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Final Coastal Lakes Aquatic Plant Survey Report

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Final

Coastal Lakes Aquatic Plant Survey Report

Prepared for:

USDA Forest Service

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Section 1.01 Introduction

Invasive, non-indigenous plants can degrade water quality and fish habitat when they invade lakes, ponds, and streams. Changes in plant community architecture in lakes due to invasion by canopy-forming invasive aquatic plants can result in loss of native plant biodiversity and reduction of the structural complexity of the underwater habitat. Differences in photosynthetic biochemistry between non-indigenous and native plants can result in large diurnal pH and dissolved oxygen concentrations.

Humans are the primary means of dispersal of non-indigenous aquatic plants. Transportation on trailered boats is a known vector of movement between lakes. Another vector is deliberate introduction by humans. The fragrant waterlily (*Nymphaea odorata*), for example, has been intentionally planted in some lakes. The recent increase in popularity of water gardens has resulted in escape of ornamental, aquatic plants into natural systems

Early detection of new infestations is key to control of invasive aquatic plants. Since aquatic plant species vary in their response to management activities, effective management of infested lakes and ponds is predicated upon a good understanding of the species present.

Regular surveys are critical to development of baseline information on aquatic plant communities and early detection of new invaders. While some of the major lakes on the south-central coast of Oregon have been the subject of regular and somewhat rigorous aquatic plant surveys (e.g., Tenmile Lakes), most have received only cursory, if any, attention to the aquatic plant community, especially the submersed, aquatic plant community.

This report is the second in a series documenting aquatic plant surveys conducted in waterbodies within and adjacent to the Siuslaw National Forest, Oregon. The first report dealt with aquatic plant data collected in summer 2003 from waterbodies lying approximately between Hebo and the Siuslaw River

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(Pfauth and Sytsma, 2003). This document reports on aquatic plant and water chemistry data collected from waterbodies concentrated between the Siuslaw River and the Umpqua River.

Section 1.02 *Methods*

Ninety four waterbodies within and adjacent to the boundaries of the Siuslaw National Forest were surveyed in June, July, and August, 2004 (Figure 1). This total included 66 small, created duck ponds located in the deflation plains near the Siuslaw (57) and Siltcoos (9) Rivers. The created ponds were individually sampled for plants, however, results have been aggregated under two headings: 1. constructed ponds at south jetty Siuslaw River and 2. constructed ponds near Siltcoos lagoon. Waterbodies were classified into two size categories - small (<100 acres) or large (> 100 acres) (Table 1). Fringing wetlands and emergent vegetation were not included in the survey.

Plant surveys

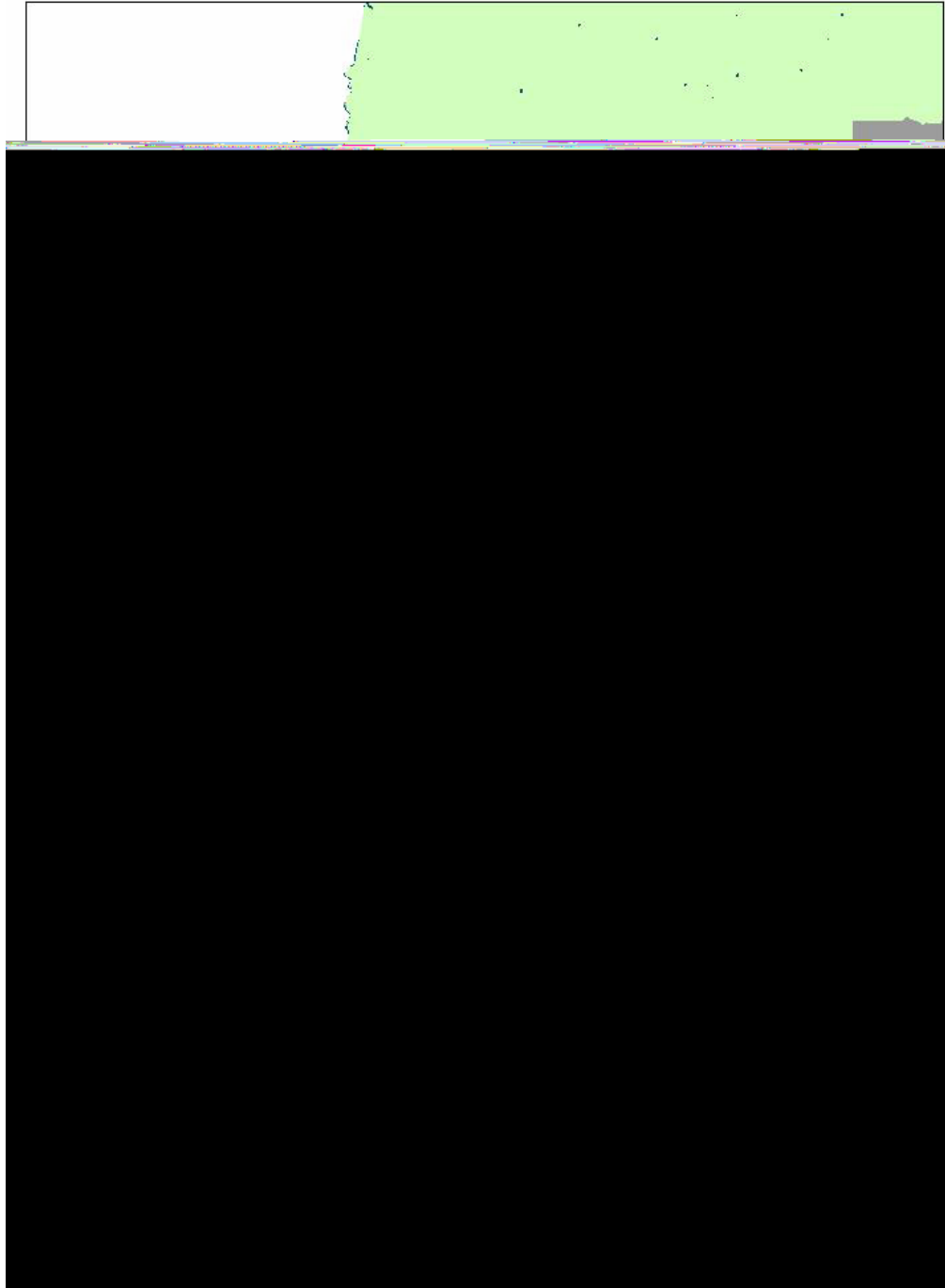
Plant survey protocols were different for the two size categories. Small lakes were surveyed by walking the shoreline, tossing a plant rake into the lake, and identifying the plants retrieved. Where access was possible, a small inflatable boat or canoe was used to gain access to mid-lake areas. Surveys were conducted until no new species were found for a period of one hour. GPS locations of each rake toss were recorded and voucher specimens (one per species per lake) were prepared and deposited in the Oregon State University Herbarium. Voucher specimens of *Nuphar polysepalum* and *Nymphaea odorata* were not made.

