Watershed Stewardship Program

Program Summary, Research Findings and Recommendations
2001

Paul Smith's College - The College of the Adirondacks

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Table of Contents

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Executive Report - 2001

Prepared by Eric Holmlund,
Director of the Watershed Stewardship Program of Paul Smith's College

The summer of 2001 brought with it a remarkable expansion of service to the Paul Smith's College region for the Watershed Stewardship Program. The Upper Saranac Lake Association decided to sponsor the Upper Saranac Lake Stewardship Program, based on the successes of the St. Regis Lakes Stewardship Program. Meanwhile, the St. Regis Lakes Stewardship Program enjoyed its second summer of exemplary service on Upper St. Regis, Spitfire and Lower St. Regis Lakes. The two programs are managed together under the umbrella of the newly-named Watershed Stewardship Program of Paul Smith's College, sharing staff and resources. Both programs enjoyed excellent press coverage from the Adirondack Daily Enterprise, including a full-page color photo spread chronicling the Educational Programs effort of the Watershed Stewardship Program, which offered fun and educational experiences to area children. At this point I have received serious inquiries from two other area lake associations interested in hosting Stewards, which attests to the quality of our program. I am once again very proud of the diligent work of our Stewards.

Background

The Watershed Stewardship Program (WSP) at Paul Smith's College is a community-based program designed primarily to educate the public about conservation, preservation, and stewardship issues of the Lower and Upper St. Regis Lakes, Spitfire Lake, Upper Saranac Lake

and the St. Regis Mountain trail and summit. The WSP also fulfils research and service functions. Baseline data concerning recreational use patterns and vegetation cover gathered through this program will aid in the development of an area management plan being prepared by the Department of Environmental Conservation. Stewards maintain and clean up public campsites on the program area lakes and the St. Regis Mountain summit and identify and remove invasive purple loosestrife plants from the waterfronts of agreeable property owners. The WSP takes advantage of the skills and training of students from Paul Smith's College's Natural Resources, Environmental and Forestry programs with direction from one of the College's professors. An advisory committee of community stakeholders (including lake associations and The Nature Conservancy), state organizations (including the DEC and APA) and Paul Smith's College faculty help guide the program.

Summer, 2001

The Watershed Stewardship Program enjoyed a successful and rewarding summer of service to the resources and people of the St. Regis Lakes and Upper Saranac Lake

Personnel. The program provided funding for four full-time Stewards and two part-time Stewards. Three positions were filled by Paul Smith's College students and recent graduates in the Natural Resources baccalaureate program at the college. One position was filled by a Paul Smith's College faculty member who is a graduate of the EET program. Two positions were filled by students associated with other colleges: Cornell University and SUNY Potsdam. One of

the full-time Stewards served as an Assistant Director, and the Program Director's position was reduced to half-time due to budget limitations.

The first month of program operation, May, was devoted to staff training and program development. After an intensive initial week of orientation to program policies, equipment, interpretive methods and safety, the stewards attended training sessions specific to their areas over the following two weeks. The stewards attended instructional sessions by the Director of the program (policies, interpretive methods, map and compass, etc.), DEC Forest Ranger Joe Rupp (orientation to St. Regis Canoe Area and St. Regis Mountain), the Adirondack Aquatic Institute interns (water testing methods), Jane LaVoy (boater safety), the Nature Conservancy's Bill Brown (exotic aquatic invasive species identification), the St. Regis Owners' Association's Anne Weld (orientation to St. Regis Lakes history and current water quality and recreation issues), Curt Stiles (orientation to Upper Saranac Lake program requirements and background), and Charles Ritchie (Upper Saranac Lake history).

Steward Duties. All stewards were on duty during the day and returned to their homes in the evening. Stewards were responsible for environmental education/interpretation at the St. Regis Landing and Saranac Inn Landing, focusing on the control of exotic invasive plant and animal species, recreational information and local history. Stewards also conducted research throughout the lake systems and performed service projects. Steward research projects included a human impact survey of the Black Pond Swamp area of Upper Saranac Lake, a plankton study of Upper Saranac Lake, a shoreline development assessment on Upper Saranac Lake, water quality

monitoring of the St. Regis Lakes, a bird survey of the St. Regis Lakes, purple loosestrife assessment and removal on the St. Regis Lakes, and an herbarium and digital imaging project of plants on the St. Regis Lakes. Stewards also compiled statistics on recreational use at both boat launches (every day, Memorial Day to Labor Day) and on St. Regis Mountain on the weekends. Stewards stationed at the summit of St. Regis Mountain on the weekends offered interpretation and education to the public.

Of particular interest was the construction during July of a boat washing station at the St. Regis Launch. Stewards used this as an interpretive tool and offered assistance in washing boats before they were launched. This structure offers an excellent means of preventing boat-borne invasive species from entering lake systems. However, Stewards found that and use of the boat wash station was less than they had hoped. Visitors tended to drive quickly past the boat wash station to the boat launch itself without stopping. Suggestions for improving visitor use of the boat wash station include: 1.) Move the interpretive sign to the center of the boat wash station. It was frequently obscured by parked vehicles at its present location. 2.) Have a second interpretive sign mounted on a movable sawhorse stationed directly off of the road in a highly visible location. Perhaps add a colored pylon or survey tape to attract attention. 3.) Have Stewards stationed either at the boat wash station or between the launch and the boat wash station, instead of close to the lake. This will allow Stewards to move between the launch and the boat wash station more effectively.

Staff: Summer, 2001

Name	Position
Bailey, Cherise	Steward
Bried, Jason	Assistant Director, Steward
Holmlund, Eric	Director (half-time)
Lord, Patrick	Steward
Riedl, Jeremy	Steward
Salmonsen, Laura	Steward
Sauther, Karen	Steward

Important Research Findings

Lake and Mountain Stewards conducted five research projects over the course of the summer which gathered information about recreational use and flora characteristics in the region. The reports which follow express findings in great detail, and the significance of each specific finding will depend on the reader's interest. To summarize a few highlights, there were 489 total watercraft reported as launched at St. Regis Landing, of which canoes were the most common (54.6%), followed by motorboats (~28%) and kayaks (~13%). 1005 people were tallied as passing through the boat launch area. These statistics represent a fair amount of use, a good opportunity for educational contacts by the stewards, and many boat hulls and props that could be cleaned of invasive species.

St. Regis Mountain saw 2151 hikers with an average group size of 5 (554 total groups) from 5/27/00 to 8/19/00. The average hiker spent 37 minutes at the summit, and about one-fifth of hiking groups were accompanied by a pet. (This does not include the ubiquitous summit dog, who reportedly lives on the Keeses Mill Road.) Saturdays (not surprising) were found as the busiest day of the week, while Tuesdays (surprising?) were the second most-visited day. About

40% of hikers were judged "unprepared" by the stewards (not wearing sturdy footwear, wearing cotton clothing, not carrying a backpack), which may reflect a casual attitude about the perils of the hike.

In addition to recreational data, stewards collected information about water quality and vegetation present in wetlands.

Program Recommendations

Once again I can without reservation recommend that the Watershed Stewardship Program be allowed to continue into the future. We have built on the accomplishments of the first summer and have expanded our offerings to another lake. Once again, the program provided a dynamic, challenging and flexible work-learning experience for our Natural Resources students, and allowed them to create and conduct research projects for an extended period of time, in all sorts of weather, excepting snow. The students also created and contributed a goodly amount of information to the public and to policy makers, while contributing to public education and conservation. Our handful of stewards were visible to over 3,000 recreational users in our back yard, and had personal contact with most of these outdoorspeople.

Specific Recommendations:

Personnel

- Begin recruitment and promotion among PSC students in the middle of the fall semester.
- Keep emphasis on juniors and seniors- they have the research skills and added maturity that are assets to the position. Be open to exceptional sophomores, etc.

- Attempt to attract one or two of last year's Stewards to work again in the summer of 2001. Offer a pay raise. This additional experience will help program get off to a fast start.
- Involve scientists (e.g, Evans, DeAngelo, Dahlen, Stager) more closely in staff training to ensure that stewards are truly up to speed on flora/fauna and equipment use.
- Retain one steward to continue research projects part-time over the Fall and Spring semesters.

Equipment

- Buy 6 new Vertex handheld radios. The radios we used were not reliable.
- Continue to use PSC's Campus Safety/Recreation johnboat. It served our purposes well and is an existing resource.
- Purchase a laptop computer for administrative use by the director and lake stewards while on duty at the St. Regis Landing.
- Purchase a digital camera that allows for 200 dpi resolution for recording vegetation and landscape images

Information/Education

- Purchase/construct a bulletin board/interpretive sign at St. Regis Landing that has a map and other visual aids to help communicate stewardship message.
- Complete the web-based guide to local vegetation that uses the digital camera to take images.
- Work with NCPR to produce a radio news piece featuring our program and its interaction with local interest groups.
- Upgrade and streamline the webpage presentation of data.

Research

- Finish construction of a pressed-plant herbarium of wetland plants.

Programs

- Revisit our coverage of St. Regis Mountain and other local trail systems. Investigate alternative partners interested in land-based conservation.
- Do a program wide risk management assessment; write a risk management plan.
- Do more intensive safety and contingency planning for staff, especially for our educational programs with area children.
- Investigate program expansion to Lower Saranac Lake and/or Lake Placid.
- Investigate the addition of a boat wash station at the Saranac Inn public launch.

Finances

- Work with PSC Administration to address growing program deficit that carries over from year to year.
- Work with Institutional Advancement Office to approach funding sources in a timely manner. Goal: secure funding by January 2002 for summer, 2002.

WSP Funding

The Watershed Stewardship Program is funded by Colin and Joann Danzis, the Upper Saranac Lake Foundation, the St. Regis Lakes Foundation and Paul Smith's College. We invite current donors to continue their support of this successful and innovative program, and welcome new donors to join in this exemplary effort. The Watershed Stewardship Program is an exceptional example of a cooperative, community-based effort to protect threatened natural areas within the Adirondacks. I am available to meet with interested parties to discuss future plans and opportunities for program support in detail.

Purple Loosestrife Removal Project: St. Regis Lakes

Prepared by: Jason Bried, Assistant Director

Introduction

Purple Loosestrife (*Lythrum salicaria*) removal on the St. Regis Lakes during the 2001 Watershed Stewardship Program focused on monitoring sites from the 2000 season while extracting occurrences of spotty individuals, dense aggregate populations, and high priority communities from pre-existing and newly discovered target areas. In the pre-stages, five removal sites from the 2000 season were visited and entered into a GPS unit for use by Steven Flint as part of the "Adirondack Park Non-Native Invasive Plant Species Initiative", which is a joint venture between the DEC, APA, NYS DOT, and the Adirondack Nature Conservancy/Adirondack Land Trust. Mr. Flint is The Nature Conservancy's Invasive Species Project Coordinator and also served as a contact and resource for the Watershed Stewardship Program throughout the 2001 *L. salicaria* removal project in the St. Regis Lakes basin. In addition, Mr. Flint spent time cutting and bagging flower heads at the Camp-Regis Applejack high priority site. On July 19th, the Watershed Stewardship Program proceeded with cutting, digging, pulling, bagging, and discarding all *L. salicaria* material and debris from several locations along the St. Regis Lakes chain. Throughout the ensuing project period additional monitoring and assistance came from Mr. and Mrs. Lewis and Sheila Rosenburg, who are camp owners on Spitfire Lake.

Materials

Short-handled spade, four-pronged pitch fork, pruning shears, 3cm 50gal black plastic garbage bags, digital camera, topographic map.

Results/Discussion

The rootstock and above surface portion of nearly **900** *L. salicaria* individuals and "clumps" in varying developmental stages were taken from seven general locations on seven dates between mid-July and early August (see the GIS map showing removal sites in the Appendix). Three of these seven sites were follow up assessments of the nine total that were addressed during the 2000 Program season. The remaining six project areas (of the nine) from the summer of 2000 had no observable regrowth. Of the seven locations for 2001, four were on private property, one sat adjacent to private property, and two were on state land. The table on the following page reveals estimated abundance and condition (i.e. dense, light, spotty, dense pockets) of plants removed from the seven sites (refer to the GIS map), and their respective "land classifications" (i.e. public or private).

