THE VIEW FROM SHORE: EXAMINING BOATING AT LAKE MASSAWIPPI

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Abstract

This paper first highlights the history of boating at Lake Massawippi starting with the first multi-passenger steamers to be launched in the late 1880s to the single-passenger personal watercrafts (PWCs) that appeared in the late 1980s. The findings of a study, based on 430 personal interviews with cottagers and visitors, which sought to measure and understand the influence of boating on people's scenic appreciation of the lake, are then presented. The findings reveal that, despite the diversity of people and boating activities at Lake Massawippi, there is widespread agreement about the negative effects of some of the larger, faster, or noisier motor-boats on people's appreciation of the lake. The implications of these findings for lake enjoyment and landscape conservation are discussed.

Résumé

Cet article présente d'abord l'histoire des activités nautiques sur le lac Massawippi. Il débute avec le premier bateau à vapeur multi passagers, inauguré à la fin des années 1880 et finit avec les motos marines individuelles qui sont apparues à la fin des années 1980. Les conclusions d'une recherche, voulant mesurer et comprendre l'influence qu'ont les embarcations nautiques sur la perception du patrimoine paysagé du lac, sont présentées. Cette recherche est basée sur des entrevues avec 430 villégiateurs et touristes. Les résultats de cette recherche démontrent que malgré la diversité des gens et des activités nautiques sur le lac Massawippi, tous sont d'accord que les plus grandes, les plus rapides et les plus bruyantes embarcations à moteur ont un impact négatif sur le paysage du lac. Les implications de ces conclusions sont discutées.

Fair Massawippi
Bertha Weston Price, 1923.

The sun is sinking in the golden west,
Behind the hills of shad'wy black and green;
The birds are flitting homeward to their nests,
And all around is peaceful and serene.
Dear Massawippi Lake lies calm and still,
Its waters gently catch the sunset rays.
Which blend in quick succession from the gold
To lucent crimson, pink and cloudy greys.

Boats softly glide upon her gentle breast,
While echoes gaily flit from shore to shore;
Laden with song and laughter, smiles and tears,
Which tell of youth, of love and mystic lore.
The shadows lengthen, and upon the shore
The evening primrose lifts its dainty face
To catch the moonbeams and night-moth's kiss,
While fireflies revel in their joy and grace.

Source: Legends of Our Lakes and River by B.W. Price.
Beck Press, Lennoxville. 1937.

Introduction

Bertha Weston Price (1872–1955), my great great-grandmother, penned these words while contemplating the view of Lake Massawippi from her cottage on Woodland Bay, nearly at the midway point along the lake's eastern shore (Fig. 1). She was connecting with an environment that still draws people to itself. Nestled in the forested Appalachian hills and surrounded by a mosaic of pastoral fields, mixed forests and small picturesque villages, Lake Massawippi is a glistening gem of breathtaking beauty. Hidden in the shadow of her bigger and more popular sister to the west, Memphrémagog, Lake Massawippi has long garnered and retained the favour of those looking for a landscape that is perhaps a little more remote and somnolent.

Eighty years have passed since *Fair Massawippi* was written. With the slow but gradual cottage and village development on the lake's shores and the accompanying increase in diversity and density of boats on the lake's surface, the area is now arguably less "peaceful and serene", and the boats that "glide upon her gentle breast" do so a little less "softly". There is an inherent paradox that plagues sig-

