
Stone crossover (1)	\$ 500.	

<u>Harvest Area</u>		
Portable skidder bridge	\$5,500.	Custom: steel, welding
Bridge abutments	\$1,000.	Concrete block
Decking	\$1,500.	Re-use, if possible
Installation	\$1,500.	
Job layout time (additional)	\$2,500.	
<u>Misc.</u>		
Skid road construction (main)	\$5,000.	
Pre-harvest waterbars	\$3,000.	
TOTAL (Summer)	<b>\$33,500.</b>	