Map Unit (Site Name)	**Estimated # Removed***	**Condition**	**Land Classification**
S1	30	spotty	public
S2	25	spotty	public

S3	18	light	private
S4	110	dense	public
S5	250	dense pockets	private
S6	5	light	private
S7	450	dense	private

***All observed plants in the target sites were removed; the estimated # removed is also the abundance level of individuals for each site**

Of the seven locations, the peaty-muck lowland lying between Webber's and Rettew's camps (S5) and the *sphagnum* mat beside Camp-Regis Applejack (S7) were high abundance and high density sites. The slough's (i.e. the fragmented bog mats between Spitfire and Lower St. Regis) two general removal areas (S1 and S2) had much lower abundance and a spotty distribution of *L. salicaria*, but they, along with Camp-Regis Applejack, would be considered "high priority" in terms of The Nature Conservancy's invasive species program guidelines. A "high priority" establishment is designated as such when the invasive could disrupt an 'intact, vibrant, and ecologically diverse/sensitive setting'. Both the slough region and Camp-Regis Applejack's adjacent wetland expanse are rich in floral diversity. The slough is also habitat for many birds that rely on the native vegetation for breeding/feeding purposes. If left unattended, *L. salicaria* could directly displace native vegetation and indirectly affect avian communities in

these environs. Meanwhile, the invasive establishment at Camp-Regis Applejack is particularly dense and is seemingly becoming a monoculture (i.e. a plant community of just *one* species)!

As mentioned earlier, six of the nine sites from last summer's project had no observable rebound efforts. For the three that did, there were fewer occurrences then what was initially accounted for in 2000. The following table compares the observed abundances/quantity removed between 2000 and 2001 for these three follow-up sites.

Map Unit (Site Name)	2000 abundance/# removed	2001 abundance/#removed
S1	121	30
S2	80	25
S6	10	5

This table reveals marked declines in the presence of *L. salicaria* for these follow-up target areas.

By the end of the harvest, we had filled up twenty 50gal bags full of *L. salicaria* debris, all of which were taken to the Lake Clear transfer station. We also continued to fill out "Invasive Species Observation Forms" (see a copy of an actual completed form in the Appendix), which were mailed in to The Nature Conservancy.

Steven Flint and I both feel that water and wind are the key transport mechanisms in distributing *L. salicaria* seed throughout the St. Regis Lakes chain. The invasive has

undoubtedly taken hold at Camp-Regis Applejack because of wind, while it has arrived in other sites, such as the slough (S1,S2), by water and/or wind. The slough (between Lower St. Regis and Spitfire lakes) could have obtained its communities through the rather fierce and consistent westerly and south-westerly winds that whip across Spitfire Lake. Perhaps the dense pocket establishment which is diagonally situated south-west of the slough between Webber's and Rettew's camps (S5) is the origin of the slough's establishment. Seed capsules falling into the water could have been carried across the lake by the wind induced wave direction. At Camp-Regis Applejack the community is most dense on its western side near the camp buildings, and it is sparsely spreading eastward across the sphagnum mat because of the wind.

Other potential distribution factors for any of the seven St. Regis Lakes' sites may include boat traffic and other human disturbances (i.e. treading through the infested area), along with waterfowl mobility (i.e. seeds can cling to their feet and bodies as well). There is also substantiated evidence that red-winged blackbirds (of which there are many on the St. Regis Lakes) eat the capsules, so they may be consuming, moving, and then excreting the still-viable seeds! These transport mechanisms, however, are minor relative to wind and water.

Conclusions/Recommendations

Based on this season's follow-up and evaluation of last season's *L. salicaria* removal project, mixed success for total eradication can be expected. Six out of last season's nine target

areas did not have any observable regrowth, so you might infer that these sites are safely stabilized. However, further monitoring of all nine previous sites and this year's four newly discovered locations is strongly recommended, in addition to continual scouting of the entire shorelines on all three lakes.

It can be difficult to thoroughly pull *L. salicaria* rootstock because of certain soil environments (i.e. dry vs. wet, sphagnum/peat vs. mucky saprist, sphagnum vs. 2 to 3% silt-clay outwash, etc.) neighboring vegetation (woody vs. herbaceous, tall shrubs like alders vs. clumps of leatherleaf/sweetgale, etc.), and each individual plant's unique characteristics.

Flower head cuttings may have been a little late for some sites this season (e.g. S4, S5, S6), but there is no guarantee that problems will result. Steven Flint believes that even though flower petals are dropped in early August, the exposed capsules will not disperse seed for another couple of weeks due to the higher altitudes and relatively cooler climate of our region. We had all of our flower spikes cut and bagged by August 8th.

There is greater probability of more invasive activity occurring again at the higher abundance sites (i.e. S4, S5, S7). This can be expected because there were proportionally greater chances of missing seedlings or non-flowering adults hidden in the concealing, native vegetation. Furthermore, the most ecologically sensitive sites (i.e. S1, S2, S7) and higher abundance/density areas were more susceptible to human induced spreading as clothing and tools shifted through the affected area increasing disturbance potential. Finally, at any of the removal sites portions of the rootstocks could have been left behind, compounding the rate of "underground revival".

These factors necessitate further monitoring and evaluation of all previous project locations.

UPPER SARANAC LAKE: Purple Loosestrife Assessment

Under an initiative that came from Curt Stiles and the Upper Saranac Lake Association (USLA), the Watershed Stewardship Program proceeded with monitoring Upper Saranac Lake shoreline for the presence of Purple Loosestrife (*Lythrum salicaria*). No individuals or communities were observed. However, due to time constraint from other program duties, we acknowledge the fact that this assessment was not done thoroughly. We spent one afternoon scouting the Upper Saranac Lake shoreline by boat during early August. At that time of year, the invasive is still sporting its dense purple flower raceme, just prior to dropping petals and exposing the seed capsules that generally disperse a couple of weeks later, and thus is highly visible if present.

Our search was limited by time, which allowed us to access random areas on the lake and to take visual inventories. Future monitoring of all the shoreline surrounding Upper Saranac Lake is necessary for making accurate site evaluations. In 2002, the Watershed Stewardship Program should design research protocols and perform extensive field surveys for *L. salicaria* early on in the summer season.

St. Regis Lakes Water Quality Study

Prepared by: Jason Bried, Assistant Director

Introduction

Water quality monitoring in the St. Regis Lakes chain was continued during the 2001 Watershed Stewardship Program. This season's findings may serve to supplement the data gathered by the Citizens Statewide Lake Assessment Program (CSLAP) and other independent researchers or organizations (i.e. Steve Lamere, Adirondack Ecologists). Lake assessment data can be viewed on our web-site at **www.paulsmiths.edu/~regis/lake01.htm**.

Methods/Constraints

Testing was performed in terms of the same five parameters (i.e. pH, conductivity, dissolved oxygen, temperature, and transparency) described in the 2000 "Water Chemistry Study" summary report. However, certain past procedures deviated this season due to an assortment of technical difficulties and time constraints.

Although the eleven study sites designated during the previous year were sampled again this year, the Upper St. Regis deephole data was deemed unreliable and was eventually scrapped.

We could not anchor in the 30m deephole, so the wind steered our boat and caused the probe meter to duck and dodge the intended measurement depths. Winds created uncertainty for much of our data at most of the monitoring locations (some are more exposed than others).

Equipment malfunctions were another major factor contributing to possible discrepancies. The first time out (June 8th), the pH meter on the digital water checker may not have been giving accurate readings. For the second outing on July 13th, the D.O. probe on the same water checker failed to calibrate and therefore could not make up it's "mind" on what numbers to settle on. During both of these misfortunes, we did our best to make sensible estimates and averages out of the jumbled read-outs being displayed. The jinx continued on what turned out to be a doomed third testing day (August 17th), because neither the pH nor D.O. were working.

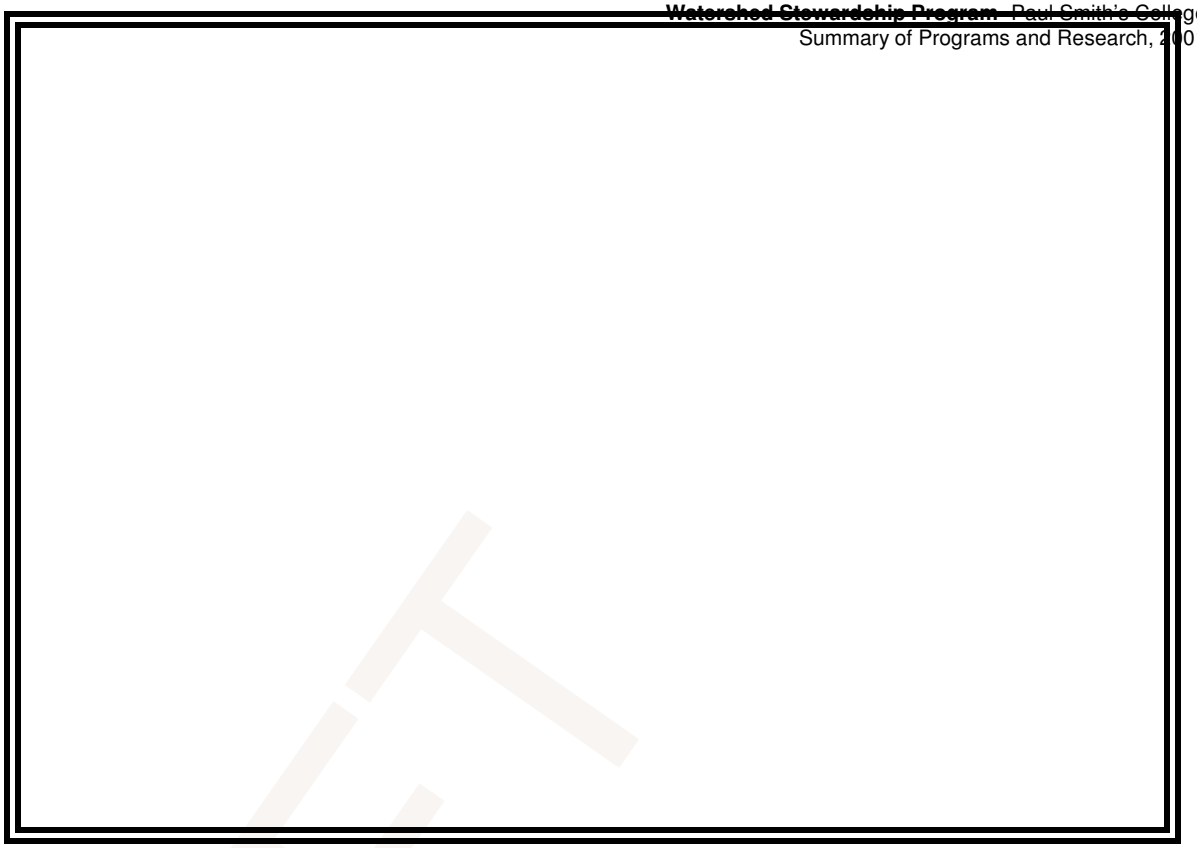
As a result of everything mentioned so far, in addition to a greater Program workload tying up available time, water quality monitoring was only performed at ten of the original eleven sites and on only two out of three intended dates for the 2001 Watershed Stewardship Program season.

Results/Discussion

Although testing was done on two days (i.e. June 8th and July 13th) this year as opposed to four or five last year, the data collected is useful for doing comparison studies to what has already been done and what will be done in future Watershed Stewardship Program seasons.

Like last year, all measurements taken at each study location were compiled onto a computer spreadsheet and placed in the Appendix section. To help add meaning to these findings, we've also inserted into the Appendix a "Definitions Page" explaining what pH, conductivity, dissolved oxygen, transparency, and trophic states are, along with the significance of each. Most of the information in the definitions page comes from the following source: Horne, Alexander J. Limnology, 2nd edition, McGraw-Hill, Inc., New York, 1994. Also, some of the following discussion and some of the information contained in the definitions page is based on reports/comments by Michael Martin, former director of the Adirondack Aquatic Institute (AAI), former Paul Smith's College faculty member, and presently with the Adirondack Park Agency.

Weather conditions always have to be considered when analyzing trends in water quality. The St. Regis Lakes, like the rest of the region, had received heavy precipitation during the winter of '00-'01 and during the late spring-early summer months of 2001. This means that there was excessive runoff in the Regis watershed during the spring snow melt, undoubtedly followed by overflow from supersaturated wetlands (of which there are many in the St. Regis basin) when the steady rains came. But by mid-July, the rain had either stopped entirely or at least become more intermittent, while temperatures reached ninety and beyond with rising humidity. These conditions provided ideal lake habitat for algae blooms, which were seen again in Spitfire (east end) and through the slough for a brief time in late July. You can see from the following graph that these warm air temperatures coincided with relatively warmer surface water temperatures on July 13th in comparison to June 8th.