The large lakes were surveyed by choosing ten random transects in each lake. Each transect ran from shore to the maximum depth of macrophyte colonization. Rake tosses from a boat were made at every one meter increment in depth along the transect as measured by an on-board depth detector. GPS locations and species abundance were recorded for each rake toss. Voucher specimens (one per species per lake) were prepared and deposited in the Oregon State

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University Herbarium. Voucher specimens of *Nuphar polysepalum* and *Nymphaea odorata* were not made.

Figure 1. Map showing lakes surveyed within the Siuslaw National Forest in 2004. Numbers denote survey locations; refer to Table 1 for corresponding names.



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Table 1. Waterbodies surveyed for aquatic plants in summer 2004. Lakes are listed from northernmost to southernmost.

#	Name of lake	Size (acres)	#	Name of lake	Size (acres)
	<i>Small lakes</i>			<i>Large lakes</i>	
1	Constructed ponds at south jetty of Siuslaw River (57)	16	26	Woahink Lake	820
2	North Glenada Lake	3	27	Siltcoos Lake	3164
3	South Glenada Lake	2	28	Tahkenitch Lake	1674
4	"North Bear Lake" *	6			
5	Bear Lake	8			
6	Little Woahink Lake	6			
7	Cleawox Lake	87			
8	Lilly Lake	1			
9	Woahink Orphan	1			
10	Siltcoos Lagoon	5			
11	Constructed ponds near Siltcoos Lagoon (9)	3			
12	Taylor Lake	3			
13	"Countyline Pond" *	1			
14	Carter Lake	28			
15	Carter Orphan	3			
16	Lost Lake	6			
17	"CZ Lake" *	1			
18	"North Perkins Pond" *	1			
19	Perkins Lake	5			
20	"MP202 Pond" *	1			
21	Elbow Lake	13			
22	Butterfly Lake	7			
23	Three Mile Lake	63			
24	Hookhats Lake	3			
25	Gardiner Reservoir	9			

* Waterbody names in quotation marks are unofficial names for unnamed features. Exact locations (GPS coordinates) are in Appendix B.

Water chemistry

Water transparency was measured with a Secchi disk in lakes where it was possible to access the mid-lake. Measurements of water chemistry parameters were made in situ and in the laboratory. Conductivity and pH were measured in situ using a Quanta or a Hydrolab MiniSonde. Two one liter water samples were

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taken from each water body (with the exception of the created duck ponds) and kept on ice, when possible, for transport back to shore for subsequent filtration and preservation. Several of the waterbodies were only accessible by hiking in through steep sand dunes. Water samples from these waterbodies were kept as cool as possible and transported in backpacks to a field office for subsequent filtration and/or preservation. One liter from each of the samples was left unfiltered and stored frozen at approximately 4°C until delivery to the Cooperative Chemical Analytical Laboratory (CCAL) in Corvallis, OR which performed analyses for conductivity, pH, alkalinity, total nitrogen, and total phosphorus. The second liter was filtered through a Whatman gfs 0.7 micron filter using a hand vacuum pump. A 250 ml aliquot of the filtrate was stored frozen at 4°C until delivery to CCAL and subsequent analyses for ortho-phosphorus and nitrate. A 125 ml aliquot of the filtrate was acidified with concentrated HCl and stored in the refrigerator at approximately 4°C until analysis for dissolved organic carbon (DOC) was made by the Center for Lakes and Reservoirs laboratory. DOC analysis was done with a Shimadzu model TOC-VCSH total organic carbon analyzer according to Standard Method 5310B.

Section 1.03 Results

Plant surveys

Names of plant species found in each waterbody are tabulated in Appendix A. Tables contain the botanical name, the common name, and whether the species grows as an aquatic or emergent. Geographic coordinates for each sample point, the botanical names of species collected at each point, and estimates of abundance are tabulated in Appendix B.

Aquatic plant species that were collected and identified were placed into three categories: introduced, nuisance species (INUS); introduced, non-nuisance species (INON); and native species (NAT) (Table 2). In addition, the presence or absence of public boat ramps was recorded for each lake.

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Eleven of the lakes surveyed contained introduced, nuisance species (Table 3); seven contained introduced, non-nuisance species (Table 4); and the remainder (11) contained only native species. Of those lakes containing introduced, nuisance species, three had more than one nuisance species. Siltcoos Lagoon had two (*Egeria densa*, *Myriophyllum aquaticum*), Woahink Lake had three (*Cabomba caroliniana*, *Myriophyllum aquaticum*, *Nymphaea odorata*), and Siltcoos Lake had three (*Cabomba caroliniana*, *Egerua densa*, *Nymphaea odorata*). The most frequently occurring INUS was *Nymphaea odorata*, found in seven lakes

Two introduced, non-nuisance, aquatic species were detected in the survey: *Callitriche stagnalis* (Pond water starwort) and *Vallisneria americana* (Tapegrass). *C. stagnalis* forms floating mats of small, leafy rosettes on the surface of shallow waters while *V. americana* has long, thin submersed leaves arising from runners buried in the sediment. Neither are listed on any of the noxious weed lists of the western coastal states nor do they appear to be problematic to humans.