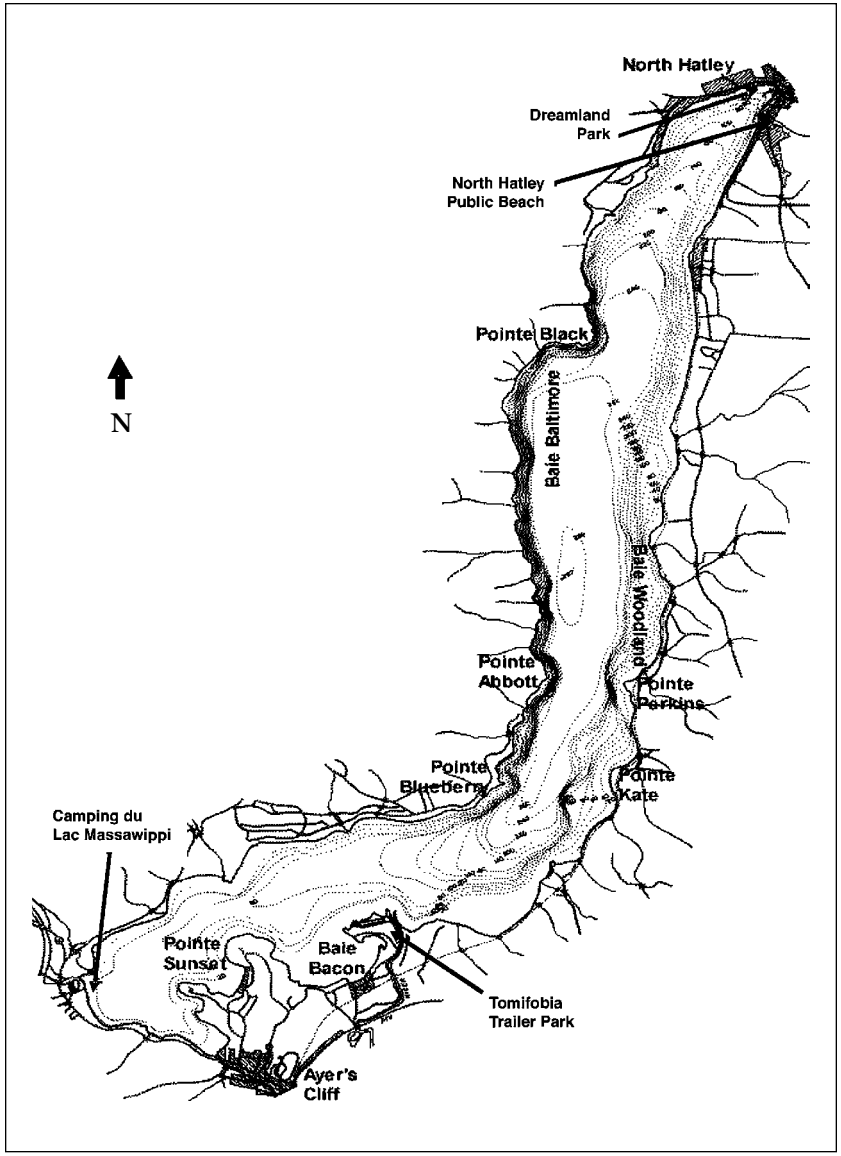

Figure 1. Lake Massawippi. Source: adapted from Neptune (2000).

nificant places like Lake Massawippi: We are attracted to the scenic values of certain landscapes, but our very presence in them risks depreciating those values we hold dear. It is therefore important to identify these values and put in place careful management controls over our activities to protect and enhance the landscape values we deem important.

This paper examines the scenic landscape at Lake Massawippi, with a special focus on the role of boating on that landscape. First, I will provide a brief overview of the history of boating at the lake. Second, using the landscape assessment approach and based on 430 personal interviews with cottagers and visitors during the summer of 1995, I will attempt to explain the influence of boating on public appreciation of the scenic beauty of the lake as viewed from shore.

If Bertha were alive today, would she still experience the serenity of the view of Lake Massawippi that she wrote about in her 1923 poem?

From the "Pride of the Valley" to the "Sea-Doo®"

At different times between 1879 and 1912, four steamboats plied the lake between North Hatley and Ayer's Cliff. The first, built in 1878, was an imposing 80-feet long, flat-bottomed, double-decker named the *Pride of the Valley* (Fig. 2). It carried passengers and cargo the length of the lake for six years. More than a transportation vessel, it was a recreational craft that lured the summer boarders and luxury hotel patrons onto the water in the summer evenings as an orchestra serenaded them (Brent, 1961).

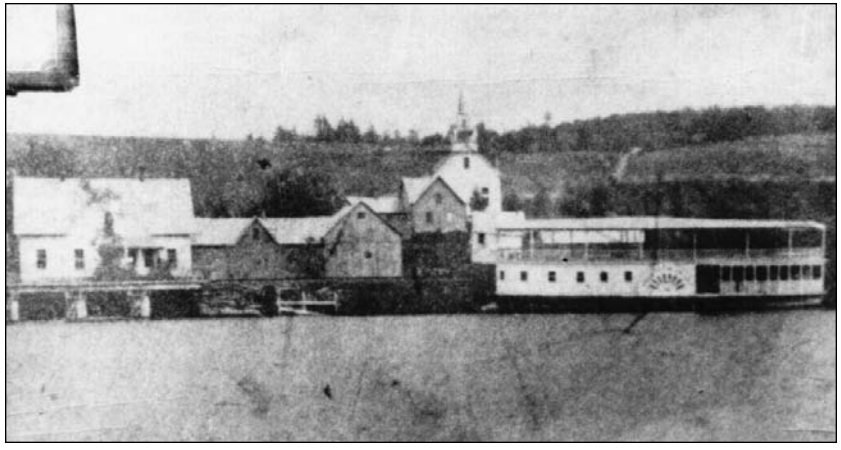

Figure 2: The "Pride of the Valley" ca. 1880
Source: North Hatley Historical Society. Used by Permission.

The second steamer, the *Mayflower* (Fig. 3), was much smaller at 55 feet. It was commissioned by A.P. LeBaron who named it after the original vessel which brought his ancestors to America in 1620. It was launched in 1886, after delays in getting engine parts that were shipped by rail from Toronto. Revelries onboard the *Mayflower*,

one moonlit evening in 1894, may have caused its dramatic demise. According to Brent (1961, 71):

> In the midst of one of Chan LeBaron's [the son of A.P. LeBaron] wild parties, when anchored immediately off Saint's Rest [Black Point], … the "Mayflower" lurched, listed violently and sank.

All passengers escaped safely, and suspicions still exist about whether the sinking was planned or not. Apparently the *Mayflower* can be seen today, on days when the water is clear, about 12m below the surface (Skeats and Skeats, 1997). A scuba-diving Web site gives detailed instructions on how to reach her.[1]

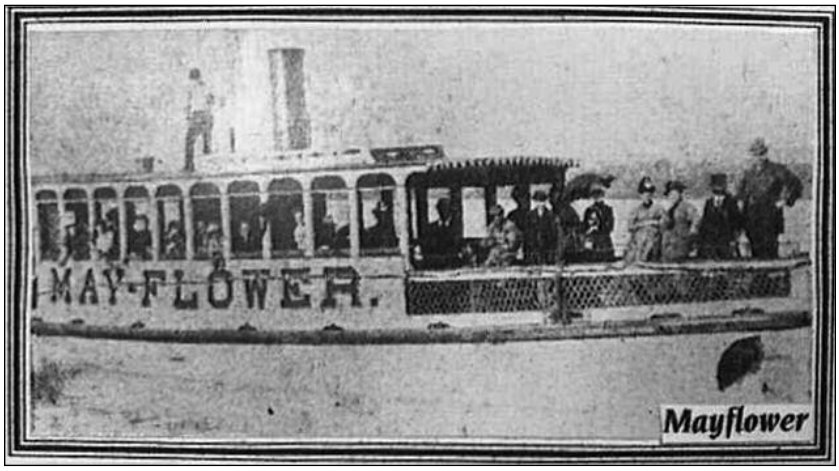

Figure 3: The Mayflower ca. 1890
Source: North Hatley Historical Society. Used by Permission.

