

Youth Conservation Corps

Final Report 2014



Thompson Lake Environmental Association

Prepared by: Drew McLaren, Coordinator/Crew Chief

2014 Staff

Crew:

Aaron Tremblay
Noh Noh
Nick McNelly
Erin Cleary

Coordinator/Crew Chief:

Drew McLaren

Staff Biographies:

Aaron Tremblay 18 years old from Waterford. Aaron is going into his sophomore year at CMCC where he is studying Computer Forensics and Network Security. This is Aarons second year on the crew and his project of choice is Rip-Rap.

Noh Noh 18 years old from Harrison. Noh is going into his Senior year at Oxford Hills Comprehensive High School. In his free time Noh enjoys working on his family farm. This is Nohs first year on the crew and his project of choice is Rip-Rap.

Nick McNelly 17 years old from Oxford. Nick is going into his Senior Year at OHCHS. Nick is passionate about cars, specifically VW's and is looking for a VW truck to restore. This is Nicks first year on the crew and his project of choice is Mulching.

Erin Cleary 16 years old from Oxford. Erin is going into her Junior year at OHCHS. Erin is enthusiastically involved in the High Schools Outing club and DECA program. This is Erin's first year on the crew and her project of choice is Mulching.

YCC Steering Committee:

Tom Ray
Dan Porter
Marcia Matuska
Anita Delecto
Stan Tetenman
Kathy Cain

Watershed Information

Thompson Lake is one of the most pristine water bodies in Southwestern Maine. The water and its surrounding riparian area provide extensive fish and wildlife habitat, outstanding opportunities for swimming, boating, and fishing, and aesthetic character that is highly valued by the public. The lake also provides economic benefits for landowners, businesses, and the towns in the watershed.

The lake has a surface area of 4225 acres. It is situated in portions of three counties (Androscoggin, Cumberland, and Oxford) and four towns (Casco, Poland, Otisfield, and Oxford). The land area that drains directly into Thompson, referred to as a direct watershed, encompasses an area of 35 square miles. Portions of the direct watershed include lands in the towns of Norway and Raymond, in addition to the four towns listed above.

Compared to other Maine lakes, the water quality of Thompson is substantially above average. Water clarity or transparency (the distance one can see down into the water, an important overall indicator of the health of the lake) is very good. Transparency readings often exceed 35 feet. The average transparency for Maine lakes is approximately 17 feet. The water in Thompson is clear because the growth of algae is in balance with the lake ecosystem. Because the growth of algae is in natural balance in the lake, moderately high levels of dissolved oxygen are maintained in the water throughout the year. This allows the lake to support a healthy coldwater fishery that includes trout and salmon. Thompson Lake is one of the relatively few lakes in the area that support both cold and warm water fisheries.

Although present water quality is very good, there are indications that Thompson Lake could decline in the relatively near future. During the past decade water clarity and phosphorus levels have on occasion varied dramatically. Severe and chronic erosion problems have been documented throughout the watershed, resulting in the sedimentation of tributaries and the deposition of silt, sediment, and phosphorus in the lake.

Thompson Lake has been rated “Most at Risk for Development” by the Maine Department of Environmental Protection (DEP). This classification is based on the watershed’s high sensitivity to small increases in phosphorus and also to rapid property development. Although most of the waterfront lots have already been developed, there continues to be development of lots in the second and third tiers.

In 2001, the Thompson Lake Environmental Association received a major Section 319(H) Grant under the Federal Clean Water Act. Part of those funds were to develop a Youth Conservation Corps (YCC) that was focused on providing erosion control solutions on private properties around the lake. The YCC provides the design and the labor to implement the projects, and the landowners pay for the materials and agree to maintain the project for five years.

The YCC is now in its 14th year. Funds from the Section 319(H) federal grant were utilized through December 31, 2004. The continuation of the YCC program now relies completely on grants from the towns bordering the lake and private foundations as well as contributions from individuals.

Problem

As the land surrounding Thompson Lake is developed, the quality of the water is jeopardized. Deforestation on the shoreline has left exposed and unstable soil, allowing runoff to carry it into the lake. Because water is no longer able to filter through a wooded buffer, it is easier for pollutants to be carried directly into the lake. The construction of homes has also had a significant impact on the quality of the lake. Soil recently excavated is subject to transportation into the lake every time it rains. Nutrients found in the soil are carried into the lake at high levels, greatly increasing the risk of algal blooms. To maintain the high quality of water in Thompson Lake, the YCC will stabilize shoreline areas and eroding sites throughout the watershed to keep both sediment and excess nutrients out of the lake.

