WATERCRAFT DATA

Standardized Inspection Data Collection, Analysis, and Applications

NYSFOLA Watercraft Inspection Steward Program Leaders Workshop

May 1, 2015. Dr. Eric Holmlund, Adirondack Watershed Institute Steward Program

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

WHY COLLECT DATA?

WHY SHOULD WE COLLECT AND ANALYZE DATA ON INVASIVE SPECIES AND WATERCRAFT?

- Planning- *Do we know where we're needed? Traffic levels? Time? Boat types? Comparative Risk of locations?*
- Accountability- *Do we know if the employee was on duty? Can we follow up on a key find or incident?*
- Impact- *Can we determine if our program makes a difference? "Saves," finds, and changed user behavior.*
- Justification- *Are program dollars well spent? $ per inspection? $ per save? $ per week? Builds buy-in.*

What does the data show us?

USE PATTERNS

Boats inspected: 1,343 **% of visitors taking spread prevention measures: 45%**
AIS intercepted: 10 **% inspected boats with organisms: 3%**
 # visitors: 3,270 **# of previously visited waterways: 65**

Waterbody	Boat Type									total # boats
	M	PWC	S	C	K	B	R	SUP	Docks	
Cranberry Lake	1158	50	0	71	56	0	7	0	1	1343
percentage of total boats	86%	4%	0%	5%	4%	0%	1%	0%	0%	100%

M = motorboat; PWC = personal watercraft; S = sailboat; C = canoe; K = kayak; B = construction barge; R = rowboat; SUP= stand-up paddleboard; Docks = boat docks launched for seasonal installation/maintenance

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

What does the data show us?

AIS FOUND

Waterbody	total # people	organisms found entering	organisms found leaving	# boats dirty	# of inspections	% of inspected boats dirty
Cranberry Lake	3270	30	17	36	1160	3%

boats dirty = watercraft with any organic material, invasive, non-invasive or unknown.

Waterbody	Organism Type																total AIS	% of inspected boats with AIS
	BW	CLP*	ELO	EWM*	GRS	NM	UM	VLM*	PN	SWF*	WC*	H*	ZM*	NP	WL	other		
Cranberry Lake	0	4	1	5	19	2	1	1	4	0	0	0	0	1	4	5	10	1%
percentage of organisms removed	0%	9%	2%	11%	40%	4%	2%	2%	9%	0%	0%	0%	0%	2%	9%	11%		

BW = bladderwort; CLP = curly-leaf pondweed; ELO = elodea; EWM = Eurasian watermilfoil; GRS = grass; NM = native milfoil; UM = unknown milfoil; VLM = variable leaf milfoil; PN = pine needles; SWF = spiny waterflea; WC= water chestnut; H= Hydrilla; ZM = Zebra mussel; NP= native pondweed; WL= water lily; */AIS = aquatic invasive species.

Cranberry Lake: Aquatic Invasive Species Intercepted by Stewards, 2014	# found on boats launching	Previous Waterway	# found on boats retrieving	Previous Waterway
Curly-leaf pondweed	3	St. Lawrence River (2), None	1	Cranberry Lake (1)
Eurasian water milfoil	5	Lake Bonaparte (3), St. Lawrence River (2)	0	N/A
Variable-leaf milfoil	0	N/A	1	Thousand Islands (1)
Totals	**8**		**2**	

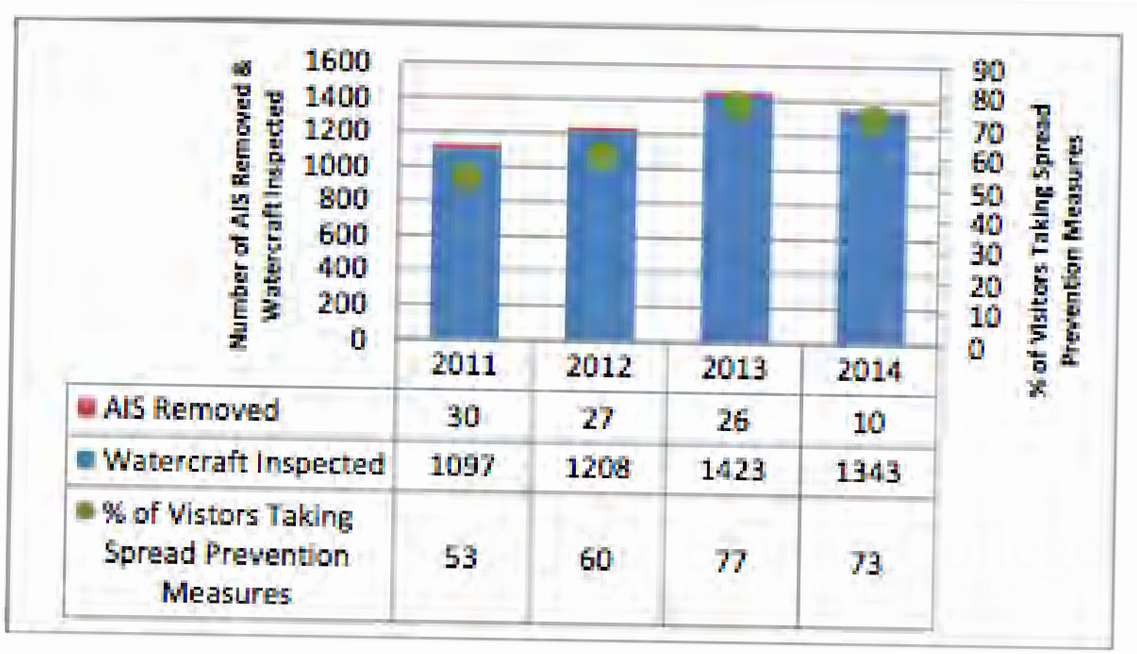
Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

What does the data show us?

USER BEHAVIOR

Waterbody	# groups taking AIS spread prevention measures									# groups asked
	yes	I	WB	DB	BB	LW	Dis	Dry	didn't ask	
Cranberry Lake	513	269	358	160	92	116	85	98	109	1135
percentage of total # groups asked	45%	24%	32%	14%	8%	10%	7%	9%	NA	

Yes = took one or more AIS spread prevention measures; I = inspected boat; WB = washed boat; DB = drained bilge; BB = emptied bait bucket; LW = drained livewell; Dis = disposed of unused bait; Dry = dried boat.



What does the data show us?

