Environmental and Socioeconomic Consequences of Tar Sands in New Hampshire

Problem-Driven Ecosystem Services Valuation of NH Ecosystems Endangered by a Pipeline Spill

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Abstract

Plans are underway for tar sands to flow through the Portland-Montreal Pipeline (PMPL). A tar sands spill will negatively impact the services provided by ecosystems it contaminates. This research focuses on identifying and valuing at risk freshwater and agriculture in New Hampshire. Our analysis shows a total ecosystem services value of approximately $15 million. This represents a minimum value of the services. Cultural importance, drinking water and recreation are among the undervalued services. There are also unaccounted for downstream ecosystems in Maine and Vermont. As next steps, our research will expand this model along the rest of the pipeline. The broader research will be shared with communities to raise awareness about the importance of the ecosystems at risk.

The Portland-Montreal Pipeline
(Photo curtesy of Fred Field)

The Challenge

- Plans are developing for tar sand pipeline transportation through NH.
- Since 2010, there have been three major inland oil spills in the US.
- They have caused ecological degradation on site and through downstream waterways.[1]
- NH ecosystems provide critical services to residents.
- A tar sands pipeline in NH will endanger important ecosystems.

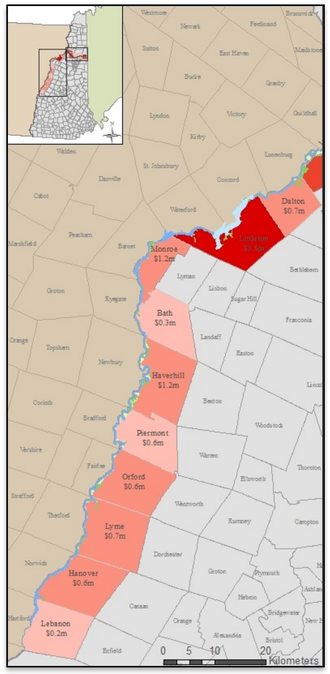
Methods

- Employed Troy, 2012 ecosystem services values for inflow by US $/yr per ecosystem type.[2]
- Ecosystems at risk of contamination are defined by intersecting:
  1) the pipeline,
  2) downstream waterways
  3) 100-year floodplains
     (includes wetlands, pasture & crop land)

Results

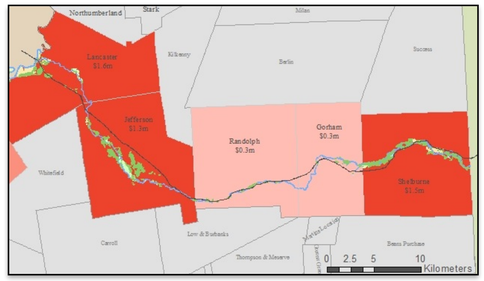
Total Value of Endangered Ecosystem Services per Town

Figure under town name represents total ecosystem services values in $/yr (millions).



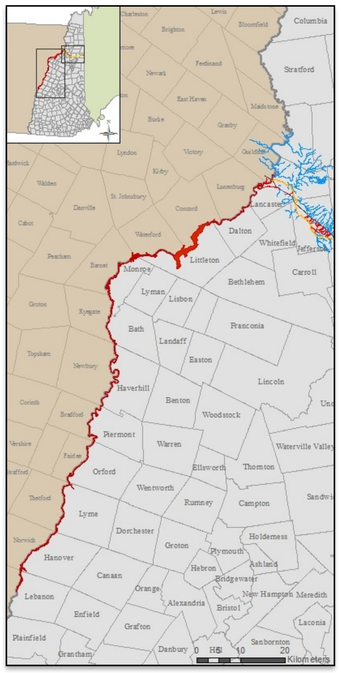
Annual Value of Services by Ecosystem Type

Ecosystem Type	$/acre/yr (2011)	Area (acres)	$/yr (millions)
Lake	$1,617	2010	$3.3
Wetland	$1,846	2465	$4.6
River	$1,182	5890	$7.0
Pasture & hay	$123	640	$0.1
Agriculture crops	$103	1700	$0.2
	Total	12705	**$15.2**



Streamflow and Values of at Risk Bodies of Water

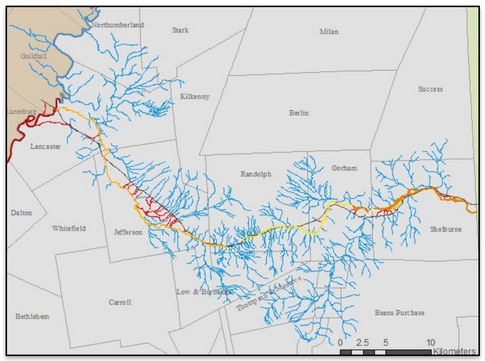
PMPL intersects 80 streams that flow into either the Connecticut or Androscoggin River.



Waterways and Total Services Value (million $/yr)

- At risk streams
- Upstream
- Portland-Montreal Pipeline

Connecticut River	$7.0
Moore Reservoir	$3.1
Androscoggin River	$0.6
Israel River	$0.3
Moose River	$0.2
Reflection Pond	$0.1



Discussion and Conclusions

This study is a beginning for understanding the environmental and socioeconomic risks associated with a tar sands pipeline in NH.

$15.2 million is an underestimate

- Cultural and spiritual importance are under-represented services.
- Recreation and water quality are undervalued in comparison to NH market estimates:

Estimated Statewide Economic Benefits of NH Freshwater Ecosystem Services[3,4] (million $/yr)

	Total Sales	Household Income
Recreation	$900	$300
Drinking Water	$300	$100
Total	$1200	$400

- Contamination risks in NH to the Connecticut and Androscoggin Rivers also endanger the services they provide to neighboring states.

Next Steps

- Expand model to study the full pipeline.
- Present broader research for use to begin addressing the potential risks of ecosystem degradation from a pipeline spill.
- Outreach is key to assessing whether this study is a useful framework for communities.

References

1. Benzank, J & Droisch, Danielle. Going in Reverse: the tar sands threat to Central Canada and New England. National Resource Defense Council. June 2012.
2. Troy, A. "Valuing Maine's Natural Capital." Spatial Informatics Group. April, 2012.
3. Colburn, J. Economic value of New Hampshire Lakes, Rivers, Streams, and ponds (Summary). NH Dept. of Environmental Services. 2010.
4. Nordstrom, A. The economic impact of potential decline in New Hampshire water quality: the link between visitor perception, usage and spending. The New Hampshire Lakes, Rivers Streams and Ponds Partnership. May. 2007.

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