Phosphorus

Nutrients are essential to life not only for land plants and animals but for aquatic life as well. Phosphorus is one of these necessary nutrients, but too much of it is detrimental to the survival of aquatic organisms. Aquatic life in many areas is becoming increasingly more exposed to phosphorus, and its devastating effects are harmful not only to the environment, but also to land values and recreational uses on and around lakes. The damage is extremely difficult and very expensive to fix. *The costs to restore it are enormous when compared to costs of prevention.*

Phosphorus enters the lake primarily through runoff and sediment. Normally, as phosphorus travels with runoff towards a water source, it encounters many natural buffer zones such as a forest, which filters the nutrients before ever reaching the water source. The nutrients in the runoff are deposited into the soil and are used by the native plant growth. However, with the increase of construction around lakes, many more impervious surfaces have come into existence. These surfaces allow water flows to become concentrated and scour more channels, collect more nutrients, and exit the land into lakes, rivers, and streams. A decrease in forested areas and an increase in bare lawns, tarred roads and impervious surfaces have allowed nutrient-rich sediment to easily access the water.

Once in the lake, phosphorus and other nutrients act as fertilizers to plants especially algae. The more phosphorus algae receive the more they use and the faster they grow. In a short amount of time, a clean lake can be transformed into a green and undesirable water source due to algal blooms. The algae can very quickly destroy a lake by reducing levels of dissolved oxygen and blocking sunlight to plants. Water quality goes down, as well as property values along the lake. The effects of too much phosphorus are devastating. Also, sediment itself can have damaging effects on a lake by changing shoreline areas and altering the habitat.

Summer Synopsis:

With the departure of Justin St. John, Drew McLaren agreed to return as Coordinator/Crew Chief as the YCC works to transition to a new era of leadership. With a young crew and a reduction in work requests the YCC completed fewer jobs than it has in years past. However, working through the 319 Grant coordinated by Cumberland County Soil and Waters Heather True the YCC was able to complete six projects in the towns of Poland and Casco. This is a large increase in projects from years past for these two towns. This did fall two jobs short of our 8-job goal within the Grant, but took up a large chunk of our season to complete.

- The crew completed 15 erosion-control jobs for landowners throughout the watershed. This report is a summary of all the erosion projects our YCC completed this year.

Summary of Completed Jobs:

Town	Jobs Completed
Casco	2
Otisfield	4
Oxford	5
Poland	4

Project Completion Date: 7/1

Oxford



Material	Units of measurement	Quantity	Cost per unit	Total cost
Rip-Rap	Cubic Yards	8		
3/4" Stone	Cubic Yards	0.5		
Labor	Hours	20		
Maine sales tax	5%	—	—	
			Total:	

Problem: This shoreline was eroding due to its steep slope and exposure to waves and ice.

Solution: The YCC hand-placed rip-rap to prevent further erosion and undercutting.

**Thompson Lake Shores Association
Right-of-Way
Thompson Lake Shores Rd.
Casco (319)**

Project Completion Date: 7/3



Material	Units of measurement	Quantity	Cost per unit	Total cost
Erosion Control Mulch	Cubic Yards	15		
Timbers	Board Feet	26		
Rebar	Linear Feet	28		
Crushed Stone	Cubic Yards	0.5		
Labor	Hours	6		
Maine sales tax	5%	—	—	
			Total:	

Problem: The right of way for Thompson Lake Shores Association was losing coverage from foot traffic and starting to erode.

Solution: The YCC installed two water-bars and mulched the entire right of way with Erosion control mix. This should divert water off from the pathway and reduce the impact of foot traffic.

Project Completion Date: 7/7

Poland (319)



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	2"x8"x12'	4		
Pressure Treated Lumber	2"x8"x10'	1		
Pressure Treated Lumber	2"x8"x8'	5		
Pressure Treated Lumber	2"x6"x8'	10		
Pressure Treated Lumber	2"x6"x12'	8		
Pressure Treated Lumber	2"x6"x10'	2		
Pressure Treated Lumber	2"x4"x8'	2		
Nails		5		
Labor	Hours	12		
Maine sales tax	varies	—	—	
			Total:	

Problem: This driveway was scouring, creating concentrated channels for water run-off.

Solution: The YCC installed four box-culverts to divert water from the driveway.

Project Completion Date: 7/15

Poland (319)



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	12'-2x8"	2		
Nails	N/A	N/A		
Labor	Hours	3		
Maine sales tax	varies	—	—	
			Total:	

Problem: This pathway was eroding from frequent foot traffic and seasonal run-off. He had box culverts installed, however they were built incorrectly.

Solution: The YCC replaced existing box culverts with a more stable box.

Project Completion Date: 7/21

Oxford



Material	Units of measurement	Quantity	Cost per unit	Total cost
Rip-Rap	Cubic Yards	14		
Labor	Hours	16		
Maine sales tax	varies	—	—	
			Total:	

Problem: This shoreline was eroding due to its steep-slope and prolonged exposure to waves and ice.

Solution: The YCC hand-placed rip-rap to protect against further erosion.

Project Completion Date: 7/24

Otisfield



Material	Units of measurement	Quantity	Cost per unit	Total cost
Rip-Rap	Cubic Yards	14		
Labor	Hours	18		
Maine sales tax	varies	—	—	
			Total:	

Problem: This shore was undercutting as a result of exposure to ice and waves.

Solution: The YCC hand placed rip-rap to armor the shoreline and prevent further erosion.