The third steamer, the *Massawippi* (Fig. 4), which was the smallest of the steamers, was launched in 1895 and, after a few modifications in 1899 to make it larger, continued the work of transporting cargo and passengers to various points along the shore. The *Massawippi*, like her predecessor, met a dramatic end. Captain Joe Sampson described her demise this way:

> One first of July [1900] she was loaded with barrels of waste and junk, and sticks of dynamite in the barrels too, and they took her out to the middle of the lake and fired her. You should have seen her when those barrels went off. We used to have real celebrations in those days *(as cited in Skeats and Skeats, 1997, 47)*.

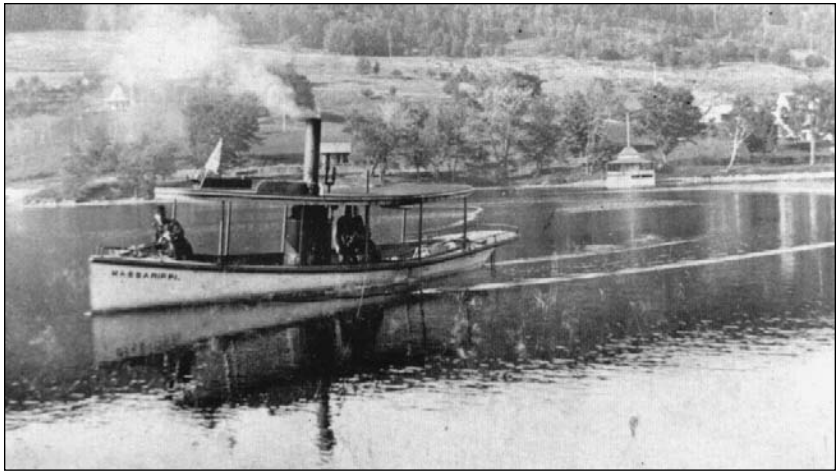

Figure 4: The Massawippi, circa 1896
Source: North Hatley Historical Society. Used by Permission.

The fourth and last steamer, the *Pocahantas* (Fig. 5), plied Lake Massawippi's waters between 1904 and 1912. Affectionately nicknamed "The Pokey", she was owned and operated by Captain Joe Sampson. He named the vessel in honour of Dr. Powhatan Clarke of Baltimore, North Hatley's American "discoverer" who had arrived in 1886. Dr. Clarke was a Virginian, and a direct descendant of the Indian Chief of Virginia Powhatan. The vessel was named after Chief Powhatans' daughter, the legendary Princess Pocahantas.

The *Pocahantas* was 70 feet in length and probably the best engineered of all four Lake Massawippi steamers. Her schedule included two round trips per day of the lake, as she transported goods and

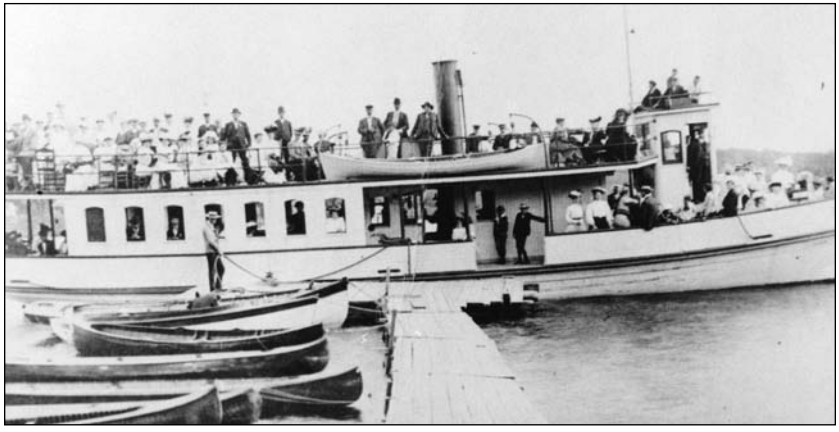

Figure 5: The Pocahantas, circa 1910
Source: North Hatley Historical Society. Used by Permission.

people to the various points along the shoreline. The *Pocahantas* stopped making trips in about 1912, and some years later Captain Sampson dismantled her. Various parts can be found in private homes of his family and friends in the form of tables and other relics (Brent, 1961).

The era of steamers on Lake Massawippi had lasted almost 40 years. By 1912, new roads gave access to various parts of the shoreline with the advent of the motorcar, making delivery of goods and people around the lakeshore less expensive and faster. Despite various rumours and plans to resurrect steamer service in recent years to capture the tourist clientele, no further attempts have been made.

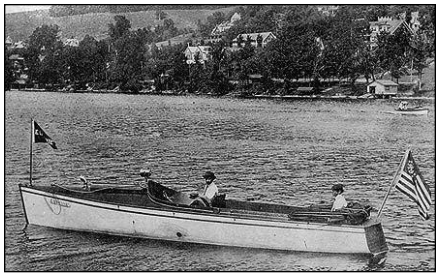

Figure 6: Early motorboat on Lake Massawippi, 1910
Source: Matthew Farfan Collection. Used by Permission.

Small combustion engine motorboats, replacing the large steamers, quickly became an important component of the enjoyment of the lake. Several of the hotels provided pleasure cruises for their patrons, and several families began acquiring them (Fig. 6).

Hally Brent (1961, 73), a long time resident of the area, recalls the following:

> Motor boats gradually appeared on the lake. Our own seaworthy little craft "the Tiny Tad" (completely fool-proof as to shipping water or tipping) became a central part of our family life in 1912. And so it was with almost every family.