Although these July 13th surface temperatures are considerably lower than last year's mid-July measurements, the epilimnion (i.e. upper water level) soon warmed enough to support the blooms observed in the slough and in Spitfire's east end. Although the planned mid-August

testing date never occurred (for reasons mentioned in the 'Methods' section), we may infer that the late July onslaught of hot, dry weather raised surface temperatures significantly, providing ideal aquatic conditions for algal growth.

If we can trust the accuracy of our dissolved oxygen (D.O.) readings, then we can say that they were very low (<5mg/L) on June 8th, doubling for many of the study areas by July 13th. Last year's D.O. levels seemed to have no pattern, but they were generally higher than this year, especially in the epilimnion. A possible reason for the difference may lie in the fact that this year we had more snowfall and late spring rain than we had last year. The slough and other bog mats in the St. Regis basin may have overflowed and spilled their particulate matter (i.e. sediments, debris, etc) into the lakes while overland runoff transported the same, all of which place heavier demands on oxygen. In the lower depth zones (hypolimnion) at most locations, bacterial decomposition has used up the oxygen, allowing for a natural and common anoxic state (0 mg/L). Scientifically speaking, these dissolved oxygen levels are adequate enough to support productive cold and warm water fisheries (see the "Reference Page" in the Appendix), except perhaps during late Spring and early summer. From talking to fishermen at the Upper St. Regis boat launch during our recreational use survey, it seems that they were generally having mixed success throughout the season.

The pH values obtained on the surface are slightly alkaline or slightly acidic, while those at one meter from the bottom usually indicate a slightly acidic ion abundance. This means that pH levels are acceptable for supporting aquatic life. In fact, pH is the one parameter whose values

have increased for the better since last year's study! It is possible that bog water, which is very acidic, has flushed out surplus hydrogen ions into the adjacent lakes, accounting for any of the lower pH measurements (e.g. at Keesemill Bog, East Side of Spitfire). Please remember that, like dissolved oxygen, we have to question the reliability of the pH data (at least for June 8th) due to the equipment problems.

Conductivity measurements have not produced any dramatic changes since last year. Where conductivity is highest, such as in the hypolimnion of the Lower St. Regis deephole, it is possible that this is the result of natural tainting from such sources as the adjacent slough, rather than because of any human born pollution.

Conclusion

In terms of this study's comprehensiveness, or lack thereof, the gathered data has not alerted us to any major concerns regarding the health of the St. Regis Lakes. Although lakes are classified according to more factors than were used in this assessment, past and on-going tests for concentrations of, say, phosphorus and chlorophyll *a*, in combination with water checking (pH, conductivity, D.O., etc), indicate that all three lakes are mesotrophic (see "Definitions"). Perhaps it can be argued that all three lakes are more eutrophic than oligotrophic, especially Lower St. Regis with its lower transparencies (<2.5m) and higher conductivities (relative to Spitfire and

Upper St. Regis). Still, the lakes seem to have stabilized between these two trophic states, showing no digressions towards the undesirable. Let us hope that cultural eutrophication (i.e. lake health negatively impacted by human-related activity) was a thing of the past. Continued water quality monitoring in the future is absolutely necessary for drawing the most accurate and finalized conclusions.

Definitions

Trophic States

- Oligotrophic⇨nutrients are in short supply, unproductive, clear, usually deep, high dissolved oxygen
- Eutrophic⇨abundant nutrients, productive, turbid, shallow, fluctuating oxygen levels
- Mesotrophic⇨share characteristics of both Oligotrophic and Eutrophic lakes

pH⇨	hydrogen ion concentration, which controls acidity. <7=acidic; >7=basic (alkaline); 7=neutral. <5.0=critical (impaired fish and other biota); 5.0-6.0=endangered (threatened fish and other biota); >6.0=satisfactory (acceptable for fish and other biota)
Conductivity⇨	ability of water to conduct an electric current. Higher conductivity values indicate pollution from either natural (e.g. swamps) or human (e.g. road salt) sources.
Dissolved Oxygen⇨	the oxygen content of lakes, with the oxygen coming from the

atmosphere and photosynthesis processes in the epilimnion (upper water layer). Oxygen levels play a big role in fisheries health.

Transparency⇨ measurement of water clarity based on how far into the water column light reaches; it is obtained simply with a secchi disk and is a major indicator of lake trophic state.

BLACK POND SWAMP STRESS/DISTURBANCE ASSESSMENT

Prepared by: Jason Bried, Assistant Director

On June 21st, 2001, Bill Brown of The Nature Conservancy asked if the Watershed Stewardship Program would be interested in performing a stress/disturbance assessment within Black Pond Swamp. Most of this wetland complex is in more than 20,000 acres of undisplaced (i.e. roadless) spruce-fir swamp, which is interspersed with small embedded patch communities of black spruce-tamarack bogs, dwarf shrub bogs, and shallow emergent marshes. It is bordered by the north basin of Upper Saranac Lake to the west, Rte. 30, Forest Home Road and Lake Clear Outlet to the north-northeast, and mixed woods forest, Shingle Bay Mountain and Boot Bay Mountain to the south and southeast.

The ensuing project entailed site visits, sensory observations, written field notes, and a final summation of all collected data. The following is the informal document, as it actually appeared, that was handed over to The Nature Conservancy at the conclusion of the study. Four GIS maps are included in the Appendix section.

Overview

This study has been an attempted follow-up assessment of David Hunt's 1996 site survey for the NY Natural Heritage Program. Four field visits were made into Black Pond Swamp proper between mid-July and mid-August of 2001; two into the core areas and two into its peripheral features (i.e. Black Pond itself, Hatchery Brook Gravel Pit). The attached GIS maps of the study site show estimated survey ranges (grey blotches) and transects (black arrow lines)

procured during each of the four field visits, labeled as MAP #1, MAP #2, MAP #3, and MAP #4. I have also designated onto these maps (using symbols), certain unusual, significant, or otherwise pertinent stress/disturbance observations, as were found within the survey ranges or along the transects. After the 'Concluding Remarks' section at the end of this write-up is a list of all map designations along with a brief description of what each symbol represents (this can be used for quick reference and it supplements the more detailed descriptions found in the 'Field Notes' text). Some of these observations, in addition to any other human born or natural stress/disturbance evidence that was not delineated on the map, can be viewed as digital photos saved onto the compact disc which accompanies this document. These pictures are designated as track numbers on the disc, and there will be an indication in the Field Notes that reports the appropriate tracks to look at for each applicable section (Example= **CD, Track #'s 5-8**). The following are my field notes, rearranged and organized into a more readable format, from the four site surveys that took place on July 8th, July 22nd, August 14th, and August 18th, 2001. Each field visit is discussed separately in this informal report, the content for each appearing in synchronous order between July 8th and August 18th. Please note that all of the comments, inferences, and data were obtained strictly through my own visual sightings and personal judgements. Therefore, site assessment according to sound scientific experimentation (e.g. water quality testing, soil sampling, vegetation analysis, etc) or based upon outside input (e.g. relevant people, reference materials, etc) was absent, and in my opinion, are a must for evaluating the accuracy of my statements.

FIELD NOTES

Site Survey #1//MAP #1

July 8th, 2001

I. Survey Range General Description: Between 0 and 50 yards along the north side of Hatchery Brook between Markham Road and the abandoned house sitting just north of the "gravel pit". Also, the river corridor east of Markham Rd to convergence point of Hatchery Brook and Lake Clear Outlet outlet stream, northeast to Forest Home Road.

II. Evidence of Immediate or Potential Stress/Disturbance

A) Gravel Pit Area

(CD, Track #'s 1-6)

Observation 1: assorted synthetic waste in, near, or on the steep pitch above Hatchery Brook for a 75-100' stretch; chicken wire, plastics, and barrels primarily. Likely nutrient loading into the brook from runoff carrying leachate of weathered synthetic coppers, tins, and other metals/alloys. Dense pockets of fibrous rooted herbaceous vegetation along immediate streambank vicinity may be filtering/absorbing some nutrients. Perhaps the

more biodegradable material is neutralized by the prevalent coniferous (*Abies balsamea* dominant) duff layer.

Observation 2: a 50' stretch of shoreline along the base of the gravel pit has bright orange colored "A" soil horizons and three pools of fossil fuel evidence contained beside the stream channel. A few rusting, overturned 50 gallon barrels ranging between a few to about 20' from the corridor are the likely contributors of iron leachate. There is no vegetation (grasses, herbaceous, woody, etc) in these contaminated reaches, while localized patches of algal "slime" in the stream provides further evidence of nutrient loading. Possible consistent overland and subsurface point source pollutant travel through outwash, with the brook serving as the transport mechanism for possible downstream contamination.

Observation 3: a beaver dam with a center break rests in the brook directly in front of the gravel pit site. Caused possible hydrologic alterations (i.e. velocity change, bulk flow increase downstream, stagnation upstream, etc), especially if acting in concert with other similar structures, sometime in the past.

B) Other Garbage Sites
(CD, Track #'s 7 & 8)

Observation 1: scattered garbage piles, few and far between, in the upland area behind the Markham Road dumpster (~1/8 mile in from Forest Home Road). One pile, approximately 75' upland from Hatchery Brook, had the largest concentration of materials; 8 plastic bags, 6 plastic drink bottles, 4 candy wrappers, 2-4 styrofoam trays, etc.

Observation 2: in the Lake Clear Outlet outlet stream, wastes are collecting in a rapid velocity area just south of Forest Home Road. White "scum" and various plastics, metals, etc, are trapped by what appears to be an old bridge foundation?? Human litter is also strewn along the west bank of the stream in the same vicinity. Perhaps particulates are being carried into Black Pond Swamp from a combination of this flow and it's confluence with Hatchery Brook's gravel pit contamination. *Map Location: MAP #1- grey circle*

C) Other Notes

- A recently abandoned housing structure is ~200-300 yards upstream from the gravel pit.

There is a mangled dock in the water and the house, with an outhouse kitty-corner to it, sit about 100' from shore on a variable upslope. I would guess that habitation was relatively recent (5-10 years) since the structures are in good condition (intact roof, walls, interior) and there are still partially weathered common household items inside (e.g. books, pots and pans, candles, etc). There may have been stream pollution/nutrient loading at one time from human garbage disposal and/or outhouse waste seepage through subsurface and overland water flow. *Map Location: MAP #1-black star*

- There was consistent canopy cover in this survey site, with expected natural vegetative litter from decay processes, blowdown, and perhaps the heavy recent (winter of '00-'01) snow pack or 1998 ice storm.

- No sighted exotic/invasive species in Survey Site #1 (S1).

Site Survey #2//MAP #2
July 22nd, 2001

I. Survey Range/Transects General Description:
A) Access from Upper Saranac Lake through the south shore of the north basin at S142°E off Goose Island. Walked from the point of entry (see map "Entry Pt" w/white star) along Markham Rd to the south inlet bridge, then doubled back and searched David Hunt's 1996 osprey nest sighting territory.
B) From the point of entry, hiked ~1600m at S112°E through core area to Black Pond's outlet. Then hiked ~700m at S256°W to a 485m elevation upland zone. Then hiked ~1050m at N279°W to Square Bay. From there, came back to the entry point after ~400m along N18°E.

II. Evidence of Immediate or Potential Stress/Disturbance

A) Markham Road (between point of entry and south inlet)
(CD, Track #'s 9-12)

Notes:
- loon nest in vicinity of the entry point; an adult pair and one chick
- wild flowers abundant/NO invasives seen

Observations/Inferences:
- spruce/fir roadside tree cutting in areas, with much of it done within the last five years to trees <10-20 years old (based on DBH estimates and tree rings). Many canopy gaps and

sparse overstory distribution set back from the roadway; mostly natural blowdown but a portion of it could possibly be human clearing and knockdown with the purposes of maintaining forest health and/or providing views for game species.

- hunting platform consisting of a wooden ladder, wooden platform, and a metal chair found near David Hunt's 1996 osprey nest sighting, approximately 100m east of Markham Road and approximately 400m south of the lower (south) inlet. *Map Location: MAP #2-black lightning bolt*
- human usage on the roadway: joggers/hikers occasional with vehicles passing on average every 15min-½hr during a watch between 9:30am and 12:30pm.

