Darrin Freshwater Institute

AT LAKE GEORGE

A SURVEY OF TRIBUTARIES TO LAKE GEORGE, NEW YORK FOR THE PRESENCE OF EURASIAN WATERMILFOIL

prepared for
The Fund for Lake George

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March, 1998

DFWI Technical Report 98-4

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The Survey of Lake George Tributaries for Eurasian watermilfoil - 1997

EXECUTIVE SUMMARY

A survey of tributary deltas in the south basin of Lake George was conducted in 1997 to assess the extent of Eurasian watermilfoil (*Myriophyllum spicatum* L.) infestation. The Darrin Fresh Water Institute conducted the project with financial support from the Fund for Lake George. Similar surveys were completed in 1987, 1989, 1991, and 1994 as reference points. Delta areas were chosen as readily identifiable points that historically harbor diverse assemblages of native aquatic plants.

Results of these surveys can be used to approximate the rate of spread of milfoil through the Lake George basin. In 1987, when surveys were initiated, 30 percent of the sites were found to have milfoil. By 1989, this percentage had dropped to 23 percent due to harvesting of milfoil, although three new locations were found in 1989. In 1991, over 45 percent of the tributary sites surveyed in the south basin had milfoil. Results from the 1994 survey showed a slight reduction to 41% of the sites colonized by Eurasian watermilfoil. The 1997 survey found this declining trend was continued from 1994, with 39% of the total sites infested, including one new infested site. This reduction is attributed to hand harvesting of milfoil in prior years. All of the new sites were restricted to only a few milfoil plants that were removed.

Management efforts to date have been implemented at 111 of 123 known milfoil locations. Management efforts have reduced the milfoil biomass in these locations; however, milfoil has only been eliminated at a handful of sites and reintroduction at these locations is highly probable. Thus maintenance becomes critical following initial management. At this time, Eurasian watermilfoil is ranked 14th by relative abundance (a function of cumulative percent cover) and 24th by frequency of occurrence for the 44 species found in this survey. The fact that milfoil has reached this level of abundance is testament to the plant's ability to spread rapidly and to outcompete native species. Maintenance will require site visits yearly or every other year to harvest regrowth of milfoil.

Although the number of samples is limited for development of a statistically reliable rate of colonization, new sites continue to be colonized on a year-to-year basis. Expansion of Eurasian watermilfoil at the 46 tributary sites over the ten year span of the study is approximately 5 new sites per year, or an 11% annual rate of colonization. At the current rate, all remaining tributaries would be colonized by Eurasian watermilfoil over the course of the next three to four years. The occurrence of milfoil at sites that had been cleared in previous years also indicates that continued surveillance and maintenance of milfoil sites is necessary. The more sobering indication from the recurrence of milfoil at previously harvested sites is that there are no sites or cases to indicate any natural mortality or demise of small populations of Eurasian watermilfoil in Lake George. Although these populations may not expand for several years, clearly they are not dying off on their own.

Tributary surveys demonstrate the need for continued management of Eurasian watermilfoil in Lake George. Management programs currently encompass several different

techniques reflective of different stages of milfoil development. Tributary surveys provide a means of mapping milfoil colonization in Lake George, while management programs limit the spread of milfoil once sites have been located. Increased public awareness of the effects of growth and spread of Eurasian watermilfoil on the Lake George ecosystem can help reduce further introduction.

1997 TRIBUTARY SURVEY

Introduction

Streams entering Lake George, with nutrients and suspended sediments derived from the terrestrial portion of the basin and deposited on their deltas, are prime habitats for the continued establishment and reestablishment of Eurasian watermilfoil (*Myriophyllum spicatum L.*). Delta areas are also disturbed habitats, as a result of sedimentation of terrestrially derived materials and scouring of existing sediments during times of accelerated runoff. The combination of changing sediment conditions and habitat disruption make tributary deltas prime locations for Eurasian watermilfoil infestation.

Around the entire lakeshore, there are 128 listed stream tributaries (Madsen et al. 1989[1]). Because human activity in the Lake George basin has historically exacerbated water quality conditions, relative to disturbed areas, the rate of establishment and spread of milfoil has been of particular concern in the management of Eurasian watermilfoil.

A survey of all the tributaries in the basin was performed as part of the 1987-88 Lake George Aquatic Plant Survey (Madsen et al. 1989). The survey provided a procedure for finding new sites with Eurasian watermilfoil, including the establishment of a regular search pattern for milfoil sites to ascertain the relative distribution of milfoil among the native plant communities in Lake George.

In order to balance the number of tributary sites surveyed in each year and to stabilize the cost of the survey, the south basin tributaries were divided into two groups in 1991. With approximately 45 tributaries in each group, a three-year cycle of surveys has been established with a south, central and north component of nearly equal number of tributaries. The tributaries in the southern half of the south basin were surveyed in 1991, those in the northern half of the south basin (central) were the subject of the 1992 and 1995 surveys. The tributaries of the north basin were the subject of the 1993 and 1996 surveys.

The far south basin tributary survey was conducted in 1987, 1989, 1991, and in 1994 to provide information on the rate of colonization of Eurasian watermilfoil (Madsen et al, 1990). Since these are readily located sites for which the presence or absence of Eurasian watermilfoil was known from the previous surveys noted above, these sites were revisited in 1997 to determine whether appreciable new infestation, re-invasion or natural mortality of earlier infestation had occurred.

[1] All cited literature is found in **References** on Page 12.

Methods

The shoreline adjacent to tributary outflows in the south basin was surveyed for the presence of Eurasian watermilfoil. The tributaries comprising this portion of the survey were visited between July 29th and September 15th, 1997. Surveys consisted of swimming a 100-meter segment of shoreline from the edge of the water to the outer edge of the littoral zone (maximum depth of rooted plant growth).

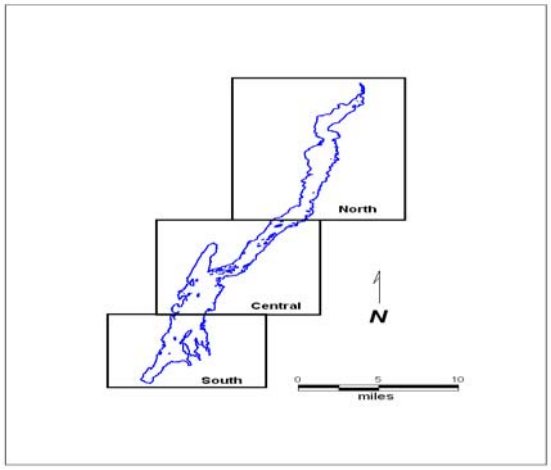
Diver swimover transects were also completed at each site in order to characterize the macrophyte (aquatic plant) community present. Divers skilled in plant identification estimated the abundance of all aquatic plant species in each 1-meter (3 ft) depth interval using the following abundance classes:

Class	Code	% Cover Range	Centroid
Abundant	A	greater than 50% cover	75.0%
Common	C	25% to 50% cover	37.5%
Present	P	15% to 25% cover	20.0%
Occasional	O	5% to 15% cover	10.0%
Rare	R	less than 5% cover	2.5%

Percent cover data provides both the average depth distribution of the plants present and an estimate of the relative abundance of species at the tributary sites. This information is also important for future management decisions concerning milfoil control alternatives and permit applications required as part of any control strategy.

A map showing the general location of this year's survey activity is shown in Figure 1. Specific tributary locations in the current survey are provided in Appendix A.

Figure 1. Map of Lake George indicating the region included in the 1997 Tributary Survey.



Results and Discussion

The current survey included the southernmost portion of the lake basin tributaries (46 sites). The central and northern portions of the lake were completed in 1995 and 1996, respectively. Maps with the locations of the tributaries surveyed in 1997 are provided as Appendix A. Aquatic plant abundance data for the 44 sites compared in the 1987 and 1989 surveys, plus 2 additional sites that were included during the 1991 survey are provided as Appendix B. Methodologies employed by the three surveys were the same. The results of the south basin tributary surveys for 1987, 1989,1991, 1994 and 1997 are presented in Table 1. For each site, the tributary number and site name is given.

Table 1. Tributary survey sites in the south basin and the presence (Yes) or absence (No) of Eurasian watermilfoil. M # is a sequential listing of sites with Eurasian watermilfoil discovered since the survey began.

TRIB #	M #	SITE DESCRIPTION	Map Quadrangle	MILFOIL PRESENT 1997	1994	1991	1989	1987
T-21	M-81	Butternut Brook	Bolton	no	no	yes	no	no
T-22	M-82	Barber Bay	Bolton	yes	yes	yes	no	no
T-23		Isom, N of Echo Bay	Bolton	no	no	no	no	no
T-24	M-107	Van Warmer-near Eliz. Is.	Lk George	no	yes	no	no	no
T-25		Van Warmer Bay	Lk George	no	no	no	no	no
T-25a	M-83	Van Warmer Bay	Lk George	no	no	yes	no	no
T-26		Trout Pavilion Brook	Lk George	no	no	no	no	no
T-27	M-11	S Warner Bay-Wetland Trib	Lk George	yes	yes	no	yes	no
T-27a	M-37	S Warner Bay-Culvert	Lk George	yes	yes	yes	yes	yes
T-27b	M-38	S Warner Bay-Culvert	Lk George	yes	yes	yes	yes	yes
T-27c	M-39	S Kattskill Bay	Lk George	yes	yes	yes	no	yes
T-28	M-92	N Warner Bay-culvert	Lk George	yes	yes	yes	no	no
T-29a	M-108	Harris Bay-culvert	Lk George	yes	yes	no	no	no
T-29b		Harris Bay-culvert	Lk George	no	no	no	no	no
T-29c		Sandy Bay-culvert	Lk George	no	no	no	no	no
T-30	M-109	Bay SW Happy Family	Lk George	no	yes	no	no	no
T-30a	M-84	Harris Bay Inlet	Lk George	yes	no	yes		
T-32	M-85	Dunham Bay Inlet	Lk George	yes	yes	yes		
T-33	M-36	Bay E of Dark Bay	Lk George	yes	yes	yes	no	yes
T-34		Dark Bay	Lk George	no	no	no	no	no
T-35a	M-33	S of Plum Point	Lk George	no	no	no	no	yes
T-35b	M-34	Bay between Plum & Woods PT	Lk George	no	no	yes	no	yes
T-36		East Shore	Lk George	no	no	no	no	no
T-36a		East Shore	Lk George	no	no	no	no	no
T-36b		East Shore-culvert	Lk George	no	no	no	no	no
T-36c		East Shore	Lk George	no	no	no	no	no
T-36d	M-86	East Shore	Lk George	no	no	yes	no	no
T-36e	M-121	East Shore-culvert	Lk George	yes	no	no	no	no
T-36f		East Shore	Lk George	no	no	no	no	no
T-37a	M-32	Crosbyside-culvert	Lk George	no	no	yes	no	yes
T-37b	M-87	Crosbyside	Lk George	no	yes	yes	no	no
T-37c	M-88	Crosbyside	Lk George	no	no	yes	no	no