Motor boating, of course, was not the only form of boating. For years, several watercrafts, including canoes, sailboats, and rowboats were seen at Lake Massawippi. One of the earliest clubs at the lake was *The North Hatley Canoe Club*, still in operation today as *The North Hatley Club,* established in 1897. By 1900, the Club started holding annual canoe and sailboat regatta (Fig. 7). Except for periods of inactivity during the wars, the

Figure 7: Regatta Day in North Hatley, 1908
Source: Matthew Farfan Collection. Used by Permission.

regatta has continued throughout the century, with varying degrees of popularity.

Sport fishing was, and still remains, an important recreational activity. The deep lake (Massawippi means "*Deep Water*" in the Abenaki tongue) was ideal for catching sturgeon (now believed to have disappeared from the lake) and land-locked salmon (now very rare). Today, the lake is stocked to maintain a vibrant population of various species of trout, bass and northern pike. Various incarnations of local Fish and Game Clubs have maintained a strong presence in the area for over a century. Owners at the lake's two marinas, one at each end where boats are rented to visitors, claim that fishing activities account for most of their boat rentals.

Since the mid-century, boat owners began to register their boats with the municipality in order to be given permits to use them on the lake. Records, however, are kept only for residents, not day visitors. Furthermore, there is no documented study on the number of motor boaters who recreated at Lake Massawippi, the composition of these boaters, and the temporal and spatial patterns of motor boating. We can only surmise the types of activities from secondary accounts where mentions of boats provide a glimpse of the kinds of boating activities that took place.

Besides the boats owned by cottagers, and those rented by marina owners to fishermen, many hotels also advertised pleasure-cruising as part of their package of recreational services. Furthermore, the North Hatley Club members often made trips to the small beaches at Baltimore Bay, near Black Point. In 1938, a power-boat race took place where records for Eastern Canada were broken (Skeats and Skeats, 1997, 60). In the mid-century, water-skiing had become an increasingly popular pastime across the country and Lake Massawippi was no exception. In essence, motor-boating appears to have always been an important aspect of recreational enjoyment of the lake.

In the late 1980s, a new motorized personal watercraft (PWC) loosely resembling a snowmobile first appeared on Lake Massawippi. This jet-powered aqua scooter was invented by the Quebec-based recreational vehicle company *Bombardier*, which had years earlier developed the *Ski-Doo®* snowmobile. Just as the snow vehicle had revolutionized winter recreational activities, it was expected the new invention would be as successful and omni-present for water-based recreation. PWCs are most often referred to by their brand names. In Quebec, they are referred to as a "*Sea-Doo*", while outside the province they can be referred to by other brand names, such as

Kawasaki's *"Jet-Ski®"* or Yamaha's *"Wave-Runner®"*.

The 2003 line-up of Bombardier's PWCs include the *"musclecraft"*, with a supercharged 185 horsepower (138 kW) engine (advertised as "the most powerful watercraft in the world"), handlebar steering, and precision handling that can seat up to three passengers (Fig. 8).

Figure 8: Bombardier's musclecraft, the Sea-Doo® GTX 4-TEC
© Bombardier Inc. All rights reserved. Used by permission.

The *musclecraft* model of PWC is aimed at boating enthusiasts searching for a special type of experience, to which the company's recent advertisement attests[2]:

It's about speed
It's about power
It's about making the water boil
And leaving it just like you found it
It's about taking the lead
and never giving it back
It's about pushing
the performance envelope
And not stopping 'til you punched
a hole right through it

Source: http://www.seadoo.com/en-CA/Watercrafts/2004/

Influence on Scenic Appreciation?

It is clear that both the technology and the quantity of boats and PWCs at Lake Massawippi have changed enormously since the *Pride of the Valley* first plied the waters over one hundred years ago. While studies have been conducted on the environmental impacts of shoreline development and boating on the lake's water quality (Stinton, 1967; Aird, 1973; Booth and Lowther, 1969; Laliberté and Leclerc, 2000), as well as boating regulations (Jaakson, 1993) and safety concerns (Canadian Coast Guard, n.d.), no study has been conducted to understand the people's aesthetic appreciation of the Massawippi landscape and if the number and types of boating activities affect that appreciation in any way.

Environmental quality and boating safety are very important at valued lakes like the Massawippi. Concern for a lake's aesthetic quality is equally relevant though its importance may be less understood. Ecological impacts and safety matters can be technical and somewhat esoteric to the average non-expert. Everyone, on the other hand, has an opinion about the scenic beauty of the landscape. Scenic appreciation is made up of a multitude of factors (including ecological and safety concerns) that is best understood by asking those doing the appreciating. Scenic beauty studies are often used to help experts make decisions about landscape conservation efforts, especially in recreation environments (Kennedy et al., 1988). Daniel (1990, 634) writes "to date, (…) it has not been shown that the public is necessarily environmentally-insensitive, nor has any method been suggested for determining who among us is sufficiently sensitive to be trusted to make the appropriate aesthetic judgements". As such, the aesthetic approach can give decision-makers a much clearer view of the landscape conservation needs in question, including ecological and safety regulations, as well as a better support for effective regulation enforcement practices.

Measuring Scenic Appreciation of Lake Massawippi

Landscape assessment, which measures scenic appreciation, examines the potential effect that development would have on the landscape resource of an area in terms of potential change (adverse and beneficial), both to its character in general and to particular features associated with it. According to classical psychophysics theory, scenic appreciation is determined by an interactive process between the landscape and the individual (Ruddell *et al.,* 1989), rather than simply "in the eye of the beholder", or inherent in the landscape. In other words, scenic appreciation is a subjective judgment that is composed of many variables both internal and external to the observer.

