Watershed Stewardship Program

Summary of Programs and Research 2006

Adirondack Watershed Institute

Paul Smith's College

Watershed Stewardship Program: Summary of Programs and Research, 2006

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Introduction and Key Findings – 2006

By Eric Holmlund, Director, Watershed Stewardship Program and Associate Professor, Paul Smith's College

Introduction

Part of Paul Smith's College's Adirondack Watershed Institute, the Watershed Stewardship Program (WSP) has served the Adirondack region in its effort to prevent the spread of invasive species to lakes in the Saranac Lake-Lake Placid region since 2000. Perhaps as important as the direct services rendered over the years to benefit the St. Regis Lakes, Upper Saranac Lake, Lower Saranac Lake, Lake Placid and Rainbow Lake is the role the WSP has played as model and collaborator with conservation and advocacy groups across the region. The program has persisted for seven summers and has become a respected resource for a coordinated invasive species management approach on a park wide scale. The recently written Adirondack Park Aquatic Nuisance Species Management Plan (2006) calls for education, outreach and monitoring functions at access points for Adirondack waterways to be enacted by lake or watershed stewards, based on the model established by the WSP. Future development and expansion of the watershed steward model is likely both within the Adirondack Park and beyond, as the Adirondack Park Aquatic Nuisance Species Management Plan is considered for statewide application.

The Watershed Stewardship Program is a cooperative, community-based effort to conserve natural resources, including water quality, wildlife and soil, through targeted educational efforts at specific locations near Paul Smith's College in New York State's Adirondack Park. The program is a true cooperative effort by members of the Paul Smith's College faculty, New York State land management agencies, including the Department of Environmental Conservation, non-governmental environmental organizations including the Adirondack Watershed Institute, the Adirondack Park Invasive Plant Program and the Adirondack Cooperative Loon Program, and shore owner organizations from the St. Regis Lakes, Rainbow Lake, Lower Saranac Lake and Lake Placid.

The WSP's wide ranging programs include point-specific environmental interpretation, educational outreach, field-based invasive species monitoring and various data-collecting projects aimed at better understanding human pressures on waterways and local trails. College students and recent graduates are hired to provide an informed, high-energy, friendly presence at local boat launches and trailheads. This report is an annual effort to consolidate and report on all aspects of program activities for the summer of 2006.

Summer 2006 Highlights

The Watershed Stewardship Program provided educational services at northern Adirondack boat launches for the seventh consecutive year. This year featured the continuation of efforts to monitor and control the exotic invasive plant purple loosestrife, monitor loon pairs on the St. Regis Lakes, assess invasive plant presence on the St. Regis Lakes, and provide educational outreach programs for area children. The most significant change in the program for 2006 was the expansion of program services to encourage volunteer efforts through area Shore Owner Associations (SOAs) through launching the Volunteer Boat Inspector (VBI) Program.

The primary thrust of this year's program was once again to educate people launching watercraft at our three launch locations - St. Regis Lake, Lake Placid, and Buck Pond/Lake Kushaqua - about the threat of introduced invasive species, primarily Eurasian watermilfoil (*Myriophyllum spicatum*) and how to minimize exposure of lakes to the threat. Stewards also gathered detailed

information about the character of boat launch use, including such information as total boats launched, type of watercraft, and demographic information. Watershed Stewards also asked boaters if they routinely take preventative measures, such as removing vegetation, washing boat and trailer, immediately emptying bilges, etc., to avoid the risk of spreading invasive species. Stewards were ordinarily stationed at the boat launches, but had other duties, such as paddling kayaks to observe loons, monitoring and controlling purple loosestrife on waterways, presenting off-site educational programs, maintaining data bases and meeting weekly to share information.

Family of boaters – Buck Pond/Lake Kushaqua Boat Launch

Program Mission

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, Lake Placid, the Rainbow Lake waterway and the St. Regis Mountain summit. The WSP also fulfills research and service functions. Baseline data concerning recreational use patterns and the status of natural resources gathered by the WSP aids in the development of area unit management plans by the New York State Department of Environmental Conservation. Stewards also identify and remove invasive purple loosestrife plants from the waterfronts of agreeable property owners on the St. Regis Lake chain. The WSP takes advantage of the skills and training of students of Paul Smith's College's Natural Resources, Environmental and Forestry programs with direction from the Paul Smith's College faculty, including a faculty program director. An advisory committee of community stakeholders, state agencies and Paul Smith's College faculty help guide the program.

The Watershed Stewardship Program has evolved over the years from its first year of service in 2000. In that year, the program served the St. Regis Lakes and St. Regis Mountain, both seven days per week during the summer. In 2001, the program expanded to serve Upper Saranac Lake for seven days per week, and in 2002, the WSP was welcomed on Lake Placid for four days per week. In 2004, coverage on Upper Saranac Lake shrank to weekends while coverage on Lake Placid expanded to five days per week. In 2005, coverage ceased for Upper Saranac Lake, but began on weekends at Lake Kushaqua (Rainbow Lake waterway) and Second Pond (Lower Saranac Lake waterway). In 2006, coverage ceased on Second Pond due to lack of funding, but expanded to six days per week at the Lake Placid site. In addition, a new outreach program was initiated, the Volunteer Boat Inspector Program, which worked with five area lake associations.

Staff

The program was funded to employ six employees for the summer of 2006 in a variety of full and part-time positions. All five of the Watershed Stewards were Paul Smith's College students or recent graduates. Positions included a Director, an Assistant Director/VBI Coordinator, 3 full-time stewards and a part time steward.

Staff Training

A week of staff training sessions began on June 5th, 2006. Stewards began boat launch duties on June 10, 2006. Staff training included program orientation, safety and risk management, interpretation principles, interpretive message development, role-playing public contact, and introduction to WSP research program data collection and entry, all by the program director. Paul Smith's College's Recreation and Intramurals Director Jim Tucker provided First Aid and CPR instruction, Marge and Ted Glowa of the Rainbow Lake Association provided Boater Safety certification, Forest Rangers Keith Bassage and Joe LaPierre provided an orientation to the DEC, PSC Professor Mike DeAngelo addressed principles of limnology, Professor Craig Milewski presented on Adirondack fish morphology and Hilary Oles of the Adirondack Park Invasive Plant Program addressed invasive plants. Dr. Nina Schoch trained our loon monitor. Anne Weld and Mike Quenelle provided an orientation to the St. Regis Lakes, Susan Riggins and Nicole Broderick oriented employees to Lake Placid and Bill Ulinski, manager of Buck Pond Campground oriented the stewards to Rainbow Lake and Lake Kushaqua.

The Watershed Stewardship Program offers a comprehensive staff training and development effort in order to provide well-prepared and effective Watershed Stewards, who represent both the WSP and Paul Smith's College in the best possible light.

Key Findings and Program Activities

Overall, Watershed Stewards tallied 4,981 members of the public launching 2,407 watercrafts at the Lake Placid, Upper St. Regis, and Lake Kushaqua/Buck Pond boat launches for the summer of 2006. These numbers represent a significant overall decrease from the 2005 season, when the program counted 11,890 visitors launching 5,446 watercrafts, figures which include weekend coverage at the highly used Second Pond State Boat Launch, which was not covered in 2006. Excluding the Second Pond tallies, the 2005 combined use figures for Upper St. Regis Lake, Lake Placid and Lake Kushaqua/Buck Pond were 8,199 visitors and 3,770 watercrafts. Thus, 2006 presented a 39% decrease in the number of visitors and a 36% decrease in the number of watercrafts encountered compared with 2005 at our three program sites for 2006, over a 13-week season as compared to the program's usual 15-week season. We plan on resuming the standard 15-week season (Memorial Day to Labor Day) in 2007.

Table 1: Recreation Use Data from WSP launches.

All Lakes	Boat Type/Size (indicate hp for MO)											Total # of	total	Avg Time at	Gender		Pets	4 stroke motor on	Visible Weeds?	Use Boatwash?
2006	(hp)	MO	MI	I/O	P	J	S	R	C	K	B	Boats	users	Launch	M	F		outboard?		
LakePlacid	74	425	161	194	53	0	9	9	121	310	14	1296	2981	13	1972	1009	115	398	3	n/a
St Regis	54	209	20	10	1	0	2	7	363	186	37	835	1434	14	918	513	56	86	0	175
LKush wkd	60	114	4	9	4	3	0	2	61	79	0	276	566	15	377	189	30	36	7	53
totals	**63**	**748**	**185**	**213**	**58**	**3**	**11**	**18**	**545**	**575**	**51**	**2407**	**4981**	**14**	**3267**	**1711**	**201**	**520**	**10**	**228**

Notes: The values are grand totals for the 13 week 2006 season (June 10 to September 4, 2006). Key: (hp) indicates average horsepower of all observed motors. MO = outboard engine, MI = inboard engine, I/O = inboard/outboard (stern drives), P = pontoon boat, J = jet ski (personal watercraft), S = sailboat, R = rowboat, C = canoe, K = kayak, B = *barge. *Barges were recorded each time they utilized the launch area in an attempt to assess commercial/ construction use of the launch. Data for Lake Kushaqua were collected on weekends only.

The decrease of use from 2005 suggests that boating use is returning back to the 2004 trend. It is assumed that the cool, rainy weather and increasing gasoline costs kept boaters off the area waterways. Regardless of this one-year decrease of use it is imperative to have stewards educate the public and inspect boats at critical points of entry in response to the increasing rates of invasive species infestation in waterways within the Adirondack Park and throughout the northeast.

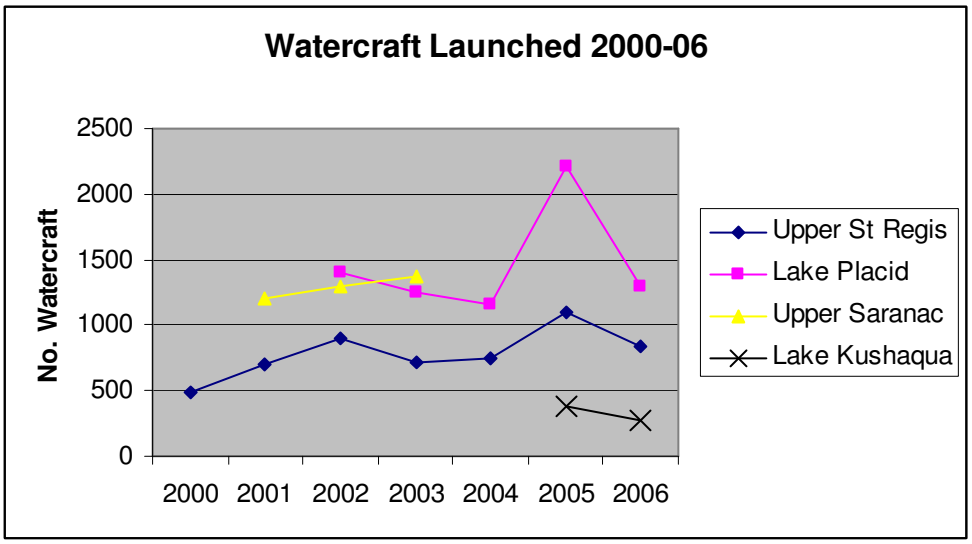


Figure 1: Multi-year trends in boat launch usage

This year, Watershed Stewards continued to compile data on the recent use history of boats putting into program waterways. This information yields a detailed picture of the web of interconnections between our lakes and those both within and without the Adirondack Park. Specific information from each lake may be found within this report. Once again, Lake Placid, Upper St. Regis Lake and Lake Kushaqua/Buck Pond were demonstrated to be connected in terms of potential invasive species exposure with hundreds of lakes and rivers from New York State and beyond.

In general, Watershed Stewards have interpretive contact with at least one person per user group, although it is common for the entire group to listen to the Stewards' messages. With this in mind, well over 2,400 people were directly given an interpretive message centering on conservation and natural resource health in the summer of 2006 while untold numbers received the message indirectly through their peers or WSP publications.

Other Programs

Our Stewards are given the opportunity to pursue their interests beyond public education in the Watershed Stewardship Program. This is what sets this program apart from similar efforts across the country. Our Stewards engage in public contact with experts from area natural resource management and advocacy agencies to solve conservation and research problems. Watershed Stewards once again teamed up with Steven Flint from the Adirondack Nature Conservancy to track down, map, count and remove as many purple loosestrife plants as possible on the St. Regis Lakes Chain. Our program has been instrumental in this struggle against the exotic invasive plant for six years. This year's efforts saw a decrease in plant populations from last summer, in which 764 purple loosestrife plants were counted, mapped and removed. This year's efforts yielded 634 of the lovely invasives. A

patch of purple loosestrife was reported on Lake Placed. This initial management effort removed a total of 208 plants.

Once again, a steward spent one day per week monitoring the three pairs of banded loons that are residents of the St. Regis Lakes chain under the aegis of the Adirondack Cooperative Loon Program. Once again, the loons seem to be doing well.

In a collaborative effort with the Adirondack Park Invasive Plant Program (APIPP) the WSP Assistant Director, Jennifer Lucas served as the Volunteer Boat Inspector (VBI) Program Coordinator. The VBI program focused on bringing boat inspection instruction and support to interested lake associations in the area. Two training sessions were held in July, one at the Paul Smith's College campus and another was presented at Burke's Marina in Raquette Lake. Training programs were presented by Lucas, WSP Director Eric Holmlund, APIPP Director Hilary Oles. At the training sessions participants received VBI handbooks, informative brochures, stickers, data sheets and t-shirts to aid them in their volunteer efforts.

From Left: Mountain View/Indian Lake Association member John Jungbluth, volunteer boat inspector Karen McGee, Jennifer Lucas and Eric Holmlund at the Mountain View Lake boat launch

Finally, one steward prepared, advertised and offered educational outreach programs to the general public and to selected area summer recreation programs. The WSP had great success with the Camp Apple Jack Summer Youth Program and Lake Placid's Camp Woodsmoke summer education program.

Each of the special projects described above allows the WSP to respond to current needs, both of the community around us and of the students themselves. In this way, the program becomes a vital bridging experience between academic study and the world of productive conservation work.

Program recommendations

For the 2007 season, the WSP director recommends:

- returning to a 15-week season, from Memorial Day to Labor Day
- continuing and expanding the Volunteer Boat Inspector program

- adding more special project activities for Watershed Stewards to prevent employee burnout from the repetitive nature of boat launch duty. Increase special projects from 1 day per five-day work week to 2 days per five-day work week.
- resume monitoring and education at the Second Pond/Lower Saranac Lake boat launch, pending funding.
- increasing collaboration with the Lake Steward programs at Lake George, Blue Mountain Lake and Sacandaga/Lake Pleasant

Watershed Stewardship Program Funding

The Watershed Stewardship Program was funded for the 2006 season by Paul Smith's College, the St. Regis Foundation, the Lake Placid Shore Owners' Association, the Rainbow Lake Association, the Lake Champlain Basin Program and the U.S. Fish and Wildlife Service. We are profoundly grateful for their support and contributions to our program vision. We invite current funders to continue their support of this multifaceted and proven program and welcome new supporters to join this effort to serve Adirondack watersheds through education, research and service. The program director is eager to meet with interested parties to discuss future plans and opportunities for the Watershed Stewardship Program. We also would like to appreciate the readers of this document and the many members of the public with whom we have interacted over the past seven years in the course of our efforts raise general awareness of critical watershed issues.

Watershed Stewardship Program- Staff Biographies, Summer, 2006

Jennifer Lucas
Assistant Director & Volunteer Lake Steward Coordinator. Jennifer is a graduate of Paul Smith's College receiving an Associate's Degree in Environmental Studies and a Bachelor's Degree in Natural Resource Management & Policy. Her background includes organizing and co-editing the proceedings of the Beech Bark Disease Symposium which took place in Saranac Lake in 2004, and various ecological research positions in the Adirondacks, northeastern United States and Siberia. She is a member of the Ecological Society of America and Lean-to Adopter through the Adirondack Mountain Club and NYS DEC. On her free time Jennifer enjoys painting, illustrating, sculpting, paddling and backpacking.

Jon Griffiths
Invasive Species Monitoring Specialist. Jon is a student at Paul Smith's College pursuing a Bachelor's Degree in Biology. He is originally from Pendleton, NY and hope to travel the world. Jon has been tutoring Math and Chemistry and is also certified as a lifeguard. He has done a lot of camping throughout the east coast and specifically enjoys kayaking, climbing, hiking and outdoor photography.

Kyle Murray
Educational Program Director. Kyle is a student at Paul Smith's College who received his Associate's in Surveying and is currently enrolled in the Natural Resource Management & Policy Bachelor's Degree Program. He is originally from Cobleskill, NY where he was a member of the Student Environmental Action Coalition. He has worked for the Adirondack Mountain Club and the Natural History Museum of the Adirondacks. He is currently a member of the Forest Guild and enjoys paddling.

Julia Polasik
Loon Monitor. Julia is a Paul Smith's College student pursuing a Bachelor's Degree in Fish and Wildlife. She is originally from Bainbridge, NY and has visited many of our National Parks. Julia enjoys skiing and kayaking and is a PSC Outing Club member. She is excited to be the WSP Loon Monitor to expand her knowledge on local waterfowl and to be out on the Adirondack lakes and ponds in her kayak.

Emily Purcell

Emily is a student of Paul Smith's College, where she is a member of the Students for Environmental Action and has received an Associate's Degree in Environmental studies and is currently pursuing a Bachelor's Degree in Natural Resource Management & Policy. She is originally from Middlebury, VT and has been canoe camping in the Adirondacks for about 16 years. She recently returned from a kayaking adventure in Alaska where she learned leave-no-trace ethics and backcountry skills. Emily is looking forward to spending her summer meeting and educating fellow boaters through the Watershed Stewardship Program.

Eric Holmlund

Director of the Watershed Stewardship Program, Eric is an Associate Professor at Paul Smith's College. In addition to his work as Director of the Watershed Stewardship Program, Eric teaches in Paul Smith's College's baccalaureate program in Recreation, Adventure Travel and Ecotourism as well as courses in environmental literature and nature writing. Eric is co-author of a book, *The Camper's Guide to Outdoor Pursuits*. Eric and his wife Kim have an eight-year-old daughter, Dana, and twin six-year-old boys, Will and John. He enjoys most outdoor activities, especially lake kayaking and camping. Eric is pursuing a Ph.D. in Environmental Studies from Antioch University New England.

Recreation Use Study-Buck Pond State Campground, Lake Kushaqua Boat Launch, 2006

By Julia Polasik, Watershed Steward

Introduction:

Stewards from the Watershed Stewardship Program were stationed at the Lake Kushaqua Boat Launch located in Buck Pond State Campground on weekends for the second summer in row. The Watershed Stewards worked to spread the word about the transport of invasive species on boats throughout the waterways of the Adirondack Park. Through interpretive messages given by the stewards, launch users are educated to help protect watershed quality for future generations. All boats and trailers were visually inspected for any plants (most particularly the invasive aquatic plant, Eurasian watermilfoil- *Myriophyllum spicatum*), and special care was taken to inspect boats leaving the lake due to the presence in the Rainbow Lake waterway of the densely growing aquatic plant, Southern naiad (*Najas guadalupensis*). Recreational use data was collected, along with where boats have been launched in the prior two weeks, and whether prevention steps were taken by boat owners against the spread of invasive species.

Methods:

A steward was stationed at the Lake Kushaqua boat launch 7am to 4pm on the weekends from June 10, 2006 through September 3, 2006. As a boat approached the launch, boat type, number of users and pets, motor size, registration year and state were all recorded for recreational use data. The launch user was then presented with a brief interpretive message regarding aquatic invasive species, and the southern naiad in the lake. Users were questioned about other waterways their boat had been in the past two weeks, and if any prevention steps were taken such as washing the boat and trailer, inspecting the boat for plant fragments or draining the bilges and live wells. Users whose boats had been on an infected lake in the past two weeks were asked to wash their boats at the available boat wash station. To ensure the removal of aquatic hitchhikers, boats were inspected by stewards for the presence of weeds prior to launching and after taking out the boat. The data collected was entered into a database where it was analyzed and compared to other weeks and the previous summer. The data not only gives the campground an idea of its boat launch use, but also provides insight into the risk of an invasive entering the lake by means of the public boat launch.

Rainbow Lake Association Member Marge Glowa conducting a Boater Safety course for Watershed Stewards

Results:

Demographics

Stewards encountered 566 people this summer, 377 men and 189 women at the Lake Kushaqua Boat Launch. Visits to Rainbow Lake totaled 129 of the 276 boats launched, or 47%. Boat launch users spent an average of 15 minutes launching and retrieving their boats. There were a total of 276 boats recorded. Outboard motors were the largest category with a total of 114 boats (42%, Figure 1), 36 of those being four stroke engines. Outboard motors had an average horsepower of 48 and the

median horsepower as 32 ½. Kayaks and canoes were the next largest group with 79 and 61 boats respectively (29%, 22%). Inboard/outboard motors (9, 3%), were occasionally observed, while inboard motors (4, 1%), pontoons (4, 1%), personal watercraft (3, 1%), and rowboats (2, 1%) were very rarely seen at Lake Kushaqua.

Visible weeds were reported only six times from the boats being retrieved; all of these were identified as southern naiad. Only one boat launching into Kushaqua Narrows had a visible weed on it, which was identified as Eurasian Watermilfoil with a zebra mussel on it. Both are invasive species. The boat owner reported using the boat in Lake Champlain during the preceding two weeks.