Four of the five lakes which have public boat ramps contain at least one INUS (80%). In contrast, INUS were detected at six of the 25 lakes having no public boat ramps (24%) (Figure 2)

Table 2. Numbers of aquatic plant species found in lakes within Siuslaw National Forest. (INUS = Introduced, nuisance species; INON = Introduced, non-nuisance species; NAT = Native species)

Name of lake	Public boat ramp	INUS	INON	NAT	TOTAL
<i>Small lakes</i>					
Constructed ponds - south jetty Siuslaw River	No	1	0	8	9
North Glenada Lake	No	0	0	1	1
South Glenada Lake	No	0	0	7	7
“North Bear Lake”	No	0	0	4	4
Bear Lake	No	0	0	3	3
Little Woahink Lake	No	1	1	8	10
Cleawox Lake	Yes	1	1	13	15
Lilly Lake	No	1	0	5	6

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Woahink Orphan	No	1	0	7	8
Siltcoos Lagoon	No*	2	0	16	18
Constructed ponds – Siltcoos River	No	1	0	11	12
Taylor Lake	No	0	1	13	14
“Countyline Pond”	No	0	0	5	5
Carter Lake	Yes	0	0	5	5
Carter Orphan	No	0	0	3	3
Lost Lake	No	0	0	7	7
“CZ Lake”	No	0	0	10	10
Perkins Lake	No	0	0	5	5
“North Perkins Pond”	No	0	0	3	3
“MP 202 Pond”	No	0	1	10	11
Elbow Lake	No	1	0	3	4
Butterfly Lake	No	0	0	3	3
Three Mile Lake	No	0	0	10	10
Hookhats Lake	No	0	0	7	7
Gardiner Reservoir	No	0	1	6	7
<i>Large lakes</i>					
Woahink Lake	Yes	3	0	10	13
Siltcoos Lake	Yes	4	1	12	16
Tahkenitch Lake	Yes	1	0	15	16

Table 3. Introduced, nuisance species (INUS) of aquatic plants found in lake surveys.

Name of lake	INUS
Constructed ponds – south jetty Siuslaw	<i>Nymphaea odorata</i>
Constructed ponds – Siltcoos	<i>Myriophyllum aquaticum</i>
Woahink Orphan	<i>Nymphaea odorata</i>
Little Woahink Lake	<i>Nymphaea odorata</i>
Cleawox Lake	<i>Nymphaea odorata</i>
Lilly Lake	<i>Nymphaea odorata</i>
Siltcoos Lagoon	<i>Egeria densa, Myriophyllum aquaticum</i>
Elbow Lake	<i>Egeria densa</i>

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Woahink Lake	<i>Cabomba caroliniana</i> , <i>Myriophyllum aquaticum</i> , <i>Nymphaea odorata</i>
Siltcoos Lake	<i>Cabomba caroliniana</i> , <i>Egeria densa</i> , <i>Nymphaea odorata</i>
Tahkenitch Lake	<i>Egeria densa</i>

Table 4. Introduced, non-nuisance species of aquatic plants (INON) found in lake surveys

Name of lake	INON
Constructed ponds – south jetty	<i>Callitriche stagnalis</i>
Little Woahink Lake	<i>Callitriche stagnalis</i>
Cleawox Lake	<i>Callitriche stagnalis</i>
Gardiner Reservoir	<i>Callitriche stagnalis</i>
“MP 202 Pond”	<i>Callitriche stagnalis</i>
Taylor Lake	<i>Callitriche stagnalis</i>
Siltcoos Lake	<i>Vallisneria americana</i>

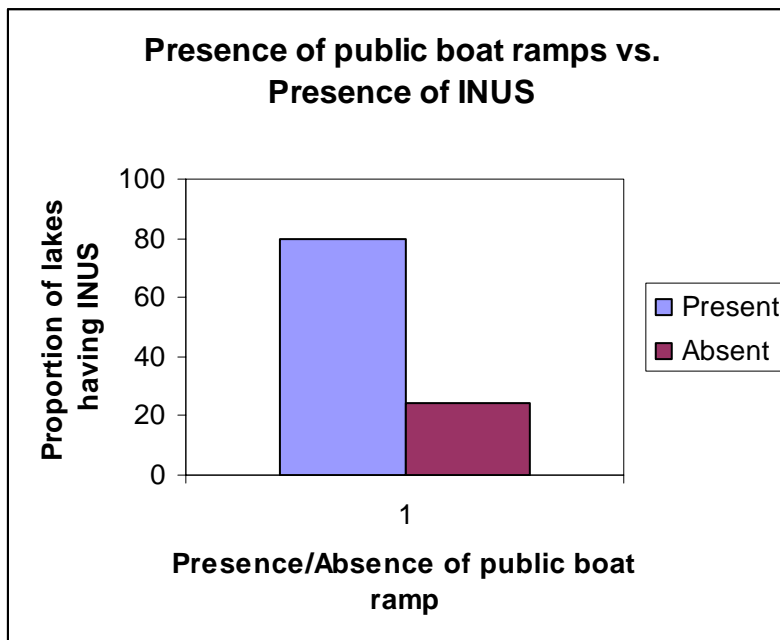


Figure 2. Presence/absence of public boat ramp vs presence of INUS in lakes surveyed.

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A species-area curve was plotted with total number of species identified used as the measure for species richness and the logarithm of the surface area used as the x-axis (Figure 3). Species-area curves typically show an increase in the number of species present (species richness) with a corresponding increase in area surveyed. Data collected for these lakes show high species richness in both very small (<10 acres) and very large (>1000 acres) lakes. Other factors, such as water chemistry, are likely determinants of aquatic plant species distribution among these lakes.