Systematic methodology is used to identify, isolate and measure the many potential variables that could influence the public's appreciation of the scenery. An observer, sampled from the general public, provides a preference rating of the landscape scene. A multivariate technique, in this case multiple regression, is then used to ascertain the relative importance of each of the variables that are directly related to the landscape scene as well as those directly related to the observer. The observer's preference rating forms the dependent variable while the other variables are treated as independent. Multiple regression assigns weights (regression coeffi-

cients) to each of the independent variables reflecting their influence on the dependent variable. With the knowledge of the regression coefficients, it is possible to determine with a great degree of accuracy the influence of each variable on preference rating.[3]

In this study's experimental design, the landscape variables were all controlled. Computer-generated photographic representations of lake boating scenes were presented to the observer who was interviewed at the lakeshore. This design combined the strengths of photography, particularly the ease with which various boating combinations could be manipulated, and the observer's actual experience of the lake in the natural setting.

The template landscape scene was an 8.5 x 11 inches (21.5 x 28 cm) photograph of the lake with four elements: (1) a foreground (15% of the photo) shows the land-water interface; (2) a midground (50%) shows the water surface; (3) a background (20%) shows the opposite shore; and (4) the cloudless sky (15%). To avoid causing an immeasurable variable to enter the calculation, all non-natural objects (boats, cottages) were removed from the image.

The boating combinations were then digitally added to this landscape scene. Eight boats or watercraft types most common on the lake were used: canoe, sailboat, windsurfer, fishing boat, outboard power-boat, inboard power-boat, power-boat pulling a water-skier, and personal watercraft (PWC). The placement of these boating combinations on the template scene was determined by a computer model that randomly assigned boat type (from the 8 listed above), boat density (from 0 to 3 for each boat type) and proximity to shore (a percentage of the distance to opposite shore).[4] Using computer software each boat was scaled to different sizes to represent the proximity levels, using the program's built-in scaling function (width of boat and distance from shore). In order to avoid the risk of affecting preference ratings by the introduction of another unmeasured variable, orientation, all boats in the photographs were placed broad-side; half of the boats facing to the left of the scene, the other half facing to the right. Considering the configuration of the narrow lake and its resemblance to an aquatic "highway" for boaters, this was the logical option. The computer model generated 49 landscape scenes.

In addition to these computer-generated scenes, two "control scenes" were used to standardize each interviewee's subjective evaluations of the photographs. One control scene had no boats at all on it. The other control scene had a high density of each boat near shore, representing the most cluttered scene. With an empty scene

and a cluttered scene at each extreme, the 51 photographs represented the random variations of possible boating activities, distance and densities that could exist on a mid-sized lake.

Data collection occurred on Saturdays and Sundays (11 a.m. to 7 p.m.), between June 23 and August 30, during the summer of 1995. These times coincided with periods of highest activity on the lake. Interviews took place at three fixed locations around the lake: Dreamland Park, the Public Beach in North Hatley and the Tomifobia Trailer Park in Ayer's Cliff[5] (Figure 1). In addition, my assistant and I systematically approached by canoe each of the 647 dwellings (cottages and homes) with shoreline access over the course of the summer.

At all locations, interviewees had a clear view of the lake. They were asked basic demographic information (age, sex, mother tongue, schooling, and permanent residence). They were also asked about cottage ownership and access, as well as boat ownership and access. All of these questions were aimed at isolating possible variables that could influence a person's scenic appreciation. Finally, interviewees were asked to provide a preference rating, on a scale of 0-100, for each of the computer-generated photographs.

Selected Findings & Discussion

Over the course of the summer, 460 people were approached resulting in 430 usable response sheets, making the response rate very high at 93.5%. These included 138 people at Dreamland Park, 31 people at the Tomifobia Trailer Park, 87 people at the Public Beach, and 174 people at their cottages. This stratified sample represented about 20% of the estimated total summer population recreating at each of the respective locations at peak times during the summer.

1) Demographic characteristics

The demographic data varied substantially according to interview group, especially with respect to age, education and cottage access (Table 1).

The Tomifobia Trailer Park group stood out as on average older (average age was 45) than the Cottage group (41), the Public Beach group (37) and Dreamland Park (34). The Trailer Park Group also stood out as having the least average level of education with only 9 years of schooling compared to 14 years for both the Public Beach and Dreamland Park groups, and 15 for the Cottage Group. Of course, by the very nature of the interview sites chosen, all of the Cottage and Trailer Park group respondents had access to lakeshore property, while an overwhelming percentage (97.0% and 96.6%