TRIB #	M #	SITE DESCRIPTION	Map Quadrangle	MILFOIL PRESENT 1997	1994	1991	1989	1987
T-37d	M-89	Crosbyside-culverts	Lk George	no	no	yes	no	no
T-40	M-62	Marine Village-culvert	Lk George	yes	yes	yes	yes	no
T-41	M-31	English Brook	Lk George	yes	no	no	yes	yes
T-41a	M-90	S. Tea Is. Bay-culvert	Lk George	yes	yes	yes	yes	no
T-41b	M-30	N Tea Is. Bay	Lk George	yes	yes	yes	yes	yes
T-42	M-29	Bay NE of Tea Is.	Lk George	yes	yes	yes	yes	yes
T-43	M-28	Bay S of Hearthstone	Lk George	no	no	no	no	yes
T-44	M-27	NW of Cooper Pt.	Lk George	yes	yes	yes	yes	yes
T-45	M-26	SW of Cannon Pt.	Lk George	yes	yes	yes	yes	yes
T-46		Diamond Point area	Lk George	no	no	no	no	no
T-47	M-110	Diamond Point area	Lk George	no	yes	no	no	no
T-48		Diamond Point area	Lk George	no	no	no	no	no
T-49		Edmund's Brook	Lk George	no	no	no	no	no
T-99		Assembly Point	Shelving Rk	no	no	no	no	no
		Total sites with milfoil		18	19	22	10	13
		Total percent with milfoil		39	41	48	23	30

The results of the four surveys are further summarized in Tables 2, 3, 4 and Figure 2. In the 1987 survey, 13 (30%) of the 44 sites had Eurasian watermilfoil (Table 1).

Table 2. Comparison of the presence of Eurasian watermilfoil between survey years 1987 and 1997. Numbers in ( ) represent row percentages, numbers in [ ] represent column percentages.

	Eurasian watermilfoil in 1987		
	Present	Absent	Total
Eurasian Watermilfoil in 1997			
Present	9 (56) [69]	7 (44) [23]	16 (100) [36]
Absent	4 (14) [31]	24 (74) [77]	28 (100) [64]
Total	13 (30) [100]	31 (70) [100]	44 (100) [100]

In 1989, the total had decreased to 10 (23%) of the 44 sites surveyed (Table 1). Eight new milfoil sites were found among the original 44 sites, and the two additional sites were also positive for milfoil during the 1991 survey. In the 1994 tributary survey, 19 (41%) of the sites had Eurasian watermilfoil (Table 4), four of which (9%) had not previously been found to have milfoil populations. Of the 46 sites visited in 1997, milfoil

was found for the first time at one location (2%). Six (14%) of the sites at which milfoil occurred were positive for the invasive species in every survey since the initial survey in 1987. Four sites (21%) had milfoil present in 1994, but not in 1997. All four sites were hand harvested during the 1994 tributary survey or in subsequent years between surveys. Twelve of the 46 sites (26%) have had milfoil during at least one of the three previous tributary surveys, but not in the 1997 survey. Of the 46 tributary sites in the far south basin, 31 (67%) sites have had milfoil present during one of the surveys performed since 1987. Not only initial colonization but also recolonization of tributary sites by Eurasian watermilfoil is occurring in Lake George. The rate of colonization, however, is variable from year to year and between the three portions of the survey.

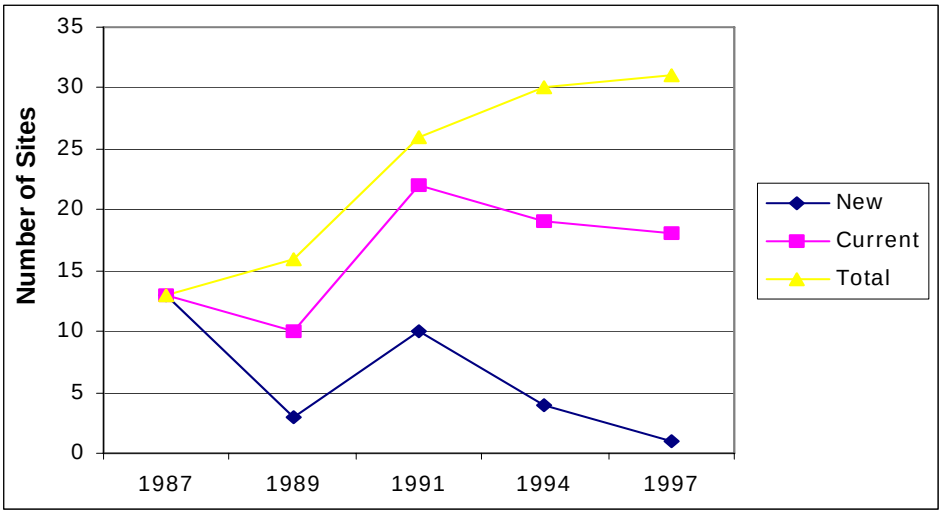
Table 3. Comparison of the presence of Eurasian watermilfoil between survey years 1987 and 1994. Numbers in ( ) represent row percentages, numbers in [ ] represent column percentages.

	Eurasian watermilfoil in 1987		
	Present	Absent	Total
Eurasian Watermilfoil in 1994			
Present	8 (44) [62]	10 (56) [32]	18 (100) [41]
Absent	5 (19) [38]	21 (81) [68]	26 (100) [59]
Total	13 (30) [100]	31 (70) [100]	44 (100) [100]

Table 4. Comparison of the presence of Eurasian watermilfoil between survey years 1997 and 1994. Numbers in ( ) represent row percentages, numbers in [ ] represent column percentages.

	Eurasian watermilfoil in 1994		
	Present	Absent	Total
Eurasian Watermilfoil in 1997			
Present	15 (83) [79]	3 (17) [11]	18 (100) [39]
Absent	4 (14) [21]	24 (86) [89]	28 (100) [61]
Total	19 (79) [100]	27 (59) [100]	46 (100) [100]

Figure 2. Comparison of the number of sites currently with Eurasian watermilfoil versus the number of sites which have had milfoil during any of the surveys (cumulative), of the south basin.



The statistics of most interest are the number of sites that had Eurasian watermilfoil during one survey year, but not during the follow-up surveys. Two sites, South of Plum Point (T-35a, M-33) and Bay south of Hearthstone (T-43, M-28) have not had Eurasian watermilfoil since the 1987 survey. Seven sites which were cleared during the 1991 survey remained clear through the 1997 tributary survey, those being Crosbyside-culvert (T-37a, M-32), Bay between Plum and Woods Point (T-35b, M-34), Butternut Brook (T-21, M-81), Van Warmer Bay (T-25a, M-83), East Shore (T-36d, M-86), Crosbyside (T-

37c, M-88),and Crosbyside-culverts (T-37d, M-89). One site, Harris Bay inlet (T-30a, M-84, was cleared of milfoil in 1991, did not have Eurasian watermilfoil during the survey in 1994, but was found to be repopulated with scattered growth in 1997. The milfoil was removed by hand harvesting in the years following or during the 1991 survey. These results indicate that hand harvesting activities can eliminate small populations of Eurasian watermilfoil. There is no evidence, however, that the loss of Eurasian watermilfoil populations at specific sites in Lake George can be attributed to natural mortality.

The following is a breakdown of the eighteen sites that had milfoil during the 1997 tributary survey. Five of the eighteen milfoil sites were found to have ten or fewer plants, all of which were hand harvested as voucher specimens. In the 1997 survey, one new site, T-36e on the east shore, was found to have milfoil for the first time. This new site had fewer than ten milfoil plants, which were cleared for voucher specimens. The remaining seventeen sites that had milfoil during the 1997 survey all had milfoil populations in one or more of the earlier tributary surveys.

Since the 1987 survey, the number of tributary sites in this portion of the Lake George basin with milfoil present during subsequent surveys has increased by eighteen. The addition of two tributary sites in 1991, Harris Bay Inlet (T-30a) and Dunham Bay Inlet (T-32) raises the total to 31 of the 46 sites which have had a milfoil population since the survey began in 1987. The small number of plants found at most tributary sites indicates recent colonization.

Six of the sites surveyed in 1997 have had a milfoil population since the first tributary survey in 1987. Those sites being South Warner Bay - Culvert (M-37), South Warner Bay - Culvert (M-38), North Tea Island Bay (M-30), Bay Northeast of Tea Island (M-29), Northwest of Cooper Point (M-27), and Southwest of Cannon Point (M-26). Five of the six sites have been the subject of management activities in the last four years. The sites in South Warner Bay - Culvert (M-37), South Warner Bay - Culvert (M-38), Bay Northeast of Tea Island (M-30), and Southwest of Cannon Point (M-26) have been either suction harvested, covered with benthic barrier, hand harvested or a combination of the three, such as was done at the Cannon Point site (M-26). Hand harvesting was conducted at all of the above sites at least once since they were discovered. Hand harvesting of low density milfoil infestations and the use of suction harvesting and benthic barrier on denser growth have been used as a means for maintaining milfoil at low density levels (Madsen et al, 1988). The remaining site North Tea Island Bay (M-90) has had no management activity to this point.

Of the 18 tributary sites in this section of the south basin with milfoil present, hand harvesting was employed to clear 14 sites. Hand harvesting was not attempted at the remaining four sites due to the size of the infested area.

Table 5. Frequency of occurrence of all macrophyte species at the tributary sites. Species are ranked in order of frequency of occurrence.