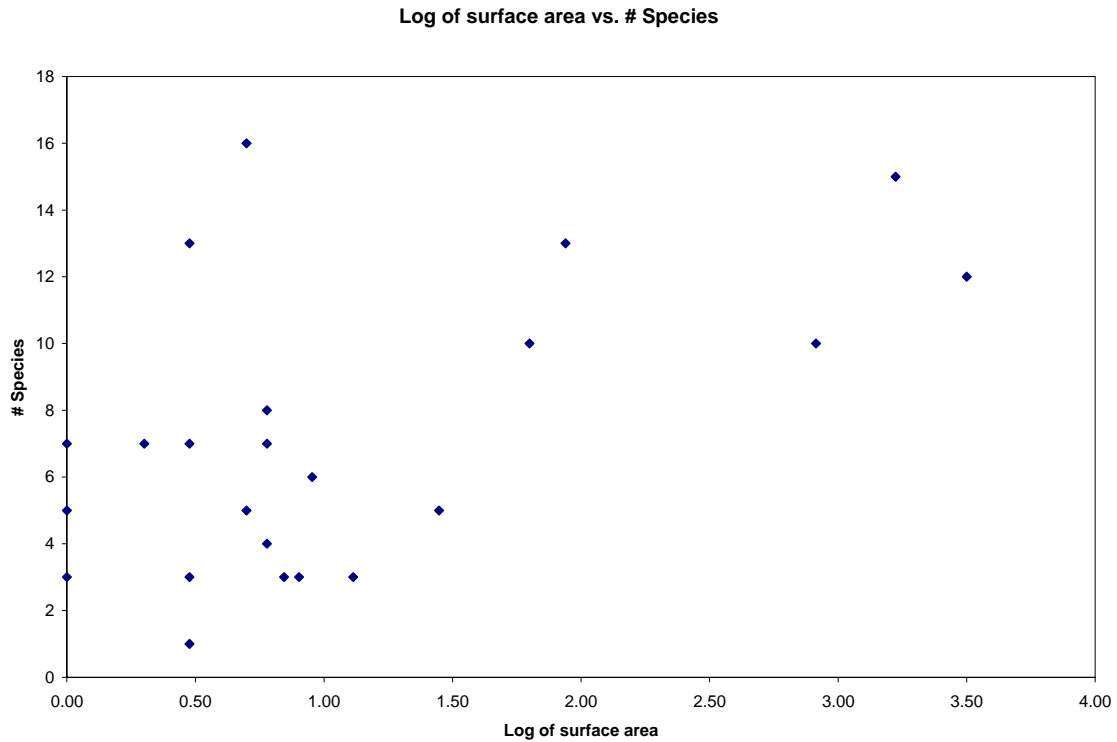


Figure 3. Species richness vs log surface area for lakes surveyed in 2004.

Water chemistry

Appendix C contains all water chemistry data. No water samples were collected from the constructed duck ponds or from Carter Orphan and Hookhats Lake which were too shallow to yield adequate volumes of water for analyses.

Bivariate scatter plots were constructed in which species richness was plotted against each of the water chemistry parameters: alkalinity (Figure 4), pH (Figure

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5), total nitrogen (Figure 6), total phosphorus (Figure 7), ortho-phosphate (Figure 8), conductivity (Figure 9), nitrates + nitrites (Figure 10), and dissolved organic carbon (Figure 11). The resulting individual plots do not show any obvious patterns which would be useful for predicting or characterizing the aquatic plant communities within these lakes. Interactions between and among these parameters are likely what determine the aquatic plant community structure. Further multivariate analyses of the data (e.g., principal components analysis), will be done and results included in the final report.

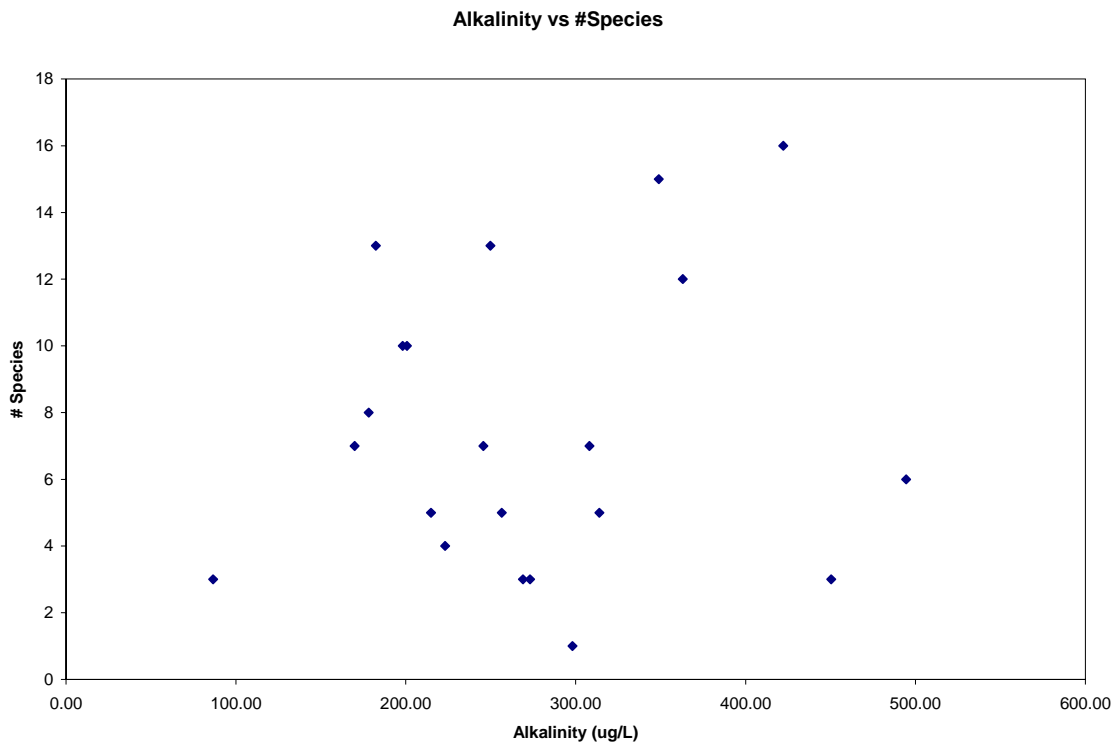


Figure 4. Species richness plotted against alkalinity (CaCO_3) for lakes surveyed in 2004.