Characteristics of interviewees	Dreamland Park	Tomifobia Trailer Park	North Hatley Public Beach	Lakeshore Cottages	All sites
	N % 138	N % 31	N % 87	N % 174	N % 430
Language					
French	61 44.2	24 77.4	49 56.3	65 37.4	199 46.3
English	77 55.8	7 22.6	38 43.7	109 62.6	231 53.7
Sex					
Male	63 45.7	13 41.9	54 62.1	79 45.4	209 48.6
Female	75 54.3	18 58.1	33 37.9	69 55.2	222 51.6
Age					
<18	14 10.1	2 6.5	6 6.9	10 5.7	32 7.4
18–24	17 12.3	0 0.0	12 13.8	10 5.7	39 9.1
25–34	41 29.7	6 19.4	24 27.6	34 19.5	105 24.4
35–49	53 38.4	9 29.0	36 41.4	69 39.7	167 38.8
50–64	8 5.8	13 41.9	4 4.6	45 25.9	70 16.3
65+	4 2.9	1 3.2	5 5.7	6 3.4	16 3.7
average age	*34*	*45.1*	*36.8*	*41.1*	*38.3*
Marital Status					
single	57 41.3	6 19.4	33 37.3	64 36.8	160 37.2
married/ common law	76 55.1	25 80.6	52 59.8	105 60.3	258 60.0
n/a	5 3.6	0 0.0	2 2.3	5 2.9	12 2.8
Children					
at least 1 ch. at home	51 37.0	6 19.4	34 39.1	102 58.6	193 44.9
n/a	5 3.6	0 0.0	3 3.4	8 4.6	16 3.7
Education					
incompl. High School	15 10.9	14 45.1	14 16.1	11 6.3	54 12.6
High School degree	13 9.4	10 32.3	20 23.0	28 16.1	71 16.5
Some post-sec	52 37.7	4 12.9	22 25.3	47 27.0	125 29.1
Univ. Undergrad.	40 29.0	3 9.7	18 20.7	63 36.2	124 28.8
Univ. Grad.	14 10.1	0 0.0	12 13.8	17 9.8	43 10.0
n/a	4 2.9	0 0.0	1 1.1	8 4.6	13 3.0
average # of years	*14*	*9.7*	*13.6*	*14.8*	*14.1*
Permanent Address					
Lake Massawippi	6 4.3	1 3.2	18 20.7	36 20.7	61 14.2
Greater Sherbrooke	61 44.2	11 35.5	38 43.7	24 13.8	134 31.2
Elsewhere in E.T.	14 10.1	9 29.0	9 10.3	12 6.9	44 10.2
Greater Montreal	16 11.6	2 6.5	14 16.1	77 44.3	109 25.3
Elsewhere in Quebec	27 19.5	8 25.8	6 6.9	9 5.2	44 10.2
Elsewhere in Canada	1 0.7	0 0.0	0 0.0	9 5.2	10 2.3
Outside Canada	6 4.3	0 0.0	1 1.1	4 2.3	11 2.6
Cottage Ownership & Access					
Claim to own	0 0.0	31 100.0	0 0.0	91 52.3	122 28.4
Rent/borrow/visit	4 3.0	0 0.0	5 3.4	83 47.7	92 21.4
no access	134 97.0	0 0.0	82 96.6	0 0.0	216 50.2

Table 1: Demographic characteristics of interviewees by location

respectively) of Dreamland Park and Public Beach patrons had no such access. This factor played a significant role in affecting lake appreciation, as will be discussed later.

Only 14% of those interviewed indicated that their permanent address was in the Lake Massawippi area. Of these, the largest group was, not surprisingly, the Cottage group with 20.7% of interviewees. For all groups, except the Cottage group, Greater Sherbrooke was identified most often as their permanent address. Most cottagers, on the other hand, lived in the Greater Montreal region. This re-enforces the assumption that Lake Massawippi is, as it has always been, a seasonal destination for the majority of people who recreate at the lake. It also indicates a significant difference between local visitors and Montreal cottage owners. The impact of these differences on lake appreciation will be discussed later.

2) Boat Ownership and Access

The data collected on boat ownership and access also revealed major differences between interviewee groups. In the Tomifobia Trailer Park group, 71% owned at least one boat, compared with 64.9% of the Cottage group, and 23% for Public Beach group. Only 10.9% of Dreamland Park group owned a boat. A total of 39.5% of all persons interviewed said they owned at least one boat. This data was disaggregated into those who owned only a motorized boat, a non-motorized boat, and both types (Figure 9).

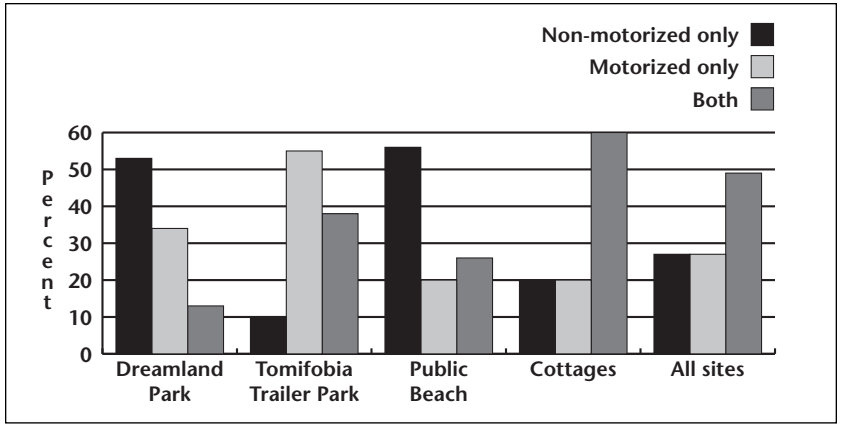

Figure 9: Distribution of Boat Types for Interviewees with 1 or more Boats

Figure 9 shows that each interviewee group was very different from the others. While Dreamland Park and Public Beach groups had the most interviewees owning boats in the "non-motorized only" category (53.3% and 55% respectively), the Public Beach and

Cottage groups had the least amount in the "motorized only" category (20%, and 20.4% respectively). The Trailer Park group stood out with the highest amount of interviewees owning boats in the "motorized only" category (54.5%), and lowest in the "non-motorized only" category (9.1%).

A similar pattern affected all the interviewees whether they owned one, two, or three or more motorized boats. The "<10 hp" boat dominated in all categories, with a total of 54 such boats in the entire sample. The second largest boat group was the "50-99 hp" category for all groups, with a total of 43 boats. Categories "PWC" and "pontoon" were also included because of their particular characteristics. Although a PWC has a relatively small engine size, it was at the time of the study very noisy and tended to maneuver turns much more quickly than other boats. The pontoon is a slow-moving platform made to carry several passengers, and is propelled by an engine, usually not larger than 100 hp.

Of all 430 people interviewed, only one claimed to own a PWC. It can be surmised that nearly all the PWCs on Lake Massawippi were rented at the "Camping du lac Massawippi" at the south end of the lake, where the researcher and his assistant were refused access to patrons for interviews. PWCs had become a concern for some people, particularly cottagers, in the Lake Massawippi area. When asked: "Are there too many boats on Lake Massawippi?" just less than half of all respondents (41.9%) said "yes". These respondents were also asked to mention what boat types they believed were too numerous. The term "any motorized" boat received the most mentions overall (31.3%), followed by PWC (21.9%), and noisy (16.6%), and fast (15.9%). All categories of boats mentioned are not mutually exclusive. For example, a PWC was also "motorized", "noisy", and "fast" according to interviewees. What is particularly relevant is that the PWC accounted *exclusively* for 21.9% of the mentions. No one claimed there were too many non-motorized boats.