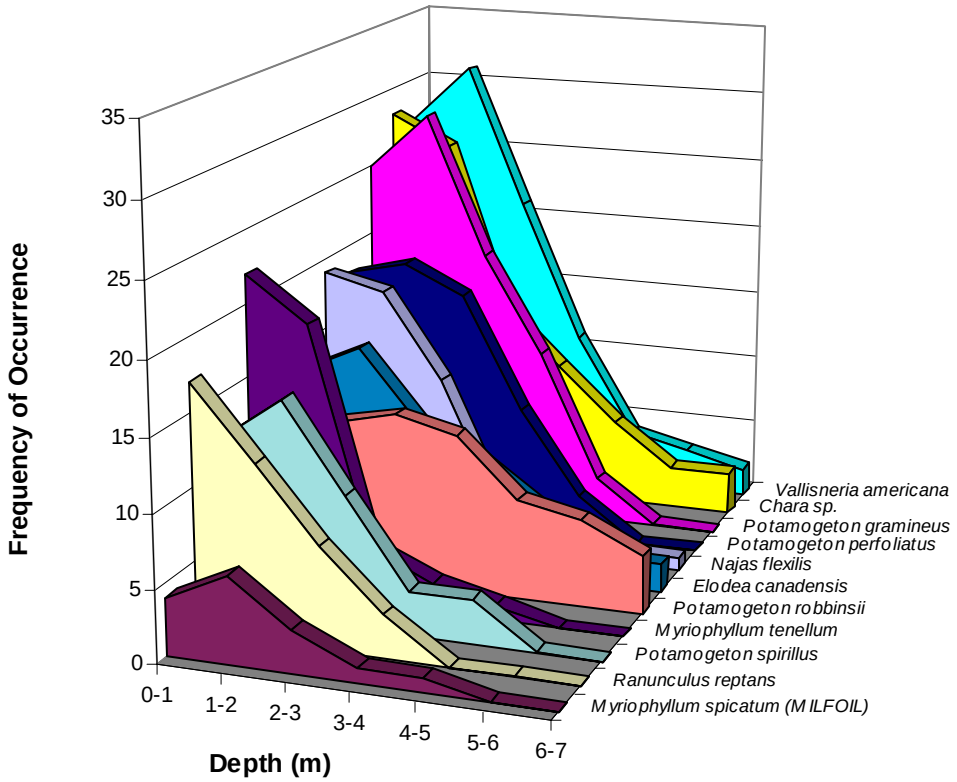
Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Frequency
Vallisneria americana	27	31	21	11	4	3	2	99
Chara sp.	28	26	14	10	6	3	3	90
Potamogeton gramineus	25	29	19	12	3	0	0	88
Potamogeton perfoliatus	18	19	17	9	3	0	0	66
Elodea canadensis	13	15	10	8	5	2	2	55
Najas flexilis	19	18	12	3	1	1	1	55
Potamogeton robbinsii	3	11	12	11	7	6	4	54
Myriophyllum tenellum	22	19	4	2	1	0	0	48
Potamogeton spirillus	12	15	9	3	3	0	0	42
Ranunculus reptans	17	12	7	3	0	0	0	39
Isoetes echinospora	12	11	9	5	1	0	0	38
Potamogeton pusillus	12	10	10	5	1	0	0	38
Sagittaria graminea	16	14	6	1	0	0	0	37
Elatine minima	16	13	3	0	0	0	0	32
Eriocaulon septangulare	14	15	0	0	0	0	0	29
Potamogeton zosteriformis	5	9	9	3	2	0	0	28
Sparganium sp.	12	6	4	3	1	1	1	28
Potamogeton amplifolius	5	9	8	3	1	1	0	27
Ranunculus longirostris	4	10	8	4	1	0	0	27
Lobelia dortmanna	11	10	4	0	0	0	0	25
Heteranthera dubia	7	6	5	2	0	0	0	20
Juncus pelocarpus	10	8	1	0	0	0	0	19
Myriophyllum alterniflorum	3	5	3	3	1	0	0	15
Myriophyllum spicatum	**4**	**6**	**3**	**1**	**1**	**0**	**0**	**15**
Isoetes macrospora	1	0	1	0	3	4	4	13
Nuphar lutem	8	4	1	0	0	0	0	13
Potamogeton foliosis	2	2	2	1	2	1	0	10
Potamogeton praelongus	1	3	2	1	2	1	0	10
Bidens beckii	0	2	3	1	1	1	1	9
Najas quadalupensis	2	1	1	2	2	1	0	9
Potamogeton crispus	2	2	2	2	0	0	0	8
Potamogeton richardsonii	3	3	1	0	0	0	0	7
Potamogeton vaseyii	1	1	2	1	1	1	0	7
Subularia aquatica	5	2	0	0	0	0	0	7
Utricularia vulgaris	5	2	0	0	0	0	0	7
Eleocharis acicularis	3	2	1	0	0	0	0	6
Utricularia resupinata	3	3	0	0	0	0	0	6
Lindernia sp.	4.5	0	0	0	0	0	0	5
Nymphaea odorata	5	0	0	0	0	0	0	5
Pontederia cordata	5	0	0	0	0	0	0	5
Potamogeton pectinatus	2.5	2.5	0	0	0	0	0	5
Utricularia purpurea	2.5	2.5	0	0	0	0	0	5
Fontinalis sp.	2	1	0	0	0	0	0	3
Myriophyllum sibiricum	1	1	0	0	1	0	0	3
Number of species	44	40	33	26	24	13	8	45
Average number of species	8	9	6	4	2	2	2	26

Percent cover data for all sites is provided in Appendix B. Of the 48 species of submersed aquatic plants identified for Lake George (Ogden et al. 1976), 46 species were found at the tributary sites. Three of these species, *Isoetes macrospora*, *Myriophyllum*

alterniflorum, and *Subularia aquatica*, are on the New York State Rare Plant List (Mitchell, 1986; Clemants, 1989; Young, 1992). These species are listed in italics in Table 5. This is particularly important for plant management considerations given the impact that a given management technique may have on non-target species. The impact of the growth and spread of nuisance aquatic plants on the distribution of rare plants, however, must also be included in any management decisions. The diversity of species present at tributary sites is indicative of the suitability of these sites for aquatic plant growth and conversely, the high probability of milfoil infestation at these sites.

In Table 5, the species present and their depth distribution are ranked in order of the frequency with which they appeared at the tributary sites. The depth distribution of the ten most frequently occurring species is presented in Figure 3. Eurasian watermilfoil, ranked 24th by frequency of occurrence, is also included in the plot. Depth distribution and species diversity remains comparable to that reported in surveys conducted in the south basin of Lake George in 1987 and 1988 (Madsen et al. 1989).

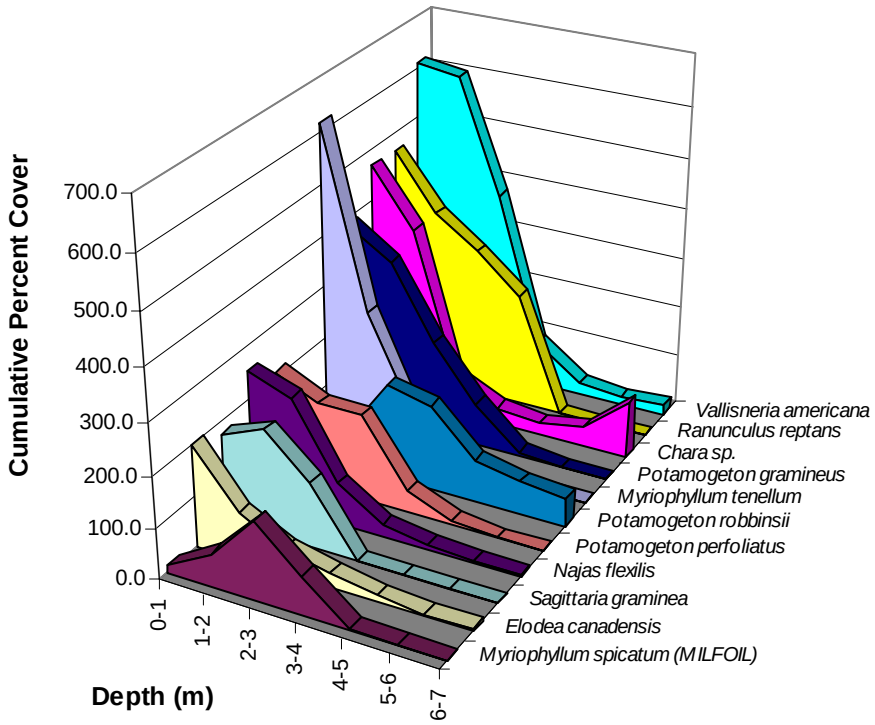
Figure 3. Frequency and depth distribution of the 10 most common macrophyte species and Eurasian watermilfoil.



Frequency, or the number of tributaries where each species was present, is an important measure of the distribution of species but does not consider the relative abundance of species within the overall population. Table 6 contains the species present and their

depth distribution ranked in order of cumulative percent cover. This ranking is a better measure of the dominance of certain species and, in conjunction with frequency data, provides a more complete picture of aquatic plant community structure. In Figure 4, the depth distribution of the 10 most abundant species is presented. Eurasian watermilfoil is ranked 14th by relative abundance. A comparison of Figures 3 and 4 indicates nine species are ranked in the top 10 percent for both frequency of occurrence and relative percent cover.

Figure 4. Cumulative percent cover and depth distribution of the 10 most common macrophyte species and Eurasian watermilfoil.



Comparisons of the major species by frequency of occurrence reported during the 1994 tributary survey (Eichler et al. 1995) with the current list (Table 5) show few differences. Eight of the ten most abundant species are the same. *Ranunculus reptans* was not within the top ten species during the 1994 survey, but was ranked tenth in the 1997 survey. Eurasian watermilfoil was ranked 16th and 18th by frequency of occurrence in the 1991 and 1994 surveys, respectively. In 1997, Eurasian watermilfoil was ranked 24th by frequency of occurrence. <u>The decline in frequency of occurrence of milfoil between 1994 and 1997 can be attributed to the removal of milfoil by hand harvesting and other management techniques, and thus a reduction in the number of sites with milfoil.</u>

Although the number of samples is limited for development of a statistically reliable rate of colonization, new sites continue to be colonized on a year-to-year basis. The rate of increase of the presence of Eurasian watermilfoil at the 46 tributary sites over the ten year span of the study is approximately 5 new sites per year, or an 11% annual rate of

colonization. At the current rate, all remaining tributaries would be colonized by Eurasian watermilfoil over the course of the next three to four years. The occurrence of

Table 6. Cumulative percent cover of all macrophyte species at the tributary sites. Species are listed in order of decreasing abundance.