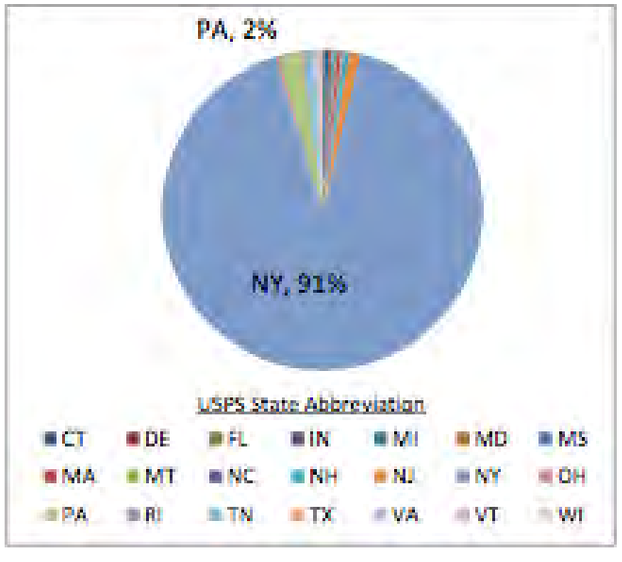
USER ORIGINS

Cranberry Lake: Previous waterways visited, 2014	# visits
Cranberry Lake	625
None	315
Did not ask	81
St. Lawrence River	28
Lake Bonaparte	24
Lake Ontario	22
Tupper Lake	18
Rental	10
Black River	6
Carry Falls Reservoir	5
Higley Flow	5
Lake Erie	5
Oneida Lake	5
Saranac Lake Chain	5
Lake Flower	4
Butterfield Lake	3
Chateaugay Lake	3
Flat Rock Reservoir	3
Fourth Lake	3
Lake Placid	3
Long Lake	3
Oswegatchie River	3
Skaneateles Lake	3

Cranberry Lake: Previous waterways visited, 2014	# visits
Tully Lake	3
Black Lake	2
Brantingham Lake	2
Cayuga Lake	2
Canesus Lake	2
Grasse River	2
Lake Champlain	2
Lake Winnipesaukee, NH	2
Massawepie Lake	2
Mohawk River	2
Raquette River	2
Red Lake	2
Saratoga Lake	2
St. Regis River	2
Star Lake	2
Balsalm Pond	1
Buck Pond	1
Canandaigua Lake	1
Charleston Lake, Ontario	1
Clearwater Reservoir	1
Connecticut River	1
Duck Lake	1
Erie Canal	1

Cranberry Lake: Previous waterways visited, 2014	# visits
Fish Creek Ponds	1
Great Sacardaga Lake	1
Green River Reservoir, VT	1
Irondequoit Bay	1
Joe Indian Pond	1
Lake George	1
Lake Kushaqua	1
Lake Pocotopaug	1
Long Island Sound	1
Lower Saranac Lake	1
Massachusetts	1
New Jersey	1
Oswego River	1
Owasco Lake	1
Pine Lake, WI	1
Schroon Lake	1
Schuyler Lake	1
Silver Lake, Western NY	1
Stillwater Reservoir	1
Thousand Islands	1
Unknown Lake	1
Vermont	1
Whitney Point Reservoir	1
Total	**1244**

State of Boat Registration

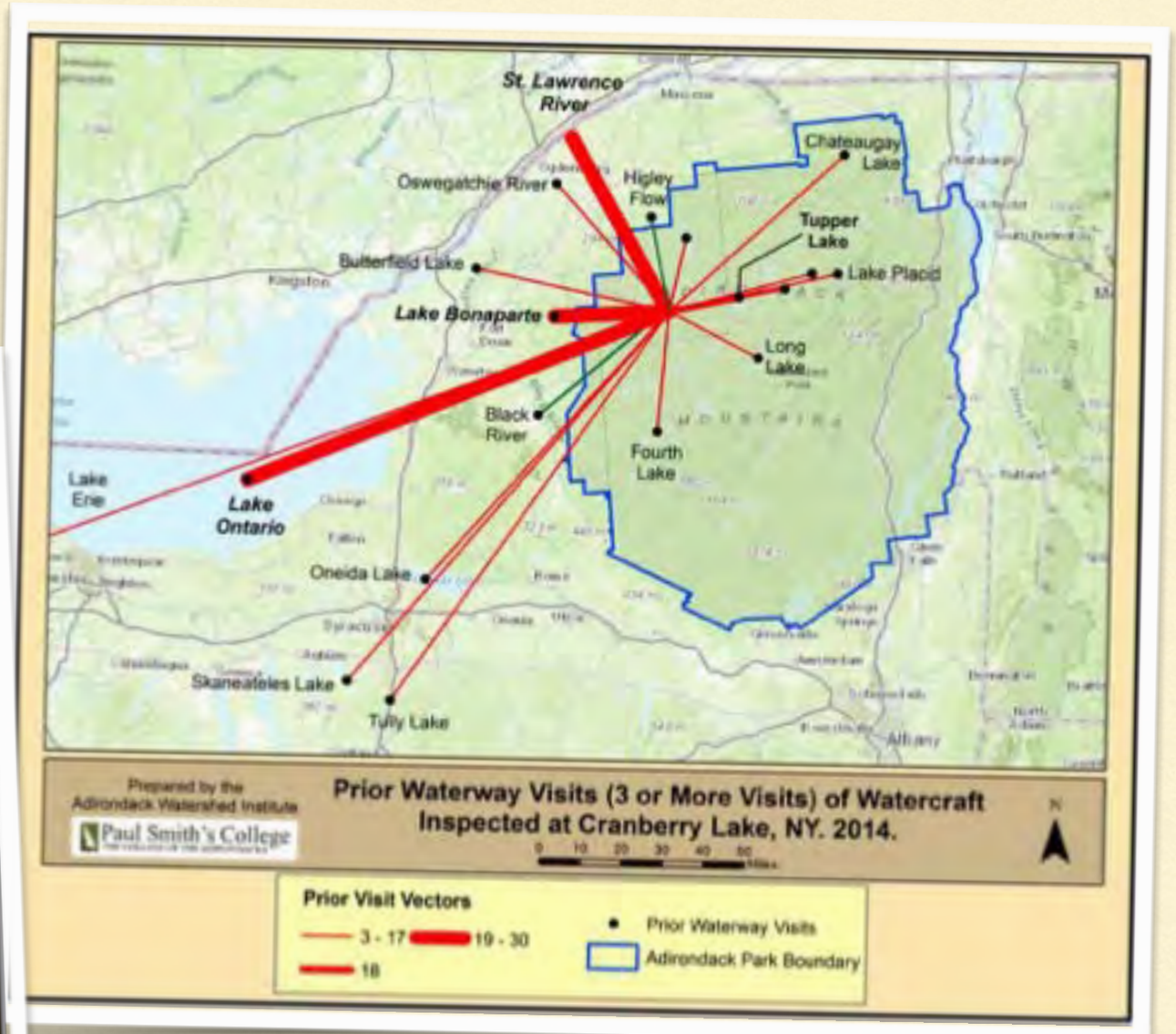


What does the data show us?

NETWORKS

What does the data show us?