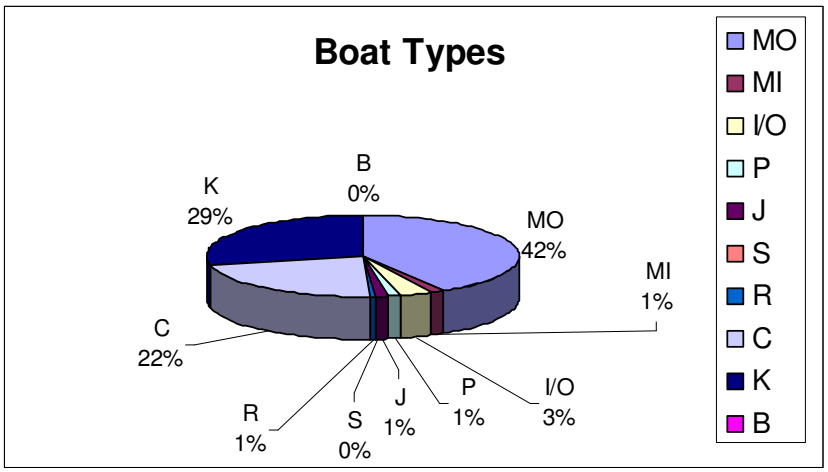


Figure 1. Types of Watercraft Launched at Lake Kushaqua: MO, outboard motor; MI, inboard motor; I/O, inboard/outboard motor; P, pontoon; J, jetski; S, sailboat; R, rowboat; C, canoe; K, kayak; B, barge.

Use patterns over the summer

The greatest number of boats was recorded on 8/12-8/13 with 38 boats and 64 people (Figure 2). The weekend with the greatest total group size was 7/22-7/23 with 79 users and 32 boats, followed closely by 7/97-7/30 and 8/12-8/13 with 64 individuals and 30 and 38 boats, respectively.

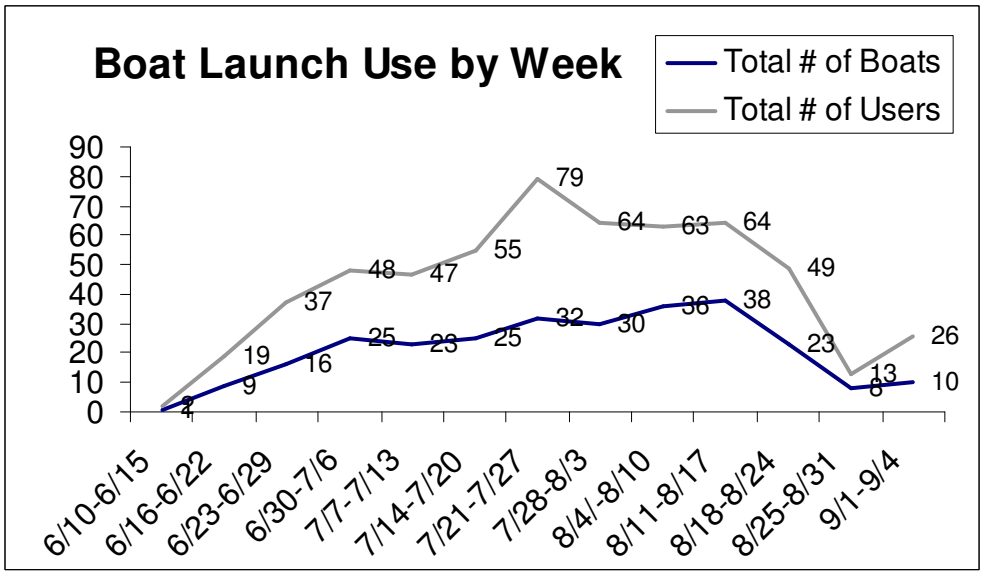


Figure 2. Total number of boats launched and total number of users at the Kushaqua Narrows Public Boat Launch

Use of Boat Wash Station

Of the 276 boats launched, 19% (53 boats) of those were washed at the boat launch station either before entering or after coming out of the lake (Figure 3). Of the boats that were washed, outboard motors (46%, 25 boats), kayaks (35%, 19), and canoes (9%, 5) were the most common. Inboard/outboards (4%, 2), pontoons (4%, 2), and inboard motors (2%, 1) rarely used the boat wash station. Boat wash use was highest the week of 7/7-7/13 at 65% use with 15 out of 23 boats washed (Figure 3). By the end of July there was a trend of decreased boat wash use even though there was a peak of use during the weekend of August 12, 2006.

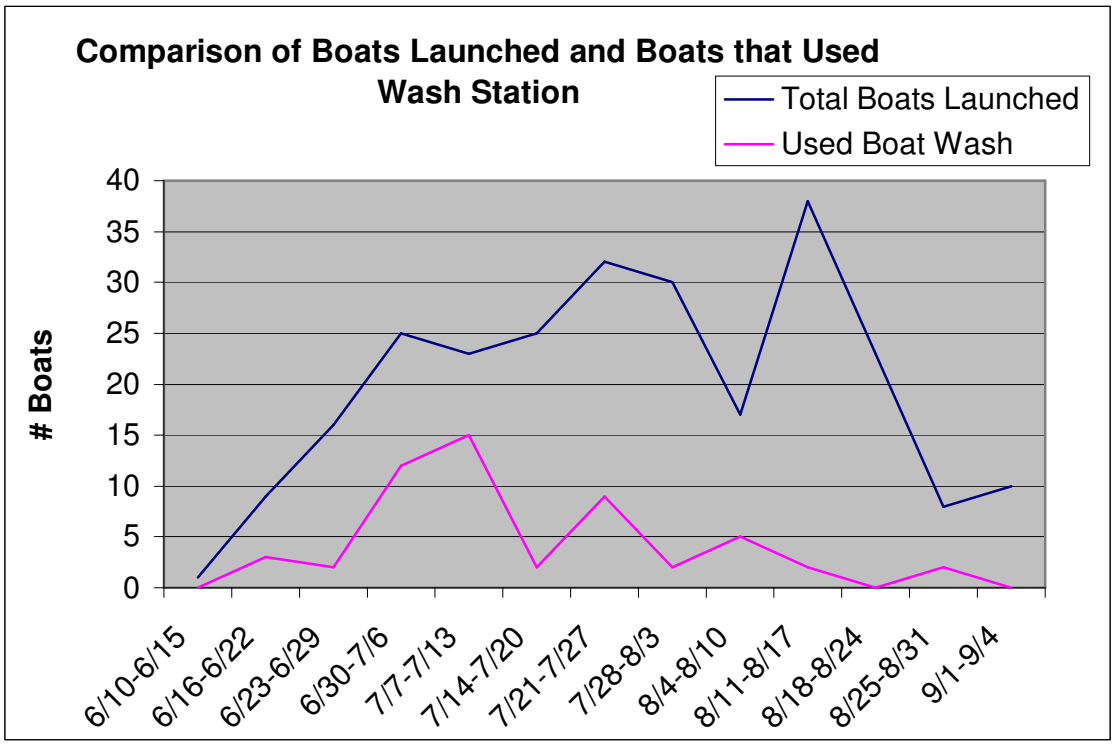


Figure 3. A comparison of the total number of boats launched and total number of boats washed using the wash station at Kushaqua Narrows Public Boat Launch located at the Buck Pond Campground in New York State.

Prevention Steps

New this year was our question regarding whether or not of launch users had taken any prevention steps to stop the spread of invasive species prior to launching. This question was asked starting the fourth weekend of the WSP duties at the Kushaqua Narrows Boat Launch. Of the 276 boats launched 34% admitted to having taken prevention steps prior to launching. Of that 34% the majority of the boats had been washed (60%, Figure 4), where as 21% of the groups having inspected their boats for attached invasive weeds, and 14% of the groups having drained their bilge water and live wells prior to launching.

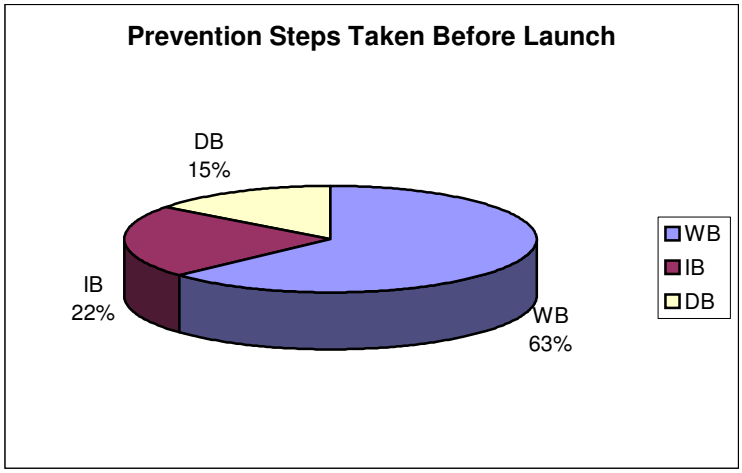


Figure 4. Ratio of prevention steps taken of boats inspected at the Kushaqua Narrows Public Boat Launch located at Buck Pond Campground, New York. WB, wash boat; IB, inspect boat for attached plants; and BD, drain bilges and live wells.

Lakes Visited Prior to Launch

When asked where their boat had been used in the last two weeks, many boaters responded with "nowhere." However, 104 of the 276 boats (37%) over the summer were reported being used in other lakes in the preceding two weeks (Table 1). Sixty-two boats (22% of total boats) had been on a body of water infected with invasive organisms in the preceding two weeks. The most visited lakes recorded were the Saranac Lakes Chain (13 boats), Lake Champlain (11), and Buck Pond (10). The Saranac Lakes Chain contains invasive Eurasian watermilfoil, Lake Champlain contains an array of invasive Eurasian watermilfoil, water chestnut, hydrilla and zebra mussels and Buck Pond is free of any invasive species.

Strand of Eurasian watermilfoil with attached zebra mussel removed from boat on 8/18/06

Lake Visited	Infected?	Total	Lake Visited	Infected?	Total
Saranac Lakes	Y	13	Buck Pond	U	10
Lake Champlain	Y	11	St. Regis Lakes	U	5
Saranac River	Y	6	Ausable River	U	3
Fish Creek	Y	4	Loon Lake	U	2
Lake Flower	Y	4	Osgood Pond or River	U	2
Taylor Pond	Y	4	Boquet River	U	1
Franklin Falls	Y	3	Chazy River	U	1
Chateaguay Lakes	Y	2	Church Pond	U	1
Lake George	Y	2	East Mud Lake	U	1
Lincoln Pond	Y	2	Forked Lake	U	1
Rollins Pond	Y	2	Garnet Lake	U	1
St. Lawrence River	Y	2	Goodyear Lake	U	1
Canandaigua Lake	Y	1	Green Pond	U	1
Deer River Flow	Y	1	Indian Lake	U	1
Lake Ontario	Y	1	Lake Placid	U	1
Kiwassa Lake	Y	1	Lake Titus	U	1
Meacham Lake	Y	1	Little Long Pond	U	1
Tupper Lake	Y	1	Little Tupper	U	1
Union Falls	Y	1	Long Lake	U	1
Total Infected		**62**	Norwood Pond	U	1
			Pine Lake	U	1
			Redfield Reservoir	U	1
			Silver Lake	U	1
			Simon Pond	U	1
			Windsor Pond	U	1
			Total Unknown/ Uninfected		**42**

Table 1. Lakes visited by users two weeks prior to launching at the Lake Kushaqua Public Boat Launch and whether the body of water is known to have aquatic invasive species present.

Overall the 2006 season at Lake Kushaqua Boat Launch saw fewer users on the weekends compared to the 2005 season. In 2005 the total number of boats was 387 with a total of 710 users; however, the 2006 season was two weeks shorter. By excluding the first two weeks of the 2005 season, the numbers are still 363 boats and 665 users in 2005, which is still greater than the 2006 total of 276 boats and 566 users which can likely be contributed to the less desirable weather of 2006. All WSP stations showed greater use in 2005 as compared with 2006.

The type of boats most commonly launched varied as well, with canoes, followed by outboard motors and kayaks as the greatest observed in 2005. 2006 showed many more outboard motors compared with kayaks and canoes, and the outboard motors had an average horsepower at 61 versus 53 in 2005. The number of four stroke engines also increased from 4 boats to 36 boats from the 2005 to 2006 summer season.

As a positive aspect, the number of boat wash users has increased greatly from last year's number of 13 boats, only 3% in 2005, to this year's 53 boat wash users, up to 19% of all boats launched. The 33% of boat launch users who took prevention steps is another indicator of how the word is getting out via stewards and other organizations regarding the transport of invasive species by boats. The number of boats with visible weeds has decreased from last year as well, likely a result of the less dense beds of southern naiad observed in 2006. The Eurasian watermilfoil with attached zebra mussel

spotted on a boat preparing to launch indicates that the potential for invasives to be spread by boats is still great, and must be known by all boat owners.

Conclusion

The summer of 2006 was successful for the Watershed Stewardship Program stationed at Buck Pond Campground as it expanded boat wash use significantly. Five hundred sixty-six people in 276 boats received a message regarding invasive species and their possible transport on watercraft. All boats were visually inspected for hanging weeds, although only one invasive weed was found. The likelihood of invasive species transport into Lake Kushaqua is a reality with 19% of the boats having been launched in bodies of water infected with invasive species in the prior two weeks, and 37% of all boats having been on any other waterway in the prior two weeks. The Watershed Stewards are a proactive means of preventing the spread of invasive species to Lake Kushaqua and the adjoining Rainbow Lake, as well as preventing the spread of southern naiad out of Lake Kushaqua and into other lakes.

The stewards would like to thank the Rainbow Lake Association for granting the stewards to work at the Kushaqua Narrows Public Boat Launch for another year, and for their contribution to help protect the Adirondack lakes. Thank you to the residents and Buck Pond Campground employees who visited and expressed their appreciation for the programs presence at Lake Kushaqua. The WSP is looking forward to another great summer in 2007.

Family using the Buck Pond/Lake Kushaqua boat launch

	Boat Type/HP (indicate hp for MO)											Total	4	Group	Gender		Average Time	Pets	Out	moored	Visible Weeds		Plan Visit Rainbow	Used Boat	Take Prevention Steps?			
	(hp)	MO	MI	I/O	P	J	S	R	C	K	B	# boats	strk	Size	M	F	(minutes)	#	Only		In	Out	Lake?	Wash	Y/N	WB	IB	DB
6/10-6/15	254	1	0	0	0	0	0	0	0	0	0	1	0	2	2	0	14	0	0	0	0	0	1	0	N/A			
6/16-6/22	34	7	0	1	0	0	0	0	0	1	0	9	1	19	12	7	20	1	2	0	0	0	3	3	N/A			
6/23-6/29	49	8	0	1	0	0	0	0	5	2	0	16	1	37	22	15	18	3	0	1	0	1	6	2	N/A			
6/30-7/6	46	8	2	1	1	0	0	0	6	7	0	25	6	48	30	18	13	5	1	1	0	0	10	12	15	13	1	2
7/7-7/13	78	10	1	1	0	1	0	0	6	4	0	23	4	47	34	13	17	3	1	1	0	0	14	15	15	11	0	4
7/14-7/20	45	12	0	1	0	0	0	0	5	7	0	25	0	55	40	15	11	6	2	2	0	0	13	2	11	6	4	0
7/21-7/27	39	19	0	0	1	0	0	0	4	8	0	32	1	79	58	21	16	3	2	1	0	0	20	9	11	5	3	1
7/28-8/3	52	12	0	2	2	0	0	1	7	6	0	30	1	64	46	18	15	2	6	0	0	1	15	2	10	4	4	1
8/4/-8/10	51	17	0	2	0	0	0	0	4	13	0	36	18	63	41	22	15	3	1	2	0	1	17	5	9	2	1	3
8/11-8/17	31	7	0	0	0	2	0	1	11	17	0	38	0	64	43	21	14	1	2	1	1	2	16	2	8	2	6	0
8/18-8/24	27	5	1	0	0	0	0	0	7	10	0	23	2	49	27	22	14	2	1	1	0	1	6	0	6	5	1	1
8/25-8/31	26.67	3	0	0	0	0	0	0	1	4	0	8	0	13	8	5	19	1	0	0	0	0	3	1	3	3	0	0
9/1-9/4	56	5	0	0	0	0	0	0	5	0	0	10	2	26	14	12	13	0	2	1	0	0	5	0	5	5	0	1
Totals	**60.64**	**114**	**4**	**9**	**4**	**3**	**0**	**2**	**61**	**79**	**0**	**276**	**36**	**566**	**377**	**189**	**15**	**30**	**20**	**11**	**1**	**6**	**129**	**53**	**93**	**56**	**20**	**13**

Table 2. A complete data summary for the 2006 season at Lake Kushaqua Boat Launch. Key: MO = outboard motor; MI = inboard motor; I/O = inboard/outboard motor; P = pontoon boat; J = Jet Ski (personal watercraft); S = sailboat; R = rowboat; C = canoe; K = kayak; B = barge (construction)

Recreation Use Study: Lake Placid State Boat Launch, 2006

Prepared by: Jon Griffiths, Watershed Steward & Jennifer Lucas, Assistant Director

Introduction:

For the past five years the Watershed Stewardship Program has had a Steward stationed at the state boat launch on Lake Placid. This year stewards were present six days a week from June 10th, 2006 through September 3rd , 2006.

The Watershed Stewards had a significant function at the Lake Placid boat launch. Stewards provided visitors and boaters a crucial message about the spread of aquatic invasive species, how invasives affect native terrestrial and aquatic ecosystems throughout the Adirondacks and how they as recreational boaters can take prevention steps to avoid infecting waterways with aquatic invasive species.

View of the McKenzie Range from the Lake Placid Boat Launch.

Methods:

Stewards served between the hours of 7:00 am to 4:00 pm each day of the week except Monday from June 10th through Labor Day, 2006. Stewards filled out recreation data sheets each day at the launch site. Stewards gathered a variety of information from each boater that visited the launch site, including boat size and type, the presence of four stroke motors, group size and gender, boat registration status, and the state in which the boat was registered. The time that the boater arrived to the launch site was also recorded, along with the time that they departed from the dock. Numbers of pets were recorded, and an "out only" box was checked if the steward only observed the removal of a boat from the lake. For the second year we logged the location of water bodies that the boats had visited in the previous two weeks, allowing us to track what type of exposure the lakes have to all types of invasive aquatic plants. A new question asked this year was whether or not the boater takes steps to prevent the spreading of aquatic invasive species, such as immediately draining bilge water and live wells, and then inspecting and washing their boat.

In addition, stewards also educated the public about maintaining healthy lake ecosystems primarily through presenting short informative messages about invasive species in the Adirondacks. Stewards notified the public about the role recreational boaters play in transporting invasive species between otherwise separate waterways. Visitors were urged to make a habit of washing and inspecting their boat and trailer every time it comes out of the water as a critical precautionary procedure to impede infection. The overwhelming majority of visitors were interested in assisting in the prevention of transporting exotic invasive organisms. Stewards also offered to answer any question visitors might have about the Adirondack Park. Stewards encouraged each boater to take a pamphlet provided by the Shore Owners' Association titled "Boating Guide to Lake Placid Lake," which includes a Lake Placid

map, lake and state land regulations, along with general information about the area and invasive species, in addition to the brochures produced by the Watershed Stewardship Program. Finally, as Stewards educated users, they visually inspected each boat for weeds, specifically looking at the propeller, hitch, rollers and axles.

Results:

Between June 10th and Labor Day there was a total of 2,981 people counted launching 1,296 watercraft of various types. The average time spent by each person at the boat launch was 13 minutes. Two peaks of usage occurred this season, during the weeks of July 7th through July 13th and from August 4th through August 10th. During the peak in July 330 people launched a total of 152 boats, and during the August peak stewards observed 331 people launching 143 boats (Figure 1). Use levels trailed off at the end of August but over Labor Day weekend the number of people using the lake increased with a static number of boats being observed when compared to the previous week.

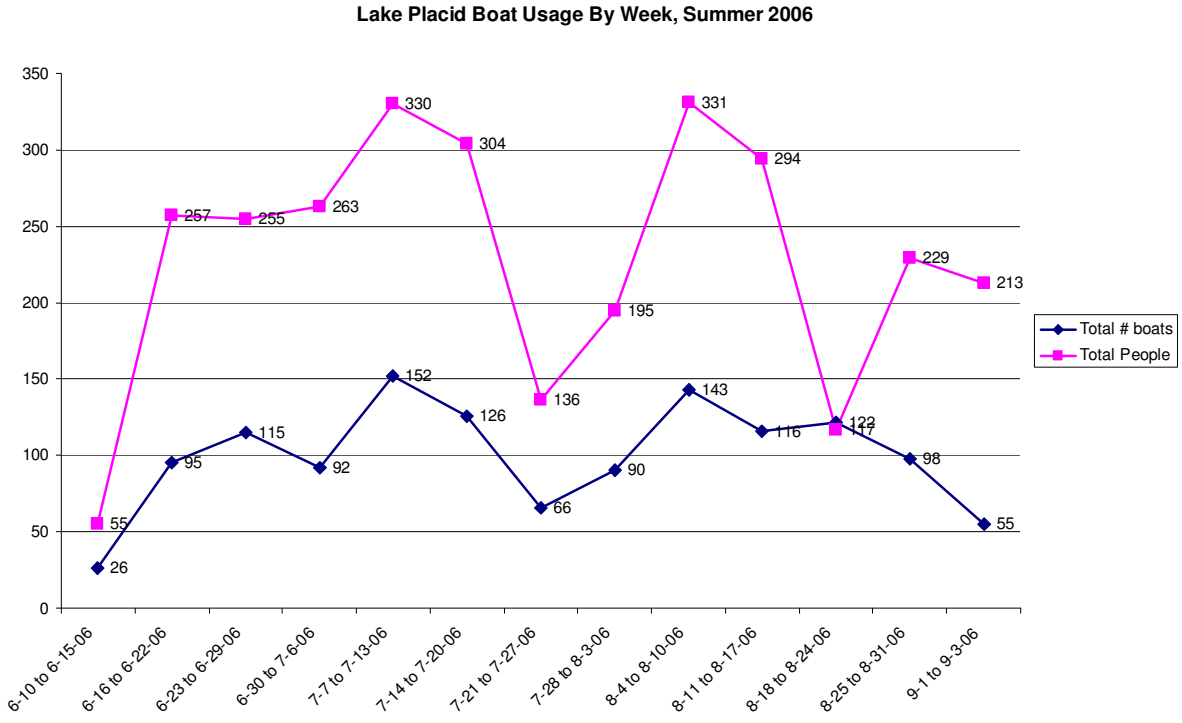


Figure 2. Weekly use levels of the New York State Boat Launch on Lake Placid during the summer of 2006.