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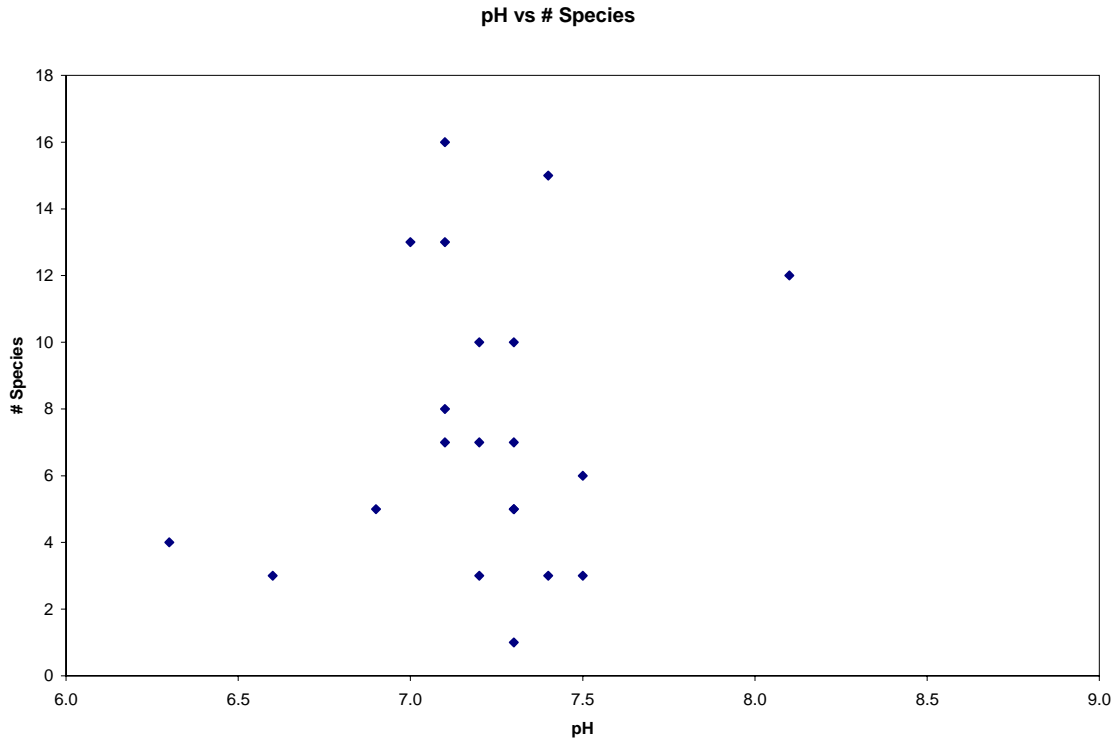


Figure 5. Species richness plotted against pH for lakes surveyed in 2004.

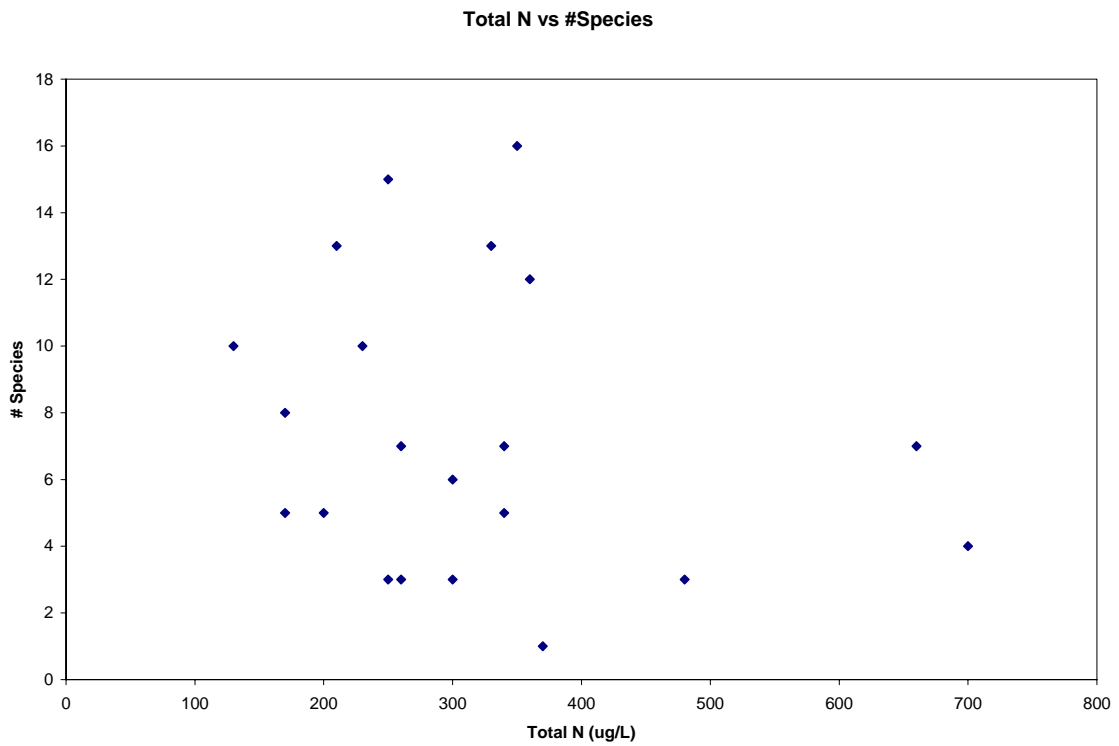


Figure 6. Species richness plotted against total nitrogen for lakes surveyed in 2004.