B) Transect Route
(CD, Track #'s 13-16)

Notes:

- saw a downy woodpecker and woodpecker trees, ?broad-winged hawks?, and various songbirds (e.g. juncos, winter wren, Canada jay)

Observations/Inferences:

- Diverse matrix of vegetative communities along the transect route. Variable canopy cover with consistent understory regeneration (fir and spruce) amongst the natural decay found throughout the sphagnum, hummock landscape.
- The route appeared to be a major mammalian travel corridor, with beaten paths and frequent occurrences/numerous types of scat.
- No major disturbances except: GUN SHOTS erupted periodically near the shoreline of Square Bay out towards Markham Point on the swamp periphery.

Survey Site #3//MAP #3
August 14th, 2001

I. Survey Range General Description:
A) Accessed Black Pond by a 2 mile hiking/cross-country skiing trail that began near Forest Home Road.
B) Patrolled the northern tip of Black Pond north ~100m along the eastern side of the outlet. Also, hiked from the outlet mouth, ~300m along the northwestern shore and ~500m along the eastern shore of Black Pond.

II. Evidence of Immediate or Potential Stress/Disturbance

A) Trail Condition

- The first ¼ mile was overgrown and essentially a bushwhack along the boundary between state and private land. The remainder was unmarked and easily followed although most likely not maintained. Signs of recent human traffic were present (i.e. footprints, trash). The trail wound through mixed woods forest beyond the swamp's eastern border. Patch communities of different combinations of such tree species as hemlock, spruce, fir, yellow birch, beech, red/striped maples, and cedar existed. Ground cover included spinnulose wood fern, wood sorrel, bunchberry, goldthread, and witchhobble. Based on the trail's vegetative properties, I would infer that soils were outwash with a 3-6% silt-clay mixture.

B) Black Pond
(CD, Track #'s 17-25)

Notes:

- diverse flora along the northern shoreline included hemlock, asters, alders, skullcap, bugleweed, leatherleaf, sweet gale, and white birch
- frogs abundant

Observation 1: possible hydrologic alterations from heavy stick bed/driftwood logs/beaver house construction near the headwaters of the outlet.

Observation 2: mild human usage at a camping area on the north end of the pond just east of the outlet. The fire pit, although filled with plastics, tins, and other materials, is centralized and situated ~40 yards from the water. There are some felled young trees in close proximity to the campsite, but the majority of vegetation and all of the older growth seems intact. A canoe and rowboat are found here. There is a vague footpath stretching along the pond's eastern edge, ending at the periphery spruce-fir zone of the inlet. A few pieces of garbage were found along here.
Map location: MAP #3-white flag

Observation 3: a vague footpath along the northwest shoreline leads to a campsite on a bedrock outcropping. Garbage is minimal, the fire pit is cleaned out, and an adjacent dumping site full of tins and other metals, is ~30 yards from the cliff. Overland runoff and subsurface flow could be transporting nutrients into the pond from this campsite.
Map location: MAP #3-black flag

Survey Site #4//MAP #4
August 18th, 2001

I. Survey Range/Transects General Description:

A) 1½ miles of Markham Road between Forest Home Road and the south inlet stream.
B) Approximately a one mile transect at S130°E through the swamp's core, starting from Markham Road where it crosses the north inlet and ending on the north branch stream, almost one mile before it's confluence with the Black Pond outlet.
C) Followed the north branch stream west to it's convergence with the Black Pond outlet, continuing ~¾ mile to where it bisects Markham Road.

II. Evidence of Immediate or Potential Stress/Disturbance

A) Markham Road

- unlike the lower portion hiked in **Survey #2**, there were no roadside tree stumps (some clearings) or any other signs of environmental disturbance or stressors.

B) Transect Route: NO DISTURBANCES
(CD, Track #'s 26 & 27)

Observations/Inferences:

- much blowdown and understory regeneration of firs and maples in the upland outwash prior to the swamp core.
- greater than 3-5 avian species heard at all times along the transect route through the swamp core.
- the spruce-fir matrix varied between medium to high densities along the transect, with sporadic large expanses of canopy gaps. At ~¾ mile along the transect, vegetation shifted to dense pockets of alders and spotty northern white cedars. Understory along the transect included sharp-leaved and purple asters, goldthread, bunchberry, and wild raisin/witherod.
- abundance of small mammals (i.e. red squirrels, moles) and deer scat. There were many paths full of deer hoof prints, their direction indicating that they've been trying to reach the stream, most likely out of necessity from the recent dry spell.

C) The Stream Corridor
(CD, Track #'s 28-32)

Notes:

- Five ruffed **or** spruce grouse (not sure which, but they definately were not turkeys, pheasants, etc) rustled from the brook side alder stands at the following *map location*: *MAP #4-black question mark*
- consistent understory regeneration of spruce/fir, even in the largest death and decay zones through the swamp core and along the brook

Observations/Inferences:

- stagnant reaches, with some fossil fuel accumulation near the fork confluence with Black Pond's outlet
- the overall slow stream velocity means that very few substrate particles (except the tiniest) are held in suspension and causing downstream sedimentation, with even less reaching Upper Saranac Lake. Many stick pile-ups from snow melt peak flows seem to be reducing stream velocity
- hydrologic alterations from beaver dam building

CONCLUDING REMARKS

The preceding information was gathered from the four described general survey sites/transects. The study range was limited by manpower, time constraints, and additional workload, which leaves plenty of opportunity for future expansion/capitalization on this project. Following this assessment, there still remains much more untraversed Black Pond Swamp territory than has actually been covered. The Watershed Stewardship Program at Paul Smith's College would consider continuing this ecoregional stress/disturbance evaluation and work on any other endeavors or ideas that may be initiated by The Nature Conservancy.

My mission has been to get as many field observations down on paper as possible, no matter how minor the stresses/disturbances actually were or seemed to be. I have made numerous judgements, with some being more along the hypothesis vein and many others following, admittedly, along more of a random guess vein. Proposals for management needs and recommendations for future study have been left completely under The Nature Conservancy's discretion; I would feel personally inadequate in pushing the current scope of my responsibilities

any further.

QUICK KEY TO MAP SYMBOLS

MAP #1-grey circle= Lake Clear Outlet bridge foundation/garbage collection

MAP #1-black star= abandoned housing structure w/ outhouse, dock, etc

MAP #2-black lightning bolt= hunting platform

MAP #3-white flag= campsite on the northern tip of Black Pond

MAP #3-black flag= campsite on the northwest side of Black Pond on outcropping

MAP #4-black question mark= five spruce or ruffed grouse (probably only ruffed)

St. Regis Lakes Bird Survey

Prepared by: Laura Salmonsen, Steward

Introduction

The purpose of the Bird Survey was to collect baseline data for the Watershed Stewardship Program regarding avian life on and around Upper St. Regis, Lower St. Regis and Spitfire Lakes. The goal of the survey was to form an inventory of observed bird species and to produce an informative brochure for public use to be distributed at the Upper St. Regis boat launch during the summer of 2002.

Methods

Field observations were made on several occasions from 5/24/01 through 8/26/01 by Steward Laura Salmonsen with the help of other Watershed Stewards as well as various members of the community including Ted Mack, Anne Weld and Mary Beth Warburton. Observations were recorded noting the time of day, weather conditions, location and species description. The location of each observation was noted on detailed maps. These observations were then entered into a database. Maps were also created using *ArcView* pinpointing the location of the sites of observation (see Appendix).

Research for the brochure was conducted in the Cubley Library at Paul Smith's College as well as on the internet.

Steward Laura Salmonsen also volunteered with the Adirondack Cooperative Loon Project and assisted Mary Beth Warburton (field assistant with the project) with the monitoring of loons on Upper St. Regis and Spitfire Lakes. This project is supported by many local agencies and monitors loon populations all across the Adirondack Park.

Results/Discussion

Over the course of the summer, 32 avian species were observed in the St. Regis Lakes basin. See **Species List** as follows:

Species List: ***(listed in order of observation)***

White-winged Crossbill	*Loxia leucoptera*
Canada Goose	*Branta canadensis*
Red-winged Blackbird	*Angelaius phoeniceus*
Great Blue Heron	*Ardea herodias*
Common Loon	*Gavia immer*
Bald Eagle	*Haliaectus leucocephalus*
Brant	*Branta bernicla*
Grackle	*Quisculus quiscula*
Red-breasted Nuthatch	*Sitta canadensis*
Common Merganser	*Mergus merganser*
Cliff Swallow	*Petrochelidon pyrrhonta*
American Bittern	*Botaurus lentiginosus*
Blue Jay	*Cyanocitta cristata*
Cedar Waxwing	*Bombycilla cedorum*
American Black Duck	*Anas rubripes*
Broad-winged Hawk	*Buteo platypterus*
Osprey	*Pandion haliaetus*
Red-tailed Hawk	*Buteo jamaicensis*
Barred Owl	*Strix varia*
Great Crested Flycatcher	*Myiarchus crinitus*
Ring-billed Gull	*Larus delawarensis*
Belted Kingfisher	*Megaceryle alcyon*
Song Sparrow	*Melospiza melodia*
Barn Swallow	*Hirundo rustica*
Northern Raven	*Corvus corax*
Hairy Woodpecker	*Picoides villosus*
Black-capped Chickadee	*Parus atricapillus*
White-breasted Nuthatch	*Sitta carolinensis*
Northern Junco	*Junco hyemalis*
American Crow	*Corvus brachyrhynchos*
Ruby-throated Hummingbird	*Archilochus colubris*

An educational brochure was also created and published that will help the public to identify local bird species. This brochure also informs boaters about habitat and conservation concerns

for each particular species of bird (see Appendix). Photographs taken of avian life within the St. Regis basin can be viewed at www.paulsmiths.edu/~regis/birdphotos.html. This portion of the Paul Smith's College web site also contains conservation information and other interesting information about the featured birds.

The table below illustrates the specific species observed at each location. These locations coordinate with the maps found in the appendix.

	Lower St. Regis	**Slough (between LSR & Spitfire)**	**Spitfire**	**Upper St. Regis-West**	**Upper St. Regis-South**
a					White-winged Crossbill
b					Canada Goose
1	Brant	Red-winged Blackbird	Common Loon	Common Loon	Common Loon
2	Great Blue Heron	Great Blue Heron	Common Loon	Common Loon	Canada Goose
3	Common Merganser	Red-winged Blackbird	Common Loon	Common Loon	Red-winged Blackbird
4	Common Loon	Red-winged Blackbird	Common Loon	Common Loon	Red-winged Blackbird
5	Cliff Swallow	Great Blue Heron	Broad-winged Hawk	Blue Jay	Bald Eagle
6	Canada Goose	Red-winged Blackbird	Great Crested Flycatcher	Common Loon	Common Grackle
7	Canada Goose	Great Blue Heron	Great Blue Heron	Osprey	Red-breasted

					Nuthatch
8	Common Merganser	Common Merganser	Ring-billed Gull	Cedar Waxwing	American Bittern
9	Common Merganser	Red-winged Blackbird		Red-tailed Hawk	Great Blue Heron
10	Bald Eagle	Common Grackle		Common Loon	American Bittern
11	Canada Goose	Red-winged Blackbird		Barred Owl	Cedar Waxwing
12	Common Loon	Common Merganser		Barred Owl	Bald Eagle
13	American Black Duck	American Black Duck		Ring-billed Gull	Great Blue Heron
14	Common Loon	Great Blue Heron		Common Loon	Cedar Waxwing
15	Great Blue Heron	Great Blue Heron		Ring-billed Gull	Cedar Waxwing
16	American Black Duck			American Black Duck	Common Loon
17	Canada Goose				Great Blue Heron
18	Common Loon				American Bittern
19	Ring-billed Gull				Common Loon
20	Common Loon				Common Loon
21	Ring-billed Gull				Broad-winged Hawk
22					Great Blue Heron

23					Common Loon
24					Broad-winged Hawk
25					Broad-winged Hawk
26					Common Loon
27					Ring-billed Gull
28					Ring-billed Gull
29					Broad-winged Hawk
30					Belted Kingfisher
31					Song Sparrow
32					Great Blue Heron
33					Ring-billed Gull
34					Great Blue Heron
35					Ring-billed Gull
36					Barn Swallow
37					Ring-billed Gull
38					Common Loon
39					Barn Swallow
40					Northern Raven
41					Ring-billed Gull

42					Song Sparrow
43					Cedar Waxwing
44					Hairy Woodpecker
45					Black-capped Chickadee
46					White-breasted Nuthatch
47					Northern Junco
48					Common Loon
49					Barn Swallow
50					Ruby-throated Hummingbird
51					American Crow

Conclusion

This survey is meant to be a preliminary inventory of the avian species that can be found on and around Lower St. Regis, Spitfire and Upper St. Regis Lakes.