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Vallisneria americana	612.5	600.0	377.5	90.0	25.0	15.0	20.0	1740.0
Ranunculus reptans	467.5	357.5	300.0	225.0	0.0	0.0	0.0	1350.0
Chara sp.	470.0	360.0	77.5	32.5	22.5	40.0	112.5	1115.0
Potamogeton gramineus	387.5	330.0	187.5	85.0	7.5	0.0	0.0	997.5
Myriophyllum tenellum	617.5	267.5	90.0	5.0	2.5	0.0	0.0	982.5
Potamogeton robbinsii	7.5	67.5	187.5	167.5	82.5	65.0	57.5	635.0
Potamogeton perfoliatus	210.0	170.0	170.0	45.0	7.5	0.0	0.0	602.5
Najas flexilis	255.0	225.0	80.0	22.5	10.0	2.5	2.5	597.5
Sagittaria graminea	175.0	207.5	130.0	2.5	0.0	0.0	0.0	515.0
Elodea canadensis	200.0	95.0	50.0	27.5	12.5	5.0	5.0	395.0
Elatine minima	187.5	172.5	25.0	0.0	0.0	0.0	0.0	385.0
Isoetes macrospora	10.0	0.0	2.5	0.0	80.0	122.5	147.5	362.5
Eriocaulon septangulare	215.0	145.0	0.0	0.0	0.0	0.0	0.0	360.0
Myriophyllum spicatum	***15.0***	***62.5***	***152.5***	***75.0***	***2.5***	***0.0***	***0.0***	***307.5***
Isoetes echinospora	62.5	85.0	62.5	77.5	2.5	0.0	0.0	290.0
Juncus pelocarpus	140.0	107.5	2.5	0.0	0.0	0.0	0.0	250.0
Potamogeton spirillus	60.0	110.0	65.0	7.5	7.5	0.0	0.0	250.0
Potamogeton amplifolius	20.0	95.0	77.5	32.5	10.0	2.5	0.0	237.5
Potamogeton zosteriformis	42.5	87.5	72.5	15.0	12.5	0.0	0.0	230.0
Potamogeton pusillus	52.5	72.5	40.0	27.5	2.5	0.0	0.0	195.0
Lobelia dortmanna	82.5	72.5	32.5	0.0	0.0	0.0	0.0	187.5
Ranunculus longirostris	17.5	47.5	85.0	10.0	2.5	0.0	0.0	162.5
Nuphar lutem	125.0	17.5	2.5	0.0	0.0	0.0	0.0	145.0
Heteranthera dubia	40.0	30.0	37.5	5.0	0.0	0.0	0.0	112.5
Myriophyllum alterniflorum	32.5	55.0	12.5	7.5	2.5	0.0	0.0	110.0
Eleocharis acicularis	15.0	77.5	10.0	0.0	0.0	0.0	0.0	102.5
Nymphaea odorata	102.5	0.0	0.0	0.0	0.0	0.0	0.0	102.5
Sparganium sp.	47.5	15.0	17.5	15.0	2.5	2.5	2.5	102.5
Potamogeton crispus	37.5	12.5	20.0	12.5	0.0	0.0	0.0	82.5
Najas quadalupensis	12.5	2.5	10.0	12.5	20.0	2.5	0.0	60.0
Potamogeton richardsonii	42.5	15.0	2.5	0.0	0.0	0.0	0.0	60.0
Utricularia resupinata	32.5	22.5	0.0	0.0	0.0	0.0	0.0	55.0
Bidens beckii	0.0	12.5	15.0	2.5	2.5	2.5	10.0	45.0
Pontederia cordata	45.0	0.0	0.0	0.0	0.0	0.0	0.0	45.0
Potamogeton foliosis	5.0	12.5	5.0	2.5	12.5	2.5	0.0	40.0
Potamogeton praelongus	10.0	15.0	5.0	2.5	5.0	2.5	0.0	40.0
Utricularia vulgaris	20.0	5.0	0.0	0.0	0.0	0.0	0.0	25.0
Potamogeton vaseyii	2.5	2.5	5.0	2.5	2.5	2.5	0.0	17.5
Subularia aquatica	12.5	5.0	0.0	0.0	0.0	0.0	0.0	17.5
Fontinalis sp.	12.5	2.5	0.0	0.0	0.0	0.0	0.0	15.0
Myriophyllum sibiricum	2.5	2.5	0.0	0.0	2.5	0.0	0.0	7.5
Lindernia	7.5	0.0	0.0	0.0	0.0	0.0	0.0	7.5
Potamogeton pectinatus	2.5	2.5	0.0	0.0	0.0	0.0	0.0	5.0
Utricularia purpurea	2.5	2.5	0.0	0.0	0.0	0.0	0.0	5.0
Number of Species	43	40	33	26	24	13	8	44
Average # Species	114	101	73	39	14	21	45	303

milfoil at sites which had been cleared in previous years also indicates that continued surveillance and maintenance of milfoil sites is necessary. The more sobering indication from the recurrence of milfoil at previously harvested sites is that there are no sites or cases to indicate any natural mortality or demise of small populations of Eurasian watermilfoil in Lake George. Although these populations may not expand for several years, clearly they are not dying off on their own.

Results of tributary surveys in combination with the Eurasian watermilfoil management program (Eichler et al., 1997) demonstrate the need for continued management of Eurasian watermilfoil in Lake George. The management program encompasses several different techniques reflective of different stages of milfoil development. Tributary surveys provide a means of mapping the rate of milfoil colonization, and the management program provides a means of limiting the rate of spread once these sites have been located. Increasing public awareness of the effects that milfoil has on the Lake George ecosystem, and how the public can help reduce further introduction into the Lake George watershed is an additional benefit.

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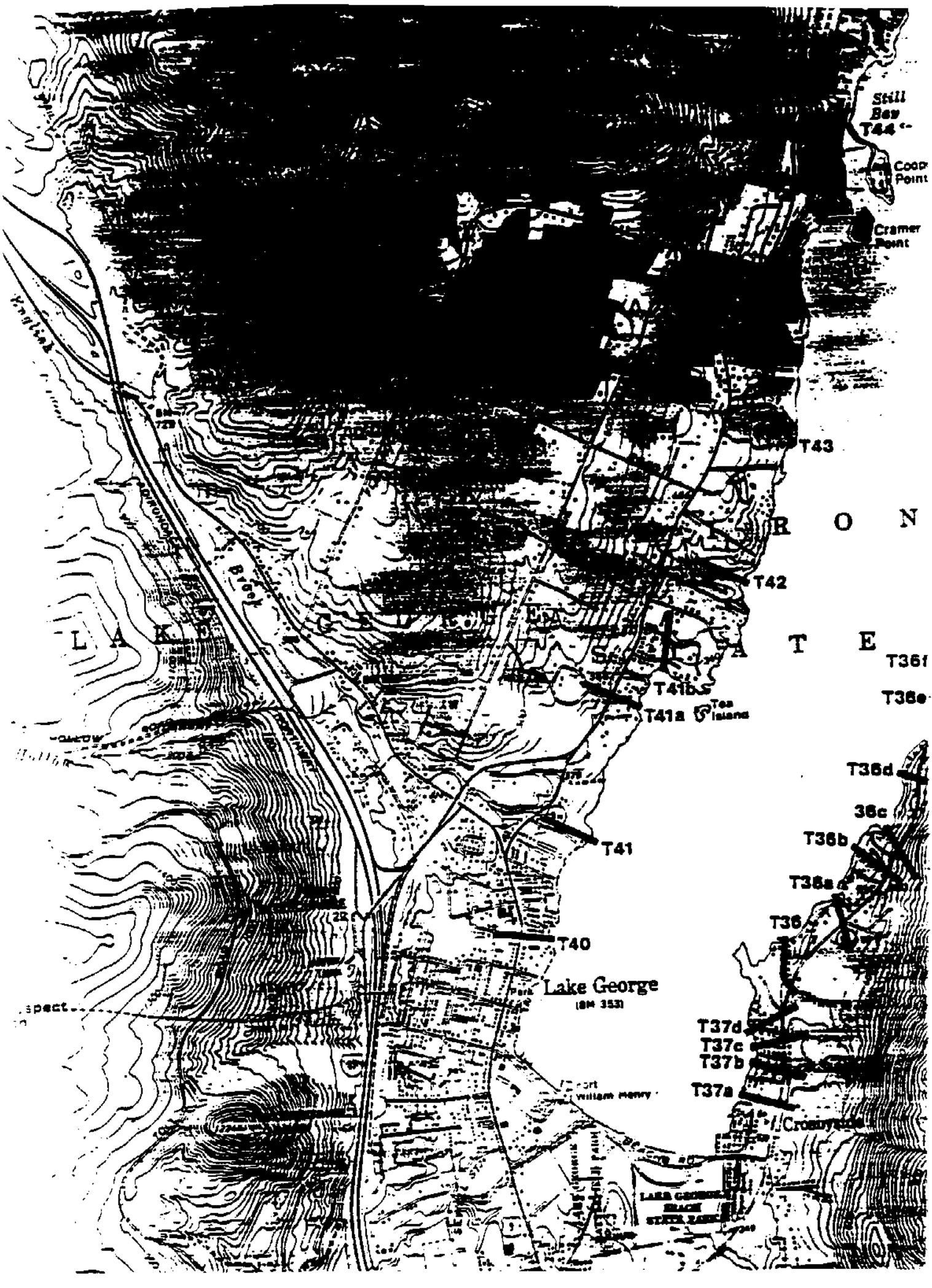
ACKNOWLEDGMENTS

This project was supported by the Fund for Lake George through a grant to the Darrin Fresh Water Institute. We gratefully acknowledge this support. Field assistance for this project was provided by David Vasiliou, Carrie Lamy, Adele Louster, Michael Balshi, David Diehl, and Erik Posner.

Critical comments on this manuscript were provided by Dr. Carol D. Collins and Dr. Robert H. Johnson.