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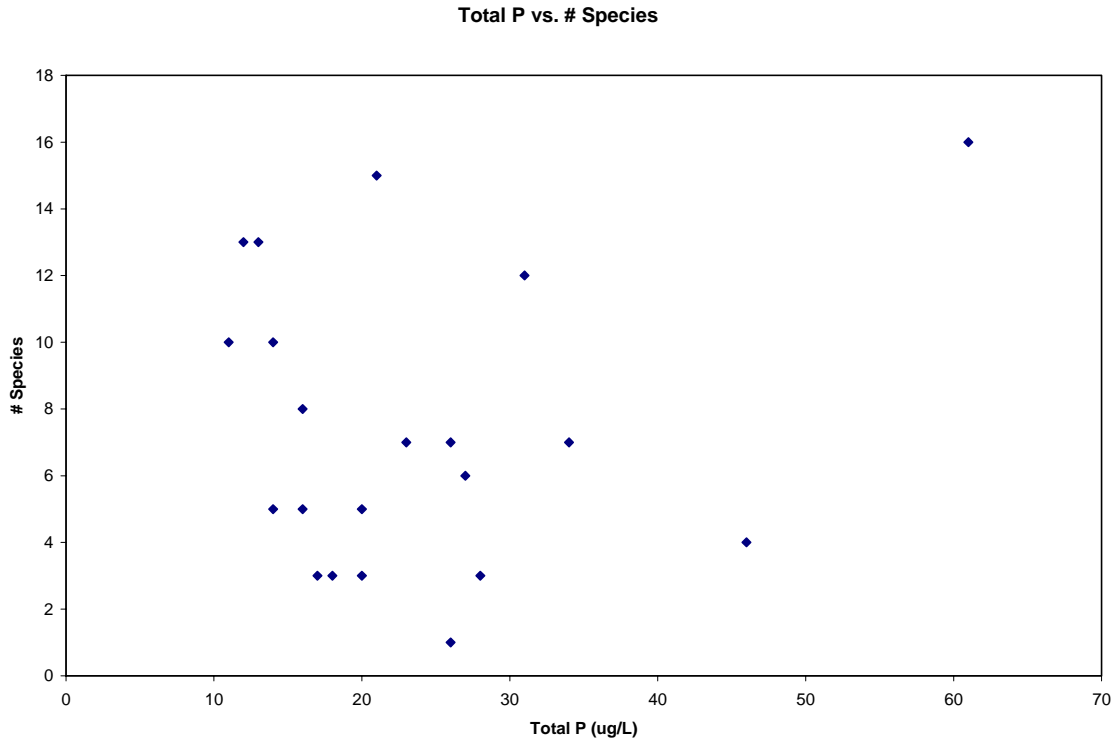


Figure 7. Species richness plotted against total nitrogen for lakes surveyed in 2004.

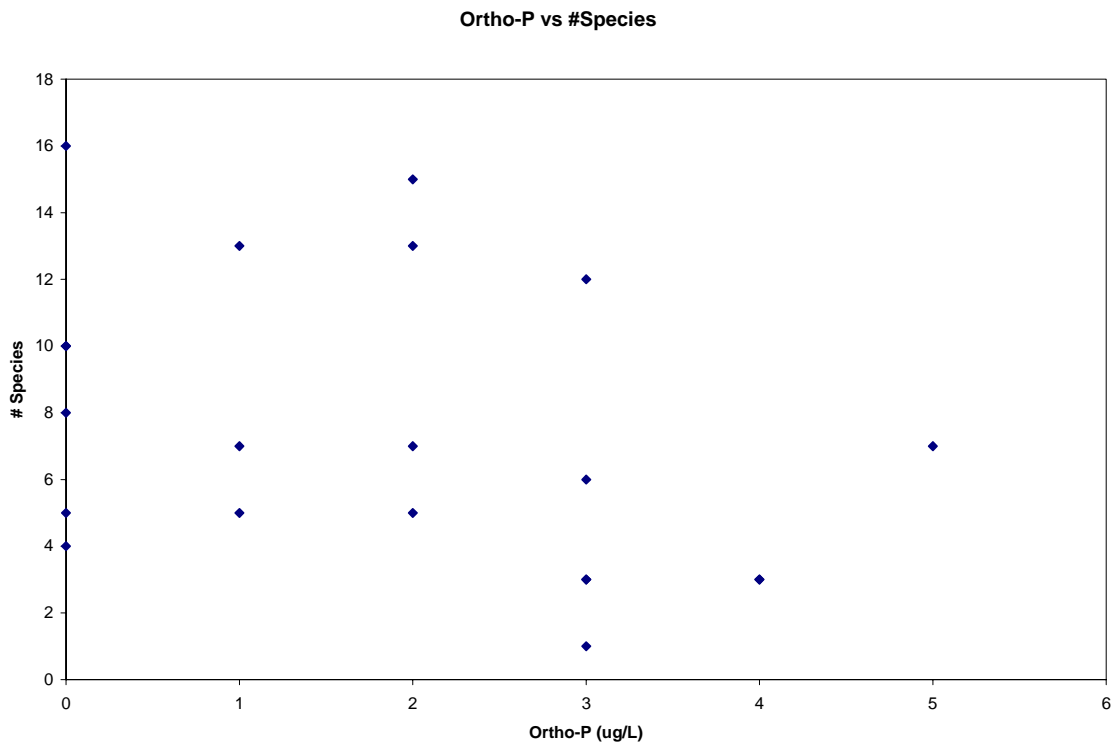


Figure 8. Species richness plotted against ortho-phosphate for lakes surveyed in 2004.