Project Completion Date: 7/29

Casco (319)



Material	Units of measurement	Quantity	Cost per unit	Total cost
Erosion Control Mix	Cubic Yards	28		
Labor	hours	12		
Maine sales tax	varies	—	—	
			Total:	

Problem: This property had a lot of bare area on his property, leaving it vulnerable to erosion.

Solution: The YCC mulched the bare area of his property to reduce the impact of water run-off.

Oxford

Project Completion Date: 7/31



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	2x6x10	2		
Pressure Treated Lumber	2x6x12	2		
Pressure Treated Lumber	2x8x10	1		
Pressure Treated Lumber	2x8x12	1		
Pressure Treated Lumber	2x4x8	1		
Nails	n/a	1		
Labor	Hours	4		
Maine sales tax	Varies	—	—	
			Total:	

Problem: This property has a seasonal run-off channel that runs right through his driveway and underneath his camp.

Solution: The YCC installed a box culvert and two plunge pools to slow down the run-off.

Project Completion Date: 8/5

Oxford



Material	Units of measurement	Quantity	Cost per unit	Total cost
Rip-Rap	Cubic Yards	14		
Labor	Hours	7		
Maine sales tax	varies	—	—	
			Total:	

Problem: This shoreline was eroding due to its exposure to waves and ice.

Solution: The YCC hand-placed rip-rap to protect the shoreline from further erosion.

Project Completion Date: 8/6

Otisfield



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	8' 2"x6"	6		
Pressure Treated Lumber	12' 2"x6"	2		
Pressure Treated Lumber	10' 2"x6"	2		
Razor Bar Rubber	Linear Feet	46		
Nails	n/a	3		
Labor	Hours	5		
Maine sales tax	varies	—	—	
			Total:	

Problem: This road was experiencing severe scouring that was developing concentrated run-off channels.

Solution: The YCC installed 3 Razor bars to divert run-off into the duff layer on the side of the road.

Project Completion Date: 8/6

Otisfield



Material	Units of measurement	Quantity	Cost per unit	Total cost
Razor Bar Rubber	Linear Feet	12		
Labor	Hours	1		
Maine sales tax	varies	—	—	
			Total:	

Problem: A razor bar in this driveway had ripped.

Solution: After a handful of razor bar failures over the last few years the YCC decided to try a new fabric reinforced rubber. Replace the rubber in this razor.

Project Completion Date: 8/6

Otisfield



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	8'-6" x 6"	2		
Labor	Hours	1		
Maine sales tax	varies	—	—	
			Total:	

Problem: The water bars in this pathway from the parking area down to the cottage had rotted out.

Solution: The YCC replaced old rotten timbers with new pressure treated timbers. With a recommendation to replace the rest next year and add more stone.

Project Completion Date: 8/7

Poland (319)



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	16' 2"x6"	4		
Pressure Treated Lumber	16' 2"x8"	1		
Pressure Treated Lumber	8' 2"x4"	1		
Razor Bar Rubber	Linear Feet	16		
Nails	n/a	2		
Labor	Hours	4		
Maine sales tax	varies	—	—	
			Total:	

Problem: These water diverters were no longer doing the job. Leading to erosion in the driveway and down the pathway to the lake.

Solution: the YCC took out the defective water diverters and put in a new box culvert and a new razor bar.

Project Completion Date: 8/11

Oxford



Material	Units of measurement	Quantity	Cost per unit	Total cost
Pressure Treated Lumber	2x4-8'	1		
Pressure Treated Lumber	2x8-10'	1		
Pressure Treated Lumber	2x6-10'	2		
Pressure Treated Lumber	2x8-12'	1		
Pressure Treated Lumber	2x6-12'	2		
Pressure Treated Lumber	2x8-16'	1		
Pressure Treated Lumber	2x6-16'	2		
Nails	n/a	3		
Labor	Hours	4		
Maine sales tax	5%	—	—	
			Total:	

Problem: This property had severe scouring in the driveway.

Solution: The YCC installed three box culverts, two in Sanborn Lane and one in a private driveway.

Project Completion Date: 8/12

West Poland (319)



Material	Units of measurement	Quantity	Cost per unit	Total cost
Rip-Rap	Cubic Yards	3		
Delivery	n/a	1		
3/4" Stone	Cubic Yards	5		
3/4" Crushed Gravel	Cubic Yards	18		
Pressure Treated Lumber	16' 2"x6"	4		
Pressure Treated Lumber	16' 2"x8"	2		
Pressure Treated Lumber	10' 2"x8"	1		
Pressure Treated Lumber	10' 2"x6"	2		
Pressure Treated Lumber	8' 2"x4"	1		
Nails	n/a	3		
3/4" Crushed Gravel	Cubic Yards	1		
4" Drain Pipe	10'	2		
4" ADS Pipe	Linear Feet	30		
Labor	Hours	20		
Maine sales tax	varies	—	—	
			Total:	

Problem: This property had severe scouring in the driveway and a shoreline that we undercut.
Solution: The YCC resurfaced their driveway with 3/4" crushed gravel and installed three box culverts to divert the water. On the shoreline the YCC hand placed rip-rap where there was undercutting.