APPENDIX A

SITE LOCATIONS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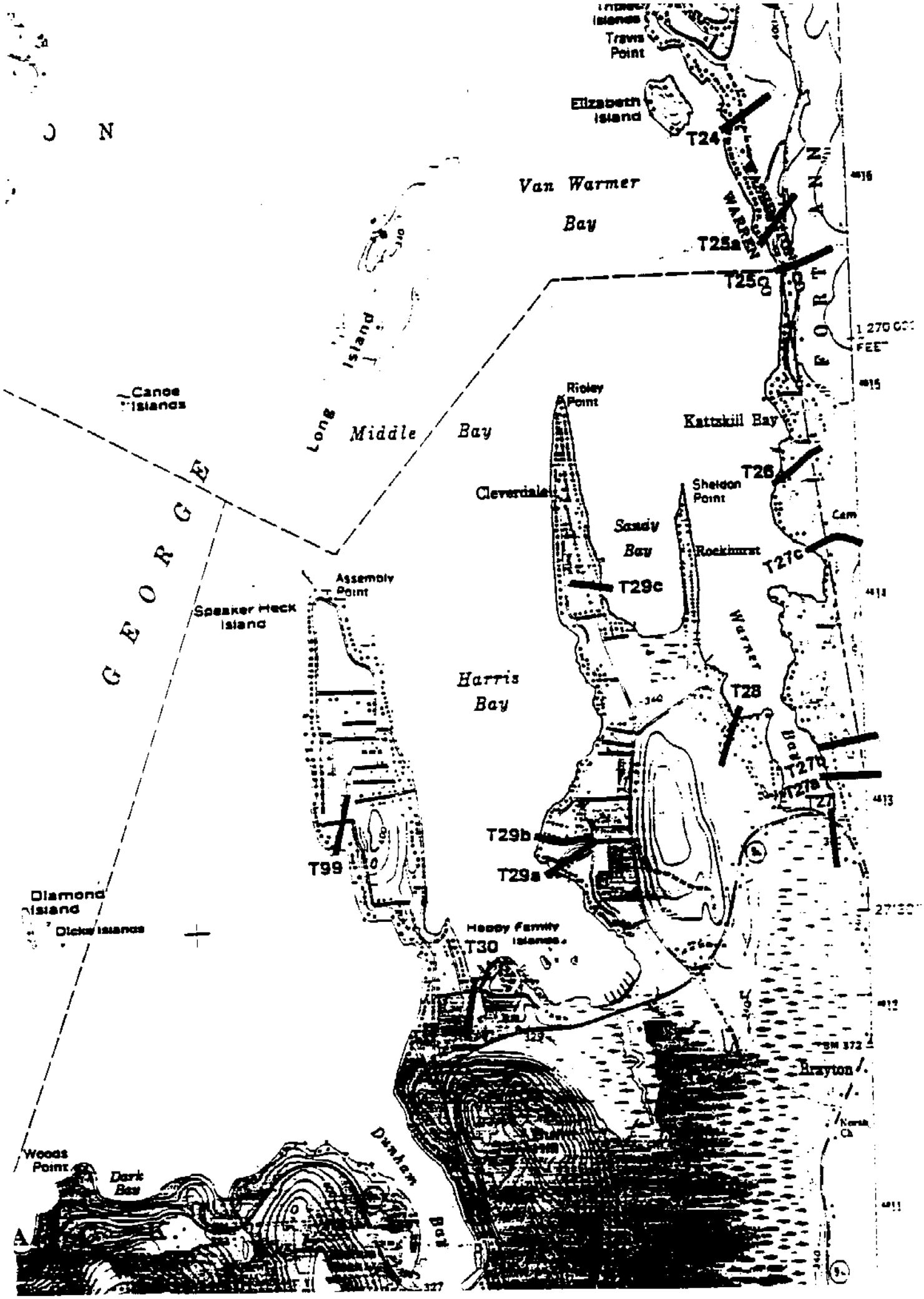
T44
Cramer Point
T43
T42
T41b
T41a
Tea Island
T41
T40
Lake George
(BM 353)
T36f
T36e
T36d
T36c
T36b
T36a
T36
T37d
T37c
T37b
T37a
Crosbyside
Fort William Henry
Park
Brook
LAKE
GEORGE
ADIRONDACK
NORTHWAY
Spect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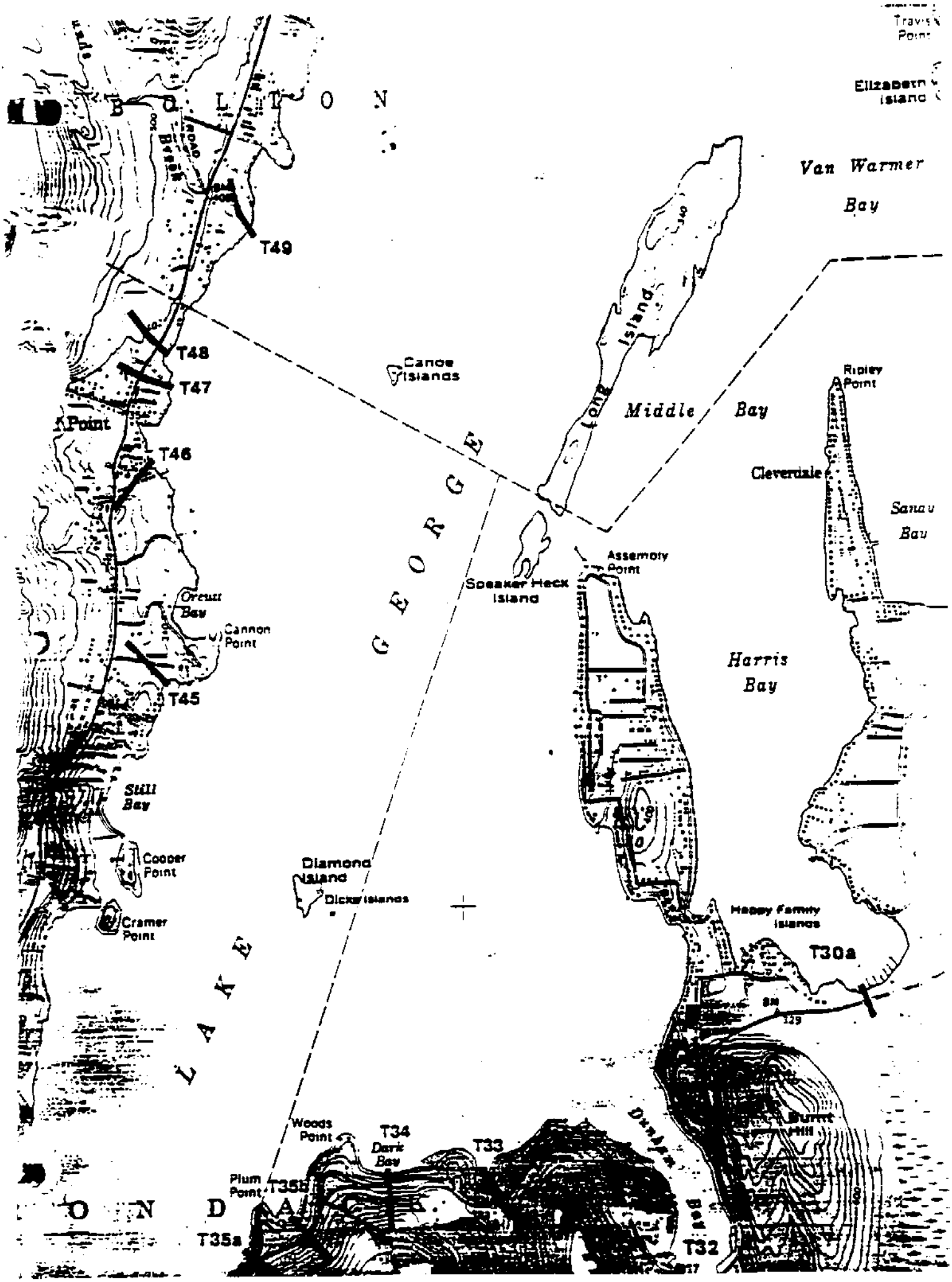
Elizabeth Island
T24
Van Warmer Bay
T25a
T25c
WARREN
FORT
1 270 000 FEET
Canoe Islands
Long Island
Middle Bay
Ridley Point
Kattskill Bay
T26
Cleverdale
Sheldon Point
Sandy Bay
Rockhurst
T27c
Cam
GEORGE
Assembly Point
Speaker Heck Island
T29c
Harris Bay
Warner
T28
T27b
T27a
T29b
T29a
T99
Diamond Island
Dicks Islands
Happy Family Islands
T30
Brayton
Woods Point
Dark Bay
Dunham Bay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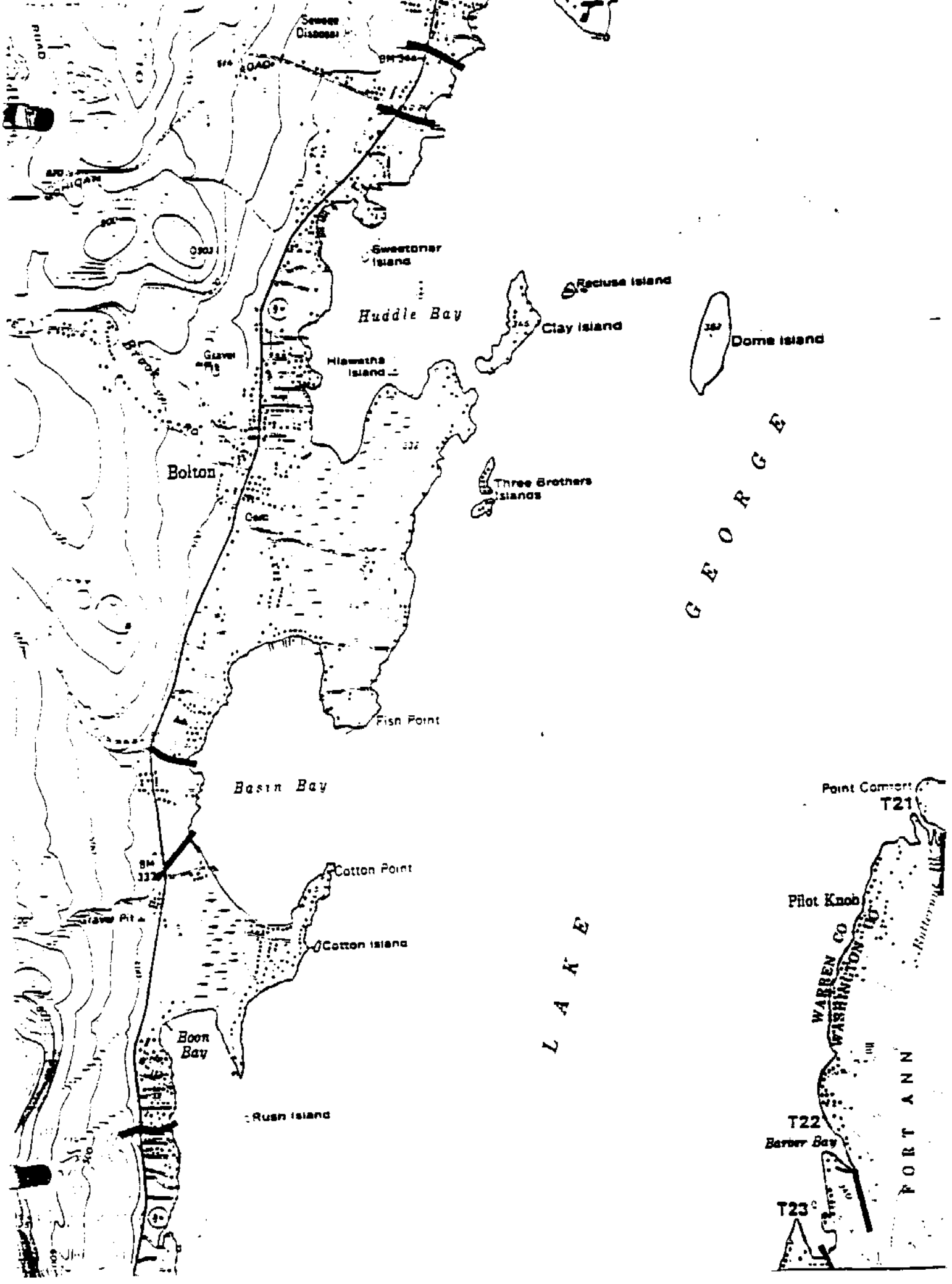
Elizabeth Island
B O L T O N
Van Warmer Bay
T49
T48
T47
Point
T46
Canoe Islands
Long Island
Middle Bay
Ripley Point
Cleveridge
Sanau Bay
G E O R G E
Assemoty Point
Speaker Heck Island
Orcutt Bay
Cannon Point
Harris Bay
T45
Still Bay
Cooper Point
Diamond Island
Dicks Islands
Cramer Point
Happy Family Islands
T30a
L A K E
Burnt Hill
Woods Point
T34
Dark Bay
T33
Plum Point
T35b
O N D A
T35a
T32