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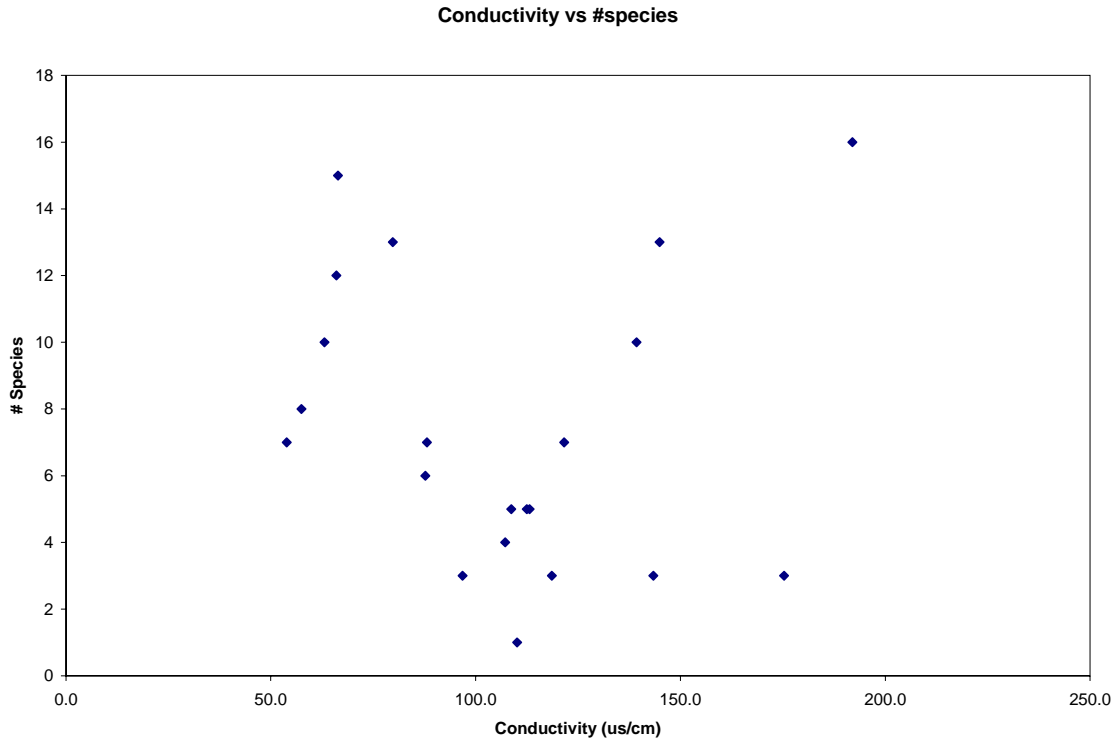


Figure 9. Species richness plotted against conductivity for lakes surveyed in 2004.

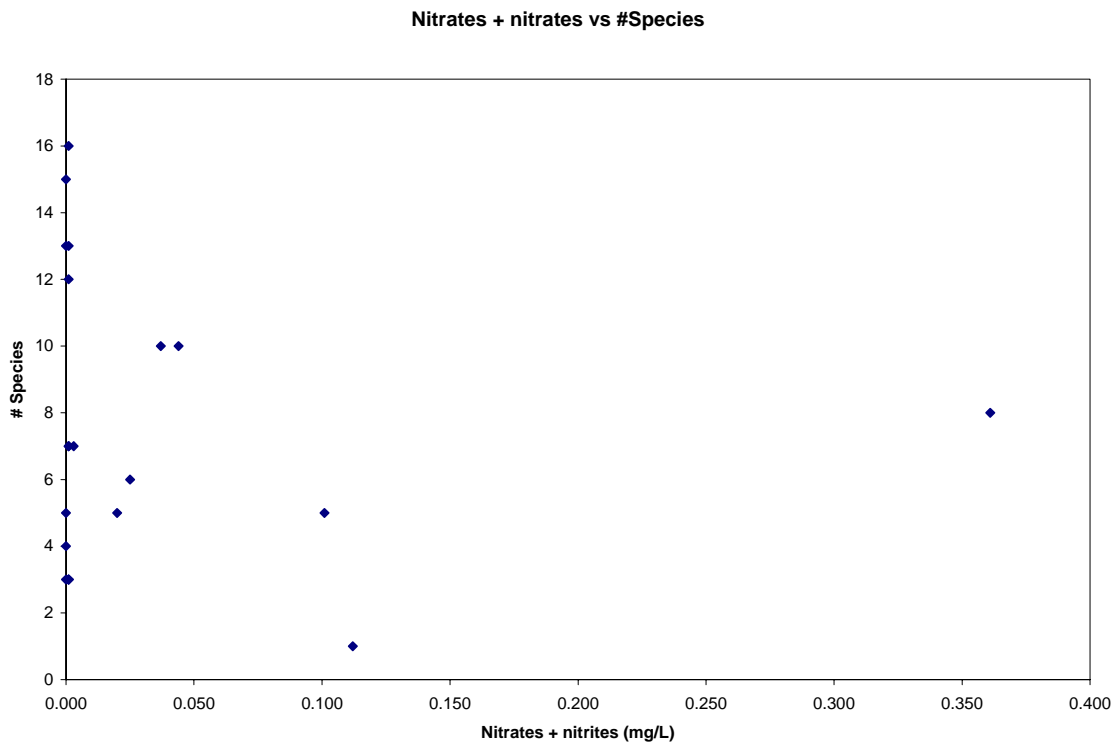


Figure 10. Species richness plotted against nitrates + nitrites for lakes surveyed in 2004.