As the bird survey is continued year after year by future stewards, trends in the avian community may be noticed. Also, through the use of the educational brochure, the public will be made aware of ways in which they can help to conserve our local birds.

Herbarium Project

Report Author: Jason Bried, Assistant Director

Introduction

This project was initiated during the summer of 2001 by the Watershed Stewardship Program. It involved the inventory, collection, and/or photography of bog mat ground cover and shrubs (usually in flower) found throughout the St. Regis Lakes basin. The majority of this season's flora was photographed and removed from the "slough" between Spitfire Lake and Lower St. Regis Lake, and on the sphagnum mats bordering the Upper St. Regis private/public landing. For the latter area, we dealt particularly with the mat on the landing's west side that extends for approximately one mile to Roiley Pond. Many of the plants utilized in the herbarium project served to expand the program's working flora inventory list as well. This list is in the process of being linked to corresponding plant photos and can be viewed on the Watershed Stewardship Program's web-site at **www.paulsmiths.edu/~regis/florainventory.htm**

Procedures

Beginning in early June and ending in early August, a Watershied Stewardship Program Steward made five field visits to collect flowering individuals of assorted wetland indicator species existing in the northern peatlands (or bogs/fens) of the St. Regis lakes. Each selected individual was pulled from its natural habitat and then placed in a five gallon bucket filled part-

way with lake water. Specimens were then loaded carefully into a plant press and left there for at least a week, drying out in preparation for mounting. Next, the plants were removed from the press and stored in newspaper. The cycle throughout the collection period went as follows: field visit, plants gathered, plants enter plant press, dry plants leave press and get inserted between folds of newspaper, another field visit, more plants gathered, etc..... At the termination of the collection/pressing process in early August, specimens began to get glued (i.e. "mounted") onto construction paper. In this final stage, they were each given corresponding index card labels that indicated species name (latin and common), extraction location, and date removed. The following table lists the common and latin names of the **20** species that were **mounted***. For most of these species more than one plant was mounted, totaling **47** individuals.

Table #1

COMMON NAME	**LATIN NAME**
Black Huckleberry	*Gaylussacia baccata*
Bog Rosemary	*Andromeda glaucophylla*
Bunchberry	*Cornus canadensis*
Common Arrowhead	*Sagittaria latifolia*
Labrador Tea	*Ledum groenlandicum*

Larger Blue Flag	*Iris versicolor*
Marsh Cinquefoil	*Potentilla palustris*
Marsh Skullcap	*Scutellaria epilobiifolia*
Marsh St. Johnswort	*Hypericum virginicum*
Northern Bugleweed	*Lycopus uniflorus*
Pale Laurel	*Kalmia polifolia*
Sheep's Laurel	*Kalmia angustifolia*
Sourtop Blueberry/Velvetleaf	*Vaccinium myrtilloides*
Spotted Touch-me-not/Jewelweed	*Impatiens capensis*
Swamp Candle/Yellow Loosestrife	*Lysimachia terrestris*
Sweet Gale	*Myrica gale*
Water Arum	*Calla palustris*
Wild Raisin	*Viburnum cassinoides*

***This table represents <u>only</u> those individuals which reached the final "mounting stage" of the project. For a complete list of plant species and their date/s removed, along with general extraction locations, see the document entitled "Herbarium Project Progress Notes" in the Appendix section. Stewardship Program staff can see the same document in the 'Herbarium Project' folder on the P-drive.**

Beginning in early July, we used the college's digital camera to start a photo gallery. Three to five shots were taken of each targeted individual while in bloom. All pictures, good and bad, were saved onto Paul Smith's College's P-drive in the "wetland plants" folder of the "images" folder. The following table lists the **26** common and latin names of our digital photo species.

Table #2

COMMON NAME	**LATIN NAME**
Common Arrowhead	*Sagittaria latifolia*
Common Bladderwort	*Utricularia vulgaris*
Common Cattail	*Typha latifolia*
Early Low Blueberry	*Vaccinium angustifolium*
Grass Pink	*Calopogon tuberosas*
Horned Bladderwort	*Utricularia cornuta*
Larger Blue Flag	*Iris versicolor*
Marsh Bedstraw	*Galium palustre*
Marsh Skullcap	*Scutellaria epilobiifolia*
Marsh St. Johnswort	*Hypericum virginicum*
Meadowsweet	*Spiraea latifolia*
Northern Bugleweed	*Lycopus uniflorus*

Pickerelweed	*Pontederia cordata*
Pitcher Plant	*Sarracenia purpurea*
Rose Pagonia	*Pogonia ophioglossoides*
Sheep's Laurel	*Kalmia angustifolia*
Spadderdock	*Nuphar variegatum*
Spotted Touch-me-not	*Impatiens capensis*
Sundew (Round-leaved)	*Drosera rotundifolia*
Swamp Candle	*Lysimachia terrestris*
Sweetgale	*Myrica gale*
Sweet-scented Water Lily	*Nymphaea odorata*
True Forget-me-not	*Myosotis scorpioides*
Water Arum	*Calla palustris*
White Bog Orchis	*Habenaria dilatata*
White Fringed Orchis	*Habenaria blephariglottis*

Outcomes

Selected physical specimens from the mounting process and the better quality digital photos

were separately distributed in order to fulfill a dual purpose. The **20** mounted species (**47** total specimens) have been filed into Paul Smith's College's own herbarium collection as well as into the Adirondack Park Agency's (APA) flora collection. Doctor Michael Kudish is the primary curator of the former while Ray Curran has been our contact for the latter. All but two of the species (Bunchberry and Larger Blue Flag) have entered both herbariums. **28** of the **47** total have gone into the college's herbarium while the remaining **19** have entered the APA's herbarium (See Table #2).

All **26** digital photos have been burned onto a Compact Disc and sent to the APA's Ray Curran, where they will be assessed and utilized for various educational purposes. Although one or two shots of each species has been delivered, it is feasible that the APA could find certain ones inadequate (i.e. not clear enough, does not capture the entire plant, too much sunlight glare, etc). Ray Curran has been notified to comment on the quality of the photos and to provide any recommendations or special instructions if necessary.

Recommendations for Future Stewards

Only **20** species have been added to the College and APA herbariums, and since they are in need of any more that can be provided, the physical collection should continue. There are many more species left (just view the 'Flora Inventory') which could be photographed and/or pressed during the Watershed Stewardship Program's future. The following are some examples of early bloomers and other missed plants which are common or rare (but exist) in the St. Regis Lakes wetlands.

Arethusa/Dragon's Mouth (*Arethusa bulbosa*)
Bog Rosemary (*Andromeda glaucophylla*)
Bunchberry (*Cornus canadensis*)
Common Cattail (*Typha latifolia*)
Labrador Tea (*Ledum groenlandicum*)
Leatherleaf (*Chamaedaphne calyculata*)
Pennsylvania Bitter Cress (*Cardamine pensylvanica*)
Rose Pagonia (*Pogonia ophioglossoides*)

Starting as soon as possible on the herbarium/photo project would be ideal for catching such common Spring bloomers as Leatherleaf and Bog Rosemary. Perhaps we could begin pressing trees, grasses, and sedges found out there. We could even start photographing St. Regis Mountain trail and/or summit vegetation, maintaining a separate and new *upland* flora inventory. Field visits should be made throughout the job season, preferably on at least a bi-weekly basis. Also, keep in mind that the APA was asked to inform us about any sent species that they would want re-photographed. If the Watershed Stewardship Program has received no response, stewards should call the APA and ask Ray Curran what, if anything, is needed.

One final suggestion: the names in the "Flora Inventory" list on the Program's web-site should be linked to their respective digital pictures. This would allow anyone who is using our web-site and scanning the flora inventory to access photos of the plants that they would be interested in viewing.

Upper Saranac Lake Structure Inventory, 2001

Report prepared by: Jeremy Riedl

Introduction: At the behest of the Upper Saranac Lake Association via Curt Stiles, a structure inventory and shoreline mapping project was conducted this summer on Upper Saranac Lake. Originally the project was to include a video recording of the shoreline in order to procure an historical account of the state of the shoreline as of summer 2001. This project was also to include an inventory of structures on the shoreline and a map of where the structures lie. The inventory and map were to provide a physical sense of where concentrations of structures were high and low.

Overall the project was an assessment of the current state of development on Upper Saranac Lake. The mapping segment of the project was not completed due to the constraints of mapping structures using only current USGS maps and a boat. GIS mapping was considered but not found to be feasible as a mapper would have to walk the entire shoreline to plot structures on the GIS map.

Methods: The method used to count structures was simple. A boat was provided by the USLA which enabled the entire coastline of the lake to be navigated. Structures were to be designated as Residences, Boathouses or Miscellaneous, which included gazebos, sheds etc. Structures

counted as residences were either obviously inhabited or combination boathouse home. Boathouses were strictly categorized according to their primary use.

The lake was divided into sixteen distinct areas according to geographical structures which are easily recognizable on a USGS map. The lake was inventoried in a counter clockwise fashion and the islands were inventoried last.

A size designation was also made for each of the structure types. Small Residences were almost exclusively one story structures which appeared to contain no more than probably two bedrooms. Medium size residences were usually two story homes or larger single story homes which probably were in the two to three bedroom range. Large Residences were usually at least two floors and included all structures of more than modest proportions.

Boathouses were also given a size designation. Small boathouses were never more than a single story with a single boat bay for storage. Medium boathouses included those with two boat bays and occasionally included an upper deck area or a small enclosed second floor. Large boathouses were either one of two types: single story with more than two boat bays, or two or more boat bays with a large second floor.

Miscellaneous structures were designated according to small, medium and large as well. These structures followed a more subjective criterion for classification however as they included structures of all types excepting boathouses and residences.

The video inventory of the shoreline was conducted in a clockwise fashion starting from Back Bay and ending in Back Bay. The video does not follow the previously noted 16

designated areas for inventory, however it is narrated on occasion to avoid confusion as to landmarks.

Materials: Materials for the video inventory were: the boat provided by USLA, one video camera provided by Paul Smiths College and a video cassette provided by myself. A copy was made at the Paul Smiths College library for college reference.

Materials for the structure inventory were : the boat provided by USLA, a USGS map of Upper Saranac Lake, and a notebook and pen.