Sewage Disposal
Sweetener Island
Huddle Bay
Recluse Island
Clay Island
Dome Island
Hiawatha Island
Gravel Pit
Bolton
Three Brothers Islands
LAKE GEORGE
Fish Point
Basin Bay
Cotton Point
Cotton Island
Boon Bay
Rush Island
Point Comfort
T21
Pilot Knob
WARREN CO
WASHINGTON CO
T22
Barber Bay
T23
FORT ANN

APPENDIX B

MACROPHYTE COMMUNITY ASSESSMENT DATA

1997 Lake George Tributary Survey

Date: 7/29/97

Site: T-21

Butternut Brook

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	35							35
Elatine minima	2.5							2.5
Eleocharis acicularis	2.5							2.5
Elodea canadensis	10	10						20
Lobelia dortmanna	10	10						20
Myriophyllum tenellum	35							35
Najas flexilis	20	20						40
Nuphar lutem	10	10						20
Potamogeton gramineus		10						10
P. perfoliatus		20						20
P. pusillus	10	2.5						12.5
P. richardsonii	2.5							2.5
P. spirillus	10	20						30
Potamogeton amplifolius	2.5							2.5
Sagittaria graminea	20	20						40
Sparganium sp.								0
Utricularia vulgaris	10							10
Vallisneria americana	35	20						55

1997 Lake George Tributary Survey

Date: 7/29/97

Site: T-22

Barber Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	37.5	75						112.5
Elatine minima		10						10
Elodea canadensis		20						20
Eriocaulon septangulare	10	20						30
Juncus pelocarpus	10	20						30
Lobelia dortmanna		10						10
Najas flexilis	20	20						40
Nuphar lutem	20							20
Nymphaea odorata	37.5							37.5
Potamogeton amplifolius		20	20					40
P. gramineus	10	10						20
P. perfoliatus			20					20
P. pusillus	2.5							2.5
P. robbinsii			20					20
P. spirillus		20						20
Ranunculus longirostris			10					10
R. reptans		37.5						37.5
Sparganium sp.	2.5							2.5
Vallisneria americana	20	10	20					50
Unknown sp. 1 (Lindernia?)	2.5							2.5

1997 Lake George Tributary Survey
Date: 7/29/97
Site: T-23
Isom Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Bidens beckii		10						10
Elatine minima	2.5							2.5
Elodea canadensis		2.5						2.5
Eriocaulon septangulare	75	35						110
Heteranthera dubia	2.5	10						12.5
Isoetes echinospora	2.5	2.5						5
Juncus pelocarpus	2.5	10						12.5
Myriophyllum tenellum	2.5	10						12.5
Najas flexilis		2.5						2.5
Nuphar lutem	10							10
Nymphaea odorata	10							10
Pontedaria cordata	2.5							2.5
Potamogeton amplifolius	2.5	2.5						5
P. foliosus		2.5						2.5
P. gramineus	2.5	2.5						5
P. perfoliatus	2.5	2.5						5
P. pusillus	2.5	10						12.5
P. robbinsii	2.5	2.5						5
P. spirillus	2.5	2.5						5
Ranunculus longirostris		2.5						2.5
R. reptans	10							10
Sagittaria graminea		2.5						2.5
Sparganium sp.	2.5	2.5						5
Vallisneria americana	10	10						20

1997 Lake George Tributary Survey
Date: 7/29/97
Site: T-24
Elizabeth Isl.

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara	2.5	2.5	2.5	2.5				10
Elodea canadensis	2.5	2.5	2.5					7.5
Fontinalis sp.	2.5	2.5						5
Heteranthera dubia	2.5	2.5						5
Isoetes echinospora	2.5	2.5						5
Myriophyllum tenellum	10	10						20
Najas flexilis	2.5	2.5	2.5					7.5
Nuphar lutem	2.5	2.5						5
Potamogeton amplifolius		10	20	20				50
P. gramineus	2.5	10	10	10				32.5
P. perfoliatus	10	10	2.5					22.5
P. pusillus	2.5	2.5	2.5	2.5				10
P. robbinsii	2.5	2.5	20	35				60
P. spirillus	2.5	2.5						5
Ranunculus longirostris		2.5						2.5
Sagittaria graminea	10	10						20
Sparganium sp.	2.5							2.5
Vallisneria americana	10	20	10	10				50
Utricularia vulgaris		2.5						2.5

1997 Lake George Tributary Survey
Date: 7/29/97
Site: T-25

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.			2.5	2.5	10	35	75	125
Elodea canadensis			10	10	2.5	2.5	2.5	27.5
Heteranthera dubia			10	2.5				12.5
Isoetes echinospora			10	35	2.5			47.5
Najas guadalupensis				2.5	10	2.5		15
Potamogeton gramineus			10	2.5	2.5			15
P. perfoliatus			2.5	2.5	2.5			7.5
P. praelongus				2.5	2.5	2.5		7.5
P. robbinsii				2.5	10	20	35	67.5
Vallisneria americana			10	10	2.5	2.5		25

1997 Lake George Tributary Survey
Date: 7/29/97
Site: T-25a
Bombard's camp

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	2.5					7.5
Elatine minima	2.5	2.5						5
Elodea canadensis				2.5	2.5			5
Eriocaulon septangulare	2.5	2.5						5
Isoetes echinospora	2.5	2.5	2.5					7.5
Myriophyllum alterniflorum			2.5	2.5	2.5			7.5
M. tenellum	2.5	2.5						5
Najas guadalupensis								0
N. quadalupensis					10			10
Potamogeton gramineus	2.5	2.5	2.5	2.5	2.5			12.5
P. robbinsii				2.5	10	20		32.5
P. spirillus	2.5	2.5	2.5					7.5
R. reptans	2.5	2.5						5
Sparganium sp.	2.5	2.5		2.5				7.5
Utricularia resupinata	10	2.5						12.5

1997 Lake George Tributary Survey
Date: 7/29/97
Site: T-26
Trout Pavilion

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10	20						30
Elatine minima	2.5							2.5
Myriophyllum tenellum	35	20						55
Najas flexilis	10	20	20					50
Najas guadalupensis	10							10
Potamogeton gramineus	35	20	35					90
P. perfoliatus	10							10
P. pusillus	2.5							2.5
Ranunculus reptans	20							20
Vallisneria americana	35		35					70
Unknown sp. 1(Lindernia?)	2.5							2.5

1997 Lake George Tributary Survey
Date: 7/30/97
Site: T-27
S. Warner Bay Trib wetland

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	35							35
Elodea canadensis	2.5							2.5
Fontinalis sp.	10							10
Isoetes macrospora	10							10
Myriophyllum exalbescens	2.5	2.5						5
Najas flexilis		20						20
Nuphar lutem	35							35
Pontederia cordata	20							20
Potamogeton amplifolius	2.5	10						12.5
P. gramineus	35	10						45
P. perfoliatus	10							10
P. pusillus	2.5							2.5
Sagittaria graminea	10	35						45
Sparganium sp.	20							20
Utricularia vulgaris	2.5							2.5
Vallisneria americana	75	75						150

1997 Lake George Tributary Survey
Date:
Site: T-27a&b

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Bidens beckii		2.5	10					12.5
Chara sp.	2.5							2.5
Eleocharis acicularis	10	2.5						12.5
Elodea canadensis	2.5	2.5	2.5					7.5
Heteranthera dubia	10	10	2.5					22.5
Myriophyllum spicatum		2.5	2.5					5
Najas flexilis	20	10	2.5					32.5
Nymphaea odorata	10							10
Potamogeton amplifolius		10	10					20
P. foliosus	2.5	10	2.5					15
P. perfoliatus	2.5	2.5	2.5					7.5
P. praelongus		2.5	2.5					5
P. pusillus	2.5	10	2.5					15
P. richardsonii		2.5						2.5
P. robbinsii		2.5	20					22.5
P. spirillus	2.5	10	2.5					15
P. vaseyii	2.5	2.5	2.5					7.5
P. zosteriformis		2.5	2.5					5
Ranunculus longirostris	2.5	2.5	2.5					7.5
Sagittaria graminea	2.5	10	10					22.5
Sparganium sp.	2.5	2.5						5
Utricularia vulgaris	2.5	2.5						5
Vallisneria americana	20	2.5	20					42.5