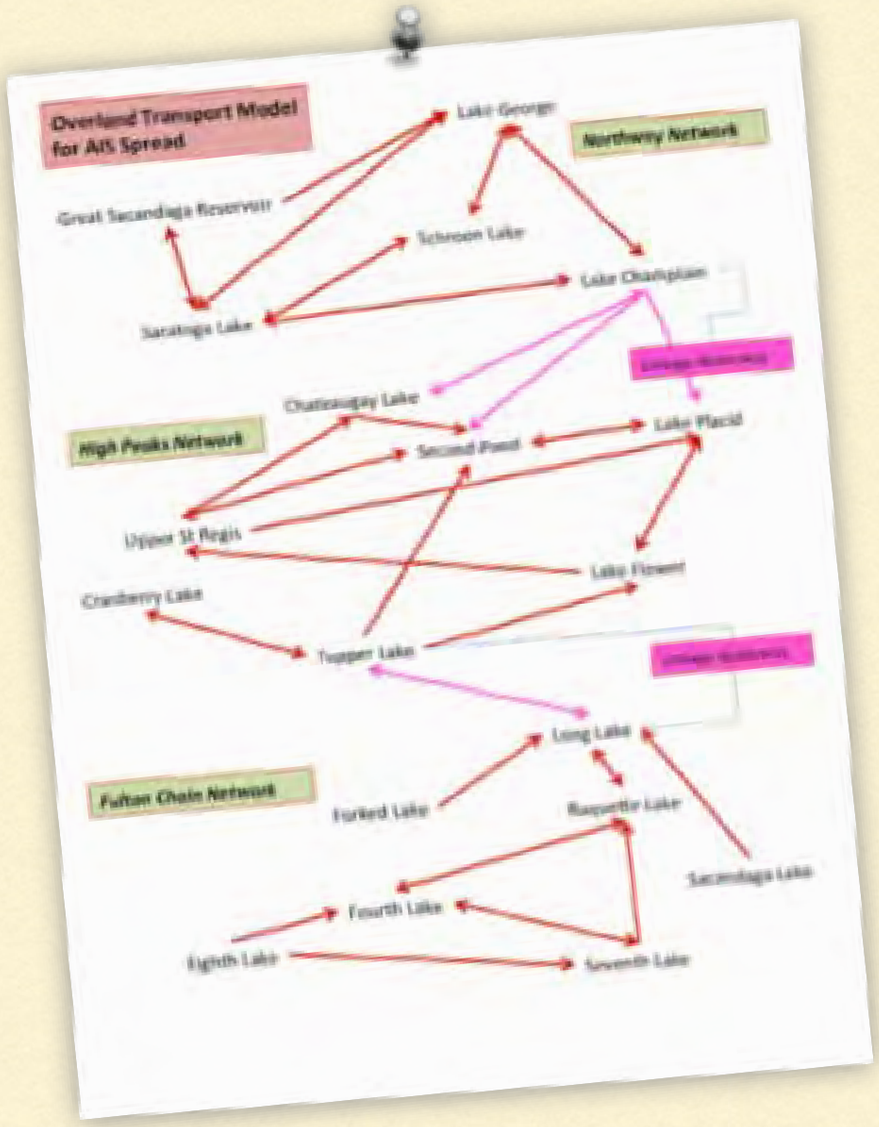
NETWORKS

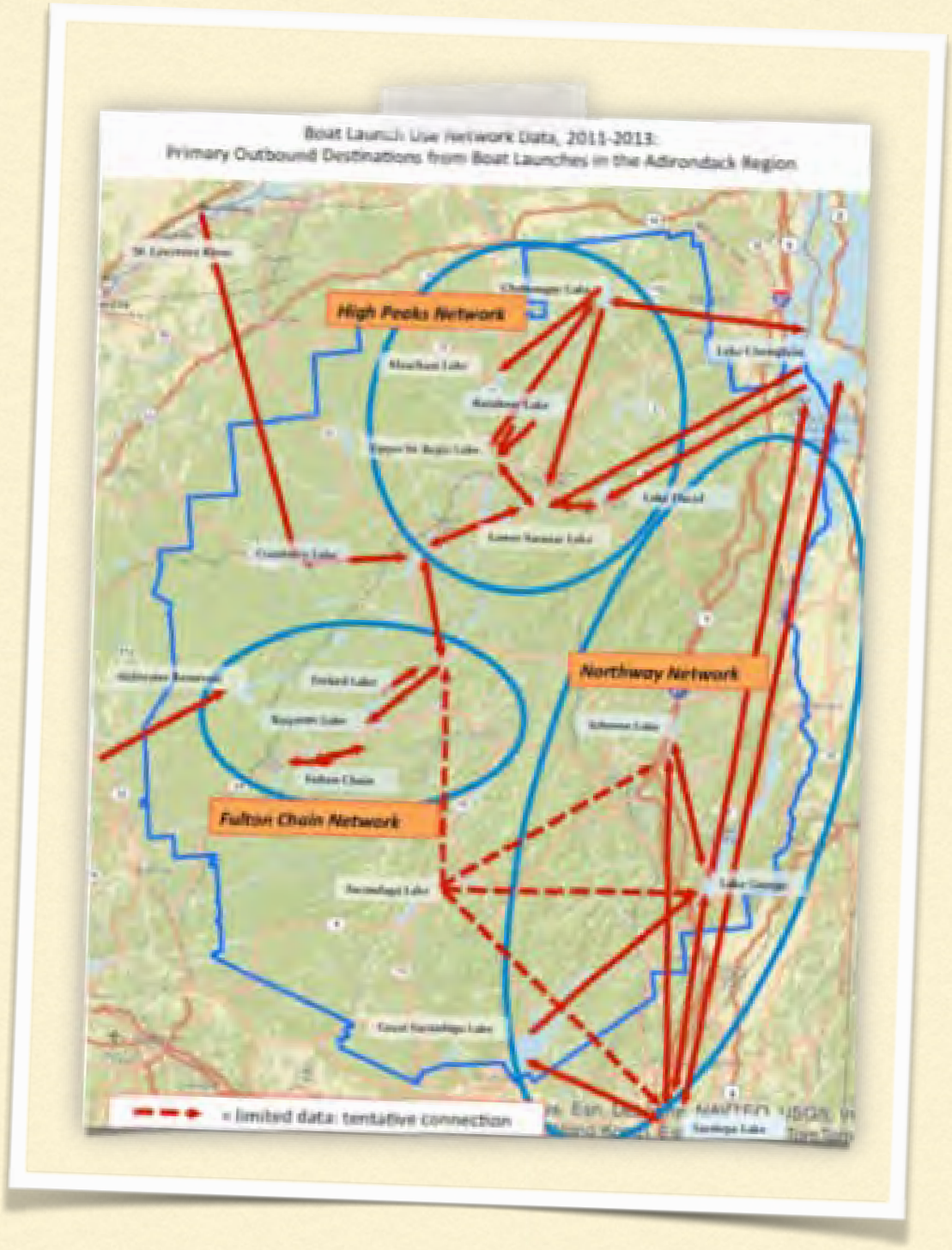


Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

What does the data show us?