Outboard motors were the most numerous type of watercraft launched in 2006 (425 total; 33% of total watercraft), followed by kayaks (310; 24%), inboard/outboard motors (194; 15%), inboard motor boats (161; 12%) and canoes (121, 9%, Figure 2). There were no personal watercrafts accounted for, due to the Town of North Elba ban. There were a small numbers of sailboats (9) and rowboats (9). Motorized watercraft outnumbered human-powered watercraft by a total of 816 (65% of total watercraft) to 433 (35%). The average horsepower of motors observed was 74, which was up from 67 in 2005. Three hundred ninety-eight 4-stroke motors were observed, which was 47% of the 847 total motorized boats recorded. Unregistered motorboats were up from 1 counted last year to 21 observed this year.

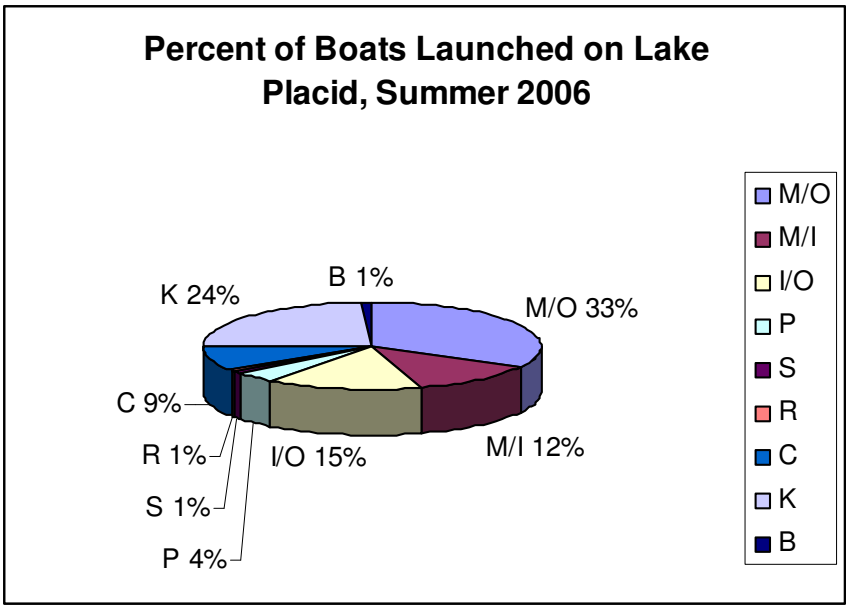


Figure 3. Percent of watercraft type launched at the New York State Boat Launch on Lake Placid during the summer of 2006.

State/Province of Origin

As expected, most boats (680) were registered in New York, while others came from a wide range of originating states (Table 1). The second most represented state was New Jersey, with 45 boats, followed by Connecticut (15 boats). Lake Placid attracts boaters from a wide range with 16 states and one Canadian province represented. Watershed stewards determined originating state by observing registration stickers on motorized watercraft. It is likely that some of the unregistered watercraft would have originated in states outside New York.

Table 1. **State of origin observed from boats launched into Lake Placid from the New York State Boat Launch during summer, 2006.**

State of Origin	
NY	680
NJ	45
CT	15
PA	13
VT	13
FL	4
NH	3
MA	3
MS	2
NC	2
RI	2
Quebec	2
VA	2
CA	1
MD	1
WI	1
Total	789

Party Composition

Sixty six percent of the people launching watercraft were male and 34% were female. One hundred fifteen pets were tallied; about 9% of the boats launched were accompanied by a (usually)

canine co-pilot. Seven percent of boats (90 total) were observed as "out only" (taken out of the lake, not observed that day as launched into the lake). It should be noted that some boats might have been counted twice because of this phenomenon. In other words, a boat may have launched on a Sunday and taken out on a Wednesday, and have been counted on both occasions, since there could have been a different Steward on duty. The intent of the study is to note total traffic impacting the boat launch. Each occasion of use is an opportunity for Watershed Stewards to educate the public and inspect boats.

Use Patterns

In 2006 Watershed Stewards were stationed at Lake Placid 6 days per week, from Tuesday to Sunday. We found the peak use weeks were July 7 to July 13 (152 boats) and August 4 to August 10 (143 boats, Figure1), which is surprisingly different than last year. In 2005 peak us was the week of July 4th, which is expected due to the holiday. Yet the July 4th holiday for the 2006 season was hindered by high winds and rain, thus decreasing the attraction of water sports. Decreased boat launch use could have also been due to the holiday falling on a Tuesday this year, limiting the number of people that could have taken a vacation during that time.

Most boats were launched on the weekend with Saturday having the most launches (total 345, Figure 3) with an average of 26 boats per Saturday. Average boats launched by day are as follows: Sunday – 23, Tuesday – 12, Wednesday 11, Thursday – 14, and Friday – 19.

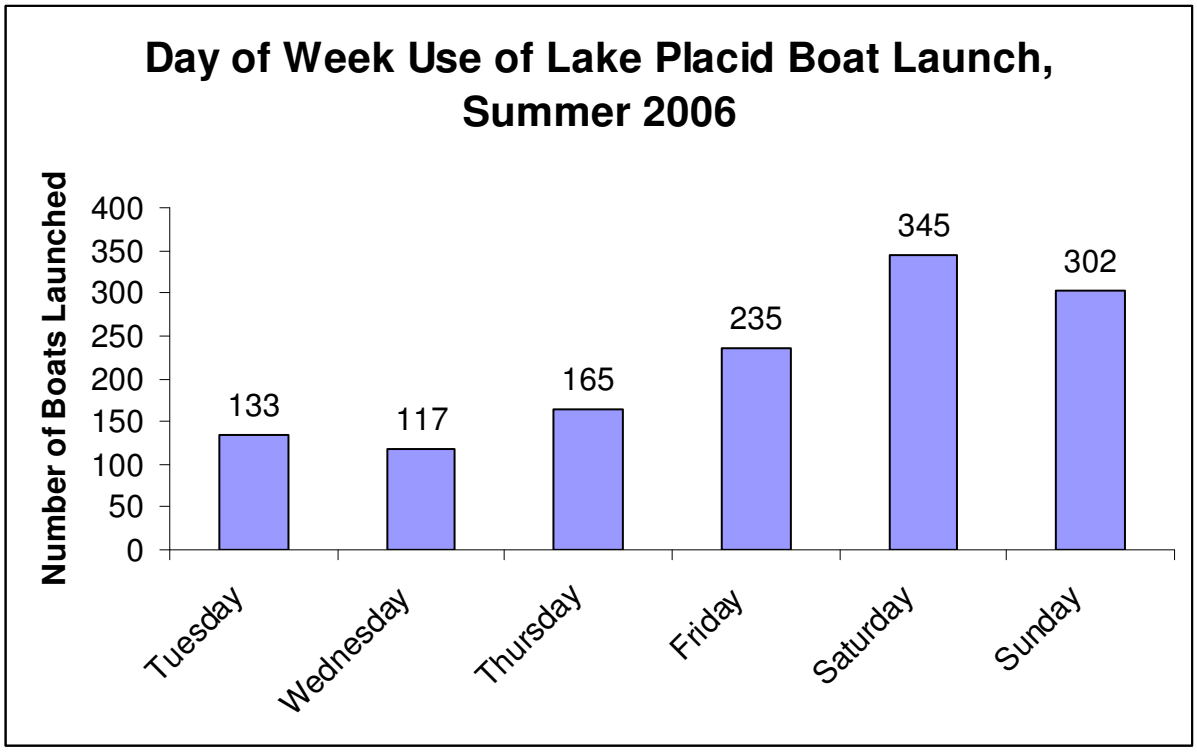


Figure 3. Total number of boats launched from the New York Sate Public Boat Launch on Lake Placid by day of week during the summer of 2006.

Where has your boat been?

For the second year the Watershed Stewardship team asked all encountered boaters what other bodies of water their boats had been in the past 2 weeks before visiting Lake Placid. This gives us a scope of the likelihood the lake may be exposed to an invasive aquatic species. 344 boats were reported by their owners as having been used in other lakes in the preceding two weeks. This

represents 27% of the total boats launched (1296). We expect that more boats had been used in other waterways in the preceding two weeks, but at high use periods it was difficult to ask this question of everybody. These 344 boats had visited a total of 416 lakes in the preceding two weeks. Some boat owners reported visiting more than one lake in the preceding two weeks. Of the 344 boat owners reporting prior use, 67% (230) had visited a lake with a known infestation of aquatic invasive species. Overall, then, 230 of the total 1,296 boats (18%) launched at Lake Placid in 2006 present a risk of transporting invasive species to Lake Placid.

The breakdown of lakes visited prior to Lake Placid helps us to understand patterns of visitation and invasive species transport. We found that 62% of the 416 prior lake visits had been to lakes that are known by WSP to have a presence of at least one invasive aquatic plant (Table 2). The most reported body of water reported was the Saranac Lakes Chain, consisting of Upper, Middle and Lower Saranac Lake (total 71). Because of the various responses given, any answer mentioning Saranac Lake was tallied together (Lower Saranac – 19, Upper Saranac – 14, Middle Saranac – 10, Saranac Lake – 24, and Saranac Lakes Chain – 4). The second most visited body of water visited was Lake Flower with 30 responses. The third and fourth most visited body of water visited was Lake Champlain (28) and Lake George (18). The Saranac Lakes Chain, Lake Flower and Lake George all host Eurasian watermilfoil and Lake Champlain is known to host many aquatic invasive species including Eurasian watermilfoil, hydrilla, water chestnut, and zebra mussels. This is interesting finding considering that most would assume that invasive species are being introduced to our pristine lakes by out-of-state visitors, when in actuality the most significant potential source of invasives tends to be right in our back yard. Most out-of-state visitors responded to this question by saying that their boat had been nowhere in that past two weeks. This would lead one to believe that people on vacation in the area only use their boat on vacation and park their boat in their yard for the remainder of the year, while locals tend to boat more throughout the summer and transport their boat to numerous lakes in the immediate area.

View of Lake Placid Marina from Lake Placid State Boat Launch

Table 2: Boat Use History, Lake Placid

Boat Use History- Prior 2 weeks Lake Placid, Summer 2006 Known Infected	
Saranac Lakes Chain	**71**
Lake Flower	**30**
Lake Champlain	**28**
Lake George	**18**
Rental	**11**
Tupper Lake	**10**
Oseetah Lake	**10**
St. Lawrence Seaway	**8**
Atlantic Ocean	**6**
Lake Ontario	**6**
Fish Creek	**5**
Cazenovia Lake	**3**
Lincoln Pond	**3**
Taylor Pond	**3**
Company Boat	**2**
Duane-Deer River Flow	**2**
Erie Canal	**2**
Follensby Pond	**2**
Franklin Falls	**2**
Grasse River	**2**
Hudson River	**2**
Lake Erie	**2**
Long Island Sound	**2**
Marina	**2**
Oneida Lake	**2**
Saranac River	**2**
Schroon Lake	**2**
Cayuga Lake	**1**
Connecticut River	**1**
Delaware River	**1**
Eagle Lake	**1**
Egg Harbor, NJ	**1**
Finger Lakes	**1**
Floodwood Pond	**1**
Great Sacandaga Lake	**1**
Kiwassa Lake	**1**
Lake Colby	**1**
Lake Sunapee, NH	**1**
Lake Winnipesauke	**1**
Lock Lake, NH	**1**
Loon Lake	**1**
Meacham Lake	**1**
Mohawk River	**1**
Mountain View Lake	**1**
Saratoga Lake	**1**
Total- Infected Lake Exposure	**256**

Boat Use History- Prior 2 weeks Lake Placid, Summer 2006 Unknown/Uninfected	
Mirror Lake	53
Raquette Lake	5
Raquette River	4
Sacandaga Lake	4
Budd Lake, NJ	3
Lake Everest	3
Rainbow Lake	3
Saint Regis Lake	3
Upper St. Regis	3
Carnegie Lake	2
Chapel Pond	2
Lake Clear	2
Little Clear Pond	2
Lower St. Regis	2
Rollins Pond	2
Round Lake	2
Silver Lake	2
Spitfire	2
4th Lake	1
50 Horse	1
8th Lake	1
Addison Lake, NJ	1
Ampersand	1
Appocanoe Lake	1
Art Lake	1
Ausable River	1
Barnum Pond	1
Beaver Lake (Lewis Cty.)	1
Buzzard's Bay	1
Carry Falls	1
Chazy Lake	1
Clide River	1
Coventry Lake	1
Cowanesque Reservoir	1
Cupsiptic Lake, ME	1
Deepcreek Lake	1
Deerfield River	1
East Fork Lake	1
Edge Comb Pond	1
Fallen Lake	1
Fork Lake	1
Jade Pond	1
Jay Pond	1
Lake Dunnmore	1
Lake Eaton	1
Lake Hoputoneog	1

Lake Iroquoi, VT	1
Lake Kushaqua	1
Lake Lila	1
Lake Marmanasco	1
Lake Pleasant	1
Lake Scoon	1
Lake Simon	1
Lake Wallensby, PA	1
Lake Wyola	1
Little Tupper	1
Long Lake	1
Magathy River, MD	1
McKenzie Pond	1
Mercercuty Parle, NJ	1
Metidconk, NJ	1
Middle Pond	1
Monksville Reservoir	1
Moose River	1
Morse Pond	1
Mountain Pond	1
Mt Arab Lake	1
New Millford	1
Niagara River	1
Norwood Pond	1
Pamparaga River, CT	1
Piseco Lake	1
Pollywog Pond	1
Schuyler Falls	1
Senica River	1
Sheppard Lake	1
Simon Pond	1
Trout Lake	1
Winooski River, VT	1
Total- Unknown or uninfected	160

Have You Taken Prevention Steps?

This year we asked a new question, "What, if any, prevention steps did you take to stop the spread of aquatic invasive species?" Possible prevention steps a boater could have taken included washing or inspecting their boat, draining the bilge, and emptying live wells, and bait buckets. We found that out of the total 1296 boats launched 446 (34%) took some form of prevention steps. Since this was a new variable being recorded during the course of the season the question was refined to have the boated define what prevention steps were taken; thus 127 boats were not recorded as to what prevention steps were taken, but rather generally noted as a "yes" response. Of the 319 refined responses washing the boat was the main prevention step reported (237 boats) followed by boat inspection (44) and bilge draining (38, Figure 5).

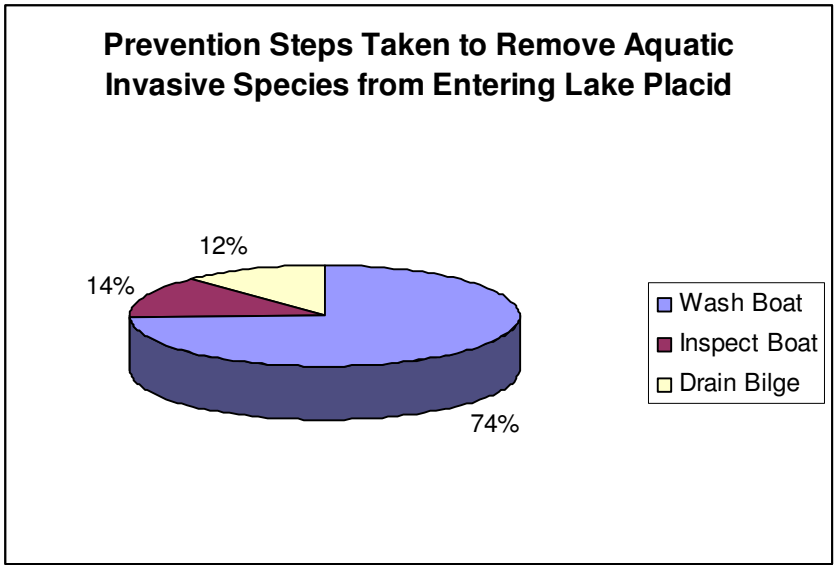


Figure 5. Prevention steps taken by boaters to remove aquatic invasive species from their boat, recorded at he New York State Public Boat Launch on Lake Placid.

Multi-Year Use Perspective

The summer of 2006 represents a 55% decline of launch use at the Lake Placid when compared to the 2005 season (1296 total boats compared to 2257 in 2005) and a 51% decrease in terms of people (2979 vs. 5527). Yet the 2006 season demonstrates a similarity compared to the 2002, 2003 and 2004 data (Figure 6). This year lake stewards were not posted at the boat launch Memorial Day weekend as previous years; the 2006 season was 13 weeks in length, as compared to 15 weeks in the past. This likely reduced usage numbers, but it is also hypothesized that cooler, rainy weather, especially on Independence Day, decreased use this season. High gas prices may have also contributed to a decrease of motor boat use and general visitation to the northern Adirondacks.

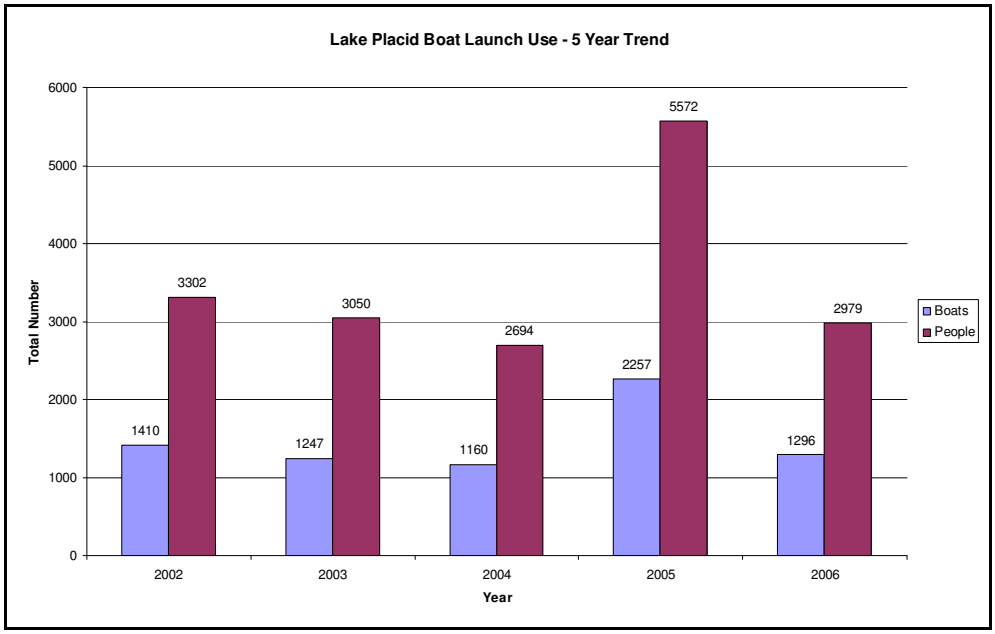


Figure 6. Five year trend use recorded from the New York State Public Boat Launch on Lake Placid.

The use of cleaner, more fuel efficient four-stroke engines increased dramatically from 22% of outboard motors in 2005 to 93% of outboard motors this season (398 four-stroke engines out of a total of 425 outboard motors). The increase of four-stroke engines on Lake Placid contributes to pollution control with decreased exhaust and oil/fuel spillage.

The report of visible weeds before launching into Lake Placid decreased this year to only 3 instances, where in 2005 there were 7 instances, one of them being Eurasian watermilfoil. None of the weeds observed at Lake Placid in the 2006 were invasive, but finding the vegetation got the attention of the boater and allowed the steward to point out important places to check and wash both boat and trailer. Vegetation removed from boats and trailers were collected and labeled to confirm identification.

Terrestrial Invasive Plant Sightings

Watershed Stewards identified an infestation of yellow iris (*Iris pseudacorus*) near the water's edge at the Lake Placid State boat launch. This outbreak was reported to the Adirondack Park Invasive Plant Program, which made a trip to attempt to remove the plants. Shore owners and visitors are urged to look for this plant near their property and at the boat launch. Future infestations should be reported to either the Watershed Stewardship Program (518-327-6341) or the Adirondack Park Invasive Plant Program (518-576-2082 x 131). On August 24, a small team of Watershed Stewards identified and removed 208 purple loosestrife plants from a camp on Buck Island. The owners were notified and provided encouragement, additional trash bags and refreshments. This site should be checked again each summer for regrowth. Please report any sightings of purple loosestrife (*Lythrum salicaria*) as noted above.

Discussion

The Watershed Stewardship Program experienced another successful summer of service overall at the Lake Placid State Boat Launch in 2006. The program educated nearly 3,000 users and visually inspected over 1,200 boats that otherwise would have entered the pristine waters of the lake without a second glance. Use trend has decreased from 2005 to what has been observed as normal levels in the previous years. Cleaner four-stroke outboard engine use has increased which will likely contribute to the health and clarity of Lake Placid as long as aquatic invasive species precautionary steps are taken. Stewards reported that most people were open and receptive to both their presence and their message, with some notable exceptions. Stewards handed out brochures throughout the summer, both the one prepared by the Lake Placid Shore Owners' Association as well as Watershed Stewardship Program literature.