Results: Results were tabulated as follows:

Back Bay

	Small	Medium	Large	Total
Residences	1	16	1	18
Boathouses	2	3	0	5
Misc.	1	1	0	2

Western Shore to Moss Rock Point

	Small	Medium	Large	Total
Residences	12	26	1	39

Boathouses	7	8	3	18
Misc.	3	0	0	3

Little Square Bay

	Small	Medium	Large	Total
Residences	2	3	5	10
Boathouses	0	1	0	1
Misc.	1	0	0	1

Butternut Point to Whitney Point

	Small	Medium	Large	Total
Residences	1	2	1	3
Boathouses	1	0	1	2
Misc.	0	0	0	0

Fish Creek Bay

	Small	Medium	Large	Total
Residences	26	1	0	27

Boathouses	1	2	0	3
Misc.	0	0	1	1

Fish Creek Bay to Gilpin Bay

	Small	Medium	Large	Total
Residences	33	1	0	34
Boathouses	0	0	0	0
Misc.	0	1	0	1

Gilpin Bay

	Small	Medium	Large	Total
Residences	8	11	3	22
Boathouses	0	3	2	5
Misc.	0	0	0	0

Pelky Bay to Bull Point

	Small	Medium	Large	Total
Residences	4	12	4	20

Boathouses	4	5	1	10
Misc.	3	0	0	3

Bull Point to Indian Point

	Small	Medium	Large	Total
Residences	6	25	9	40
Boathouses	9	9	7	25
Misc.	2	2	0	4

Indian Point to Doctor's Island

	Small	Medium	Large	Total
Residences	12	11	3	26
Boathouses	5	1	4	10
Misc.	6	0	0	6

Doctor's Island to Birch Point

	Small	Medium	Large	Total
Residences	10	19	4	33

Boathouses	8	10	4	22
Misc.	1	0	0	1

Birch Point through Narrows (east shore)

	Small	Medium	Large	Total
Residences	5	6	2	13
Boathouses	3	0	0	3
Misc.	0	0	0	0

Pork Bay

	Small	Medium	Large	Total
Residences	4	4	1	9
Boathouses	1	0	0	1
Misc.	0	0	0	0

Saginaw Bay

	Small	Medium	Large	Total
Residences	1	1	0	2

Boathouses	0	0	0	3
Misc.	0	0	0	0

Saginaw Bay to Markham Point

	Small	Medium	Large	Total
Residences	1	3	2	6
Boathouses	0	0	1	1
Misc.	1	0	0	1

Markham Point to Back Bay

	Small	Medium	Large	Total
Residences	7	17	8	32
Boathouses	9	3	0	12
Misc.	2	0	0	2

Dry Island

	Small	Medium	Large	Total
Residences	0	0	1	1
Boathouses	1	0	0	1

Misc.	0	0	0	0

Green Island

	Small	Medium	Large	Total
Residences	0	0	0	0
Boathouses	0	0	0	0
Misc.	0	0	0	0

Buck Island

	Small	Medium	Large	Total
Residences	0	0	0	0
Boathouses	0	0	0	0
Misc.	0	0	0	0

Eagle Island

	Small	Medium	Large	Total

Residences	0	2	1	3
Boathouses	0	2	0	2
Misc.	1	0	1	2

Deer Island

	Small	Medium	Large	Total
Residences	3	2	1	6
Boathouses	1	1	1	3
Misc.	0	0	0	0

Doctor's Island

	Small	Medium	Large	Total
Residences	0	1	0	1
Boathouses	1	0	0	1
Misc.	0	0	0	0

Three Islands South of Doctor's

	Small	Medium	Large	Total

Residences	0	0	0	0
Boathouses	0	0	0	0
Misc.	0	0	0	0

Birch Island

	Small	Medium	Large	Total
Residences	5	7	0	12
Boathouses	0	2	0	2
Misc.	0	0	0	0

Large Island South of Birch

	Small	Medium	Large	Total
Residences	0	1	0	1
Boathouses	0	0	1	1
Misc.	0	0	0	0

Chapel Island

	Small	Medium	Large	Total
Residences	0	0	0	0
Boathouses	0	0	0	0
Misc.	0	1	0	1

TOTAL RESIDENCES: 358

TOTAL BOATHOUSES: 128

TOTAL MISC. STRUCTURES: 28

TOTAL STRUCTURES COUNTED: 514

Results/Discussion: The results shown for Upper Saranac Lake were by no means an exact count of all structures on Upper Saranac Lake. Many structures were hidden in the center of islands or obscured from view by dense foliage. However the numbers represented here are a general estimate of structures and types on the lake. This data will show that there are areas where concentrations of people are high and hence recreational and other usage will also be higher than in other areas. Areas of very low structure density are usually due to the prevalence of state owned land along the shoreline. Relative structure size in any given area will most likely also

denote relative property value etc. There are other various inferences which can be made regarding the data gathered.

Conclusion/Recommendations: It is my belief that an exact count of structures on the lake will be very difficult to assess using the methods that we employed this summer. If the current data is revised or extended in the future it is my recommendation that a mailing be sent out to all residents in the surrounding area asking them to send in their information regarding property location, structure numbers, types and size. Compliance using this method may be sporadic however if there was some reward for submitting the information compliance might rise. Regardless of numbers received from such a mailing holes could most likely be filled in using a combination of mailing and visual counting.

It is also my recommendation that a video be shot next summer to improve upon and extend the current video project which is far from perfect. Perhaps a local historian could make the tour of the lake with the videographer to narrate as the film is shot explaining the significance of the various structures and their history.

Mapping projects are difficult to conduct with any accuracy. The largest problems with such a project are related to the difficult nature of mapping with nothing more than your eyes to guide you. If a survey were done then the mapping could be concluded, however this is a very costly route. The only other option would be a GIS mapping which would require someone to actually walk to all of the structures on the lake and plot them in individually on the GIS map. All options regarding the mapping are costly and labor intensive.

Watershed Stewardship Program: Educational Programs for Children

Prepared by: Cherise Bailey, Steward

The Watershed Stewardship Program's Educational Programs for Children were designed to be fun activities that would raise awareness about the mission of the Watershed Stewardship Program. The goal was to provide a special opportunity for children to take a closer look at the environment they live in, and to interact with other children close in age. By engaging in such an experience, children would experience the seed of stewardship, which hopefully would grow along with the children. Cherise Bailey ran all of the programs, with assistance by Karen Sauther.

Programs for children ages 6-11, offered weekly**,** were designed to be similar to the tasks the Stewards are required to perform every day. These weekly programs gave children a chance to be outside, while learning about the need to respect and treasure nature. Children also learned about the diversity of the Adirondack Park. Program plans are included later in this report.

Programs for children ages 3-5 were offered on a biweekly basis to try to include smaller children in the Watershed Stewardship Program's outreach. The main goal for these programs was to offer the children some fun and messy nature-centered art projects that they might not be able to do at home. Each program had an educational aspect, but was not necessarily related to the main focus of the Watershed Stewardship Program.

Stewards placed program announcements and schedules in Saranac Lake churches and grocery stores, and distributed 100 fliers during Saranac Lake Youth Soccer Association practices. Notices were also sent to the Adirondack Daily Enterprise.

Over 50 children attended 6 programs over the summer for the 6-11 age group, and over 20 children attended 4 programs for the 3-5 age group. Each week was a learning experience for both the children and the Stewards with them. Overall, the programs were a success and were well attended.

Dates & Times of Educational Programs for Summer of 2001

Tuesday, July 10: When Your Canoe Tips Over, 10 AM– Noon, ages 5-11, PSC Campus
We will cover the basic safety guidelines for both boating and hiking. Children should be prepared to be outside and in the water. (Cancelled)

Tuesday, July 17: It's All In the Leaves, 1-3:30 PM, ages 6-11, PSC Campus
Kids will learn to identify some of the common local trees & how to use them for art projects without damaging the trees.

Tuesday, July 24: Fun With Fruit, 10:30 AM - Noon, ages 3-5, PSC Campus
Kids will be learning about fruit while taste testing and using them for projects.

Tuesday, July 24: The Ones That Got Away, 1-3:30 PM, ages 6-11, State Boat Launch on Lake Flower
An explanation & identification of some evasive plants that are a local problem.

Monday, July 30: Invisible Art, 1-2:30 PM, ages 3-5, PSC Campus
Come and have some fun creating art without using crayons, paint, or markers. We will still be getting messy!

Tuesday, July 31: Rain Taking Soil, Wind Moving Mountains, 1-3 PM, ages 6-11, Lake Clear Beach
Children will explore the causes and consequences of erosion.

Tuesday, August 7: Sticky Pictures, 10-11:30 AM, ages 3-5, PSC Campus
Kids will be learning about the air we breathe while doing fun art projects.

Tuesday, August 7: Hide and Seek With Nature, 2-3:30 PM, ages 5-11, PSC Campus
This program includes a scavenger hunt that teaches the importance of not removing or destroying.

Tuesday, August 14: The Missing Link, 10 AM - noon, ages 6-11, PSC Campus
An exploration of the connections between the worlds of plants, animals, and insects.

Tuesday, August 21: All About Leaves, 9:30-11 AM, ages 3-5, PSC Campus
Kids will be learning about the importance of leaves while we use them for art projects.

August 21: Squishy, Muddy, Squirmy, Jumpy, 1-4 PM, ages 6-11, Boat Launch on Upper St. Regis
This program is a study of aquatic life: plant, insect, amphibian and animal.

Program Write-up Form

Name of Program: Hide and Seek With Nature
(A scavenger hunt)
Outcomes/Realizations: Use observational skills as Stewards do, to map out plants.
Audience: 6-11 yrs. (kids need to be 6 – need to be able to read!)
Length of Activity: 1 ½ - 2 hrs
Location of Activity: Red Dot Trail
Best Time of Day: afternoon, late summer, 2 – 3:30PM?

Activity Description:

1. Intro and nametags
2. Explain our job & about evasive plants (why do we map out Loosestrife, why do we want to remove it, about plant surveys)
3. Put the kids in pairs and give each a whistle – tell them about the importance of staying on or near the trail and being careful not to squish any plants
4. Hand out the list and explain that they have to find the objects ON THE GROUND (why?)
5. Give them ~30 – 45 mins to look around (aid and assist)
6. Sit down and share the finds – compare
7. See how observant they were (ask about things not on the list that were there)
8. Play animal charades (ask for volunteers to act like an animal they saw on the trail – squirrel, chipmunk, birds, frogs, fish, butterfly)
9. Hand out other games for them to take home

Prep: make list from common things on the trail, photocopy it, get picture of Loosestrife

Prep Time: 1½ hrs

Materials: whistles, pencils, clipboards, list of plants, copies of the games to take home

Sketch of Pre-made Materials:

Designed: Cherise on 6/6/01

References/Resources:

Program Write-up Form

Name of Program: It's All In The Leaves

Outcomes/Realizations: Kids will learn to identify some of the common local trees & how to use them for art projects without damaging the trees.

Audience: 6-11 yrs.

Length of Activity: 2½ -3 hrs (2½ is enough)

Location of Activity: PSC campus and one room with tables

Best Time of Day: early afternoon, 1-3:30 PM

Activity Description:

1. Intro and nametags (who we are and what we are doing)
2. Tell about the plant surveys we are doing - have to ID the plant before you can add it to the list)
3. Hand out paper & crayons (clipboards and leaf key)
4. Do bark rubbings & look at the leaves – try to ID the trees
5. Do a mock survey in a small-designated area (how many different kinds of trees? How many of each kind?)
6. Back to the classroom
7. Add leaf rubbings to the sheets with bark rubbings
8. Bind together in a book
9. Use rubbings to make pictures & cards with the time remaining

Prep: copy leaf ID, gather materials, label 2 sets of trees, tape of test area

Prep Time: 2 hrs

Materials: scissors, paper, crayons, glue sticks, surveyors tape, clipboards, tags for trees

Sketch of Pre-made Materials:

Designed: Cherise on 6/5/01

References/Resources:

Program Write-up Form

Name of Program: The Missing Link
(An exploration of the connections between the worlds of plants, animals, and insects)

Outcomes/Realizations: Kids will have the opportunity to explore how insects use plants, the ways humans need plant and the animals that eat plants.

Audience: 6-11 yrs.

Length of Activity: 2 hrs

Location of Activity: PSC campus

Best Time of Day: midmorning, 10 - noon

Activity Description:

1. Intro and explanation of who we are and what we do
2. Show a leaf roller and ask what it is

3. Ask for other examples of insects that use plants – moth caterpillar, aphids
4. Bring out fruit and pass it
5. Who eats fruit besides us? Bears, birds, turtles, squirrels, chipmunks
6. What animals eat plants for food – not just the berries: deer, woodchucks, beaver, moose, ducks, some fish
7. Do people need plants? What for? For food, show t-shirt and picture of a cotton plant; hold up the picture of a log cabin or an Adirondack chair
8. Do plants need animals?
9. Take a walk and see if we can find other needs for plants (tag some plants ahead of time that show signs of an insect or animal needing it)

Prep: get materials, tag trees

Prep Time: 2 hrs

Materials: leaf roller, caterpillar, picture of aphid, fruit, t-shirt, picture of cotton plant, picture of log cabin, pictures of all of the animals mentioned above

Sketch of Pre-made Materials:

Designed: Cherise on 6/14/01

References/Resources:

Program Write-up Form

Name of Program: The Ones That Got Away
(An explanation & identification of some evasive plants that are a local problem.)

Outcomes/Realizations: To understand what evasive means & how these species can be a problem/danger to us.

Audience: 6-11 yrs.

Length of Activity: 2½ hrs

Location of Activity: State Boat Launch on Lake Flower

Best Time of Day: afternoon, early July, 1 –3:30PM

Activity Description:

1. Intro & nametags (who we are and what we do)
2. What is an invasive/evasive plant? What does it mean?
3. Ask if they know of any examples
4. Show pictures of them, or show samples (talk about how they spread and the problems of each): Eurasian Milfoil, Water Chestnut, Zebra Mussels, Purple Loosestrife, Dandelion, Box Elder (*Acer negundo*), Grey shade orchid
5. Are there evasive animals or insects? (starling,cowbird,Jap.Beetle,beetle on LI)
6. Game (make a circle ½ as big as all the kids, put 1 in as a plant, is it a problem? Can you get around it? Put in another kid, is it a problem? Can you get around it? Keep adding until it is a problem, explain about plant reproduction & rooting)
7. What can we do about the problem? (wash your boat, get permission to pull up offending plants,

education – spread the word!)
8. Take a walk (Riverwalk) and look for the plants we talked about.