NETWORKS

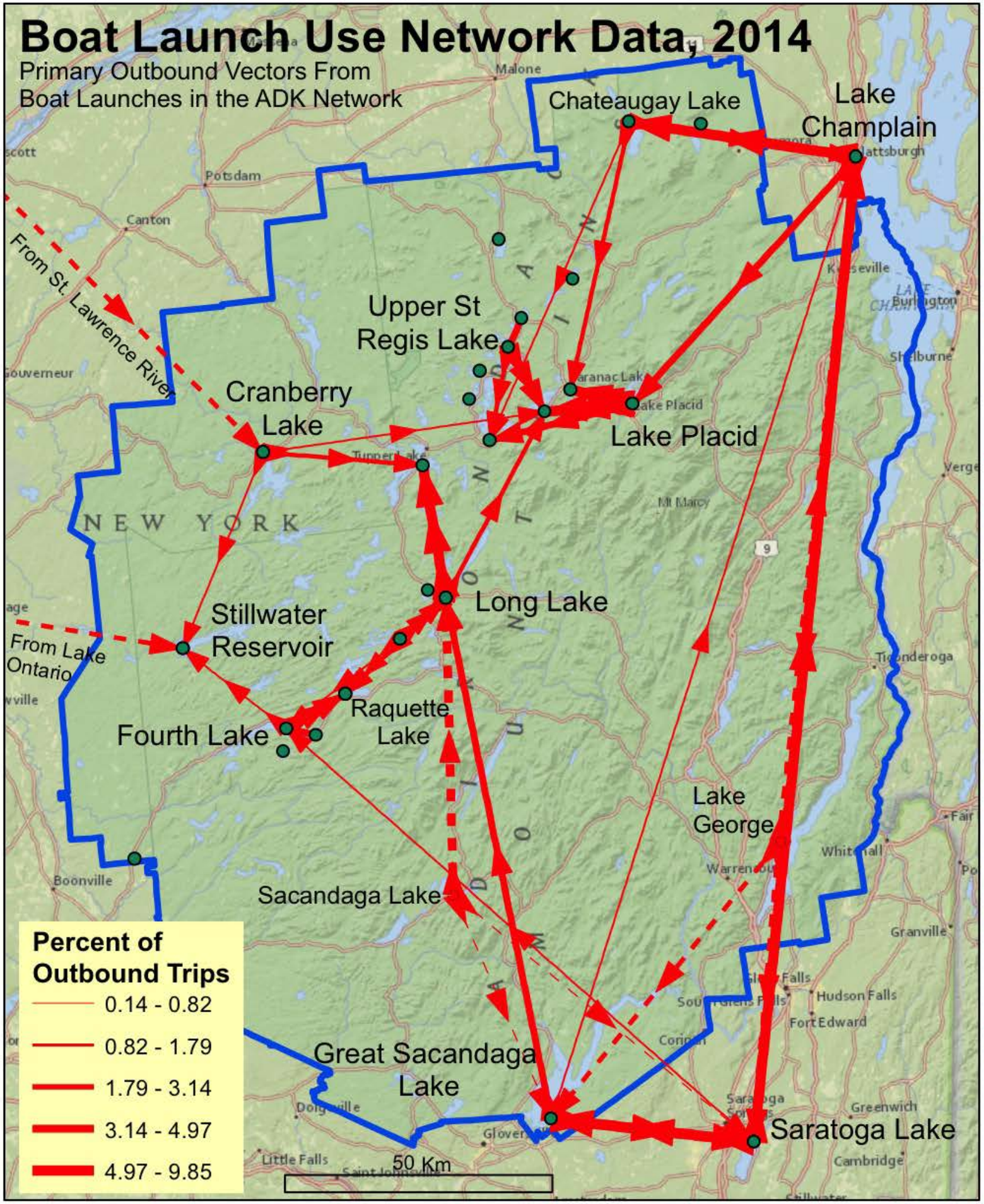


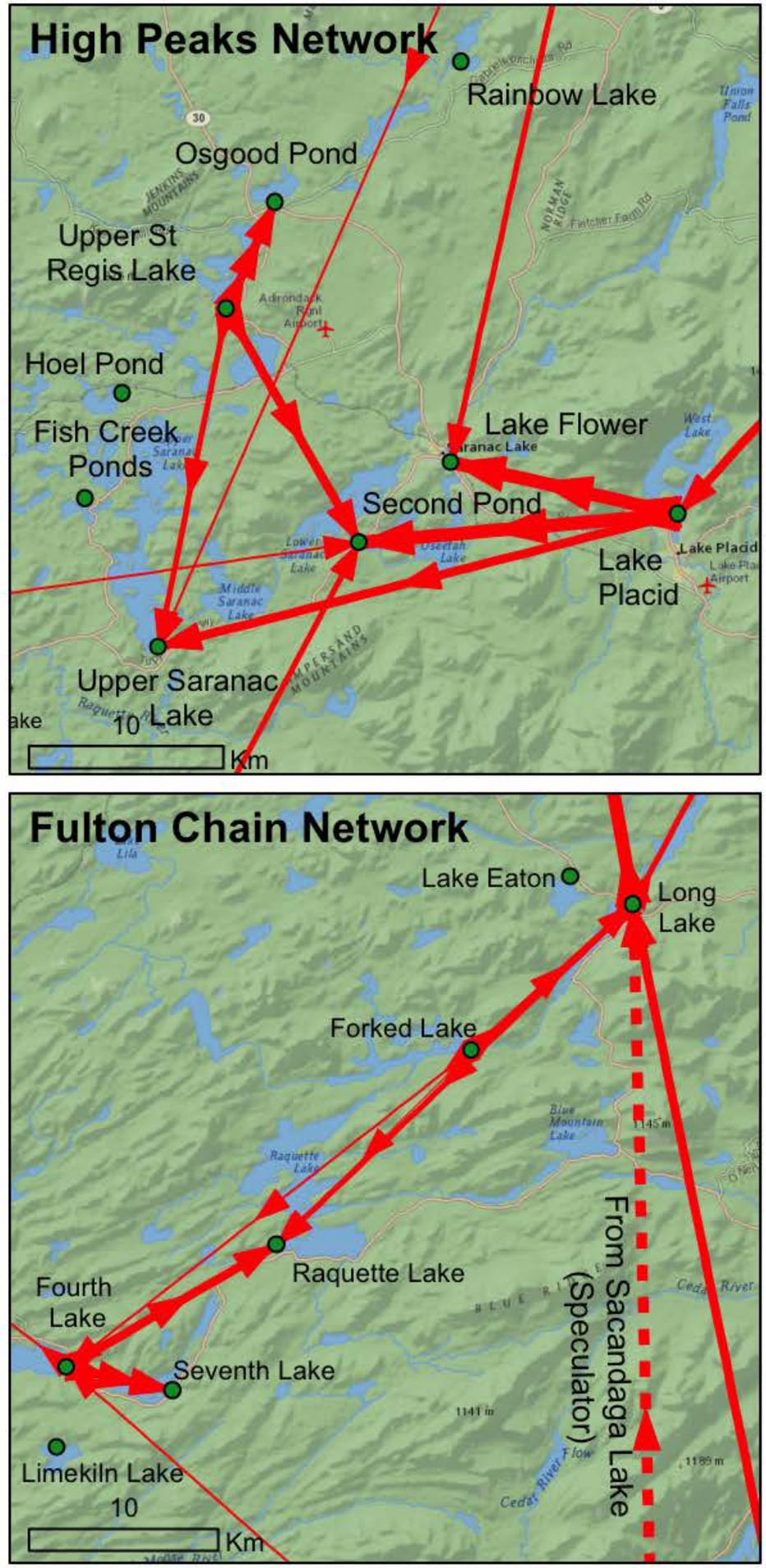


Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

Boat Launch Use Network Data, 2014

Primary Outbound Vectors From
Boat Launches in the ADK Network





Road Use Network Data, 2014

Primary Routes Between
Boat Launches in the ADK Region

Chateaugay Lake
Lake Champlain
Upper St Regis Lake
Lake Placid
Cranberry Lake
Long Lake
Forked Lake
Raquette Lake
Fourth Lake
Great Sacandaga Lake
Saratoga Lake