Nicole Broderick and Sue Riggins of the Lake Placid Shore Owners' Association

Conclusion

The WSP would like to thank its primary sponsor, the Lake Placid Shore Owners' Association (LPSOA) for their vision and dedication to the health of Lake Placid and all waterways in the Adirondack Park. The energetic and dedicated officers of the LPSOA provide guidance and encouragement in addition to the financial support of the association. The Watershed Stewards truly feel part of a team committed to the health of Lake Placid and enjoy every opportunity they get to get out onto the lake and help. So many visitors to the Lake Placid Boat Launch benefit from the program and the leadership of the LPSOA, the support of the New York State Forest Rangers and the goodwill of the property owners in general. In the end, Lake Placid is a community resource for a community that includes not only shore owners, but citizens of the local and regional municipalities as well as the speechless organisms living in the lake ecosystem and the soil, water and air that surround us all.

Table 3: Lake Placid Boat Launch Usage, 2006

Lake Placid 2006	Boat Type/HP (MO hp recorded only)											Total	4	Total	Gender		Ave Time at Launch	Unregistered
Week	(hp)	M/O	M/I	I/O	P	J	S	R	C	K	B	# boats	strk	People	M	F	(minutes)	Motorboats
6-10 to 6-15-06	48	9	2	4	1	0	1	0	7	2	0	26	11	56	39	17	0:16	0
6-16 to 6-22-06	79	36	17	26	0	0	0	2	2	12	0	95	36	257	169	88	0:12	1
6-23 to 6-29-06	64	41	15	24	4	0	0	2	9	20	0	115	42	255	169	86	0:12	2
6-30 to 7-6-06	87	29	8	27	2	0	0	1	4	21	0	92	31	263	170	93	0:12	1
7-7 to 7-13-06	78	48	17	13	8	0	0	2	14	50	0	152	37	330	208	122	0:12	7
7-14 to 7-20-06	79	44	8	22	3	0	0	0	18	31	0	126	38	304	195	109	0:12	1
7-21 to 7-27-06	77	23	6	7	0	0	1	1	11	17	0	66	13	136	96	40	0:12	0
7-28 to 8-3-06	73	35	16	12	2	0	0	0	5	19	1	90	35	195	132	63	0:13	1
8-4 to 8-10-06	81	46	17	14	5	0	0	0	12	47	2	143	43	331	214	117	0:15	3
8-11 to 8-17-06	69	37	19	16	3	0	2	1	18	16	4	116	35	294	209	85	0:14	4
8-18 to 8-24-06	76	30	13	10	9	0	0	0	10	46	4	122	27	117	79	38	0:15	1
8-25 to 8-31-06	77	26	15	14	6	0	0	0	9	25	3	98	37	230	164	66	0:14	0
9-1 to 9-3-06	72	21	8	5	10	0	5	0	2	4	0	55	13	213	128	85	0:16	0
TOTALS	74	425	161	194	53	0	9	9	121	310	14	1296	398	2981	1972	1009	0:13	21
Median HP	77																	

Key: MO = outboard motor; MI = inboard motor; I/O = inboard/outboard motor; P = pontoon boat; J = Jet Ski (personal watercraft); S = sailboat; R = rowboat; C = canoe; K = kayak; B = barge (construction)

Table 4: Lake Placid Boat Launch Usage, 2006, Additional Usage Data

Lake Placid 2006				Visible Weeds		Prevention Steps Taken				Been in another water body	Infected lake
Week	# Pets	Out Only	Moored	In	Out	Y/N	Wash Boat	Inspect Boat	Drain Bilge	prior 2 weeks?	visit?
6-10 to 6-15-06	2	3	3	0	0	6	NA	NA	NA	9	5
6-16 to 6-22-06	4	4	4	0	0	53	NA	NA	NA	21	18
6-23 to 6-29-06	10	1	4	0	0	41	5	0	1	26	13
6-30 to 7-6-06	4	3	0	1	0	34	16	4	4	29	20
7-7 to 7-13-06	13	9	7	0	0	60	46	3	4	51	36
7-14 to 7-20-06	12	11	2	0	0	35	21	0	6	35	23
7-21 to 7-27-06	5	6	0	0	0	29	10	3	0	18	13
7-28 to 8-3-06	7	10	4	1	0	31	20	0	5	19	14
8-4 to 8-10-06	13	10	7	0	1	38	33	5	4	35	18
8-11 to 8-17-06	10	12	17	0	0	38	31	4	6	27	20
8-18 to 8-24-06	12	11	13	0	0	37	25	11	3	36	21
8-25 to 8-31-06	11	6	8	0	0	30	22	8	3	27	22
9-1 to 9-3-06	12	4	22	1	0	14	8	6	2	11	7
TOTALS	115	90	91	3	1	446	237	44	38	344	230

Recreation Use Study- Upper St. Regis Lake, 2006

By Julia Polasik, Watershed Steward

Introduction:

The Watershed Stewardship Program, part of Paul Smith's College's Adirondack Watershed Institute, works to help protect the quality of the local waterways. The program allows stewards to prevent the introduction of aquatic invasive species through public interaction. A steward was stationed at the Upper St. Regis Landing to present a brief interpretive message to launch users about invasive species and how to fight the spread of these species found throughout the Adirondack Park. The steward inspected all watercraft and trailers to ensure boats were free of invasive weeds. Stewards also collected recreational data to determine the number and type of boats that visited the lake. Questions regarding where the boat has been in the prior two weeks, and whether any prevention steps were taken against invasive species were also asked. These actions along with the encouragement of users to wash their boats at the available boat wash station helped in deterring the spread of invasive species from lake to lake.

Early morning fog on Upper St. Regis Lake

Methods:

A steward was stationed at the Upper St. Regis Boat Launch daily from Saturday, June 10th through Monday, September 4th for the 2006 season. From 7am to 4pm a steward was located near the boat wash station, rather than down by the boat launch, to increase compliance after advising visitors to wash their boats. As a boat approached the launch area, the steward recorded all observable data including boat type, motor size, number of users, registration state and year for each group. Stewards would then give a brief interpretive message regarding invasive species, and proceed to ask the user where the boat had been in the prior two weeks. Users of boats that had been on a lake infected with an invasive plant were asked to wash their boat if the user had not already washed it prior to launching. As the summer progressed the stewards asked the user if any prevention steps against the spread of invasive plants had been taken including washing the boat, draining bilges and live wells, or inspecting the boat for plant fragments. In addition, all boats and trailers were inspected for weeds. All data collected was written on a prepared sheet which was later entered into a database so all information could be compiled. The database allowed for comparison of data and a chance to observe any trends from the summer. In addition to providing recreational use insights, the database allows a better idea as to what launch users are doing to help prevent the spread of invasive species.

The WSP Assistant Director hand painted this very attractive sign advising visitors to wash their boats.

Results:

Demographics

Total use of the Upper St. Regis boat launch for 2006 totaled 835 boats (including 31 boats launched from the private boat launch) and 1434 people, 918 males and 516 females. Of the boats launched, nearly half were canoes, (363, 43%), followed by outboard motors (209, 25%) and kayaks (186, 22%). Barges were often moored (37, 4%) and inboard motors (20), inboard/outboard (10), rowboats (7) and sailboats (2) were rarely seen at the launch.

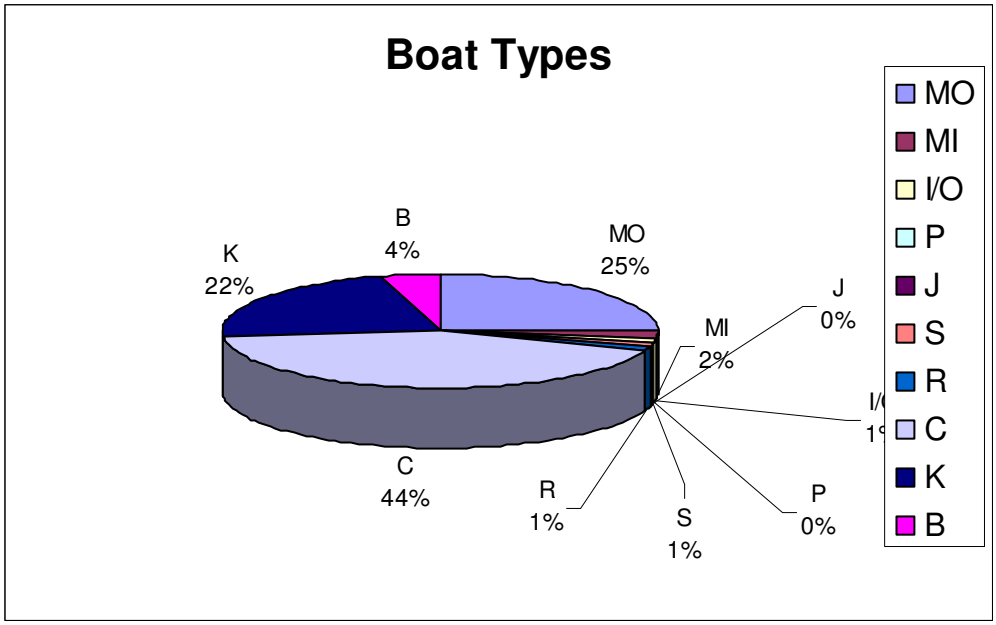


Figure 1. The various types of watercraft launched at Upper St. Regis

Boats that were registered were primarily from New York State (216), followed by Vermont (5), Delaware (3), New Jersey (3), and Pennsylvania (3, Table 1). The average amount of time spent at the boat launch was 14 minutes, and 62 of the groups of boaters were reported as out only, having put in at an alternate location.

State of Origin	
NY	216
VT	5
DE	3
NJ	3
PA	3
AZ	1
CT	1
MD	1
Ontario	1
RI	1
Total	235

Table 1. State of origin from boats launched at the public boat launch on Upper St. Regis Lake.

Summer use patterns

The boat launch use by week is shown below in Figure 2. The peak use for the launch regarding the number of boats occurred during the weeks of 7/14-7/20 and 8/4-8/10 with 90 and 93 boats respectively. The peak use regarding total number of people occurred during the week of 7/14 – 7/20 with 182 individuals in the 90 boats launched. The smallest number of boats tallied occurred during the first week from 6/10-6/15 with only 29 boats launched, and 44 individuals in those boats.

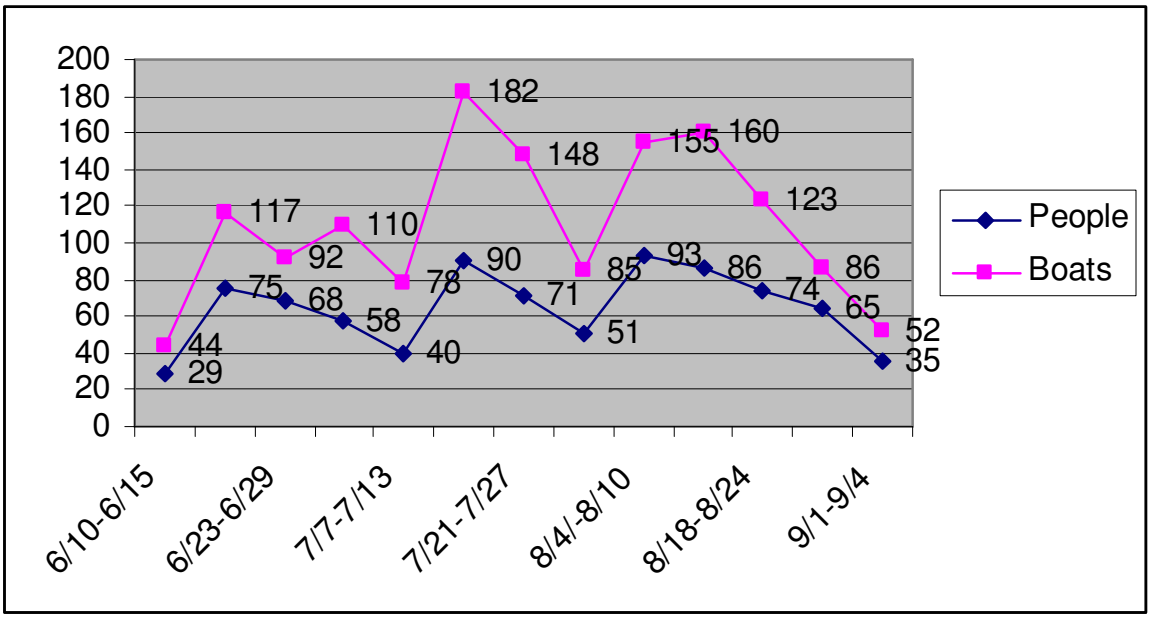


Figure 2. The number of boats and users at Upper St. Regis launch per week.

Boat wash use trends

The use of the boat wash station this year totaled 175 users, or about 21% of all boats launched. Of the watercraft washed at the station, 46% were canoes (81), followed by 23% kayaks (40) and 27% outboard motors (47, Figure 3). Only 2% of watercraft washed were inboard motors (4) and inboard/outboard motors (3). Wash station usage levels showed the greatest use the week of 8/4-8/10 with 28 boats, or 30% of the boats launched having used the boat wash.

Use of the Boat Wash Station at Upper St. Regis Lake

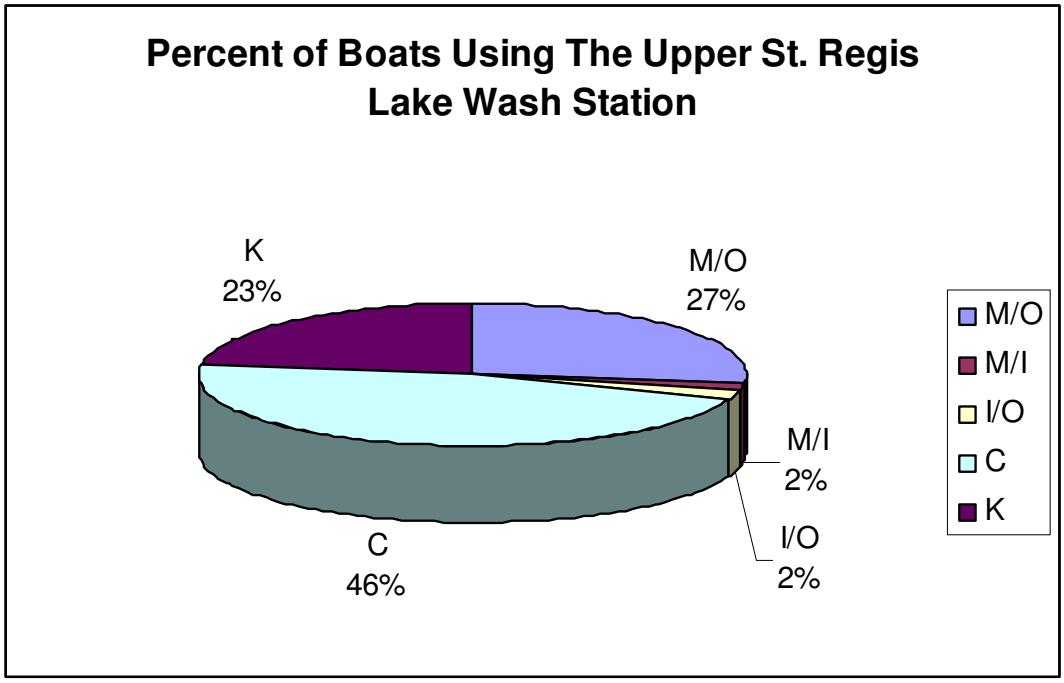


Figure 3. The types of boats that used the boat wash station at Upper St. Regis Lake: MO, outboard motor; MI, inboard motor; I/O, inboard/outboard motor; C, canoe; K, kayak. There were no sailboats, jet skis or barges observed using the boat wash station.

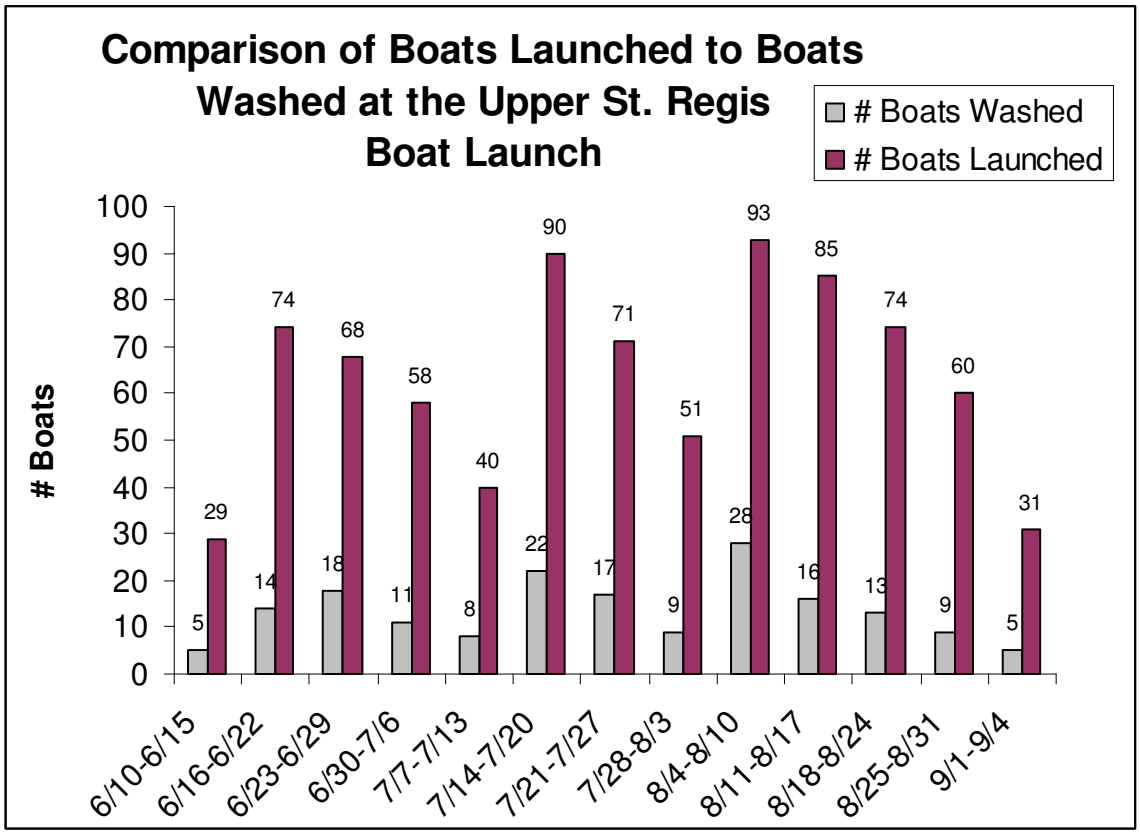


Figure 4. A comparison of the total number of boats launched to the total number of boats observed to have used the Upper St. Regis Lake Boat Wash Station during the summer of 2006.

Prior waterway visitation

As a continuation of the 2005 season, users were asked whether their boat had been in another water body in two weeks prior to launching it. The results varied greatly and are shown in Table 1, but overall, 378 of the 835 boats, or 45% of boats launched had been on a different waterway within the past two weeks. Of those 378 boats 168 had been on waterways infected with an invasive species, which means 20% of all boats launched at Upper St. Regis had a high risk of bringing invasive species into the lake chain. The lakes most commonly visited prior to the St. Regis Chain were the Saranac Lake Chain, which contains Eurasian watermilfoil, along with Osgood Pond, Lake Clear, and Lake Placid that are believed to be absent of invasive species.

Prevention

A new question of whether or not users had taken invasive species prevention steps was asked beginning the third week of the program (June 16). 227of the 496 groups using the launch after June 16 (46%) had taken prevention steps prior to launching (Figure 5). Users were then asked what prevention steps they had taken. 30% of groups had washed their boats, 5% had inspected their boats for invasives, and 3% had drained their bilge water and live wells prior to launching. With boat wash use up to 21% for 2006 it is recommended that stewards try to spend the majority of their time at the St. Regis Boat Launch near the boat wash station, as intercepting launch users at that location has proven effective.

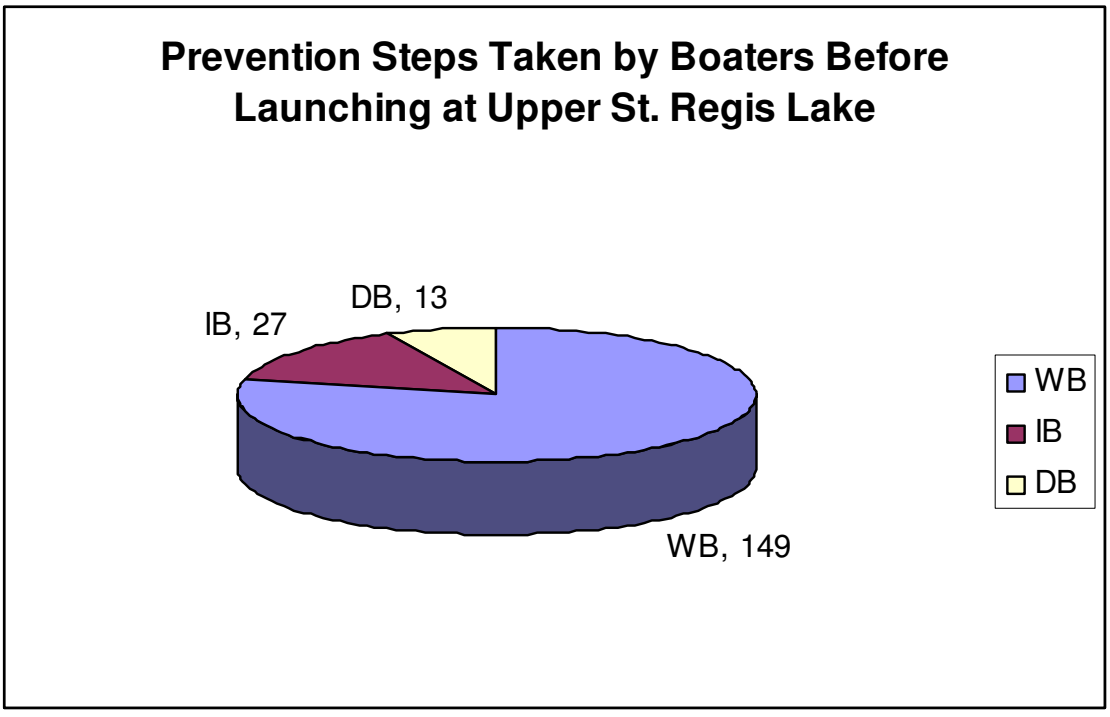


Figure 5. Prevention steps taken to avoid the transportation of aquatic invasive species of the 227 boats claiming to have these precautionary measures: WB, wash boat; IB, inspect boat; DB, drain bilges and live wells. Total numbers were given for not all boaters responded with the specific action(s) taken.