Prep: get materials, check over the site

Prep Time: 1½ hrs

Materials: plants, pictures

Sketch of Pre-made Materials:

Designed: Cherise on 6/6/01

References/Resources:

Program Write-up Form

Name of Program: Rain Taking Soil, Wind Moving Mountains
(The causes and consequences of erosion.)

Outcomes/Realizations: Understand the importance of vegetation, the problems caused by not having it, and the overall seriousness of the erosion problem.)

Audience: 6-11 yrs.

Length of Activity: 2 –2 ½ hours (2 hrs. works out well)

Location of Activity: pile of soil by the dock on the PSC campus, or Lake Clear Beach

Best Time of Day: afternoon, 1-3 PM

Activity Description:
1. Intro & nametags (who we are and what we do)
2. Ask – what is erosion? Where does it occur? Where does the soil go?
3. A project I need help with - build mounds of soil (dry, wet, w/ grass, w/ stone)
4. Blow air onto the dry piles
5. Dump buckets of water slowly over the top
6. Ask – which blows/washes away the most? Why does the pile with plants hold together the best? (roots)
7. Ask- why do you think it's important to have plants? Why? (NOTE: especially important on mtn tops – harsher climate: more windy and exposed)
8. Show pictures of the stunted, short plants that live on top of mtns
9. Take care to: always walk on the bare rock when you can, not step on any plants you can avoid, spread the word!

Prep: build trial mounds, collect materials

Prep Time: 1 – 1 ½ hrs.

Materials: buckets, pictures of alpine plants, globe/map (world & local), dirt, rocks, sod, small trowels TELL PARENTS: children will be getting dirty!

Sketch of Pre-made Materials:

Designed: Cherise on 6/5/01

References/Resources:

Program Write-up Form

Name of Program: Squishy, Muddy, Squirmy, Jumpy
(A study of aquatic life – plant, insect, amphibian and animal.)

Outcomes/Realizations: How much life exists in the water that we don't usually see. An exploration of the interconnections between these organisms.

Audience: 6-11 (maybe 5?)

Length of Activity: 2½ hrs. + walk in = 3 hours (next year – 2½ hrs is enough)

Location of Activity: PO Boat Launch on St. Regis

Best Time of Day: afternoon, 1 – 4 PM

Activity Description:

1. Intro and nametags (who we are and what our program is about)
2. Ask – what can you see that lives in/on/near the marsh? (beaver, otter, deer, ducks, birds, frogs, turtles, insects…)
3. Explain about the nets (how to use them NO stirring up the sediment and why; where to put the finds)
4. Have them ID what they find (what does it eat? What eats it?)
5. Take a walk – look at the plants growing on the edge of the water ("wet feet" – not just any plant can grow there; sun vs. shade – differences? ; roots hold soil and slows down erosion)

Prep: copy ID sheets, get materials together, scout location

Prep Time: 2 hours

Materials: nets, clear buckets, spoons, nametags, pencils & crayons
TELL PARENTS: waterproof boots, sunscreen, insect repellent all a good idea.

Sketch of Pre-made Materials:

Designed: Cherise on 6/5/01

References/Resources:

Program Write-up Form

Name of Program: When Your Canoe Tips Over
(An overview of things to remember while hiking or out in the boat.)

Outcomes: Kids will learn what to take when hiking, and other safety tips, and rules for being safe in the boat, including: wearing PFDs, where to sit, what supplies to bring.

Audience: 5-11 yrs.

Length of Activity: 1½ hrs

Location of Activity: PSC boat launch

Best Time of Day: midmorning, 10-11:30AM

Activity Description:

1. Intro and explanation of who we are and what we do
2. Tell about the Boater Safety Class that we had to take
3. Talk and show a PFD – why is it important
4. Talk about where to sit in the boat – demo w/ ours
5. Make a list of all the things we should take with us when we go out in the boat – ask the kids for suggestions
6. Ask the kids if they hike, tell them about how we go up St. Regis Mtn
7. Ask – what should we take when we go? What should we do before we leave for our hike? How can we help keep the trail in the best condition possible?

Prep: collect materials, arrange for a lifeguard that has had a canoe safety course

Prep Time: 1 ½ hrs

Materials: several different PFDs, all the gear for in the boat, all the hiking equipment to take, an example of a contact sheet

Sketch of Pre-made Materials:

Designed: Cherise on 6/14/01

References/Resources:

Program Write-up Form

Name of Program: The Art Of Leaves
Messy art projects for younger children.

Outcomes: While doing fun art projects with leaves, kids will learn how important they are to the trees they grow on.

Audience: 3 -5 yrs.

Length of Activity: 1 ½ hrs. (next year – 1 hr is enough)

Location of Activity: PSC Campus, room near bathroom, access to outside (Freer 209)

Best Time of Day: right after lunch, early afternoon

Activity Description:

1. Intro and bathroom
2. Hand out papers and a collection of leaves
3. Let kids make an arrangement of leaves on the paper
4. Put sieve over top and paint with toothbrush
5. Set aside and let dry
6. Hand out more paper and shoe polish with towels (Note: lvs must be smooth – no hair or fuzz AND light colored shoe polish doesn't work.)
7. Show kids how to put the polish on the leaves and then arrange them on a paper NOTE: can use ink pad instead of shoe polish
8. Put sheet of paper over the top and roll with a rolling pin
9. Hand out more paper and crayons
10. Show them how to make leaf rubbings
11. Let the kids create their own designs & tell them about lvs & photosynthesis.
12. If time, take a walk and look at the different leaves.
13. Collect some to use for nature windows
14. Hand out squares of contact paper & let the kids arrange the lvs they collected – put a piece of contact paper on top & trim the edges. Add string to hang them.

Prep: collect materials, make examples

Prep Time: 1 ½ hrs.

Materials: paint, toothbrushes, screen sieve, paper, lvs, newspaper, shoe polish, paper towels, rolling pin, contact paper, crayons & paper NOTE: kids will be messy!

Sketch of Pre-made Materials:
Designed: Cherise 6/28/01
References/Resources:

Program Write-up Form

Name of Program: Fun With Fruit
Messy art projects for younger children.

Outcomes: Kids will learn what fruit is while using it for painting.

Audience: 3 - 5 yrs.

Length of Activity: 1 - 1 ½ hrs. (next year – 1 hr is enough)

Location of Activity: PSC Campus, room w/ tables & chairs, near bathroom (Freer 209)

Best Time of Day: midmorning or early afternoon?

Activity Description:

1. Intro and bathroom
2. Hand out paper and put out paint

3. Show them how to dip the fruit in and set it on the paper
4. Cut up fruit for painting
5. Let them create until they are tired of it
6. Set out fruit to eat
7. Show them a cut piece of fruit and point out the seeds and the shape
8. Tell about the parts and show picture of flower
9. Let them add flower prints to their paintings
10. Let dry while cleaning up and waiting for parents

Prep: buy fruit (apples, oranges, bananas, grapes, peaches, pears), collect other materials, make examples
WARNING: children will be using paint!

Prep Time: 1 ½ hrs.

Materials: paint, paper, newspaper, dishes for water and for paint, paper plates, a knife and cutting board, fruit, interesting flowers (Queen Ann's Lace)

Sketch of Pre-made Materials:

Designed: Cherise on 6/28/01

References/Resources:

Program Write-up Form

Name of Program: Invisible Art
Messy art projects for younger children.

Outcomes: Kids will be creating art without the typical paint and crayons.

Audience: 3-5 yrs.

Length of Activity: 1 ½ hrs. (next year – 1 hr is enough)

Location of Activity: PSC Campus, a room near a bathroom or sink (Freer 209)

Best Time of Day: midmorning or early afternoon?

Activity Description:

1. Intro and bathroom
2. Hand out paper and brushes & set out baking soda w/ water (names on papers)
3. Show kids how to paint a simple picture with the mixture
4. Set the papers aside to dry
5. Hand out more paper and candles
6. Show kids how to draw with candles
7. Set out watercolors and let them paint over the wax (or color over w/ crayons)
8. Set aside to dry and hand out more paper
9. Put out oil and colored water
10. Let the kids make a design with oil and then paint over the top with water

11. Get paper with soda and water and paint over with the purple grape juice.
12. Wash up let papers dry while waiting for parents

Prep: gather materials, make examples

Prep Time: 1 ½ hrs.

Materials: baking soda, tablespoon, q-tips, white paper, purple grape juice, candles, watercolors, paintbrushes, newspaper, cups, cooking oil, water, crayons NOTE: kids will be messy!

Sketch of Pre-made Materials:

Designed: Cherise on 6/28/01

References/Resources:

Program Write-up Form

Name of Program: Sticky Pictures
(Artwork for little people without using crayons, pencils or paint!)

Outcomes: This program will help small children learn about the air we breathe.

Audience: 3-5 yrs old

Length of Activity: 1 - 1 ½ hrs. (next year – an hour is enough time)

Location of Activity: Paul Smith's College Campus, a room with tables and chairs, located near a bathroom, with easy access to outside (Freer 209)

Best Time of Day: 10 - 11:30?

Activity Description:

1. Intro and bathroom break
2. Find a chair around the table & give each child a plate & some petroleum jelly
3. Show the kids the plates I made, and the plates we hung outside
4. Let the kids cover a plate (already has string) with jelly to hang outside
5. Go out with the kids and let them hang the plates
6. Back inside - spread out the seeds & grass & let them make designs w/ the glue sticks (put names on the papers)
7. Hand out dark paper and stones
8. Show them how to rub them together over the glue - Weathering!
9. Take them back outside to check the plates - info about the air we breathe and the particles we are taking in
10. Prepare for the coming of parents

Prep: collect materials, make examples for kids to see, TELL PARENTS: kids will be messy - wear old clothes!

Prep Time: 1 - 1 ½ hrs.

Materials: petroleum jelly, paper plates, dandelion seeds, grass clippings (very small), string, dark paper, white glue, sandstone

Sketch of Pre-made Materials:
Designed: Cherise, 6/27/01

References/Resources:

Plankton Sampling Project

Prepared by: Jeremy Riedl, Steward

Introduction:

Due to the concern over water quality, local property owners suggested a study of plankton on the St. Regis chain of lakes as well as on Upper Saranac Lake. There are many types of plankton in the water which dependent upon their concentrations can denote relative health or sickness in a body of water. Sites for sampling were chosen on all the lakes in the St. Regis chain as well as on Upper Saranac lake. True success in an endeavor of this nature must be combined with other water quality studies as well as continued yearly plankton sampling in order to create a base from which fluctuations in certain organisms can be monitored and recorded.

Materials:

Two boats were provided for the execution of this project. One boat was provided by Paul Smith's College, and another by the Upper Saranac Lake Association. Paul Smith's College and the Adirondack Aquatic Institute provided the following: SECCHI disk, plankton net, sample bottles, iodine, key for identification of plankton, microscope, slides, covers,etc.

Methods:

Methods used in collecting samples were consistent with other plankton sampling projects conducted elsewhere as well as here in the adirondacks. Due to constraints in manpower and time only one site was sampled on one occasion on all of the St. Regis lakes. Two sites were

chosen and sampled from Upper Saranac Lake due to its larger size. All samples collected in connected bodies of water were acquired on the same day. The samples from Upper Saranac lake were collected on 6\30\01 and the St. Regis samples were collected on 08\06\01. All specimens were collected in areas of open water, at least 100ft from any shoreline or island.

Once the boat was anchored at the testing spot general weather conditions were recorded, then the SECCHI disk was dropped and visibility was measured. After retrieval of the SECCHI disk the plankton net would be lowered until it reached either twice the SECCHI reading or the lake bottom. After a few moments (30-60seconds) the net would be quickly drawn up and into the boat where a sample bottle containing a few drops of iodine awaited. After the samples were sealed in the bottles a label was affixed to each recording the site and the date. Before leaving the site the plankton was thoroughly rinsed.

All slides were prepared and examined at Paul Smith's College by Jeremy Riedl or Karen Sauther. Plankton were grouped according to type. Different slides were used for each sample observed and select areas of two slides were examined for each sample.