NEW YORK

Boater Traffic

- 1 - 27
- 28 - 74
- 75 - 156
- 157 - 276
- 277 - 907

High Peaks Network

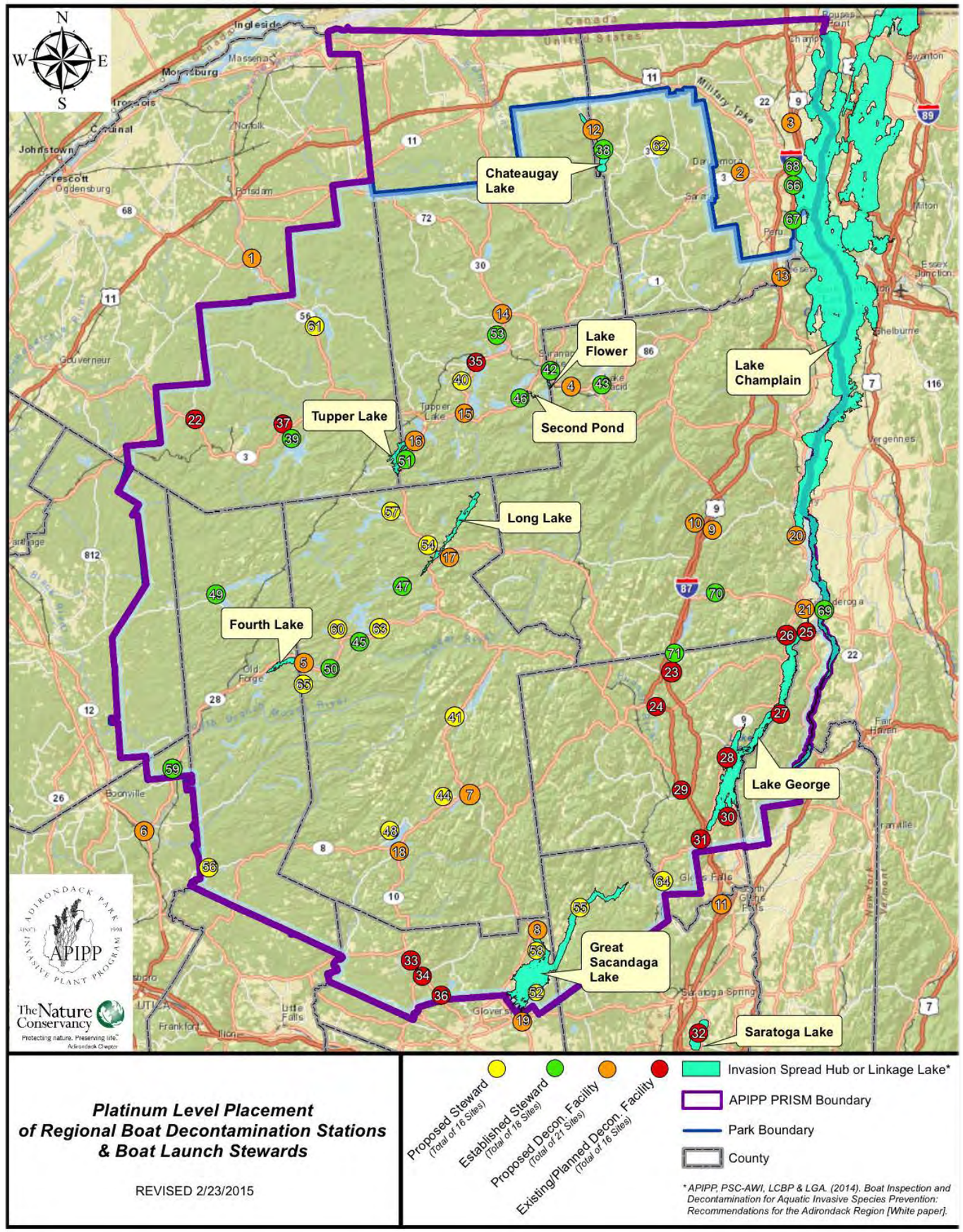
Upper St Regis Lake
Hoel Pond
Saranac Lake
Lake Placid
Second Pond
Tupper Lake

Fulton Chain Network

Lake Eaton
Long Lake
Forked Lake
Raquette Lake
Fourth Lake
Seventh Lake
Limekiln Lake

Good Data = Strategic Placement of Stewards and Decon Stations

ADIRONDACK PARKWIDE AIS PREVENTION PILOT PROGRAM (NYSDEC)



WHAT KINDS OF INFO DO WE COLLECT?