Lake Visited	Infected?	Totals
rental	Y	**42**
Saranac Lakes	Y	**41**
Chateaugay Lakes	Y	**8**
Fish Creek Ponds	Y	**7**
Follensby Clear Pond	Y	**6**
Lake Flower	Y	**6**
Long Pond	Y	**6**
St. Lawrence River	Y	**6**
Atlantic Ocean	Y	**5**
Meacham Lake	Y	**4**
Saranac River	Y	**4**
Connecticut River	Y	**3**
Cranberry Lake	Y	**3**
Hudson River	Y	**3**
Rollins Pond	Y	**3**
Union Falls	Y	**3**
Floodwood Pond	Y	**2**
Indian Lake	Y	**2**
Kiwassa Lake	Y	**2**
Lake Champlain	Y	**2**
Lake Colby	Y	**2**
Otter Creek, VT	Y	**2**
Tupper Lake	Y	**2**
Echo Lake	Y	**1**
Lake George	Y	**1**
Lake Ontario	Y	**1**
Oseetah Lake	Y	**1**
Osgood Pond	Unknown	**16**
Lake Clear	Unknown	**14**
Lake Placid	Unknown	**14**
7 carries	Unknown	**11**
Raquette River	Unknown	**11**
Jones Pond	Unknown	**10**
Rainbow Lake	Unknown	**10**
Little Green Pond	Unknown	**9**
Ferris Lake	Unknown	**8**
Lake Kushaqua	Unknown	**8**
Black Pond	Unknown	**7**
Little Clear Pond	Unknown	**7**
Chazy Lake	Unknown	**5**
Mirror Lake	Unknown	**5**
Chubb River	Unknown	**4**
Church Pond	Unknown	**4**
Ausable River	Unknown	**3**
Buck Pond	Unknown	**3**
Polliwog Pond	Unknown	**3**
St. Regis River	Unknown	**3**
Stony Creek Pond	Unknown	**3**
Black Lake	Unknown	**2**
Blue Mountain Lake	Unknown	**2**
Mill Pond	Unknown	**2**
Moose Pond	Unknown	**2**
Osgood River	Unknown	**2**
Silver Lake	Unknown	**2**
Allegheny River	Unknown	**1**
Bickford Pond	Unknown	**1**
Catskill Creek	Unknown	**1**
Connery Pond	Unknown	**1**
Debar Pond	Unknown	**1**
Dry Channel	Unknown	**1**
East Pond	Unknown	**1**
Eighth Lake	Unknown	**1**
Fairfield Swamp, VT	Unknown	**1**
Fern Lake	Unknown	**1**
Freedom Lake	Unknown	**1**
Gatineau River	Unknown	**1**
Graffin Pond	Unknown	**1**
Hemlock Lake	Unknown	**1**
Hoel Pond	Unknown	**1**
Hull Pond	Unknown	**1**
Indian River	Unknown	**1**
Pontoosuc Lake, MA	Unknown	**1**
Lake Simons Pond	Unknown	**1**
Lake Titus	Unknown	**1**
Limekiln Lake	Unknown	**1**
Little Echo	Unknown	**1**
Little Miami, OH	Unknown	**1**
Little River	Unknown	**1**
Mount Arab Lake	Unknown	**1**
Mountain Pond	Unknown	**1**
Oregon Pond	Unknown	**1**
Oswegatchie River	Unknown	**1**
Raquette Lake	Unknown	**1**
Red House Lake, PA	Unknown	**1**
Sagamore Lake	Unknown	**1**
South Hampton, MA	Unknown	**1**
Sunday Pond	Unknown	**1**
Susquehanna river	Unknown	**1**
Swift River, MA	Unknown	**1**
Turtle Pond	Unknown	**1**
Upper Greenwood Lake, NJ	Unknown	**1**
Waterbury Reservior, VT	Unknown	**1**
West & East Pine Pond	Unknown	**1**
Winooski River & #10 Pond, VT	Unknown	**1**
	TOTALS	**378**
	Unknown	210
	Infected	168

Table 2. A list of the lakes visited by users two weeks prior to visiting the St. Regis Chain and the lakes status as referring to infection by invasive species.

Discussion

SRPOA member Mike Quenell at WSP Staff Training

The summer of 2006 saw a decrease in the number of users at the Upper St. Regis Boat Launch from the previous summer, although numbers are relatively close to 2001, 2003, and 2004. The weather is likely the main factor in the decrease in boat launch use, however, other factors may also play an important part such as the fact the Watershed Stewardship Program season was shortened by two weeks for 2006 compared with earlier years due to a change in the Paul Smith's College calendar. The program is expected to start up on Memorial Day in 2007, resuming the former pattern of a 15 week duty period. The type of watercraft launched is similar to years past with non-motorized boats accounted for approximately 67% of all usage. Of the outboard motors making up 24% of all boats, the average horsepower is up; in 2005 it was 48 while this year the average is 54. Median horsepower in 2006 was 49. The number of four stroke engines increased slightly with 86 this year compared to 70 in 2005. However, with fewer boats in 2006, the percentage of outboard motors with four stroke engines has increased .

Use of the boat wash station has increased compared to 2005 when 111 boats (10% of total boats launched) were washed compared with 175 boats (21%) washed in 2006. This greater percentage of wash users is likely due to the fact that stewards were posted near the wash station to ask users to wash their boats prior to launching. Despite the fact stewards visually inspected boats for hanging weeds, no visible weeds were observed this year. The prevention steps taken by users indicate the effectiveness of stewards and other programs informing boat owners of the transport of invasive species.

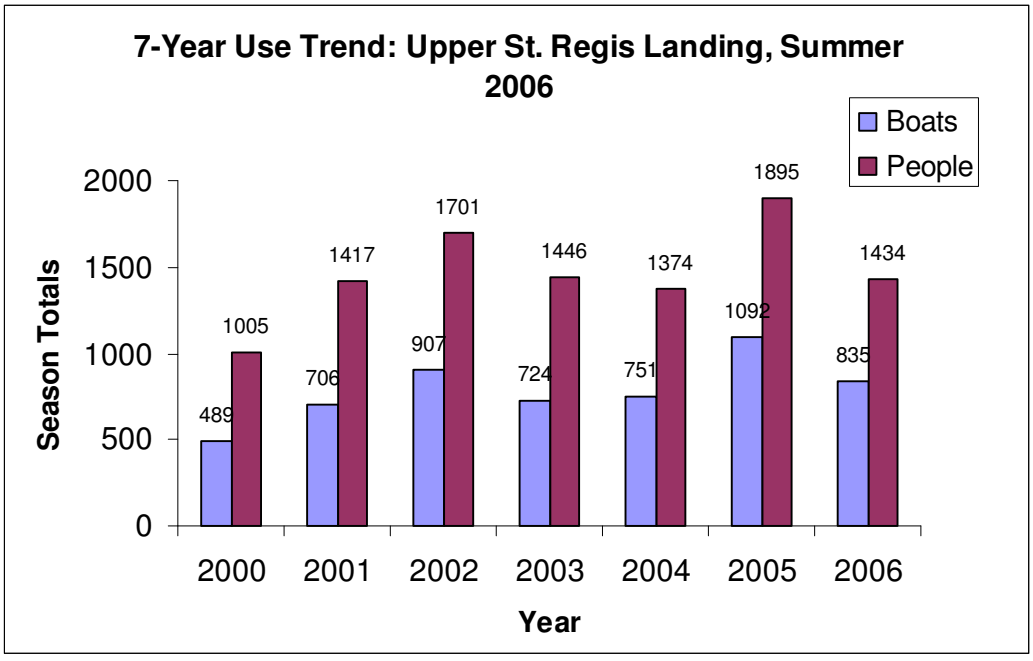


Figure 6. The seven year use trend of boats launched and the number of people using Upper St. Regis Lake, New York.

Conclusion

The summer of 2006 was another success for the Watershed Stewards stationed at the Upper St. Regis Boat Launch. 1,434 people in 835 boats received a message regarding invasive species and their possible transport on watercraft. All 835 boats were inspected for weeds, but the absence of any weeds along with the fact that an 27% of users had taken prevention steps is an encouraging sign of public cooperation with the effort to maintain clean lakes. However, with 20% of all boats launched having come from infected waterways within the preceding two week period, the threat of the spread of invasive species being introduced into the St. Regis Chain remains a concern.

Ann Weld at WSP Staff Training

The Watershed Stewardship Program has been in effect for seven years, since 2000. Each year our primary benefactor is the St. Regis Foundation along with the guidance of the Property Owners' Association of the St. Regis Lakes. We sincerely thank the Foundation for supporting this program, working not only to protect the St. Regis Lakes but to educate all visitors about the responsibility we have to aquatic ecosystems everywhere. As boat users receive an educational message, environmental awareness is spread to all waterways in which those users then travel to. The stewards would like to thank all of the caretakers, employees, and residents of the lake for their words of encouragement throughout the summer. Thanks to Ann Weld for providing books for stewards and Steve for providing stewards with chocolate and smiles. A special thanks to Holly as well for her kindness, advice, and friendship that was a daily treat for the steward, and to Carry for her companionship.

St. Regis "Carry" at her post

Upper St. Regis 2006	Boat Type/HP (indicate hp for MO)											Total #	Private	4	Group	Gender		Average Time	Pets	Out	moored	Visible Weeds		Used Boat	Take Prevention Steps?				# of
Date	(hp)	MO	MI	I/O	P	J	S	R	C	K	B	boats	side	strk	Size	M	F	(minutes)	#	Only		In	Out	Wash	Y/N	WB	IB	DB	groups
6/10-6/15	88	5	2	0	0	0	0	1	10	6	5	29	N/A	3	44	33	11	10	2	5	6	0	0	5	N/A	N/A	N/A	N/A	26
6/16-6/22	44	24	2	0	0	0	0	0	26	16	7	75	N/A	9	117	80	37	13	5	2	7	0	0	14	N/A	N/A	N/A	N/A	63
6/23-6/29	71	12	5	2	1	0	0	0	21	20	7	68	N/A	1	92	60	32	14	3	1	7	0	0	18	13	5	0	0	48
6/30-7/6	62	21	0	1	0	0	0	1	17	17	1	58	N/A	8	110	68	42	13	4	2	2	0	0	11	19	3	0	1	44
7/7-7/13	45	14	0	0	0	0	0	0	18	8	0	40	N/A	6	78	52	26	15	5	6	0	0	0	8	21	8	4	0	33
7/14-7/20	57	19	2	2	0	0	0	0	50	17	0	90	9	11	182	115	67	14	6	15	1	0	0	22	31	18	7	2	58
7/21-7/27	63	19	1	3	0	0	0	0	41	7	0	71	3	8	148	83	65	18	9	8	0	0	0	17	27	16	5	3	49
7/28-8/3	49	11	1	1	0	0	0	0	25	12	1	51	2	7	85	51	34	12	4	0	2	0	0	9	23	18	3	1	38
8/4/-8/10	49	15	0	0	0	0	0	0	36	41	1	93	1	5	155	83	72	14	2	1	2	0	0	28	25	20	3	2	51
8/11-8/17	49	23	1	0	0	0	1	2	48	8	3	86	5	7	162	108	54	12	7	12	4	0	0	16	31	28	2	1	52
8/18-8/24	43	15	3	0	0	0	0	3	34	16	3	74	11	6	123	81	42	14	3	2	4	0	0	13	22	19	2	2	54
8/25-8/31	35	21	3	1	0	0	0	0	21	13	6	65	0	9	86	66	20	15	5	6	6	0	0	9	5	4	1	0	46
9/1-9/4	48	10	0	0	0	0	1	0	16	5	3	35	0	6	52	38	14	14	1	2	3	0	0	5	10	10	0	1	23
Totals	**54**	**209**	**20**	**10**	**1**	**0**	**2**	**7**	**363**	**186**	**37**	**835**	**31**	**86**	**1434**	**918**	**516**	**14**	**56**	**62**	**44**	**0**	**0**	**175**	**227**	**149**	**27**	**13**	**585**
median	49																		percent of groups taking measures						46	30	5	3	

Table 2. A complete data summary of 2006 at the Upper St. Regis Boat Launch. **Key:** MO = outboard motor; MI = inboard motor; I/O = inboard/outboard motor; P = pontoon boat; J = Jet Ski (personal watercraft); S = sailboat; R = rowboat; C = canoe; K = kayak; B = barge (construction)

Volunteer Boat Inspector Program Review

by Jennifer Lucas, Assistant Director and
Volunteer Boat Inspector Program Coordinator

Introduction

All lakes in the Adirondack Park are faced with the threat of invasive aquatic species. Dozens of lakes are known to host invasive species such as Eurasian watermilfoil, zebra mussels, curlyleaf pondweed and water chestnut. Most lakes remain either clear of invasive species or are of unknown status. All lakes, however, face the threat of new invasions or the burden of being a source of invasive species for nearby lakes. Visitors and residents alike are becoming aware of the issue and many feel the need to take action. Boat launch monitoring programs are seen as most desirable and effective, but most small lake associations find the costs associated with manpower and administration to be beyond their means.

VBI Coordinator Jennifer Lucas identifies purple loosestrife.

Paul Smith's College's Watershed Stewardship Program (WSP) has developed a version of its successful program of paid boat launch monitors for implementation by volunteers. The WSP in cooperation with the Adirondack Park Invasive Plant Program (APIPP) designed training sessions for local shore owner associations and others interested in learning how they can contribute to monitoring boats that enter and exit local boat launches for the presence of aquatic invasive species. The Volunteer Boat Inspector (VBI) program was piloted in the summer of 2005 with the cooperation of the Osgood Pond Association. The WSP conducted two VBI training sessions in the month of July, 2006. During the first New York State designated Adirondack Park Invasive Species Awareness Week (ISAW), the WSP and APIPP offered a VBI training session at the Joan Weill Adirondack Library at Paul Smith's College on July 12, 2006. The second training session was hosted by Burke's Marina for the Raquette Lake Shore Owners' Association on July 20, 2006. The VBI program is a public outreach to others who cannot hire paid WSP Lake Stewards to man the public boat launches but are interested in reaching boaters to help protect the native biodiversity of Adirondack lakes and waterways. Volunteers educate both themselves and the public about the global problem posed by invasive species and learn about ways to take care of the Adirondack Park's aquatic resources.

VBI Training Session Content

Hilary Oles, Director of the APIPP joined Eric Holmlund, WSP Director, and Jennifer Lucas, WSP Assistant Director, as presenters for the July 12th VBI training session. Oles explained the importance of understanding the impact exotic invasive plant species can have on local plant biodiversity and provided information on the "most unwanted" exotic invasive plant species in the Adirondack Park. Holmlund and Lucas brought the participants through the updated VBI handbook which was adapted from the WSP Lake Steward's Handbook. Portions of the VBI Handbook were also modified from the successful volunteer boat monitoring program in Wisconsin. Participants learned the proper techniques of boat, personal watercraft and trailer cleansing and inspection of aquatic invasive plants and zebra mussels. Holmlund and Lucas described the duties of the Lake Stewards and how their objectives of recreational use data collection, boat monitoring and aquatic invasives interpretation can be adapted to fit the objectives of volunteers from each association. Interpretation (public education), the most important aspect of volunteering at boat launches, was demonstrated by the presenters and then practiced by the participants. Along with the VBI handbook, participants received informative brochures, visual aids and VBI t-shirts to assist them at boat launches.

Participants

About 24 participants attended the VBI training sessions. Representatives in attendance at the July 12th Joan Weill Adirondack Library session were from Osgood Pond, Chateaugay Lakes, Mountain View and Indian Lakes, Rainbow Lake, Lake Placid, Lake Pleasant/Sacandaga Lake, Lake George and the Lake Champlain Basin Program. On July 20, 2006 Eric Holmlund and Jennifer Lucas brought the VBI session to Burke's Marina on Raquette Lake for a personal session adapted to the needs and concerns of the shore owners and local marinas.

Participating Waterways

The following reports summarize the progress of the VBI program at the five participating lake associations across the Adirondack Park. A range of experiences is noted, along with a variety of opinions from lake associations regarding the program title and uniform.

Osgood Pond

As the pilot project in the 2005 season, Osgood Pond volunteers stood as an example for not only the VBI program but also for the participants for the 2006 training session. In the 2005 season volunteers gathered recreational use data, educated boaters and inspected boats and trailers. However, recruiting volunteers proved to be a challenge in 2006. The first association meeting was reportedly lacking member turnout which may have contributed to the lack of volunteers. It was suggested by the coordinator, Randall Swanson that the WSP VBI Coordinator should attend this meeting in 2007 to explain the importance of the program, the duties to be filled and encourage people to volunteer by providing them with a sign-up sheet. Swanson also suggested that more promotions within the Osgood Pond SOA may encourage a better turnout by volunteers in the 2007 season.

Bob Hall, the initial Coordinator for the Osgood Pond volunteer effort suggested that the VBI program offer a natural colored vest with the VBI logo attached. Bob was invested in the pilot project, which was called the Volunteer Lake Steward Program, and he supports the qualities that the title "Steward" embraces, thus suggesting that the program revert back to its original name.

Rainbow Lake

Rainbow Lake VBI coordinator Joe Degnan reported that the training session and materials provided were very helpful. This season was utilized to organize the VBI effort, which was successful in recruiting over 20 volunteers signed up for the 2007 season. Joe has organized a 2007 schedule of having volunteers at the boat launch in three hour shifts for half a day once a week (likely on Fridays) from June 29th to Labor Day (Monday, September 3rd) and additionally on Wednesday, July 4th. He

found that home owners that spent the entire summer on the lake were more apt to sign up for volunteering.

Suggestions for the 2007 season include having two training sessions, on in late June and another in late July. Degnan envisions that the Rainbow Lake volunteers will work in two shifts, the July volunteers and the August volunteers. Volunteers found that the word "inspector" (VBI) on the t-shirts that the WSP provided may intimidate people launching boats and suggested that the name be changed to "Volunteer Lake Steward." He also suggested that a blaze-orange vest with Volunteer Program patch or embroidery should be provided to volunteers for it is more versatile (sizing) and easy to exchange when shifts are done. They also brought up a concern about the Rainbow Lake fishery, in particular walleye. A few years ago the Rainbow Lake Association (RLA) purchased walleye from the New York State Fish Hatchery to stock the lake. Their concern is that regulations on walleye are not being followed and people are taking walleye that are too small. If this is so, the walleye fishery that the RLA paid for is being reduced and may, if continued, fail entirely. Thus, RLA would like the WSP lake steward and their volunteers to pay particular attention to and engage in conversation with those angling in Rainbow Lake.

Chateaugay Lakes

Chateaugay Lakes VBI coordinator Mary McLean Johnson found that the training session was informative and encouraging due to the opportunities to network with other SOAs. Their effort was piloted on the last weekend of August (Friday through Sunday) and Labor Day Weekend (Friday through Monday) with volunteers signing up for three hour shifts between 9:00am and 6:00pm. The main challenge with Chateaugay Lakes is that there is an abundant population of Eurasian watermilfoil (EWM) present. Therefore, it is not a concern of protecting the lake form EWM, but rather a concern that boaters will not wash their trailer and boat appropriately and subsequently infect other lakes. However, there are other invasives that the Chateaugay Lakes are susceptible to including but not limited to water chestnut, curlyleaf pondweed, and zebra mussels.

For the 2007 season the feasibility of hiring divers to begin management practices on the large beds of EWM is being proposed.

Raquette Lake

Raquette Lake has the help of Burke's Marina to monitor their private boat launch and there was a part time monitor for the public boat launch. Signs promoting invasive species awareness were also posted at the Raquette Lake public canoe launches located on Route 28. Raquette Lake VBI coordinator and SOA member Pat Deyle has been active in spreading the awareness of aquatic invasive species. He has been training others in the inspection of trailers and boats and he also handed out the WSP "Clean Boats Mean Clean Lakes" informative brochures at a local parade. Along with monitoring recreational use Pat and the Raquette Lake SOA has also coordinated a milfoil monitoring program. This year Variable Leaf Milfoil was discovered in the lake and is being mapped and analyzed for its DNA for variation identification. Implementation plans for management are being discussed within the Raquette Lake community and organizations including TNC.

For the 2007 season Raquette Lake SOA is planning on having a paid Steward to monitor the public boat launch. In conjunction with the new restroom facility being built, the building of a boat wash station is being proposed. Deyle suggested that volunteer attire should be a vest colored orange on the back and khaki on the front and a hat for each volunteer. Both the hat and the vest should be adorned with a VBI patch, which could also be added to each marina's shirts that are provided to their staff. Deyle found that "Volunteer Boat Inspector" or "Volunteer Watercraft Inspector" were suitable names for the program.

Mountain View & Indian Lakes

Coordinator John Jungbluth had already organized a plan of action to recruit Mountain View and Indian Lakes SOA volunteers before attending the VBI training session. Through SOA meetings and social gatherings John would bring the VBI sign-up sheet, thus there was a constant presence of a recruiter. This technique worked since many of the weekend shifts were filled with 10 frequent volunteers. Shifts were at 2 hour intervals on the weekends from Memorial Day through Labor Day. Jungbluth noted that people who spend the entire summer on the lakes are more apt to be interested in volunteering. A voluntary sign-in register was left at the boat launch addressing similar questions which a VBI would ask and record. The sign-in kiosk also contained information on aquatic invasive species and safe boating practices.