1997 Lake George Tributary Survey
Date: 29-Jul-98
Site: T-27c
S. of Fishers Marina

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Elodea canadensis	2.5	2.5						5
Eriocaulon septangulare	2.5	2.5						5
Heteranthera dubia	2.5	2.5						5
Isoetes echinospora	2.5	2.5						5
Juncus pelocarpus	20	10						30
Myriophyllum tenellum	10	2.5						12.5
Najas flexilis	2.5	2.5						5
Nuphar lutem	2.5	2.5						5
Potamogeton amplifolius	2.5	2.5						5
Pontedaria cordata	10							10
P. foliosus	2.5							2.5
P. gramineus	2.5	2.5						5
P. perfoliatus	2.5	2.5						5
P. robbinsii	2.5	2.5						5
P. spirillus	2.5	2.5						5
Ranunculus longirostris	2.5	2.5						5
R. reptans	10	10						20
Sparganium sp.	2.5							2.5
Sagittaria graminea	10	2.5						12.5
Vallisneria americana	2.5	10						12.5
Utricularia resupinata	20	10						30
U. vulgaris	2.5							2.5

1997 Lake George Tributary Survey
Date: 30-Jul-97
Site: T-28
N. Warner bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10							10
Elatine minima	10							10
Juncus pelocarpus		10						10
Myriophyllum spicatum		2.5						2.5
M. tenellum	75							75
Najas flexilis	20	10	10					40
Potamogeton gramineus	10	10	10					30
P. perfoliatus	10	10	10					30
P. pusillus		10	10					20
P. robbinsii		2.5	10					12.5
P. zosteriformis			10					10
Ranunculus longirostris								0
R. reptans	35	35	35					105
Sagittaria graminea	35							35
Vallisneria americana	20	20	35					75

1997 Lake George Tributary Survey
Date: 7/31/97
Site: T-29a
Harris Bay culvert

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Bidens beckii			2.5					2.5
Chara sp.		20						20
Elodea canadensis	10	10						20
Myriophyllum spicatum		35	75					110
Najas flexilis	75	10	20					105
Potamogeton amplifolius			2.5					2.5
P. crispus	35							35
P. gramineus			10					10
P. perfoliatus		20						20
P. praelongus		10						10
P. zosteriformis			20					20
Vallisneria americana	35	20	20					75

1997 Lake George Tributary Survey
Date: 7/31/97
Site: T-29b
Harris Bay culvert

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10	2.5	2.5					15
Elodea canadensis				2.5				2.5
Isoetes echinospora		10	2.5					12.5
Myriophyllum alterniflorum		2.5		2.5				5
M. tenellum		20						20
Najas flexilis	20	10	2.5	10				42.5
Potamogeton gramineus	20							20
P. perfoliatus				2.5				2.5
P. pusillus			2.5	10				12.5
P. zosteriformis		2.5	2.5					5
Ranunculus longirostris				2.5				2.5
R. reptans	20							20
Vallisneria americana	2.5			2.5				5

1997 Lake George Tributary Survey
Date: 7/30/97
Site: T-29c
Sandy Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	2.5	2.5				10
Elodea canadensis		2.5	2.5	2.5				7.5
Heteranthera dubia	2.5	2.5						5
Isoetes echinospora			2.5	2.5				5
Myriophyllum tenellum	10	2.5	2.5	2.5				17.5
Najas flexilis	10	2.5	2.5					15
Potamogeton gramineus	2.5	2.5	2.5	2.5				10
P. pectinatus	2.5	2.5						5
P. perfoliatus	10	2.5	2.5					15
P. pusillus	2.5	2.5						5
P. spirillus	2.5	2.5	2.5					7.5
Ranunculus longirostris	2.5							2.5
Vallisneria americana	10	2.5	2.5	2.5				17.5

1997 Lake George Tributary Survey
Date: 7/31/97
Site: T-30
Bay SW Happy Family Isl.

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	20	20						40
Elatine minima	20							20
Elodea canadensis	10							10
Eriocaulon septangulare	20							20
Isoetes echinospora	10							10
Juncus pelocarpus	20							20
M. tenellum	20							20
Najas flexilis	20							20
Potamogeton gramineus	20	20						40
P. perfoliatus	10							10
P. pusillus	10							10
Ranunculus reptans	20							20
Sagittaria graminea	2.5							2.5
Vallisneria americana		10						10

1997 Lake George Tributary Survey
Date: 7/31/97
Site: T-30a
Harris Bay inlet

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.		20						20
Elodea canadensis		10						10
Eriocaulon septangulare		20						20
Juncus pelocarpus		10						10
Lindernia	2.5							2.5
Myriophyllum spicatum		2.5						2.5
Najas flexilis		10						10
Nuphar lutem	35							35
Nymphaea odorata	10							10
Pontederia cordata	10							10
Potamogeton amplifolius	10	20						30
P. gramineus	10	20						30
P. praelongus	10							10
P. pusillus	2.5							2.5
P. robbinsii		10						10
P. zosteriformis	10							10
Ranunculus longirostris		2.5						2.5
Sagittaria graminea	10	20						30
Sparganium sp.	2.5							2.5
Utricularia vulgaris	2.5							2.5
Vallisneria americana	20	35						55

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-32
Dunham's Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5						5
Elodea		2.5	2.5					5
Myriophyllum spicatum								0
Najas flexilis	2.5	35	2.5					40
Nuphar lutem	10	2.5	2.5					15
Nymphaea odorata	35							35
Pontedaria cordata	2.5							2.5
Potamogeton amplifolius			10					10
P. gramineus		10	10					20
P. perfoliatus		2.5	10					12.5
P. praelongus		2.5	2.5					5
P. zosteriformis	2.5	2.5	2.5					7.5
Sagittaria graminea	2.5	10						12.5
Sparganium sp.	2.5	2.5	2.5					7.5
Utricularia purpurea	2.5	2.5						5
Vallisneria americana	10	35	75					120

1997 Lake George Tributary Survey
Date: 8/6/97
Site: T-33
B-E Dark Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.		2.5	2.5	2.5	2.5	2.5	2.5	15
Elatine minima		2.5	2.5					5
Elodea canadensis			2.5	2.5				5
Isoetes echinospora		2.5	2.5	10				15
I. macrospora						2.5	2.5	5
Myriophyllum exalbescens					2.5			2.5
M. tenellum		10						10
Potamogeton amplifolius					10	2.5		12.5
P. foliosis					10			10
P. gramineus		2.5	10	10				22.5
P. perfoliatus				2.5				2.5
P. pusillus		2.5	2.5	2.5				7.5
P. richardsonii		2.5	2.5					5
P. robbinsii					10	2.5	2.5	15
P. spirillus				2.5	2.5			5
Sagittaria graminea			2.5					2.5
Sparganium sp.		2.5	2.5	10	2.5	2.5	2.5	22.5
Vallisneria americana	2.5	2.5	2.5	2.5				10

1997 Lake George Tributary Survey
Date: 8/6/97
Site: T-34
Dark Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	2.5	2.5				10
Elatine minima	2.5	2.5						5
Eriocaulon septangulare		10						10
Isoetes macrospora					2.5	10	35	47.5
Juncus pelocarpus		2.5	2.5					5
Lobelia dortmanna		2.5						2.5
Myriophyllum tenellum		2.5	2.5					5
P. foliosis			2.5	2.5	2.5	2.5		10
P. gramineus		2.5	2.5	2.5				7.5
P. robbinsii				2.5	2.5	2.5		7.5
Sparganium sp.		2.5	2.5	2.5				7.5

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-35a
S. of Plum Pt.

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10							10
Elatine minima	2.5	20						22.5
Heteranthera dubia			20					20
Lobelia dortmanna	10							10
Najas flexilis	2.5							2.5
Potamogeton gramineus		35						35
P. perfoliatus			10					10
P. pusillus			10					10
P. spirillus			20					20
Ranunculus longirostris			10					10
R. reptans	10							10
Sparganium sp.	2.5							2.5
Vallisneria americana		35						35

1997 Lake George Tributary Survey
Date: 8/6/97
Site: T-35b
Plum/Woods Pt.

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	2.5	2.5	2.5			12.5
Elatine minima		2.5						2.5
Elodea canadensis				2.5	2.5			5
Heteranthera dubia			2.5					2.5
Isoetes echinospora		2.5	10	10				22.5
I. macrospora					2.5	35	35	72.5
Myriophyllum tenellum		2.5			2.5			5
Potamogeton gramineus		2.5	2.5	2.5				7.5
P. perfoliatus		2.5	35	2.5	2.5			42.5
P. praelongus					2.5			2.5
P. robbinsii				2.5	20	10	10	42.5
P. spirillus					2.5			2.5
P. zosteriformis			2.5					2.5
Ranunculus longirostris				2.5	2.5			5
R. reptans		2.5	10					12.5
Vallisneria americana	2.5	2.5	2.5	2.5	2.5	2.5	10	25

1997 Lake George Tributary Survey
Date: 9/9/97
Site. T-36

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	20							20
Elatine minima	10	20						30
Elodea canadensis		2.5						
Eriocaulon septangulare	2.5	2.5						5
Myriophyllum tenellum	10							10
Potamogeton gramineus	20							20
P. perfoliatus				10				10
P. robbinsii			10	35				45
P. spirillus		2.5	20					22.5
Ranunculus longirostris			10					10
R. reptans			35	75				110
Vallisneria americana		20	35	10				65

1997 Lake George Tributary Survey
Date:
Site: T-36a

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.		35						35
Elatine minima		2.5						2.5
Eriocaulon septangulare	35	20						55
Juncus pelocarpus	10							10
Lobelia dortmanna	10							10
Myriophyllum tenellum	20							20
P. gramineus	10	10						20
P. perfoliatus	10		10					20
P. robbinsii			20					20
P. spirillus		10	2.5					12.5
P. zosteriformis		2.5						2.5
Ranunculus longirostris		10	20					30
R. reptans	75	35	35	75				220
Sagittaria graminea	10							10
Vallisneria americana		20	10					30