3) The influence on lake appreciation

Responses obtained from interviewees regarding demographic information (age, sex, marital status, etc), as well as cottage and boat access information were used to generate interviewee-related variables and added to the multiple regression analysis model. Variables relating to the lake scene itself were already known since the scenes were carefully computer-generated (explained earlier). In all, 25 variables relating to the interviewee and another 48 relating to the lake

scene were created, a total of 65 variables considered independent in the regression model and having a potential effect on the dependent variable, preference rating. Table 2 shows only those variables that were proven to be statistically significant at 99% confidence level.

INTERVIEWEE CHARACTERISTICS	VARIABLE	DEFINITION	DEGREE OF INFLUENCE
Interview Site	TRAILER	Trailer Park group	13.587
	COTTAGE	Cottage group	10.289
Socio-Economic	AGE	Respondent's age	-0.185
Cottage Access	OWN	Owns a cottage	-11.684
	RENT	Rents or borrows a cottage	-15.251
	VISIT	Is visiting at cottage	-13.590
Boating Activity	MOTORB	Participates in motor-boating	3.779
LAKE SCENE CHARACTERISTICS			
Canoes	CAN1N	1 canoe near shore	2.843
	CAN3M	3 canoes in mid distance	-5.350
Sailboats	SAIL2M	2 sailboats in mid	-3.819
Windsurfers	WIND1N	2 windsurfers near	-6.970
PWCs	SEA2N	2 PWCs near	-15.107
	SEA1N	1 PWC near	-4.145
	SEA3M	3 PWCs mid	-5.793
	SEA2M	2 PWCs mid	-4.453
	SEA1M	1 PWC mid	-3.063
Outboard Power-boats	SPEED2N	2 powerboats near	-13.881
	SPEED1N	1 power boat near	-12.223
	SPEED3M	3 power boats mid	-7.094
	SPEED2M	2 power boats mid	-6.687
	SPEED1M	1 power boat mid	-3.834
Fishing Boats	FISH3M	3 fishing boats mid	-3.968
Waterskiers	WATER2N	2 waterskiers near	-10.460
	WATER3M	3 waterskiers mid	-8.493
	WATER2M	2 waterskiers mid	-3.806
Inboard Cabin Cruisers	CRUISE2N	2 cruisers near	-9.096
	CRUISE1N	1 cruiser near	-8.464
	CRUISE3M	3 cruisers mid	-7.157
	CRUISE2M	2 cruisers mid	-3.853

Table 2: Variables Influencing Scenic Appreciation

The number under the column "degree of influence" demonstrates the magnitude of the effect that the specific variable had on preference rating in a positive or negative direction. For example, a lake scene was rated 15.1 points lower (on 100) if the scene included two PWCs near shore. Likewise, the scene was rated 3.78 points higher if the interviewee claimed to participate in motor-boating on a regular basis.

The results of the multiple regression analysis suggest a number of important things. The lake scene variables tend to influence preference rating more than interviewee variables. Only 7 of the original 25 interviewee variables were significant, while 22 of the original 48 lake scene variables were significant. Of the interviewee characteristics, access to a cottage appeared to be very important in lowering preference rating for owners (by 11.6), renters (by 15.2) and visiting family and friends (by 13.5) alike. It is important to note that of the many socio-economic characteristics (Table 1), only age appeared to be important in affecting preference rating (by a factor of -0.185 per year). The data suggests that the older one gets, the less one tolerates lake scenes with motorboats in them. If the interviewee was a motor-boater, then he or she tended to rate the lake scene higher by an average of 3.77 points over non-motorboaters. Of course, there are compounding effects to these influences. For example, a 50-year-old who rents a cottage and who does not participate in motor-boating will rate a scene 24.58 points lower than a 20-year-old who does not have access to a cottage and participates in motor-boating.[6]

The data also suggests that the presence of motor-boats, especially in high density and near shore, greatly influences preference rating. Of the twenty-four variables associated with noisy or fast motor-boating activities, seventeen variables had a significant and entirely negative effect on preference rating. It is important to note that all variables used to represent PWC s, water-skiers, powerboats and cabin cruisers are significant in affecting a person's preference rating. In the case of these faster motorized vehicles, both density and proximity have a progressively negative effect on preference rating.

For all four motorboat types in the mid distance, density has only a mildly negative influence on preference rating. This suggests that people do not differentiate between boats in the mid distance, but rather rely only on density, regardless of type of boat, to form their aesthetic judgment of the lake scene. This is probably due to the difficulty in distinguishing one boat from another at that distance.

As the number of motorized boats near shore increases, the scene's rating drops rapidly. Particularly, a person's preference for a lake scene is more sensitive to the density of PWC s and water-skiers near shore than it is to that of other power-boats. The least preferred lake scene included two PWCs near shore, probably because of their loud noise and high annoyance factor at the time of the study.

The small-engine (10 hp) fishing boat is tolerated much more than the other motorized boats. All density and proximity levels of the fishing boat were insignificant in influencing preference rating, except for 3 boats in the mid distance. Because of the nature of the activity of its occupants, a fishing boat is usually stationary or slow moving. It would appear, therefore, that the presence of these typically stationary boats with small engines in the scene generally does not have any effect on people's appreciation of the scene. In the case of "slower" vessels, most of which are non-motorized, higher density in the middle distance seems to be the main negative factor.