Jungbluth reported that there were about 10 regular volunteers through the 2006 season. Data has been collected with nearly identical variables to those the WSP lake stewards collect. One problem that was recognized in the 2006 development of the Mountain View/Indian Lakes volunteer program is the collection of social security numbers by the DEC for the Adopt a Natural Resource Agreement. In response to the national problem with identity theft, prospective volunteers are reluctant to share their social security numbers with the DEC, other participants, or the VBI program. Jungbluth suggested that individual contact forms should be provided for each volunteer to submit to the DEC making volunteers feel that their social security numbers are not being passed around the lakes on one sheet for signing up.

For the 2007 season Jungbluth is interested in hiring a part-time Steward, but projects that the volunteering aspect will most likely continue. He thought the t-shirts the WSP provided made a positive presence and helped identify the purpose of the volunteers at the Mountain View Lake boat launch. He also mentioned that the term "steward" may be vague and confuse boaters as to why volunteers are stationed at the boat launch, and so prefers "inspector."

John Jungbluth, Jenn Lucas and friends at the Mountain View Lake Boat Launch

Conclusion

The number of volunteers that actually manned public boat launches this season was limited. This is mostly due to the 2006 season being the first attempt of recruiting volunteers from SOAs, or that some associations used the 2006 season as a time to organize and initialize the concept of having SOA members volunteer at the local public boat launch. Those that were challenged to hold interest or to even have people sign up for volunteering suggested that the VBI coordinator to attend an early SOA meeting to make a presence and encourage members to participate through explaining the importance of inspecting boats and trailers and educating the public. At this time a sign-up sheet should be present to further encourage the volunteer movement. Volunteering is suggested to begin on the weekends during high use, which has worked for some associations that were prepared to launch the volunteer efforts this season and has also encouraged others to begin the 2007 season in this manner. An earlier VBI training session (early June) was suggested to be offered so that volunteer efforts can begin earlier in the boating season.

The name of the program is still under discussion for we envision the WSP as the hub of those interested in and participating in the volunteer program. Having one specific program name would familiarize boaters to the actions of the volunteers enhancing program messages and awareness to boaters. Through possessing a specific program name boaters would also understand that each association with volunteers is a part of a larger movement taking place in the Adirondack Park.

Each lake association involved in the VBI program possesses their own vision and their own challenges. For the 2007 season it is suggested that the WSP VBI coordinator should be familiar with each association and be in contact with each coordinator before Memorial Day to ensure WSP support, motivation and to begin planning training sessions.

Both the WSP and APIPP are eager to assist those who attended the VBI sessions or any other interested association in attending training sessions in 2007 and organizing their own Volunteer Boat Inspector team. Interested associations can contact Eric Holmlund at holmlue@paulsmiths.edu or (518)327-6341.

Educational Outreach Programs

By Kyle Murray, Educational Programs Coordinator

Introduction:

It is the Watershed Stewardship Program's anticipation that children and adults who are exposed to the natural environment interpreter will experience an increase in their awareness about and sympathy with our fragile ecosystem. With this in mind each year the Watershed Stewardship Program has had an Educational Programs Coordinator charged with designing, advertising and conducting outreach programming at sites in the Tri-Lakes Region of the northern Adirondack Park. In the summer of 2006, programs were designed for the public as open enrollment programs along with area summer camps and recreation programs for a variety of age groups. In total, 5 programs were designed and offered to a total of 114 participants, mostly youth.

Open Enrollment and Camp Programs:

The first public educational program held at the Fish Creek Campground was entitled, "Who are these Aquatic Invaders?" The focus of this program was to show a variety of aquatic and terrestrial exotic invasive plants and explain why they are classified as invasive and how they alter the native Adirondack biodiversity. The program unfortunately had only three participants. The only public program that had any participants sign up for it was a Rainbow Lake Tour; however, the program had to be canceled.

At Lake Placid's Camp Woodsmoke a presentation on water quality was given to a group of 47 kids, ages 8 to 14. Water quality issues addressed in this program included aquatic invasive plants and anthropocentric actions (fertilizer use, pollution, etc.) which decrease the aesthetic values and increase the health hazards of water bodies. This program received active participation from the audience and Directors from the Camp invited more WSP educational programs in the future.

At Upper St. Regis' Camp Regis four programs on water quality and invasive species were delivered to 64 kids, ages 9 to 15. These programs were derived from those mentioned above and were also deemed successful for active audience participation. The Camp Regis directors expressed an interest in having a WSP Steward deliver a guided hike (similar to the proposed St. Regis Hike) up Ampersand Mountain in the future.

Discussion:

This year an attempt was made to make the Education Programs offered to a variety of age groups with the assumption of adults being just as curious as children with environmental issues. However, there was not an increase of interest observed. This is likely due to the challenges faced this year of promoting the programs. It is suggested that the Educational Coordinator develop the programs during the first week of employment to ensure that the media can deliver information and the dates of the programs.

Press Release:

Summer Adirondack Educational Programs Hosted by
Paul Smith's College Watershed Steward Program

The Paul Smith's College Watershed Stewardship Program is a community-based program designed primarily to educate the public about ecosystem conservation and stewardship issues of area lakes and watersheds. The programs will offer an ecologically-conscious insight to the Adirondack wilderness.

The Programs will be targeted to different age groups. Two of the programs will be focused on older age groups, 16 years and up. These programs will include two guided hikes of St. Regis Mountain as well as a Cultural and Natural History tour of Rainbow Lake. The remaining programs will be focused towards local children and children attending local camps. The programs will take place on Fridays throughout the summer.

All Programs are **FREE** of charge. Pre-registration is required for all programs as space is limited. For more information and to pre-register yourself or your child/children please contact the Watershed Stewardship Program, at 518-327-6341 or email Kyle Murray at murrayk@paulsmiths.edu.

Events:

St. Regis Mountain's Dynamic Forest
Dates: July 28, 2006 and August 18, 2006 **Place:** St. Regis Mountain Trailhead, 10:30
Description: Join us on a guided 7 mile round-trip day hike to gain a new view at this mountain's unique forest types. We will examine five different types of forests and the factors that determine their location. This program is designed for ages 16 and up.

Make your own Tree Identification book
Date: August 4, 2006 **Place:** Paul Smith's College, Main Campus
Description: Your children will enjoy this hour long hands-on activity to create their own tree identification book and learn the visual characteristics that define the trees found in the Adirondack Park. Ages 6 and up.

Discover the Cultural and Natural History of Rainbow Lake
Date: August 11, 2006 **Place:** Rainbow Lake
Description: This Paddle Trip will explore a local perspective of Rainbow Lake and the Meenagha Mountain Watershed. Be prepared for a full day of paddling and hiking.

Adirondack Bog Discovery Walk
Date: August 25, 2006 **Place:** Bloomingdale Bog (tentative)
Description: Learn to appreciate the biodiversity of Adirondack bogs and how these fragile ecosystems are threatened by invasive species.

Lake Placid Bird Census and Water Quality Survey 2006

By Jennifer Lucas, Assistant Director

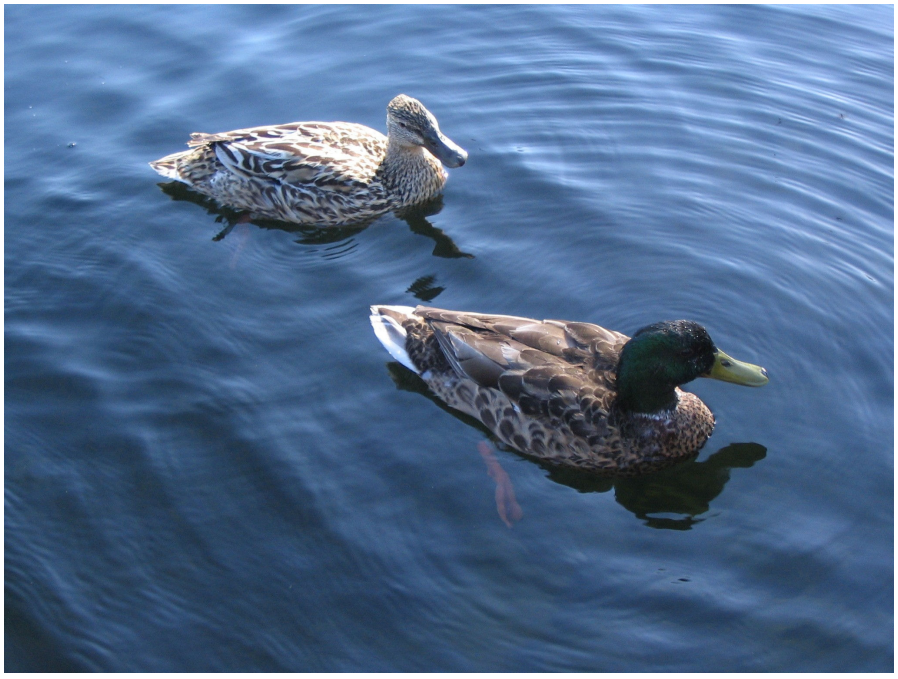
Introduction

A bird and waterfowl census was conducted on Lake Placid to find where bird populations are concentrated with attention to water quality. There is concern that the feeding of birds and/or presence of lawns increases bird populations (in particular ducks and geese) that could increase fecal contaminants in the water. Since Lake Placid is used for local drinking water this is of particular concern. An initial Lake Placid bird census was taken in 2002 by WSP Stewards.

Methods

Five groups of motor boats surveyed Lake Placid, each assigned to particular areas on the lake (Figure1). Along the designated area each group trolled along the shore line tallying species presence, sex and presence of juveniles for one hour. Birds located on the shore up to 25m were included in the census. Air temperature, precipitation and cloud cover was also recorded.

Using the bird census data, sites for water quality testing were determined. One sample was taken at sites 3 and 4 while two samples were taken from Paradox Bay and near the Whiteface Club. Sample collection consisted of taking secchi disk measurements, depth of water, DO and temperature readings (up to 6m). Water samples were taken to measure the levels of pH, total phosphorus (ppm), nitrate (ppm), chloride (ppm), alkalinity (ppm), color (Pt-Co) and conductivity (micro ohmc/cm) by the Adirondack Watershed Institute with direction from Mike De Angelo, who is also a Professor at Paul Smith's College.



Mallards on Lake Placid

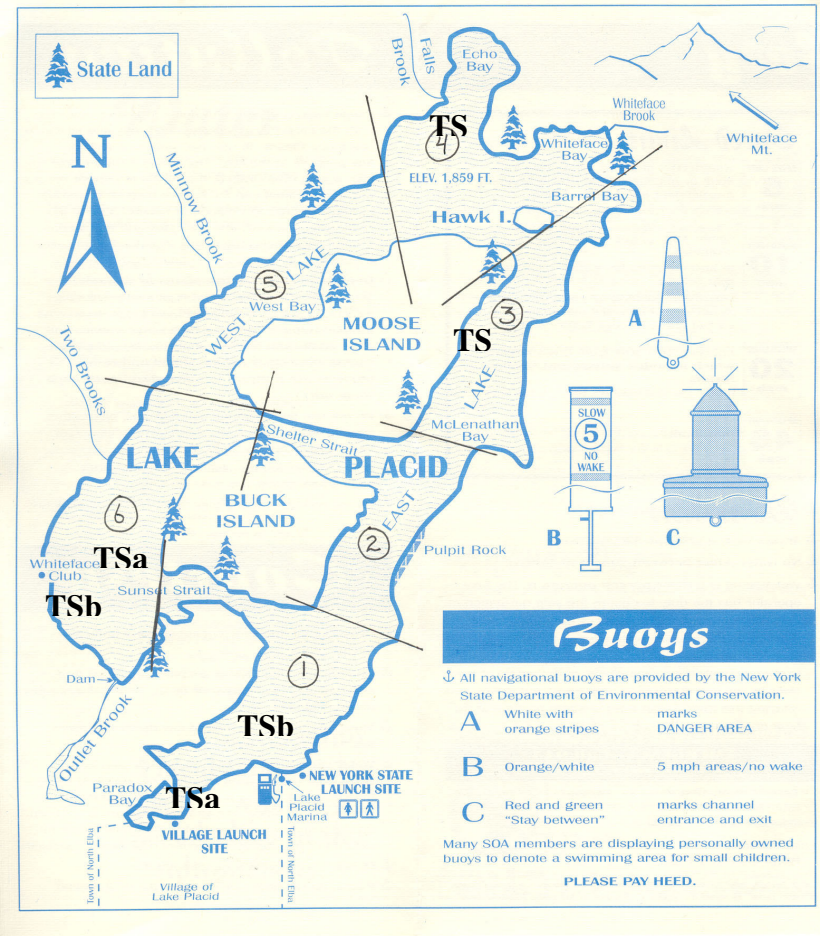


Figure 1. The six sites used to tally the birds seen on Lake Placid, New York. "TS" markers (Test Site) show where and how many water quality samples were taken from area 1, 3, 4 and 6.

Results

Bird Census

Table 1 shows the summary of the birds tallied. There were light, periodic rain showers and 100% cloud cover with the temperature at 73 degrees Fahrenheit. Paradox Bay (Site 1) had the largest number of birds present, the majority of them being gulls, followed by ducks and loons. Whiteface Club (Site 6) had the second largest number of birds present, the majority of them being gulls, closely followed by ducks and then loons and crows. Echo Bay (Site 4) and Pulpit Rock (Site 2) both had the same number of birds tallied. Echo Bay had mergansers and crows present where Pulpit Rock had only mergansers present. Due to time restrictions Sites 3 and 4 (Echo Bay and Mc Lenathan Bay) were combined. Thirty-two juveniles in all were tallied on Lake Placid with 10 females and 6 males identified. No geese, grebes, herons or raptors were observed, however an active (seen through past observation this season) Osprey nest located on Moose Island (Site 3) was noted.

Site Location	Duck	Merganser	Gull	Loon	Crow	Goose	Grebe	Heron	Raptor	Male	Female	Juvenile
1	17	0	0	0	0	0	0	0	0	4	0	8
1	0	0	25	0	0	0	0	0	0	•	•	•
1	0	0	0	2	0	0	0	0	0	•	•	•
2	0	13	0	0	0	0	0	0	0	0	5	8
3	0	0	0	0	0	0	0	0	0	0	0	0
4	0	7	0	0	0	0	0	0	0	0	1	6
4	0	0	0	0	6	0	0	0	0	•	•	•
5	0	9	0	0	0	0	0	0	0	0	1	8
6	5	0	0	0	0	0	0	0	0	1	2	2
6	0	0	6	0	0	0	0	0	0	•	•	•
6	0	0	0	2	0	0	0	0	0	1	1	0
6	0	0	0	0	2	0	0	0	0	•	•	•
Total	22	29	31	4	8	0	0	0	0	6	10	32

Table 1. Tally of birds by species and sex from the 2006 summer tally of Lake Placid, located in the Adirondack Park of New York.

Water Quality

All 6 samples taken were found to be similar. Since there is little difference between results (Table 2) conclusions are limited, however it is important to continue data collection and analysis for documenting the status of Lake Placid's water. The deepest secchi disk reading, 4.28m, was found at the Whiteface Club (TS 6a). The shallowest reading (not including readings when the secchi disk could be seen when touching the substrate) was taken in Echo bay (TS 4) at 3.2m. pH levels were found to be normal. The lowest DO recorded was in Paradox Bay (TS 1a, average 7.68 mg/L) which unusually had the lowest temperature recorded (although this is a very small difference) and the highest conductivity (30.5 micro ohms/cm). The highest DO recorded (TS 6a, average 8.52 mg/L). There was an absence of nitrate in TS 1b (Paradox Bay) and TS 3 (Mc Lenathan Bay). Nitrate levels were found to be highest at the Whiteface Club (TS 6) at 0.2 ppm. Yet, as mentioned above, the level difference is minimal, thus there can be no solid conclusions of these readings. The water quality of Lake Placid was commented by De Angelo as "a typical late oligotrophic to early eutrophic lake" upon observing the sample results.

Discussion

Due to time restrictions and available group numbers Sites 3 and 4 were combined. Only 5 species from the Lake Placid Bird Survey of 2002 (n=18) were identified in the 2006 census. This is likely due to the adverse weather conditions of the 2006 census. In the future bird census should be taken on sunny days or when there is adverse weather more than one census should be taken. Involvement form the LP SOA was terrific to have stewards meet their sponsors and to establish relationships.

Although there was no significant data between water sample sites it is important to continue collecting samples and data to document the status of the lake to understand when and where changes may occur in the future.

Conclusion

The WSP would like to thank the Lake Placid Shore Owners Association for their continued support and involvement with the program. We would also like to thank the expertise of the Mike De Angelo of the Adirondack Watershed Institute of Paul Smith's College for conducting the water sample analyses.

						Chemistry:						Total
Test Site #	Site Name	Depth (m)	Secchi Midpoint (m)	Average DO (mg/L)	Temp. Degrees C	pH	Alkalinity ppm	Conductivity micro ohms/cm	Color Pt-Co	Chloride ppm	Nitrate ppm	Phosphorous ppm
1a	Paradox Bay (a)	2.35	0	7.7	20.3	6.53	15.6	30.5	10	1	0.1	0.013
1b	Paradox Bay (b)	6.45	3.2	8.3	20.6	6.53	15.6	29.5	10	1	0	0.012
3	Mc Lenathan Bay	>15	3.73	8.5	20.9	6.55	15.6	28.3	10	1	0	0.013
4	Echo Bay	>15	3.05	8.5	20.8	6.65	15.6	28.7	10	1	0.1	0.013
6a	Whiteface Club (a)	>15	4.28	8.5	20.6	6.61	15.6	29.9	10	1	0.2	0.012
6b	Whiteface Club (b)	3.9	0	8.5	20.7	6.57	15.6	28.7	10	1	0.1	0.012

Table 2. A result summary of samples taken from Lake Placid, NY on August 24, 2006.

Purple Loosestrife Monitoring and Control Project 2006

By: Jon Griffiths, Watershed Steward and Jennifer Lucas, Assistant Director

Introduction

Purple Loosestrife (*Lythrum salicaria*) removal from the St. Regis lake chain has continued for the sixth year by the Watershed Stewardship Program (WSP) at Paul Smith's College. Originally initiated by concerned property owners on the lakes the removal of *L. salicaria* is a major program effort of the WSP. *L. salicaria* is a perennial herb native to Eurasian wetland soils. The plant was intro-duced to the United States in the 1800's for ornamental and medical reasons. When this invasive plant becomes mature it can produce up to three million seeds a year, the seeds can also survive in water up to twenty months. The plant also spreads through its root system, by vegetative regeneration which can crowd native plants. *L.salicaria*'s ability to quickly spread enables them to dominate an area threatening the biodiversity of that area. In addition, the plants that *L. salicaria* chokes out also effect migratory birds, reptiles, amphibians, larger mammals and many invertebrates that are dependent on native areas for food and shelter. This is why the removal of *L. salicaria* is so important to these lakes and the Adirondack Park. This plant can jeopardize the biological and aesthetic properties of this area.

Watershed Steward Jon Griffiths removes purple loosestrife from a site located on Spitfire Lake.

As in years past the WSP has worked with Steven Flint, The Nature Conversancy (TNC) Invasive Species Project Coordinator. We continued the monitoring and removal from the projects origination in 2000 until the present. The removal amount is varied as it has been in years past. This could be dependent upon weather or effective harvesting in the previous summer.

A new purple loosestrife site on Lake Placid was also discovered and addressed this season. Thanks to public education and Lake Placid SOA awareness a purple loosestrife site on public property was documented and management practices started this year.

Materials

Watershed Stewardship boat, fifty gallon black garbage bags, clip board and zip lock bags to keep documents dry, topographic map, pruning shears, and shovels.

Methods

ST. REGIS CHAIN LAKES

The removal of Purple Loosestrife in the St. Regis lake chain as in previous years was focused on fourteen confirmed sites, and areas of concern from St. Regis shore owners informing us of possible new sites. A complete shoreline survey was done on Upper and Lower St. Regis, Spitfire, and the St. Regis River.

Again this year Steven Flint, Terrestrial Invasive Species Project coordinator worked with us. Our involvement was part of the Adirondack Park Non-Native Invasive Plant Species Initiative, which is a joint effort of the NYSDEC, APA, NYS DOT, and The Nature Conversancy (TNC)/ Adirondack Land Trust. On July 29th, 2006 WSP Steward Jonathan Griffiths and Assistant Director Jennifer Lucas, completed a shoreline survey on all the sites and removal of *L.* salicaria from most of the sites. All pre-existing sites were checked and three new sites on Spitfire were identified. A survey of Upper and Lower St. Regis Lakes, along with Spitfire was done on August 1st with Flint; one of the TNC stewards, Lisa; and WSP steward, Jon Griffiths. A survey of the St. Regis River was also completed with Stewards Jon and Jenn, no plants were found during the survey that day. All sites were then rechecked on September 1st by Griffiths and Lucas. The second and third surveys were completed to check the previous sites and to make sure that any plants that may have been overlooked by the stewards, and are now mature, can easily be spotted and removed.

The method of removal is continued from years past and is done by cutting the plant with a pair of pruning shears as low to the ground as possible or if possible pulling the plant and root up where the soil is thin enough to do so. The plant is then disposed of in a large black garbage bag, and the number of plants removed is then recorded. If a new site is identified in addition to removing the plants and recording the number of plants removed we also recorded filed a new invasive species site location form and submitted it to the Adirondack Invasive Species Program, for future reference and removal. The plants are removed starting in late July because the plant is just starting to bloom, easy to identify and the seeds are not ready to drop yet.