Results\Discussion:

The results of plankton sampling reflect only part of the multifaceted nature of water quality determination, although SECCHI readings and plankton sampling are two of the most effective means to do this. On Upper St. Regis the following plankton types were identified: cyanobacteria or blue-green algae, diatoms, desmids or green algae, golden browns and rotifers. Of the slides examined from Spitfire and Lower St. Regis, the afore mentioned plankton types

were identified with the addition of copepods.

The following are the number of organisms found organized according to test site as well as SECCHI depth and weather conditions.

Upper Saranac Lake (Black Swamp Bay)

Weather: Sunny, warm and hazy

SECCHI: 7.5 meters

Copepods: 3

Golden Browns: 9

Green Algae: 3

Diatoms: 10

Cyanobacteria: 21

Rotifers: 7

Upper Saranac Lake (Fish Creek Bay)

Weather: Overcast cool and windy

SECCHI: 8.0 meters

Copepods: 5

Golden Browns: 75

Green Algae: 10

Diatoms: 74

Cyanobacteria: 14

Rotifers: 4

Upper St. Regis	**Spitfire**	**Lower St. Regis**
Weather: Warm sunny, calm for all sites		
SECCHI: 4.5 meters	SECCHI: 4.2 meters	SECCHI: 2.5 meters
Copepods: 8	Copepods: 3	Copepods: 15
Golden Browns: 6	Golden Browns: 18	Golden Browns: 3
Green Algae: 8	Green Algae: 13	Green Algae: 3
Diatoms: 20	Diatoms: 7	Diatoms:4

Cyanobacteria: 8	Cyanobacteria: 33	Cyanobacteria: 12
Rotifers: 6	Rotifers: 6	Rotifers: 6

Probably the easiest and most accurate test for water quality is the SECCHI disk reading which measures visibility in the water. The deeper the measurement, the cleaner the water is. What primarily obscures vision in the lakes are the plankton and sediment that are suspended in the water. When nutrient rich sediment enters a body of water the primary consumers (algae) feed on the nutrients in the water and become a problem. This problem of nutrient loading is called eutrophication and is usually the cause of algae blooms. The main culprit where algae blooms are concerned is phosphorous which usually enters the water through the watershed as run-off or from a point source. A particularly low water visibility combined with a high level of cyanobacteria is indicative of nutrient rich waters and eutrophication is a danger. Eutrophic lakes support very little life as nutrient levels are high and dissolved oxygen levels are low. Of course this represents a situation which is out of balance.

Of all the types of plankton that were identified, what we were particularly concerned with were the levels of Cyanobacteria which can cause potentially hazardous blooms if their populations get out of control. These blooms usually occur in late summer or fall and consit of large floating mats of green scum. Cyanobacteria along with diatoms and other algae make up the bottom tier of the food chain where nutrients are absorbed. Thus these creatures become food for larger organisms such as copepods and rotifers. The levels of copepods and rotifers can

indicate the amount of consumers there are for the phytoplankton in the lake. Also to be noted are the numbers of Golden-browns which are native to these older and colder lakes. They can tell us by their numbers whether eutrophication is taking place.

Conclusion\Recommendations:

Although the Adirondack Aquatic Institute already monitors plankton on the lakes which were tested as part of the Stewardship program I believe that the project is useful in two ways. First of all the plankton sampling project allows the stewards to gain valuable experience in aquatic research. Secondly it provides the community with further information regarding the health of the lakes which can be compared to other research findings in determining any possible course of action in the future.

If possible in subsequent years the continuation of plankton sampling should be conducted. However more samples should be taken at various places throughout the Stewardship range and at different times so that a more comprehensive picture can be drawn regarding nutrient levels in the Saranac and St. Regis chains.

Recreational Use Study of the Upper St. Regis Boat Launch

Prepared by: Laura Salmonsen, Steward

Introduction

The recreational use study was conducted from May 26, 2001 to September 3, 2001. The first objective of the study was to assess the amount of public usage on the St. Regis Lakes and connecting bodies of water from the Upper St. Regis Boat Landing. The second objective was to educate the boat launch users about exotic invasive species such as Eurasian milfoil, zebra mussels, purple loosestrife, and water chestnut. Stewards also were available to offer information and informative materials to users including maps, brochures, local history, time and location of sail boat races and rules and regulations.

Methods

This study was conducted from 7:30 am to 4:00pm daily (Sat-Fri). Watershed Stewards recorded data on a survey form (see Appendix) regarding boat size and type, number of users in a group, boat registration information, time arrived and time departed, gender of users, pets, brochure use, and comments. Stewards then approached the users and introduced themselves and the Watershed Stewardship Program and then proceeded to deliver a brief message about exotic invasive species and how to prevent the spread of these species. Specifically, stewards explained the causes of milfoil and purple loosestrife invasion and preventive measures that the public

could take to prevent the spread of the pest plants (e.g. washing their boat). Stewards also assisted the public in the use of the recently installed boat wash station.

These data were then entered into a database and analyzed over the course of the summer. The information can also be found on the Paul Smith's College website (www.paulsmiths.edu/~regis).

Results/Discussion

From Memorial Day weekend through Labor Day weekend 1417 people received our message regarding exotic invasive species at this boat launch, as compared with 1005 users in 2000. Of the 1417 people that used the launch, 535 were female and 882 were male. Users spent an average of 19 minutes preparing to launch their boats. Peak use was recorded during the week of 7/28-8/3 with a total of 209 users recorded during this particular week. In 2000, the week of August 6 to August 12 was the busiest with 132 individuals using the launch.

There were 706 boats launched this year at the Upper St. Regis boat launch (see Appendix), as compared with 489 boats launched in 2000. The most common form of recreational use on the St. Regis Lakes was canoe use with 375 canoes launched over the course of the summer. 170 kayaks, 5 rowboats, 3 inboard/outboards, 151 motor outboards, 3 inboard/outboards, and 1 sailboat were also launched at the Upper St. Regis boat launch. The average horse power of the motor outboards launched here was 61. Most boats had a current state registration sticker (98%). Boats registered to 7 states other than New York and one

Canadian province were observed at this launch. These states were New Jersey, Florida, Connecticut, Pennsylvania, Vermont, New Hampshire, South Carolina, and Quebec.

A complete table and various charts for the entire season can be found in the appendix section of this report.

Conclusion

The recreational use study during the year of 2001 gathered very comprehensive and detailed information regarding the public usage at the Upper St. Regis boat launch. Stewards were also able to communicate a valuable message to a great number of people this year. Many of the users that received our message were not aware of Eurasian milfoil and other invasives and the problems that they can cause to a watershed. The many brochures (see Appendix) that were made available at the boat launch also helped to distribute this information.

Recreational Use Study of the Upper Saranac Lake Boat Launch

Prepared by: Laura Salmonsen, Steward

Introduction

The recreational use study was conducted from May 26, 2001 to September 3, 2001. The first objective of the study was to assess the amount of public usage on Upper Saranac Lake and connecting bodies of water from the Saranac Inn Boat Landing. The second objective was to educate the boat launch users about exotic invasive species such as Eurasian milfoil, zebra mussels, purple loosetrife, and water chestnut. Stewards were also available to offer informative materials to users such as maps and brochures. Stewards also answered questions about local history, camping and rules and regulations.

Methods

This study was conducted from 7:30 am to 4:00pm daily, seven days per week. Watershed Stewards recorded data on a survey form (see appendix) regarding boat size and type, number of users in a group, boat registration information, time arrived and time departed, gender of users, pets, brochure use, weather and comments. Stewards also recorded the percentage of

users that signed the register. Stewards then approached the users and introduced themselves and the Watershed Stewardship Program before delivering a brief message about exotic invasive species and how to prevent the spread of such species. Specifically, Stewards explained the causes of milfoil and purple loosetrife invasion and preventive measures that the public could take to prevent the spread of the pest plants (e.g. washing their boat).

These data were then entered into a database and analyzed over the course of the summer. The information can also be found on the Paul Smith's College website (www.paulsmiths.edu/~regis).

Results/Discussion

From Memorial Day weekend through Labor Day weekend 3036 people received our message regarding exotic invasive species at this boat launch. Of the 3036 people that used the launch, 1911 were female and 1125 were male. Users spent an average of 18 minutes at the site preparing to launch their boat. Peak use was recorded during the week of 8/11-8/17 with a total of 451 users recorded during this particular week.

Over the course of the summer 1205 boats were launched at the Saranac Inn boat launch. The most common form of recreational use on Upper Saranac Lake was motor outboards with 569 of this type of boat launched over the course of the summer. The second most common boat type were canoes with 199 canoes launched during the summer. 64 kayaks,178 inboard/outboards, 68 motor inboards, 47 jet skis, 34 pontoon boats and 20 sailboats were also

launched at the Saranac Inn boat launch. The average horse power of motor outboards launched here was 78. Most boaters visiting the Saranac Inn had a current state registration sticker on their boat (95%). However, most people did not sign in at the register box, with only 25% doing so. Boats registered to 18 states other than New York were observed at this boat launch. These states were New Jersey, Pennsylvania, Vermont, North Carolina, Ohio, Massachusetts, Connecticut, Maine, Florida, California, Wisconsin, Delaware, New Hampshire, Georgia, South Carolina and Virginia.

A complete table and various charts for the entire season can be found in the appendix section of this report.

Conclusion

The recreational use study during the year of 2001 gathered very comprehensive and detailed information regarding the public usage at the Saranac Inn boat launch. Stewards were also able to communicate a valuable message to a great number of people this year. Many of the users that received our message were not aware of Eurasian milfoil and other invasives and the problems that they can cause to a watershed. The many brochures (see Appendix) that were made available at the boat launch also helped to distribute this information.

Recreational Use Study of St. Regis Mountain

Prepared by: Laura Salmonsen, Steward

Introduction

The purpose of the recreational use study on St. Regis Mountain was to gather data regarding weekend usage of the hiking trail and summit. Our second objective was to deliver an interpretive message concerning the erosion of the soil on the summit. Stewards also were available to offer information regarding rules/regulations, St. Regis Mountain/local history, camping/hiking information and flora/fauna identification. Stewards also helped users to interpret the view from the summit.

Methods

Stewards ascended the mountain at 8:00 am and were back to the trailhead by 5:00 pm. During this coverage period, stewards recorded data on survey sheets (see Appendix). With some exceptions, Stewards provided coverage on Saturdays and Sundays from Memorial Day to the weekend before Labor Day. Data included: the number of people per group, time arrived and departed, pets, level of preparedness, behavior and comments. Stewards then approached each group of users, introduced themselves and the Watershed Stewardship Program and proceeded to deliver their interpretive message regarding erosion on the summit. Stewards then made themselves available to answer questions and offer information.

Results/Discussion

The mountain summit was only covered on weekends during the summer of 2001. During this period, 632 people ascended St. Regis Mountain and received our interpretive message. Of these people, 352 were male and 280 were female. Most people did not bring pets to the summit with approximately 17% bringing pets and 83% not bringing pets. Most visitors to the summit were not fully prepared for a mountain hike according to the standards for our study. These standards were that the hikers carry a backpack, wear non-cotton clothing, and wear appropriate footwear (not sneakers). Only 33% of users were considered fully prepared. During their visit to the summit, most hikers (53%) remained on the bedrock, therefore preventing further soil erosion. However, a large percentage walked or sat on the grass/vegetation on the summit (43%). 3% of visitors climbed the fire tower.

The recreational use study for St. Regis Mountain during the summer 2001 was done in a limited capacity as compared with the recreational use study conducted in 2000. During 2000, Stewards covered the summit daily, whereas in 2001 the coverage was only on weekends. Therefore, data from 2000 cannot be accurately compared with data from 2001.

A complete table and various charts can be found in the appendix section of this report. Daily data gathered by stewards can also be found in the appendix.

Limitations

The fact that stewards only covered the mountain on weekends this year was the greatest limitation to this study. In addition to this factor, severe weather and other circumstances further limited the accuracy and significance of these data. The overall figures for the summer of 2001 do not accurately reflect the actual public usage on St. Regis Mountain due to these constraints. However, they do offer some insight into the trends in volume of users, user behavior and user preparedness.

Conclusion

Our interpretive message ("walk on the rocks to prevent erosion") was received by many people this year and further spread awareness about the damage hikers can cause to fragile plants and soil on mountain summits. We hope hikers will extend this "tread lightly" approach to all their hikes in the Adirondack Park and elsewhere.