It is interesting to note that most of the boats which were insignificant in affecting scenic appreciation were non-motorized (canoes, sailboats and windsurfers). The only exception is the canoe. While a single canoe in the foreground can increase the aesthetic quality of a lake scene (by 2.8 points on average), that same canoe in the mid distance will cause the lake scene's aesthetic quality to decrease (by 5.3 points). Perhaps, an unconscious (or conscious) trade-off is being made in a person's mind between the beauty of canoes in the middle of a lake and the danger it poses to itself and other boaters by being in the presence of fast moving motorboats which could hit it or cause enough wake to overturn it. Furthermore, the data suggest that regardless of distance, fewer boats of any type are generally preferred over more.

Concluding Thoughts: Implications

The purpose of the paper was to identify the factors which explain the impact of boating on people's assessment of the scenic quality of a lake scene as viewed from shore. The study found that the presence of high-powered and high-speed motorized boats in a scene plays the most important role in determining a person's aesthetic appreciation of the lake scene. All variables relating to PWCs and other power-boats were significant in adversely affecting the level of people's preference for any scene which includes them. Furthermore, the most negative influences on lake appreciation were associated with variables depicting the highest density of all motorboat types near shore. The study showed that the presence of non-motorized boats (canoes, sailboats, and windsurfers) in a lake scene probably has no bearing on the level of preference, with the exception that people tend to appreciate a scene with a sole canoe gliding past the shore. Finally, people appear to be more tolerant of small, slow-moving fishing boats than any other type of motorboat.

The study also found that lake scene variables (external to the person enjoying the lake) were proven to be far more important than interviewee-related variables (internal to the person enjoying the lake) in influencing people's assessment of scenic quality. This would suggest that beauty is more inherent in the landscape than it is "in the eye of the beholder". This finding is significant as it confirms that there tends to be agreement about what people like and what they do not like on the lake. The study concludes that the presence of faster, louder motor-boats on Lake Massawippi has a resounding negative effect on how most people enjoy the lake.

This study's findings are not surprising in light of recent Canadian experience. Recreational lakes across Canada have become increasingly threatened by growing local populations, development pressures and increased visitations. Boating pressures are only one part of the complex package of threats to the Canadian lakes and to people's enjoyment of them. The results would concur with the suggestion that recreational lakes, like the Massawippi, are still "getaway" places where people seek solitude, peace and quiet. Lake environments are still perceived as places of nature enjoyment where the intrusions of sound and environmental degradation are perhaps abhorred even more than in cities. There is a need to conserve these landscapes while allowing people to enjoy them.

The study's findings are important for the future of recreation planning and development at Lake Massawippi. Careful controls on motor-boating activities need to be maintained and enhanced for the lake to continue to be so highly valued. While there is certainly value in ensuring everyone continues to have the freedom to enjoy the lake in the way he or she pleases, there is now a growing body of empirical evidence which supports the argument that many people's enjoyment of the lake is being hampered by the motor-boating activities of the minority. One person interviewed was quoted as saying the following*: "Lake Massawippi is a jewel in the Eastern Townships' crown, but the jewel is getting tarnished"*. This study found that excessive motor-boating activity is a significant factor diminishing people's regal perspective of the valued landscape.

The solution may not be a total ban on motor-boating altogether. Rather, the evidence emerging from this study would suggest the imposition of a selective ban on certain types of larger, faster and noisier motorboats might be well received by the majority of cottagers and visitors. Case studies at smaller lakes have demonstrated that selective bans have greatly improved both environmental and scenic quality (Dépot, personal communication, 2003). The chal-

lenge is now to examine the feasibility and possible repercussions of such a selective ban at larger lakes like the Massawippi.

In 1923, Bertha Weston Price captured the essence of Lake Massawippi in her poem *Fair Massawippi*. I hope the lake will still be as highly valued for its scenic beauty and relaxed, unpretentious nature when my great, great-grandchildren are alive.

Acknowledgments

First, I thank those kind people at Lake Massawippi who allowed me to interrupt them during their summer vacations to answer my questions. Second, I thank Terry Skeats (North Hatley Historical Society), Marc Lacroix (Bombardier Inc.) and Matthew Farfan (Townships Web Magazine) for use of the photographs included here. Finally, the research was made possible by a grant from Quebec's *Fonds des chercheurs et aide a la recherche (FCAR), competition B1-06E.*

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NOTES

1. http://www.iro.umontreal.ca/neptune/ca/qc/lac-massawippi-en.html
2. Other recent company PWC models include a luxury-performance model aimed at increased comfort; a family-oriented recreation model and a nimble sport model (see http://www.seadoo.com/en-CA/Watercrafts/2004/). It is also important to note that Sea-Doo® technology has evolved throughout the 1990s with several models of multi-passenger watercrafts, better environmental emission standards and sound reduction systems (Marc Lacroix, Bombardier Inc. Director of Communications, personal communication, 7 July 2003).
3. For further explanation of the use of multiple regression analysis, readers are encouraged to consult Clark and Hoskins (1986).
4. The computer model was a 1/117 649 fractional factorial design of 7^8 created by Dr. Don Anderson, formerly of the University of Wyoming.

5. A fourth fixed location, the private "Camping du lac Massawippi" campground in Ayer's Cliff (Figure 1), was also originally chosen. However, the owner refused my assistant and me access to interview a sample of the estimated 1000 campground patrons.
6. The calculations are done by adding together the degrees of influence on preference rating of variables AGE, RENT and MOTORB in Table 2. For the 50-year-old: (50 * -0.185) + (-15.251) + (0) = -24.501. For the 20-year-old: (20 * -.185) + (0) + (3.779) = 0.079. The difference between the two is 24.58 points. Thus, the 20-year-old motor-boater without access to a cottage will rate the same scene 24.58 points higher than the 50-year-old non-motorboater who rents a cottage.