LAKE PLACID

Lake Placid Shore Owners' Association President Susan Riggins reported the presence of purple loosestrife on Lake Placid to the WSP in August 2006. In a patch of wild flowers on private property #191 (Buck Island) an established community of purple loosestrife was positively identified and removed by means mentioned above on August 24, 2006.

Results

ST. REGIS CHAIN LAKES

The total number of Purple Loosestrife that has been removed this year compared to past management activities has continued to decrease (Figure 1). This year had the least amount of plants removed since management began in 2001. Despite this drop in removed plants, three new sites were identified on Spitfire Lake (S15, S16). There is about a 17% decrease in plant removal between 2006 and 2005, 634 plants compared to 764 plants (Table 1).

LAKE PLACID

This preliminary step of managing the purple loosestrife found on Buck Island totaled a removal of 208 plants. Invasive Plant Inventory and an Invasive Plant Control forms issued by TNC were completed and sent in to be archived.

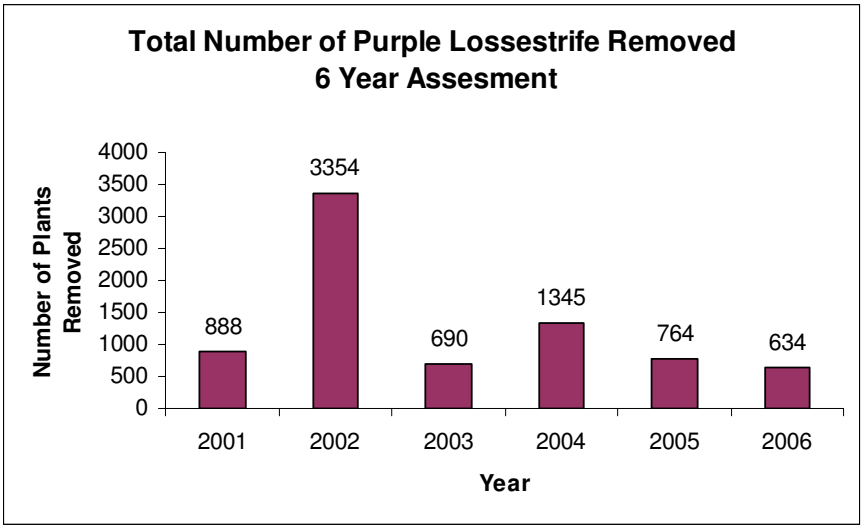


Figure 1. Comparison of removal amounts in the past six years on the St. Regis Lake Chain.

Site/GPS or location	2001	2002	2003	2004	2005	2006
S1 N4918731, E559028	30	8	16	42	40	0
S2 N4918673, E558675	25	260	35	111	100	96
S3 N4918680, E5579988	18	11	13	3	10	23
S4 N4918290, E558390	110	49	3	74	150	101
S5 N4918087, E557660	250	915	117	146	250	200
S6 N4917748, E558103	5	63	5	26	5	0
S7 Camp Regis-Applejack, rear right of boathouse- in wetland	450	1400	330	742	130	14
S8 N4918636, E557038	0	123	5	34	25	11
S9 N4918149, E557190	0	437	143	116	25	117
S10 N4917831, E557837	0	74	23	50	15	54
S11 Upper St. Regis Lake, N. Shore facing Ward Island	0	14	0	0	0	0
S12 N4918960, E559279	0	0	0	1	0	0
S13 N4918668, E557451	0	0	0	0	10	0
S14 Lower St. Regis Lake near DEC boat launch	0	0	0	0	4	0
S15 Spitfire Lake- south shore near Slough	0	0	0	0	0	2
S16 Spitfire Lake- south shore near Slough, just west of S15	0	0	0	0	0	13
S17 Slough, south end of boggy island	-	-	-	-	-	3
Total	**888**	**3354**	**690**	**1345**	**764**	**634**

Table 1. A summary of sites and the number of purple loosestrife removed from the St. Regis Chain Lakes from 2001 to 2006.

Discussion:

ST. REGIS CHAIN LAKES

The number of plants removed from the St. Regis Lakes declined again in 2006 compared to the previous year. This drop is hypothesized to be caused by heavy rains that the area received during the early summer which may have caused some plants to be flooded and thereby limiting growth. This phenomenon coupled with effective harvesting practices could have also contributed to the decreased presence of purple loosestrife in the St. Regis Chain.

The three new sites (S15, S16 and S17) found had small populations and along the shore. Site S15 is very wet and somewhat hard to access which may be why it was not found until this year. S16 was located on the bank of the bog near the outlet of the stream in the slough between Lower St. Regis and Spitfire.

In Figure 1, it is apparent that there are fewer plants harvested than in the earlier stages of the program. There does appear to be a trend that large plants harvests are followed by a summer of smaller plant harvests. It may be thought that these years in which numbers are lower are when the plants are smaller and harder to find at sites. Another consideration is weather, which in the summer of 2006 was very wet. According to TNC protocol and Julie K. Cronk and M. Siobhan Fennessy's *Wetland Plants* the method of hand pulling and cutting that WSP has been following is the most effective way of harvesting *L. salicaria*. In one summer trial when the plant cutting was done in late summer and then flooded, the plant was then highly stressed for the next summer. This may be the explanation for the relatively weak growth observed this summer: the effectiveness of last summer's harvests and the wet weather put a damper on the reproductive abilities of the plant. Cronk and Fennessy also mention that spring and early summer flooding may hinder the plant's ability to establish itself that season. This may be what has happened this summer before the warm spells of weather the area experienced a very wet spring.

Hopefully the number of plants will continue to decrease due to our management efforts, and maybe in a few years the infestation will be reduced to only a few plants, and hopefully one day none at all.

LAKE PLACID

The positive identification of purple loosestrife on Lake Placid this year was an example of how the WSP raises the awareness of invasive species to with their partner associations. The homeowner was aware of the presence of the purple loosestrife and was welcoming of our management efforts.

It is suggested that a steward recon the property in July 2007. As with the management procedures in the St. Regis Chain Lakes, the whole lake shore should be surveyed and homeowners should be notified of the presence of purple loosestrife and educated about the ecological damage that the prolific plant can induce. Any further plants identified should be removed by the procedures mentioned above and any new patches found should be documented and sent into TNC.

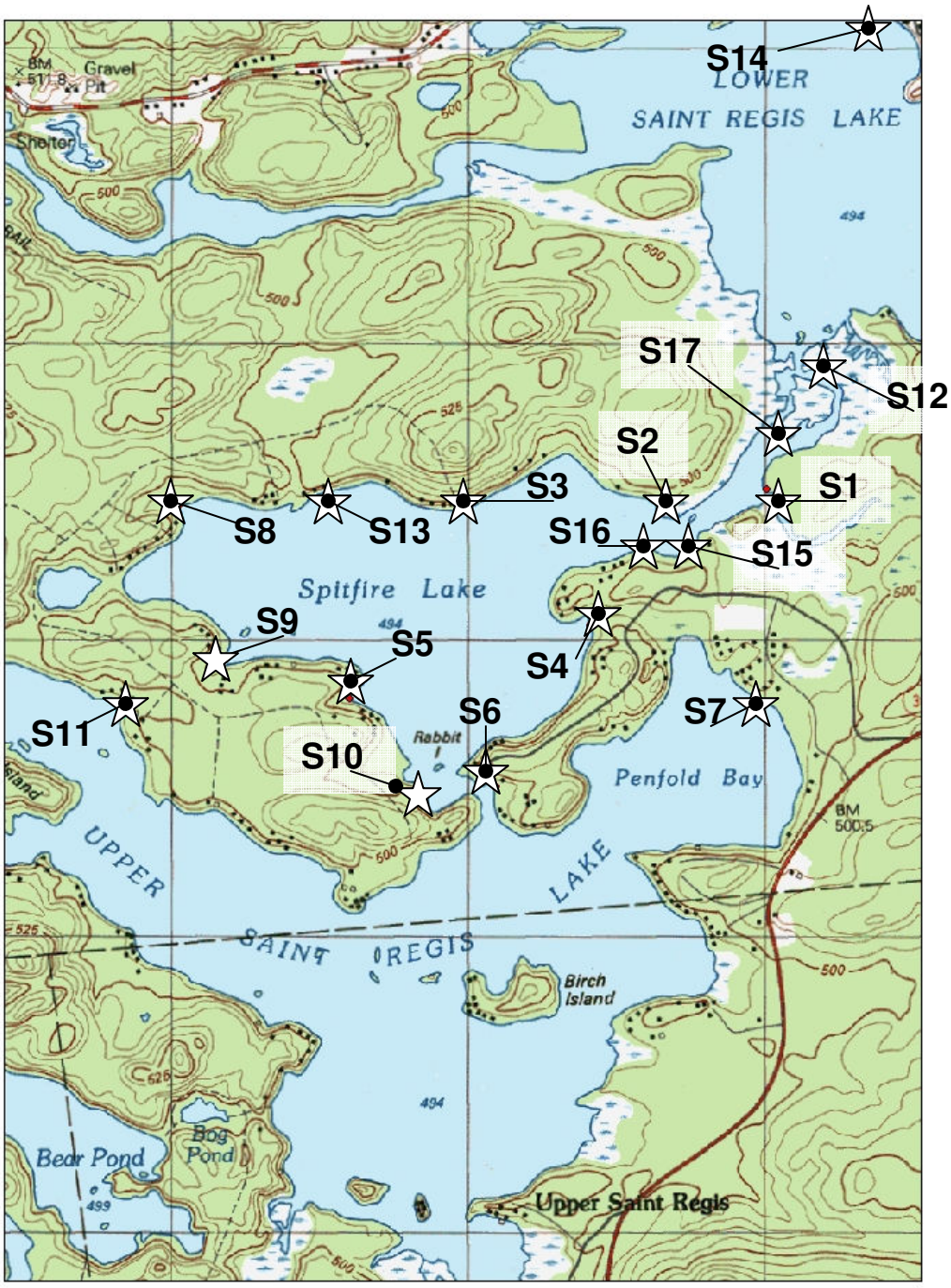


Figure 4: Purple Loosestrife Sites, St. Regis Lakes

Loon Observation Report for St. Regis Lakes, 2006

By Julia Polasik, Watershed Steward

Introduction

When visiting the North Country most people are accustomed to the nightly call of the loon. The Common Loon (*Gavia immer*) is a unique species that plays an important role in the lake ecosystem as a top-level predator. However, along with the benefits of being a top predator loons also suffer the disadvantage of having high levels of bioaccumulation of toxic metals within their systems. Ingesting live fish as their primary food source, loons are exposed to all toxins that can be found in those fish which reach increased levels in the bloodstream and body as time progresses.

The goal of the Adirondack Cooperative Loon Program (ACLP), the cooperating agency in this effort, is to understand how human development and contaminants such as mercury and lead are affecting the loon population of the Adirondack Park. The loon monitor has the duty of determining the reproductive success and overall behavior of the banded birds as part of a long term research project. For each banded loon, data is collected regarding mating habits, nest success, and territory behavior. Paul Smith's College's Watershed Stewardship Program (WSP) allocates one day per week of a Watershed Steward's position as a loon monitor on the St. Regis Lakes, supervised by the ACLP.

Prior to the loon monitor duties, the loons are captured at night and banded with a unique color combination by wildlife biologists from the Biodiversity Research Institute. Both feather and blood samples are taken to determine mercury levels along with other physical measurements of the bird that determine overall health. This information is compiled with observations of behavior received from the loon monitor into a database so that any possible effects from mercury can be determined. Any eggshell fragments or non-viable eggs collected by the loon monitor are sent in for biological analyzing. The combination of field staff who monitor banded loons and scientists who collect biological data regarding the health of the lakes and their loons is the Adirondack Cooperative Loon Research Program.

Methods

The Loon Monitor, Watershed Steward Julia Polasik, had the job of observing the banded loons on the Upper St. Regis and Spitfire Lakes for the summer under the supervision of the Adirondack Cooperative Loon Program directed by Nina Schoch. The Loon Monitor worked every Wednesday as part of the Adirondack Cooperative Loon Program monitoring banded loons on the Upper St. Regis and Spitfire Lakes. The WSP provided a kayak for transport throughout the waterways, as the monitor began her trek between 6 and 8 am to observe those loons nesting on the lakes. For 4 to 7 hours the monitor covered nearly all of both lakes noting any loons observed, band color or lack of bands, mate status, location of nests, the number of eggs, and the success of any chicks that fledged. Binoculars provided by the Natural History Museum of the Adirondacks aided in watching the loons and finding bands without causing disturbance to the loons.

Results

Mated Pairs

The Birch Island loon pair on Upper St. Regis Lake had a successful summer with their two eggs hatching on approximately June 15th. The two chicks were first observed on June 21st with their banded mother. The mother has lived within the Birch Island territory in previous years, but was originally banded when residing on Little Clear Pond in 1998. Her mate lacks bands but her mate of last year was also unbanded, and may likely be the same mate. Last year the pair successfully fledged two chicks, and observations in late summer show all chances they may be successful again. The two

chicks were last observed feeding in the middle of September, giving them a high chance of fledging successfully.

The pair in Spring Bay on Upper St. Regis Lake had a less successful summer; their nest was abandoned within a couple of weeks of laying eggs. The eggs were collected and sent to Biodiversity Research Institute for biological analysis including levels of mercury. The results on the levels of mercury are expected to be published in a future article that will be available though the Adirondack Cooperative Loon Program. Throughout the rest of the summer the pair in Spring Bay was rarely observed together within the territory. However, there was often a third loon observed nearby from which the pair defended their territory.

On Spitfire Lake there was a change in nesting location for the year which can be linked to the change in at least one adult from the pair of the previous year. Both adults on Spitfire were unbanded in 2006, whereas one adult was banded last year, showing a switch in territories of at least the banded bird. Their eggs hatched nearly a month later than the Birch Island pair on approximately July 14th, yielding two chicks to roam the lake. The two chicks were observed on two occasions in early August followed by the observation of no chicks during two weeks in late August. However, in the middle of September one chick was observed again with a parent nearby. The often rough conditions on the water coupled with the chicks blending into the shoreline may have hindered the observation of all chicks and adults present on the lake.

Banded loons

The bands of the male who resided in Upper St. Regis Lake's Spring Bay in 2005 were observed on two occasions in the middle of Upper St. Regis Lake. Once the male was observed alone and the second time with a large group of other adults. The male was later noted as being on the St. Regis River acting quite lethargic. He is being monitored by another member of the field staff and was last noted as doing much better. The banded female from Spitfire Lake for 2005 were observed on one occasion on Upper St. Regis Lake in late July; it is likely she has switched territories and was residing on Upper St. Regis Lake this year. The antennae bird that was banded back in 2004 was not observed this year. However, the monitor observed a loon with bands the same as those of the antennae bird, so there is a slight possibility she may have been on the Upper St. Regis Lake, but it is unclear how the antennae could have been lost if the banding crew never removed it. Most often observed were the bands of the Birch Island female with the two chicks.

Discussion

Although many of the banded loons were observed during the summer, it was most often during the large group gatherings in the middle of Upper St. Regis Lake. This made it rather difficult to determine their territories or to determine their mating status for the summer, as loons would constantly join and leave the group. Of the mating pairs observed, only one pair has hatched and will almost certainly fledge their two chicks successfully. At least one Spitfire Lake chick is also likely to survive after being observed in the middle of September, however, the second chick was either missed in the observations of the loon monitor, or lost to predation or disease at some point in the late summer.

Information regarding scientific data collected from past years about the health of the Upper St. Regis and Spitfire Lakes can be found in the New York Field Report from 1998-2000 titled *Monitoring Mercury in Common Loons.* This report includes findings that Spitfire Lake had two adults and one chick with low blood mercury risk, and one adult with low feather mercury risk. Upper St. Regis had three adults with low blood mercury risk, one with moderate blood mercury risk and three adults with low feather mercury risk. Water quality information on the lakes includes:

Mean air equilibrium pH, dissolved organic carbon, and acid neutralizing capacity which are then compared to mercury levels in loons to find any connections.

Conclusion

The Adirondack Cooperative Loon Program is essential to helping to preserve a unique predatory species. By monitoring loons and collecting scientific data, the anthropogenic factors that may be affecting the health of *Gavia immer* can be better understood. Allowing a Watershed Steward to take part in the loon monitoring expands knowledge of an ecologically important species. Also, communication with residents on the lakes regarding the loons is important to understanding how to protect them. The loon monitor thanks all those who gave updates on the loons near their camps, along with caretakers and residents who helped in deterring boat users from loons, their chicks, and eggs at nesting sites.

Assessing the impact of a boat launch invasive species education and interdiction program in New York State's Adirondack Park

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Abstract:

Public education is a common response to environmental concerns, but measuring the impact of such efforts can be challenging owing to the invisible nature of subject attitudes and intellectual development. The impact of an invasive species education program targeting users of public boat launches in New York State's Adirondack Park was assessed by administering a simple survey of user knowledge of the natural history of a key invasive plant, Eurasian watermilfoil (*Myriophyllum spicatum)*. Over the three years of the study (2003-2005), 1,681 surveys were conducted at five different sites in the northern Adirondacks, scoring subjects on a 5-point Likert-type scale. Visitors reporting prior contact with the invasive species educational program scored significantly higher on the knowledge assessment (at $\alpha = 0.05$, $p < 0.0001$) than those with no prior contact. We infer from this finding a positive effect from this educational intervention in improving public knowledge about a key environmental issue.

Key Words: conservation education, invasive species, Eurasian watermilfoil, Adirondack Park, boat inspection

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Introduced, aggressively propagating plant, animal and microbial species pose an issue of critical concern across the globe. Scientists have documented invasions in all corners of the world, from vast continental land masses to remote islands, from mountain summits to the interior reaches of the marine world (Vitousek and others 1996). Protected landscapes, such as parks and preserves indicate the general health of the larger human-dominated landscapes encompassing or adjacent to them (Vitousek and others 1996). The consequences of exotic species invasion range from economic cost to humans to dire implications for entire ecosystems (Dybas 2004). Many researchers, practitioners and policy makers suggest integrated approaches to managing this global crisis (Alder 1996; Aquatic Ecosystem Restoration Foundation 2005; Dybas 2004; Mullin and others 2000; Vitousek and others 1996). Prevention, education, monitoring, legislation, enforcement and remediation (physical, chemical and biological) are typical elements of an integrated response to invasive species activity.

Public recreational use of boats for fishing and pleasure has been identified as a critical vector for invasive species transport in freshwater waterways in the United States (Johnson, Ricciardi, and Carltona 2001, December; Leung, Bossenbroek, Lodge 2006). Johnson, Ricciardi and Carltona (2001) found that boat trailers exiting a lake infested with invasive species can expose many more inland lakes to infestation by transporting seed and larval stock on trailing macrophytes. In many regions of the country, aquatic plants such as Eurasian watermilfoil (*Myriophyllum spicatum*) are themselves tremendously disruptive invaders.

Eurasian watermilfoil is thought to have been introduced to the United States in the 1940's and now has spread to lakes, rivers and reservoirs in 45 states across the country. The submersed aquatic plant, a perennial, flourishes in a wide variety of conditions – in flowing and standing water, in warm and cool temperatures and from low to high elevations (Smith and Barko 1990). It has been well

established that boat transport is an important vector for the transport and spread of Eurasian watermilfoil (Mullin and others 2000). Eurasian watermilfoil has been found in 49 Adirondack lakes, primarily on the eastern border of the Adirondack Park (Lake George, Saratoga Lake) and in the Saranac Lake region (Adirondack Park Invasive Plant Program 2005; Madsen and Boylen 1989; Smith and Barko 1990).

Several states have designed integrated programs to prevent or delay the spread of Eurasian watermilfoil and other invasive species. California, Maine, Minnesota, New Hampshire, Wisconsin and New York State's Adirondack Park feature such programs (Cassell 1998; Crawford and others 2001; Felda-Marquardt 2005; Smagula and Poiner 2005; State of Maine Department of Environmental Protection 2006). The federal Sea Grant program has long considered education an essential component of its coordinated research and control efforts to confront invasive species issues (Crawford and others 2001).

Efforts to assess invasive species education programs feature use of surveys and assessments of respondent knowledge of key invasive species issues. In its effort to stem the invasions of the plant *mimosa pigra*, land managers in Australia focused on educating fishers whose boats are vectors for transporting the invasive plant. The researchers conducted a mail survey to assess baseline knowledge of mimosa and the effect of the program on user behavior, and found positive impact on both knowledge and self-reported boat and equipment inspection to prevent mimosa seed transport (Hills 2002). A 1997 study of a zebra mussel boater education program in California, which aimed at preventing zebra mussel spread in California waterways through boater awareness and self-inspection, surveyed 800 people regarding baseline knowledge and boat use patterns and found that the overwhelming majority of respondents had little or no knowledge about invasive species (Cassell 1998).

Created in 2000, the Watershed Stewardship Program (WSP) at Paul Smith's College offers educational, service and research activities to augment watershed health in several locations in New York State's Adirondack Park. The program places college students at area boat launches in order to deliver short interpretive messages about invasive species to each group of visitors launching watercraft. The principle goal of the program is to stop or slow the spread of invasive plants from lake to lake through public education and visual inspection. This study was designed as a manageable effort to measure changes in knowledge of a key watershed issue in respondents. This key issue – Eurasian watermilfoil growth and propagation – is seen as representative of the efforts made by Watershed Stewards to raise the awareness of water quality issues in boat launch users. Thus, whether respondents have a high or low knowledge of the key issue is linked to the presence or absence of their prior exposure to the Watershed Stewards' message.

Methods:

This study (referred to hereafter as the Watershed Stewardship Program Assessment Study) was conducted by front-line employees, referred to here as Watershed Stewards, in the context of their normal duties. Watershed Stewards were stationed at area boat launches between Memorial Day and Labor Day. Shifts run from 7 am to 4 pm. Stewards were instructed to approach users of the public boat launches, deliver their interpretive message about water quality and invasive species and record observable data for a separate study on recreational use characteristics (data points for this study include party size, composition, watercraft type, engine size and type, time at launch, etc.). Table 1 below details the level of coverage each week by site.