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

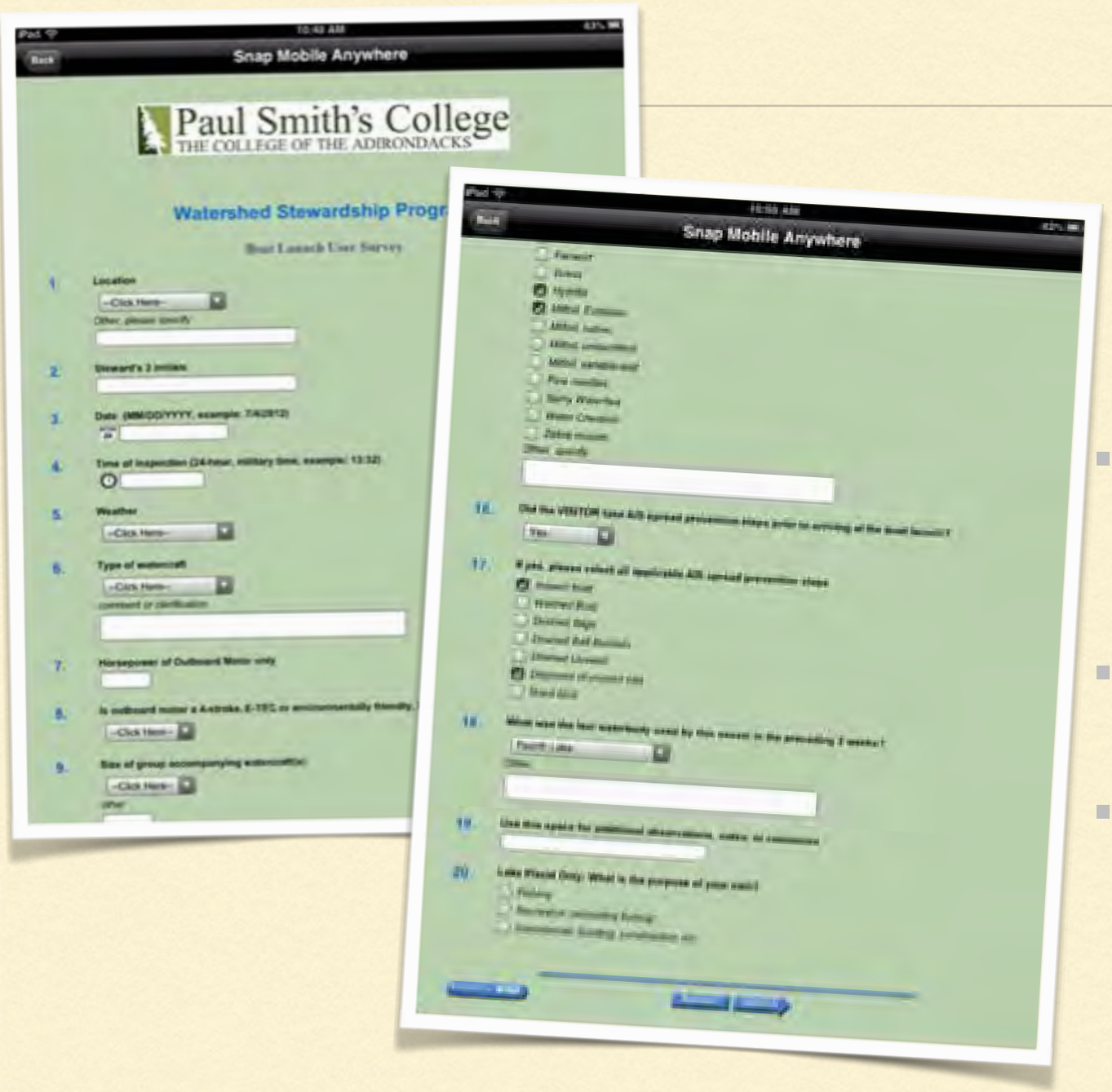
KEY DATA POINTS TO COLLECT

- <u>Top Priority:</u>
  - Previously Visited Waterway (Q)
  - Boat Type (O)
  - Date/time (O)

KEY DATA POINTS TO COLLECT

- <u>Second Priority:</u>
- Organism type (O)
- Launching or Retrieving (O)
- Spread Prevention Measures THEY took BEFORE arriving (Q)
- Inspector name (O)

FORMATTING



- Collect data the same way, each time
- Easier to interpret and share
- iPad mini- works for us

DATA ENTRY INTO EXCEL

- Paper forms = hand entry- laborious and prone to error!
- Standardize spelling, capitalization and spaces (St. vs. Saint vs. St)
- HUNDREDS of waterway names!
- Data manager enter AND check weekly for clarity and follow-up with field staff
- Memory fades….

	A	B	C	D	E	F	G	H	I	J	
1											
2	ID.start	ID.date	Q1	Q1.a	Q2	Q3	Q3.a	Q4	Q5	Q5.a	Q6
3	Time intervie	Date of inter	Location	Other, please specify	Steward's firs	Type of wate	specify multiple types and #'s of watercraft. Ex	Horsepower	Size of group	other	State
25433	14:14:54	8/26/14	Upper St. Regis Lake		Nathan B.	Motorboat			2		NY
25434	8:50:56	9/1/14	Upper St. Regis Lake		Nathan B.	Multiple type	2K		2		
25435	12:27:52	8/30/14	Upper St. Regis Lake		Nathan B.	Canoe			1		
25436	10:50:06	8/30/14	Upper St. Regis Lake		Nathan B.	Multiple type	3K		3		
25437	13:23:45	8/25/14	Upper St. Regis Lake		Nathan B.	Canoe			2		
25438	10:53:55	8/25/14	Upper St. Regis Lake		Nathan B.	Motorboat			2		NY
25439	14:11:01	9/1/14	Upper St. Regis Lake		Nathan B.	Motorboat			2		NY
25440	8:45:00	9/1/14	Upper St. Regis Lake		Nathan B.	Motorboat			2		NY
25441	12:20:45	8/30/14	Upper St. Regis Lake		Nathan B.	Rowboat			3		
25442	13:22:15	8/30/14	Upper St. Regis Lake		Nathan B.	Multiple type	2K		3		
25443	12:37:09	8/30/14	Upper St. Regis Lake		Nathan B.	Motorboat			3		
25444	11:21:14	7/23/14	Upper St. Regis Lake		Nathan B.	Canoe			2		
25445	12:16:03	8/24/14	Upper St. Regis Lake		Kristel G.	Canoe			2		
25446	8:42:02	8/24/14	Upper St. Regis Lake		Kristel G.	Canoe			1		
25447	10:13:10	8/24/14	Upper St. Regis Lake		Kristel G.	Canoe			2		
25448	8:15:43	8/24/14	Upper St. Regis Lake		Kristel G.	Canoe			2		
25449	15:19:51	8/24/14	Upper St. Regis Lake		Kristel G.	Motorboat		90	2		NY
25450	8:24:10	8/22/14	Upper St. Regis Lake		Kristel G.	Motorboat		6	1		NY
25451	14:02:41	8/24/14	Upper St. Regis Lake		Kristel G.	Motorboat			2		NY
25452	12:34:33	8/24/14	Upper St. Regis Lake		Kristel G.	Motorboat		90	2		NY
25453	12:15:00	8/24/14	Upper St. Regis Lake		Kristel G.	Multiple type	1C, 4K		6		
25454	11:58:56	8/22/14	Upper St. Regis Lake		Kristel G.	Multiple type	2K		2		
25455	15:05:24	8/25/14	Upper St. Regis Lake		Nathan B.	Multiple type	2C		4		
25456	9:03:28	7/16/14	Upper St. Regis Lake		Sarah L.	Motorboat			1		NY
25457	16:00:00	6/8/14	Upper St. Regis Lake		Susan C.	NO BOATS ALL DAY			NO PEOPLE		
25458	11:01:56	7/6/14	White Lake		Eric S.	Kayak			1		
25459	10:27:27	7/6/14	White Lake		Eric S.	Multiple type	2K		2		
25460	16:33:17	8/16/14	White Lake		Eric S.	Motorboat			2		NY
25461	11:57:30	8/2/14	White Lake		Eric S.	Multiple type	2K		2		
25462	13:34:53	7/12/14	White Lake		Eric S.	Personal Watercraft			1		
25463	12:36:31	7/26/14	White Lake		Eric S.	Kayak			2		
25464	11:29:01	6/7/14	White Lake		Eric S.	Motorboat		50	2		NY
25465	12:40:33	7/19/14	White Lake		Eric S.	Multiple type	4K		4		
25466	9:10:01	6/8/14	White Lake		Eric S.	Multiple type	4K		4		
25467	14:39:42	8/16/14	White Lake		Eric S.	Multiple type	2K		2		
25468	15:08:05	7/26/14	White Lake		Eric S.	Personal Watercraft			1		NY