1997 Lake George Tributary Survey
Date:
Site: T-36b

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	35							35
Elatine minima	20	20						40
Isoetes echinospora	2.5							2.5
Lobelia dortmanna	2.5							2.5
Myriophyllum tenellum	35							35
Najas flexilis	10							10
Potamogeton gramineus	35	35						70
P. perfoliatus	75	20	10					105
P. robbinsii		10	35					45
P. spirillus	10	10						20
Ranunculus longirostris		10	10					20
R. reptans	35	75	75					185
Vallisneria americana	20	20	10					50

1997 Lake George Tributary Survey
Date:
Site: T-36c

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10							10
Elatine minima	20	10						30
Eriocaulon septangulare	20							20
Juncus pelocarpus	10							10
Lobelia dortmanna		2.5						2.5
Myriophyllum tenellum	35							35
Najas flexilis	2.5							2.5
Potamogeton amplifolius		10						10
P. gramineus	35							35
P. perfoliatus	10	10						20
P. spirillus	10							10
R. reptans	35	20						55
Vallisneria americana	35	20						55

1997 Lake George Tributary Survey
Date: 9/9/97
Site: T-36d

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.		2.5						2.5
Isoetes macrospora			2.5					2.5
Potamogeton pusillus			2.5					2.5
P. spirillus			10					10

1997 Lake George Tributary Survey
Date: 9/9/97
Site: T-36e

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	20							20
Elatine minima	10							10
Elodea canadensis	10							10
Eriocaulon septangulare	20							20
Isoetes echinospora	10							10
Juncus pelocarpus	10							10
Lobelia dortmanna	10							10
Myriophyllum spicatum		10						10
M. tenellum	20							20
Potamogeton gramineus	35	10	10					55
P. perfoliatus		10	10					20
P. zosteriformis		10	10					20
R. reptans	75							75
Vallisneria americana		20	20					40

1997 Lake George Tributary Survey
Date: 9/9/97
Site: T-36f

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	75	10						85
Elatine minima	75	75	20					170
Isoetes echinospora	20	35	20					75
Lobelia dortmanna	10	10	10					30
Potamogeton gramineus	20	20	20					60
P. pusillus	10	20						30
P. spirillus	10	10						20
P. zostenformis	10	10						20

1997 Lake George Tributary Survey
Date: 8/26/97
Site: T-37a through d

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Bidens beckii			2.5	2.5	2.5	2.5	10	20
Chara sp.	2.5	2.5	10	2.5	2.5	2.5	35	57.5
Elodea canadensis	10	2.5	2.5	2.5	2.5	2.5	2.5	25
Isoetes echinospora	2.5		2.5					5
I. macrospora					75	75	75	225
Heteranthera dubia	10	2.5						12.5
Myriophyllum tenellum	2.5	2.5						5
Najas flexilis	2.5	10	10	10	10	2.5	2.5	47.5
N. quadalupensis	2.5	2.5	10	10				25
Potamogeton gramineus	10	2.5	10	20				42.5
P. perfoliatus		10	10	2.5				22.5
P. pusillus	2.5	2.5	2.5	10				17.5
P. robbinsii		2.5	10	2.5	10	10	10	45
P. spirillus	2.5	2.5	2.5	2.5				10
P. vaseyii			2.5	2.5	2.5	2.5		10
P. zosteriformis				2.5	2.5			5
Ranunculus longirostris		2.5	2.5	2.5				7.5
Sagittaria graminea	2.5	2.5	2.5					7.5
Vallisneria americana	35	35	10	20	10	10	10	130

1997 Lake George Tributary Survey
Date: 8/26/97
Site: T-40
Marine Village culvert

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.		35						35
Elodea canadensis	35							35
Myriophyllum spicatum	10							10
Najas flexilis		35						35
Potamogeton perfoliatus	2.5							2.5
P. robbinsii		10						10
P. spirillus	2.5	10						12.5
P. zosteriformis	10	35						45
Ranunculus longirostris	10	10						20
R. reptans	75							75
Sagittaria graminea		20						20
Vallisneria americana	35	35						70

1997 Lake George Tributary Survey
Date: 8/28/97
Site: T-41
English Brook

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	75	35						110
Elodea canadensis	10	2.5						12.5
Eriocaulon septangulare		2.5						2.5
Heteranthera dubia	10							10
Juncus pelocarpus	35	35						70
Lobelia dortmanna	20	20						40
Myriophyllum alterniflorum	20	20						40
M. tenellum	75	75						150
M. spicatum	2.5							2.5
P. gramineus	10	10	10					30
P. robbinsii		20	20					40
Ranunculus longirostris		2.5	20					22.5
Sagittaria graminea	35	20	75					130
Vallisneria americana	75	20						95

1997 Lake George Tributary Survey
Date: 8/26/97
Site. T-41a
Tahoe culvert

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Elodea canadensis	75	20	20					115
Potamogeton amplifolius				10				10
P. crispus	2.5	10	10	10				32.5
P. perfoliatus	20	20	20					60
P. richardsonii	20							20
P. robbinsii			10	20				30
P. zosteriformis		20	20	10				50
Sparganium sp.			10					10
Vallisneria americana		20						20

1997 Lake George Tributary Survey
Date: 8/27/97
Site: T-43
Hearthstone

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Elatine minima		2.5	2.5					5
Lobelia dortmanna			10					10
Myriophyllum tenellum	20	35						55
Najas flexilis			2.5					2.5
Potamogeton amplifolius		10	10					20
P. gramineus		10	10	10				30
P. perfoliatus		2.5						2.5
P. robbinsii				35				35
Ranunculus reptans		35	35	75				145
Sagittaria graminea	10	10	20					40
Vallisneria americana		10	10					20

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-44
Still Bay

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	2.5	10				17.5
Eleocharis acicularis	2.5	75	10					87.5
Eriocaulon septangulare	2.5	2.5						5
Isoetes echinospora		2.5	10	20				32.5
Lobelia dortmanna	2.5	10	2.5					15
Myriophyllum alterniflorum		10	10	2.5				22.5
M. tenellum	20	20	10	2.5				52.5
Potamogeton gramineus		10	10	10				30
P. perfoliatus	2.5	2.5	2.5	10				17.5
P. robbinsii			2.5	10				12.5
Ranunculus longirostris				2.5				2.5
Sagittaria graminea	2.5	10	20	2.5				35
Subularia aquatica	2.5	2.5						5
Vallisneria americana	10	10	10	10				40

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-45
Antlers

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10	2.5	2.5	2.5	2.5			20
Elodea canadensis			2.5	2.5	2.5			7.5
Eriocaulon septangulare	2.5	2.5						5
Heteranthera dubia			2.5	2.5				5
Lobelia dortmanna	2.5	2.5						5
Myriophyllum alterniflorum	2.5	2.5						5
M. spicatum	2.5	10	75	75	2.5			165
M. tenellum	20	2.5						22.5
Najas flexilis		2.5	2.5	2.5				7.5
Potamogeton amplifolius			2.5	2.5				5
P. crispus		2.5	10	2.5				15
P. gramineus	2.5	10	2.5	2.5	2.5			20
P. perfoliatus	10	10	2.5	2.5	2.5			27.5
P. pusillus		10	2.5	2.5	2.5			17.5
P. robbinsii		2.5	10	20	20			52.5
P. spirillus			2.5	2.5	2.5			7.5
P. zosteriformis		2.5	2.5	2.5	10			17.5
Sagittaria graminea	10							10
Subularia aquatica	2.5	2.5						5
Vallisneria americana	10	20	10	10	10			60

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-46
Smith Brook

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.		35	20					55
Eriocaulon septangulare		10						10
Isoetes echinospora	2.5	20						22.5
Lobelia dortmanna			10					10
Myriophyllum alterniflorum	10	20						30
Myriophyllum tenellum		35	75					110
Potamogeton amplifolius			2.5					2.5
P. gramineus		20						20
P. perfoliatus	10							10
P. richardsonii	20	10						30
P. robbinsii								0
R. reptans	20	75	75					170
Sparganium sp.	2.5							2.5
Vallisneria americana	35	20	20					75

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-47
Stepping Stones

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	2.5					7.5
Elatine minima	2.5							2.5
Eriocaulon septangulare	2.5	2.5						5
Isoetes echinospora	2.5							2.5
Lobelia dortmanna	2.5	2.5						5
Juncus pelocarpus	2.5							2.5
Myriophyllum tenellum	10	2.5						12.5
Najas flexilis	2.5	2.5	2.5					7.5
Potamogeton gramineus	2.5							2.5
Ranunculus reptans	2.5							2.5
Subularia aquatica	2.5							2.5
Utricularia resupinata	2.5	10						12.5
Vallisneria americana	2.5							2.5

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-48

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	10	10						20
M. tenellum		2.5						2.5
Najas flexilis	2.5							2.5
Potamogeton gramineus	10	10						20
Sparganium sp.	2.5							2.5
Subularia aquatica	2.5							2.5

1997 Lake George Tributary Survey
Date: 9/15/97
Site: T-49
Edmund's Brook

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	2.5	2.5	20	2.5	2.5			30
Elatine minima	2.5	2.5						5
Elodea canadensis		2.5	2.5					5
Eriocaulon septangulare	10	2.5						12.5
Isoetes echinospora	2.5	2.5						5
Lobelia dortmanna	2.5	2.5						5
Myriophyllum tenellum	75	10						85
Potamogeton gramineus	10	10	10	10				40
P. perfoliatus	2.5	10	10	10				32.5
P. pusillus			2.5					2.5
P. spirillus		2.5						2.5
Ranunculus reptans	2.5	20						22.5
Sagittaria graminea	2.5	35						37.5
Subularia aquatica	2.5							2.5
Vallisneria americana	10	10	10	10				40

1997 Lake George Tributary Survey
Date: 7/31/97
Site: T-99
Assembly Point

Species	0-1	1-2	2-3	3-4	4-5	5-6	6-7	Total
Chara sp.	20	10						30
Elatine minima	2.5							2.5
Elodea canadensis	20							20
Eriocaulon septangulare	10	10						20
Juncus pelocarpus	20	10						30
Myriophyllum tenellum	75							75
Najas flexilis	10							10
Potamogeton gramineus	35							35
P. zosteriformis	10							10
Ranunculus reptans	20	10						30
Vallisneria americana	35	10						45