Sampling Strategy Watershed Stewardship Program Assessment Study

Watershed Stewards were instructed to conduct the study, which was a four-question orally-administered survey (Figure 2), with each group launching a watercraft at the boat launch they were assigned to for the duration of their shift (7 am – 4 pm). It should be noted that Watershed Stewards were conducting the study in addition to their normal duties mentioned above. In practice, the survey

was not given to each party, especially during periods of high user volume when shorter interactions between Watershed Stewards and the public became essential. Table 1 indicates the percentage of possible respondents which were actually surveyed. Note that the sample size grew considerably in the second year and third year of the study, both in absolute numbers and in some cases as a proportion of the potential population available for survey administration. The goal was to survey 100% of the users on each day of the study.

Table 1: Watershed Stewardship Program Assessment Study Sampling Information Northern Adirondack Boat Launches, 2003 and 2004

Public Boat Launch	Year	Days per week of coverage	# Days/ site/ week	Sample Size	Total Groups on surveyed days	Sample as % of Total Users
Lake Placid State Boat Launch	2003	Weds-Sun	5	68	171	39.7%
	2004	Weds-Sun	5	260	395	65.8%
	2005	Weds-Sun	5	342	786	43.5%
Upper St. Regis Landing	2003	All week	7	78	131	59.5%
	2004	All week	7	178	212	83.9%
	2005	All week	7	213	412	51.6%
Upper Saranac Lake- Saranac Inn State Boat Launch	2003	All week	7	82	232	35.3%
	2004	Weekends	2	172	175	98.2%
	2005	Not Participating	-	-	-	-
Buck Pond State Campground: Lake Kushaqua launch	2005	Weekends	2	80	144	55.5%
Saranac Lake Islands State Campground: Second Pond launch	2005	Weekends	2	247	568	43.4%

The Watershed Stewardship Program Assessment Study was conducted during two generally defined periods throughout the summers of 2003, 2004 and 2005. In 2005, the study was conducted every day (when possible) for 16 days in late June and early July (early summer) and for 28 days in August and September (late summer). This structure was an important part of the study design, in that comparisons might be made between users of the boat launches in early summer versus late summer.

Table 2: WSP Assessment Study Survey Days, 2003 - 2005

Month	2003	2004	2005
May	5	0	0
June	15	17	5
July	5	9	11
August	18	19	25
September	0	3	3
Total for summer	**43**	**48**	**44**

Procedures for Conducting the Survey

A specific protocol for implementing the Program Assessment Survey was designed in order to instill as much consistency as possible in the delivery of the survey. Watershed Stewards were instructed to adhere to the following methods:

Figure 1: Method of conducting WSP Assessment Study

1. When visitors arrive at boat launch, record the observable data for the regular recreation study as usual.
2. Approach the party and give your standard introduction/hook.
3. Ask question Q1 below. Depending on response, then ask questions Q2-Q4 OR skip to Q4. Record data on the WSPAS (Watershed Stewardship Program Assessment Study) form provided. This should take 1-2 minutes.
4. After finishing with the WSPAS, proceed with your normal interpretive message as appropriate to the needs or desires of the visitor.

A one-hour training session was given each year to orient the Watershed Stewards to the goals and methods of the study. This training session includes the use of role-played interactions between surveyors and the public, which are then scored by the group using the standard rubric found below. Scores can then be compared and calibrated between the raters.

Survey Design and Scoring

The four survey questions, seen below, were designed to be very simple and pointed, in order to not displace the other duties and responsibilities the Stewards were charged with each day.

Question #1 was intended to break the respondents into two sample subgroups: those who had prior contact with a Watershed Steward and those who had not. Question #2 gave us the respondent's recollected overall impression of program value. Question #3 gave us an interesting potpourri of information that ranged quite widely, but offered some insight into the messages that stayed with respondents. Question # 4 was our critical question, in that it allowed Stewards an opportunity to assess respondent knowledge on this key issue on a scale of 1 (low) to 5 (high). Stewards were requested to instantly score each subject's response to Question #4 according to the rubric below, which was printed on the reverse of each data sheet.

Figure 2: Survey Questions

Q1.	Have you encountered a Watershed Steward from our program before? (Y/N) (If yes, go to question 2. If no, skip to question 4)
Q2.	Did you learn useful information from the Steward regarding invasive species? (Y/N)
Q3.	What were the most important messages you can recall from your earlier meeting with the Steward?
Q4.	Can you tell me what you know about Eurasian watermilfoil?

1- no knowledge	2- vague knowledge	3- reasonable working knowledge	4- advanced knowledge	5- extensive knowledge
No knowledge	• Noxious weed of some kind • In lakes	• Invasive underwater plant • Chokes lakes • Transported by boats	• Catches in boat props and trailers • Interferes with fishing, swimming, boating, skiing • Knows that there are native species of milfoil	• Able to differentiate from native spec. • Knows the relationship of infestation to reduced O2, shading of bottom, habitat change. • autofragmentation

Figure 3: Scoring Rubric for Responses to Question #4 of Survey

(Note: each higher level assumes the knowledge of the preceding level, plus the new material as noted. These levels are approximate, subjective. Do the best you can at determining the closest level.)

Study Design Considerations

It should be noted that the Watershed Stewards were instructed to integrate the study into their normal operating procedures. Stewards were not making a separate intervention in order to glean the data for this study. Also, Stewards conducted this study on selected weeks in order to get information about early summer versus late summer visitors. That is, Stewards conducted the survey in two bursts- June-July and August-early September. However, in 2005, Stewards were delayed until late June in starting the study. Finally, it should be noted that the Stewards were uniformed professionals conducting this survey. It is possible that their position, function and appearance influenced results.

Research Hypothesis

The researcher was interested in the effects of this particular public education effort in the overall integrated strategic campaign to control invasive species. The chief question involved whether there was measurable impact associated with the program's educational efforts on recruiting members of the public to self-police by taking care of their equipment, inspecting their boats and fishing tackle, and by removing invasive species. The first step in the chain of events which in theory ends in changes in public behavior is to increase public awareness and knowledge of the concern at hand. Thus, this study focused on measuring visitor knowledge of invasive species. The following null hypothesis was tested:

Ho: There is no significant difference in boat launch users' knowledge of Eurasian watermilfoil between those users who have had prior contact with watershed stewards and those who had no prior contact with watershed stewards.

Analysis

The study design depended on dividing the overall sample into two groups based on visitor self-identification of whether or not they had prior contact with representatives of the program.

Visitors who reported no prior contact with the WSP were placed in one group (S_n = Sample "no contact"), since they presumably had not had the benefit of the WSP educational message about invasive species, while those reporting prior WSP contact were placed in a second group (S_y = Sample "yes contact"). The type of data gathered by the study is ordinal, based on a rating assigned to subject performance (expressed knowledge) by researchers according to a 5-point Likert-type rating scale of increasing knowledge. Ordinal data indicates nonparametric statistical analysis. The Mann-Whitney test was selected (Zar 1999). MiniTab software was used to conduct the Mann-Whitney test. In addition, analysis included calculating median scores and tallying the number of visitors in each sample's scores.

Results:

Sample Segmentation:

Useful responses were divided into two sample groups for purposes of data analysis. S_n (Sample "No prior contact") was defined as the subgroup of respondents who indicated on Question # 1 that they had no prior contact with Watershed Stewards. S_y (Sample "Yes prior contact") was defined as the subgroup of respondents who indicated on Question #1 that they had prior contact with Watershed Stewards. S_t (Sample "Total") was defined as the entire group of respondents. Table 3 shows the sample sizes for the three years of the study.

Table 3: Study Participants, 2003 - 2005

		2003	2004	2005	Total
Sample Size	S_t (total sample in study)	221	582	878	1,681
	S_n (no prior contact with Watershed Stewards)	136	269	532	937
	S_y ("yes" to prior contact with Watershed Stewards)	85	313	346	744

Clear trends were found in the scores of visitors on the knowledge test for each of the three years. Table 4 shows the number of visitors scoring "1" through "5" for each year of the study by sample group and by yearly total. Visitors in the group reporting prior contact with the WSP were more likely to score higher on the survey in each of the three years of the study.

Table 4: Sample Score Detail by Year

Year in study (S_n = no prior WSP contact; S_y = prior WSP contact; median scores in square brackets)	**Number of responses (percent of total) by score on Eurasian watermilfoil knowledge survey** (1 = no knowledge, 2 = vague knowledge, 3 = reasonable working knowledge, 4 = advanced knowledge, 5 = extensive knowledge; percent of total scores in parenthesis)					
	1	2	3	4	5	total
2003 S_n [2.0]	28 (21%)	60 (44)	37 (27)	9 (7)	2 (1)	136 (100)
2003 S_y [3.0]	1 (1)	12 (14)	32 (38)	33 (39)	7 (8)	85 (100)
2003 total	29 (13)	72 (33)	69 (31)	42 (19)	9 (4)	221 (100)
2004 S_n [2.0]	97 (36)	77 (29)	59 (22)	26 (10)	10 (4)	269 (100)
2004 S_y [3.0]	15 (5)	43 (14)	129 (41)	90 (29)	36 (12)	313 (100)
2004 total	112 (19)	120 (21)	188 (32)	116 (20)	46 (8)	582 (100)
2005 S_n [1.0]	277 (52)	173 (33)	68 (13)	13 (2)	1 (0.19)	532 (100)
2005 S_y [3.0]	26 (7)	104 (32)	165 (48)	42 (12)	9 (3)	346 (100)
2005 total	303 (35)	277 (32)	233 (27)	55 (6)	10 (1)	878 (100)
2003-2005 S_n [2.0]	402 (43)	310 (33)	164 (18)	48 (5)	13 (1)	937 (100)
2003-2005 S_y [3.0]	42 (6)	159 (21)	326 (44)	165 (22)	52 (7)	744 (100)
2003-2005 total	444 (26)	469 (28)	490 (29)	213 (13)	65 (4)	1681 (100)

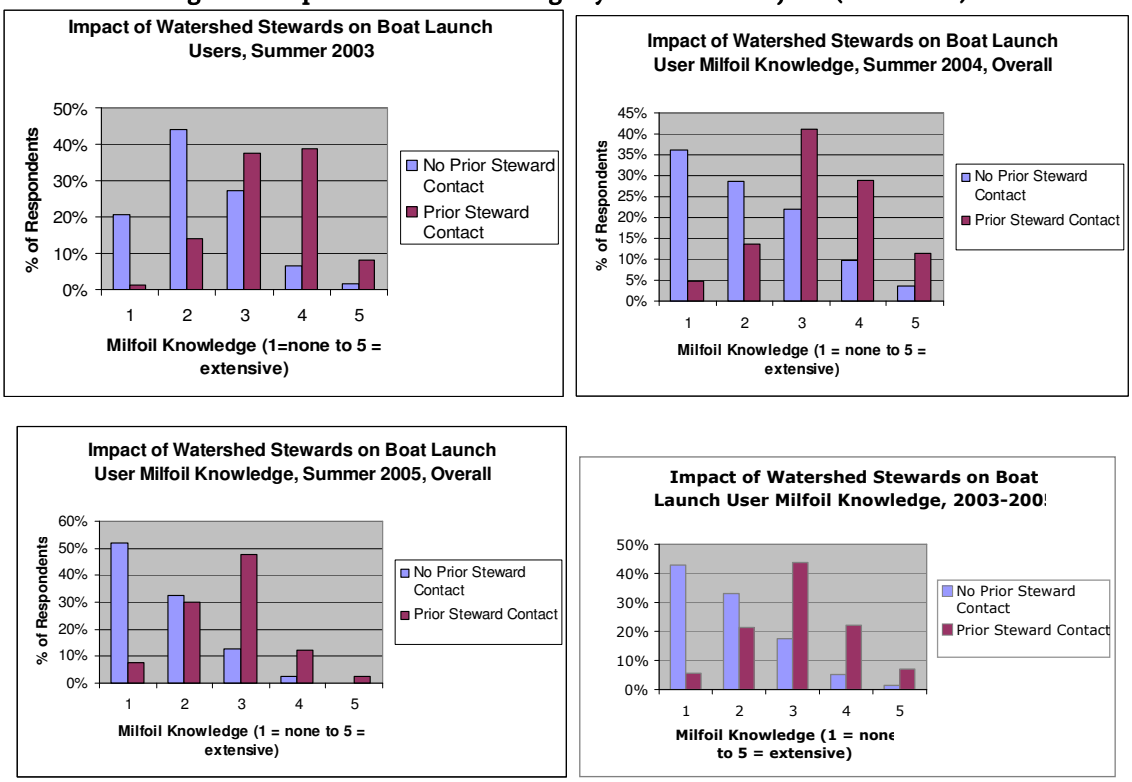
Testing of Hypothesis

Mann-Whitney testing indicated the results from the two test groups, S_n (visitors with no prior WSP contact) and S_y (visitors with prior WSP contact) showed significantly different scores. Mann-Whitney was run for each year in isolation (2003, 2004, 2005) and once again for the three years combined. For all four tests at $\alpha = 0.05$, the p value was < 0.0001, indicating extremely strong confidence that the scores for the two groups differed significantly. Thus, the researcher rejected the null hypothesis. The test supports the conclusion that the respondents who had no prior steward contact scored lower on the survey than respondents who had prior steward contact.

Discussion:

Differences in median scores indicate that the visitors in the "treatment" group, i.e., those users of the boat launch who had experienced prior contact with Watershed Stewards, scored as a group higher on the scoring rubric in terms of their expressed knowledge of Eurasian watermilfoil compared to those visitors who had no prior WSP contact. Histograms of the data show this difference in terms of percent of visitors scoring at each level (Figure 4).

Figure 4: Impact of Steward Message by Percent of Subjects (2003-2005)



Visitors with no prior contact with watershed stewards were very likely to score a "1" and less and less likely to score at higher levels. In contrast, those people with prior Watershed Stewardship Program contact fell into a more normal distribution, with large numbers rated as "3's" and fewer rating as 1 or 5. When one considers percents of respondents, the contrast is marked. Over the three years of the study, a striking 76% of respondents with no prior contact with Watershed Stewards had either vague or no knowledge (scored a 1 or 2) of the natural history and threat posed by Eurasian watermilfoil (Table 5), while 73% of those who listened to the Watershed Stewards on a prior occasion had a reasonable working knowledge of the plant or better (scored 3 or higher). Based on this information, almost eight out of ten new visitors using Watershed Stewardship Program-addressed boat launches have inadequate information to make responsible decisions regarding the transport of invasive plants. Once exposed to the Watershed Stewardship Program, this risk drops markedly.

Early versus Late Summer

For all three years, the survey was administered in two bursts- June through early July and August through early September. These two periods were chosen to give insight into changes in user knowledge and satisfaction as the summer progresses.

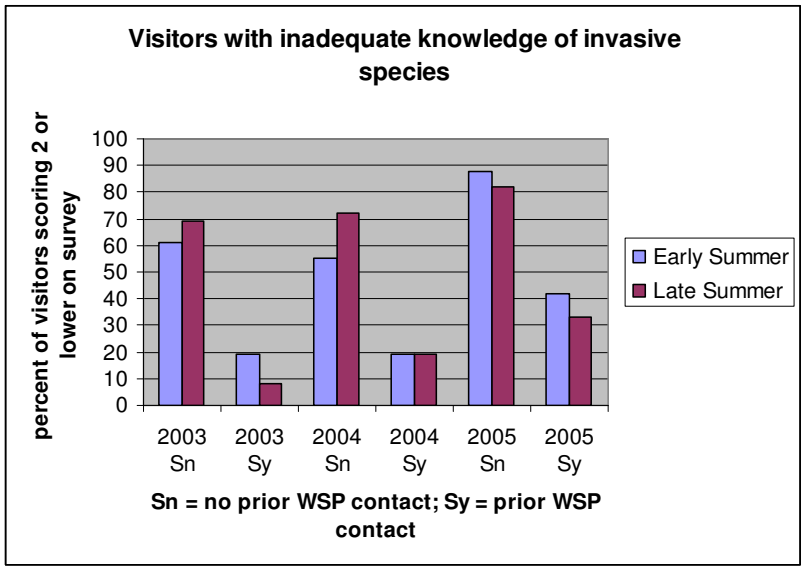
Table 5: Cumulative Frequency Results, Early vs. Late Summer

Year in study (S_n = no prior WSP contact; S_y = prior WSP contact; ES = Early Summer; LS = Late Summer)	**Cumulative Frequency Distribution of responses (percent of total) by score on Eurasian watermilfoil knowledge survey** (1 = no knowledge, 2 = vague knowledge, 3 = reasonable working knowledge, 4 = advanced knowledge, 5 = extensive knowledge)				
	1	2	3	4	5
2003 ES S_n	21%	61	90	99	100
S_y	2	19	47	90	100
2003 LS S_n	21	69	94	99	100
S_y	0	8	69	96	100
2004 ES S_n	31	55	84	94	100
S_y	5	19	51	85	100
2004 LS S_n	40	72	89	98	100
S_y	5	19	64	90	100
2005 ES S_n	54	88	98	100	100
S_y	8	42	86	96	100
2005 LS S_n	50	82	97	100	100
S_y	7	33	84	99	100
2003-2005 (all summer, all years) S_n	43	76	93	99	100
S_y	6	27	71	93	100

The information in Table 5 indicates that there was a slight downturn in scores overall as the summer progressed for the first two years of the study, which might be attributed to the greater instance of out-of-the-area users in August at the boat launches. It is likely that early summer users tend to be from the nearby region, and are somewhat better informed about regional water quality issues. However, in 2005, scores for both samples (those with and without prior contact with watershed stewards) increased slightly as the summer progressed. It should be noted that researchers started the first burst of research considerably later in 2005 than in previous years (late June in 2005 compared to early June in 2004), and that usage overall was up between 50 and 100% at the boat launches studied compared with 2004. These factors could have altered the overall findings and reduced the "late summer effect" observed in the first two years of the study.

When we look at the percent of visitors scoring either a 2 or lower (vague knowledge or no knowledge), we see that this late summer effect more clearly. Visitors scoring a 2 ("vague knowledge") or a 1 ("no knowledge") can be thought of as visitors less likely to inspect their watercraft and prevent introduced invasive species. For the first two years of the study, visitors in the S_n group demonstrated decreasing knowledge as the summer progressed. This pattern was not repeated in 2005 (Figure 5).

Figure 5: Early Summer versus Late Summer and Visitor Knowledge



Respondent Satisfaction

While Question #1 asked if recreators had encountered a Watershed Steward in the past, Question #2 on the survey asked "Did you learn useful information from the Steward regarding invasive species?" We looked to this question for an indication of overall satisfaction or impact from the user's memory of the past encounter.

From 2003-2005, there were 713 useable responses to this question, while 937 respondents reported that they had not encountered a Watershed Steward in the past. Of the 713 respondents with prior experience with Watershed Stewards, 670 responded "yes" to Question #2 while 44 responded "no." In percentages, 94% of respondents reported learning useful information about invasive species while a small 6% reported that they did not learn any useful information. This finding attests to the positive impact overall of the effort of the Watershed Stewards. The results are consistent over the three years of the study.

Table 6: Visitor Satisfaction with Watershed Stewardship Program

Year of Study	Usable n	% Satisfied	% Dissatisfied
2003	82	90%	10%
2004	313	95.5%	4.5%
2005	318	93%	7%
2003-2005	713	94%	6%

2005 compared with past years

In 2003, there were 228 respondents surveyed, while in 2004 there were 582, a 155% increase in subjects. 2005 saw a further 50% increase in subjects over 2004 – 878 compared to 582. Table 3 illustrates that there was no change overall in median scores on Question #4 from 2003 to 2004 despite the greatly increased pool of respondents. This suggests that the program design is comparable and reliable over the course of two years, with a workforce of Watershed Stewards/ researchers that was entirely new in 2004 as compared with 2003.

However, 2005 brought considerable change when compared to the previous two years. The median score for the group with no prior WSP contact dropped from 2 to 1 on the survey instrument. Several variables could explain this fall off in scores. First, while the survey instrument, training and overall method remained the same, the research crew was entirely new in 2005. This was also the case in 2004. However, it is possible that the team in 2005 was on a whole more critical in assessing responses to the key survey question, "Can you tell me what you know about Eurasian watermilfoil?" Second, 2005 saw a dramatic increase in visitation at both Lake Placid (up 100%) and Upper St. Regis (up 50%) from 2004 levels. This could indicate that less intrepid ("fair weather") visitors were out in greater numbers, which might decrease the overall scores. Third, in 2005, the program expanded to two new sites: Second Pond and Lake Kushaqua. The scores of respondents at those sites were considerably lower than those at Lake Placid and Upper St. Regis. Lastly, the Stewards were instructed not to repeatedly poll visitors who indicated they had already answered the questions for the Assessment Study. It is likely that after three years of administering the study, many local, repeat users had answered the questions in the past. This would effectively skew the sample toward new visitors who had never encountered Stewards or who had never participated in the Assessment Study. This skewed sample would naturally tend to score lower overall due to a decreased level of familiarity with northern Adirondack waters and our program.

Conclusion:

The Watershed Stewardship Program Assessment Study has confirmed in 2005 and 2004, using a much larger sample, what the study indicated in 2003. All three years show that there is a high correlation in the general public between heightened knowledge of Eurasian watermilfoil natural history and control methods and prior contact with representatives of the Watershed Stewardship Program. The program feels confident that it is having a positive impact on user knowledge of this critical watershed health issue and is protecting the waters not only of the lakes monitored by the program, but all the waterways that are potentially visited by each recreator educated by Watershed Stewards.

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