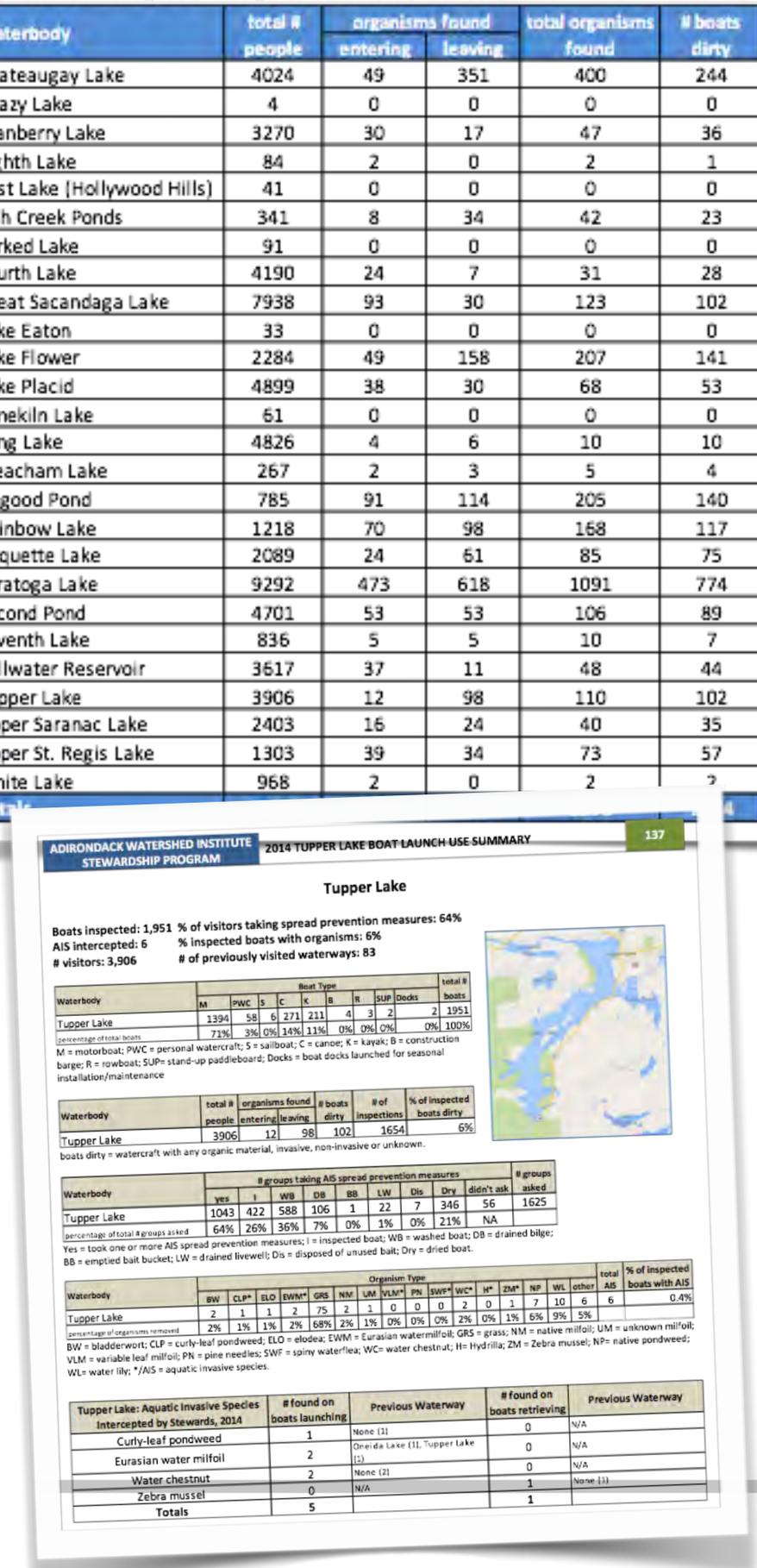
	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS
	Q12	Q13:1	Q13:2	Q13:3	Q13:4	Q13:5	Q13:6	Q13:7	Q14	Q14.a	Q15
cif	Did the VISIT	If yes, please	If yes, please	If yes, please	If yes, please	If yes, please	If yes, please	If yes, please	What was the last waterbody usec	Other, include town and state	Use this space for a
	Yes		Washed Boat						Upper St Regis Lake		
	Yes	Inspect boat	Washed Boat	Drained Bilge				Dried boat	Rental		St. Regis outfitters
	Yes	Inspect boat	Washed Boat					Dried boat	None		
	Yes	Inspect boat							Upper St Regis Lake		
	Yes	Inspect boat							None		
	Yes		Washed Boat						Upper St Regis Lake		Frontier company
	Yes		Washed Boat	Drained Bilge					Lake Flower		
	Yes			Drained Bilge					Upper St Regis Lake		
	Yes							Dried boat	None		
	Yes	Inspect boat	Washed Boat						None		
	Yes	Inspect boat	Washed Boat	Drained Bilge				Dried boat	Upper St Regis Lake		
	Yes	Inspect boat	Washed Boat						Forked Lake		
	Yes							Dried boat	Upper St Regis Lake		
	Yes		Washed Boat						Upper St Regis Lake		
	Yes			Drained Bilge					Upper St Regis Lake		
	Yes			Drained Bilge					Chateaugay Lake		
	Yes			Drained Bilge					Upper St Regis Lake		
	Yes			Drained Bilge					Upper St Regis Lake		
	Yes							Dried boat	Long Lake		
	Yes		Washed Boat						Long Lake		
	Yes		Washed Boat					Dried boat	Upper St Regis Lake		
	No									Bear Creek	
	No									Cazenovia Lake	
	No									Conesus Lake	
	No									Dalhousie Lake, Ontario	
	Visitor does not know									Hinckley Reservoir	
	No									Hinckley Reservoir	
	No									Kayuta Lake	
	No									Kayuta Lake	
	Yes							Dried boat		Lake Pleasant	
	No									Otisco Lake	
	No									Otter Lake	

Table 2. Comprehensive data summary, 2014. Total # of visitors and # of organisms removed from watercraft entering and leaving AWISP boat launch sites.

Waterbody	total # people	organisms found entering	organisms found leaving	total organisms found	# boats dirty	# of inspections	% of inspected boats dirty
Chateaugay Lake	4024	49	351	400	244	1556	16%
Chazy Lake	4	0	0	0	0	2	0%
Cranberry Lake	3270	30	17	47	36	1160	3%
Eighth Lake	84	2	0	2	1	35	3%
First Lake (Hollywood Hills)	41	0	0	0	0	18	0%
Fish Creek Ponds	341	8	34	42	23	129	18%
Forked Lake	91	0	0	0	0	31	0%
Fourth Lake	4190	24	7	31	28	1563	2%
Great Sacandaga Lake	7938	93	30	123	102	3564	3%
Lake Eaton	33	0	0	0	0	14	0%
Lake Flower	2284	49	158	207	141	997	14%
Lake Placid	4899	38	30	68	53	2006	3%
Limekiln Lake	61	0	0	0	0	21	0%
Long Lake	4826	4	6	10	10	1726	1%
Meacham Lake	267	2	3	5	4	101	4%
Osgood Pond	785	91	114	205	140	345	41%
Rainbow Lake	1218	70	98	168	117	462	25%
Raquette Lake	2089	24	61	85	75	840	9%
Saratoga Lake	9292	473	618	1091	774	3717	21%
Second Pond	4701	53	53	106	89	1679	5%
Seventh Lake	836	5	5	10	7	316	2%
Stillwater Reservoir	3617	37	11	48	44	1323	3%
Tupper Lake	3906	12	98	110	102	1654	6%
Upper Saranac Lake	2403	16	24	40	35	819	4%
Upper St. Regis Lake	1303	39	34	73	57	559	10%
White Lake	968	2	0	2	2	396	1%
Totals					4	25033	8%

Table 8. Twenty-five most-visited waterways in previous two-week period for all AWISP lakes, 2014.

Previously Visited Waterway	total visits 2014	% of total visits	2014 rank	2013 rank	2012 rank
Same Lake - Previous Visit	10960	44.412%	1	1	2
None	7102	28.779%	2	2	1
Rental	809	3.278%	3	3	3
Saranac Lake Chain	445	1.803%	4	4	4
Lake Champlain	281	1.139%	5	6	6
Fulton Chain of Lakes	253	1.025%	6	5	5
Hudson River	201	0.814%	7	7	8
Lake Flower	188	0.762%	8	22	18
Lake George	169	0.685%	9	9	12
Lake Placid	166	0.673%	10	19	7
Lake Ontario	150	0.608%	11	12	14
Saratoga Lake	144	0.584%	12	42	32
Mohawk River	136	0.551%	13	14	18
Tupper Lake	125	0.507%	14	16	15
Lake Kushaqua	123	0.498%	15	27	51
St. Lawrence River	122	0.494%	16	10	11
Oneida Lake	107	0.434%	17	13	13
Long Lake	106	0.430%	18	15	17
Raquette Lake	100	0.405%	19	8	9
Sacandaga Lake	96	0.389%	20	11	35
Raquette River	81	0.328%	21	29	26
Unknown Lake	75	0.304%	22	41	267
Upper St Regis Lake	72	0.292%	23	25	16
Great Sacandaga Lake	70	0.284%	24	22	22
Canandaigua Lake	67	0.271%	25	37	39



ADIRONDACK WATERSHED INSTITUTE STEWARDSHIP PROGRAM

2014 TUPPER LAKE BOAT LAUNCH USE SUMMARY

137

Tupper Lake

Boats inspected: 1,951 % of visitors taking spread prevention measures: 64%
AIS intercepted: 6 % inspected boats with organisms: 6%
visitors: 3,906 # of previously visited waterways: 83

Waterbody	Boat Type M	PWC	S	C	K	B	R	SUP	Docks	total # boats
Tupper Lake	1394	58	6	271	211	4	3	2	2	1951
percentage of total boats	71%	3%	0%	14%	11%	0%	0%	0%	0%	100%

M = motorboat; PWC = personal watercraft; S = sailboat; C = canoe; K = kayak; B = construction barge; R = rowboat; SUP= stand-up paddleboard; Docks = boat docks launched for seasonal installation/maintenance

Waterbody	total # people	organisms found entering	organisms found leaving	# boats dirty	# of inspections	% of inspected boats dirty
Tupper Lake	3906	12	98	102	1654	6%

boats dirty = watercraft with any organic material, invasive, non-invasive or unknown.

Waterbody	# groups taking AIS spread prevention measures yes	I	WB	DB	BB	LW	Dis	Dry	didn't ask	# groups asked
Tupper Lake	1043	422	588	106	1	22	7	346	56	1625
percentage of total # groups asked	64%	26%	36%	7%	0%	1%	0%	21%	NA	

Yes = took one or more AIS spread prevention measures; I = inspected boat; WB = washed boat; DB = drained bilge; BB = emptied bait bucket; LW = drained livewell; Dis = disposed of unused bait; Dry = dried boat.

Waterbody	Organism Type BW	CLP*	ELO	EWM*	GRS	NM	UM	VLM*	PN	SWF*	WC*	H*	ZM*	NP	WL	other	total AIS	% of inspected boats with AIS
Tupper Lake	2	1	1	2	75	2	1	0	0	0	2	0	1	7	10	6	6	0.4%
percentage of organisms removed	2%	1%	1%	2%	68%	2%	1%	0%	0%	0%	2%	0%	1%	6%	9%	5%		

BW = bladderwort; CLP = curly-leaf pondweed; ELO = elodea; EWM = Eurasian watermilfoil; GRS = grass; NM = native milfoil; UM = unknown milfoil; VLM = variable leaf milfoil; PN = pine needles; SWF = spiny waterflea; WC= water chestnut; H= Hydrilla; ZM = Zebra mussel; NP= native pondweed; WL= water lily; */AIS = aquatic invasive species.

Tupper Lake: Aquatic Invasive Species Intercepted by Stewards, 2014	# found on boats launching	Previous Waterway	# found on boats retrieving	Previous Waterway
Curly-leaf pondweed	1	None (1)	0	N/A
Eurasian water milfoil	2	Oneida Lake (1), Tupper Lake (1)	0	N/A
Water chestnut	2	None (2)	0	N/A
Zebra mussel	0	N/A	1	None (1)
Totals	5		1	

TIME FOR QUESTIONS…

- Why?
- How?
- Who?
- What?
- How much?
- ??

ACKNOWLEDGEMENTS

Great Lakes RESTORATION

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS

The Shore Owners' Association of Lake Placid

St. Regis Foundation

Adirondack White Lake Association

Lower Saranac Lake Association

Great Sacandaga Lake Advisory Council

Rainbow Lake Association

Upper Saranac Lake Association

Lake Champlain Basin Program

ADIRONDACK
WATERSHED INSTITUTE
OF PAUL SMITH'S COLLEGE

INVASIVE SPECIES + WATER QUALITY + RESEARCH OUTREACH + REPORTS ABOUT +

UNDERSTANDING AND PROTECTING NATURAL RESOURCES IN THE ADIRONDACKS

http://www.adkwatershed.org

Paul Smith's College
THE COLLEGE OF THE ADIRONDACKS