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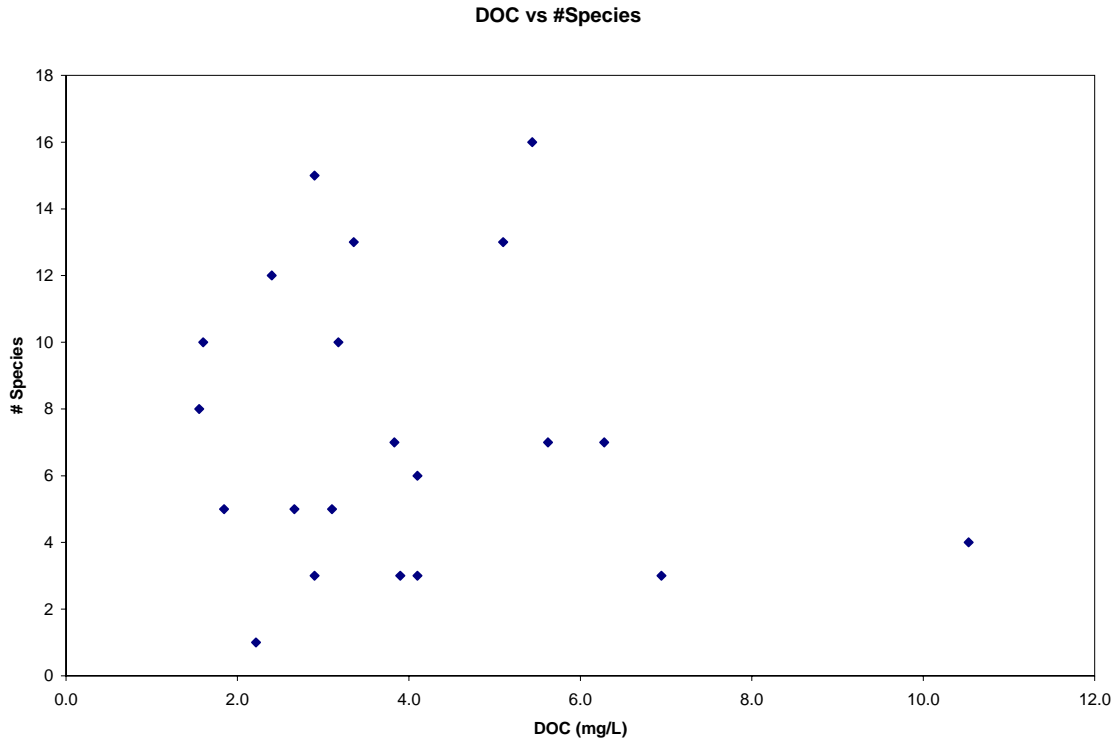


Figure 11. Species richness plotted against dissolved organic carbon for lakes surveyed in 2004

Section 1.04 Conclusions and recommendations

Plant species data from this survey are similar to those reported from the 2003 survey (Pfauth & Sytsma, 2003) in that the presence of introduced, nuisance aquatic plant species in lakes is correlated with the presence of a public boat ramp. Limiting the number of boat ramps on lakes would help prevent infestation of other waterbodies. Public outreach and education could also aid in prevention of future aquatic nuisance infestations within the Siuslaw National Forest. At a minimum, boater information signs should be posted at all public boat ramps. The CLR has signs available upon request and can furnish them to the USFS (Appendix D). Development and implementation of management plans for waterbodies already infested with INUS is, again, recommended as a way to control them in those waterbodies.

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The 2004 survey documented several occurrences of *Scirpus subterminalis* (Water bulrush) which is on the Oregon Natural Heritage Program List of Rare, Threatened and Endangered Plants and Animals of Oregon. *S. subterminalis* was found in Cleawox Lake, Taylor Lake, and Woahink Lake. Submersed, aquatic plants tend to be underreported and are seldom surveyed adequately. Results from the 2003 and 2004 surveys indicate that this species is not as limited in abundance as previously thought.

The remainder of this section discusses each of the 28 surveyed lakes and ponds.

The **Siuslaw south jetty duck ponds** and the **Siltcoos duck ponds** are a series of 66 small ponds which were excavated between the late 1960's and the 1990's. Each of these ponds is less than a half acre in surface area and maximum depth is no greater than approximately two meters. The first group of ponds were constructed with steep sides in the shape of a dog leg. Soon after, a second set with shallower slopes and islands were excavated. Neither of these first two types of constructed ponds were effective for their intended use as waterfowl habitat. The third set, excavated in the early 1990's, had shallow sloping banks and proved effective as waterfowl habitat (M. Northrop, USFS, pers. comm.).

There are no roads or maintained trails which directly access these ponds. Rather, access is gained by walking from established roads through the dense vegetation of the deflation plain. Access to some of the ponds was gained by walking on top of a dike that had been constructed at the same time as the ponds. The most frequently occurring plant species within the Siuslaw south jetty duck ponds were *Chara* sp. (Muskgrass), *Potamogeton pusillus* (Small pondweed), and *P. natans* (Floating leaved pondweed). *Nymphaea odorata* (fragrant waterlily) was found growing in one pond. This INUS is an ornamental that has escaped cultivation and is widely distributed throughout the region. Given the difficulty of access to the site, it is unlikely that it was deliberately

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planted. The large seeds of this species are dispersed by water and eaten by waterfowl, either of which could have been the vector for introduction to the pond.

The constructed ponds near the Siltcoos River are larger and deeper than the south jetty ponds. They contained a larger assemblage of aquatic plant species (12) than was found in the Siuslaw River south jetty ponds (9), one of which was the aggressive, exotic *Myriophyllum aquaticum* (Parrotfeather). The ponds are situated close to the Siltcoos Lagoon area which contains a sizeable *M. aquaticum* infestation. It is possible that the pond infestation originated via plant fragments transported between the two waterbodies by duck hunters or animals, however, it is more likely that fragments were carried in by high water events.

Water samples were not collected for analyses from these very small waterbodies.

North Glenada Lake, South Glenada Lake, North Bear Lake, and Bear Lake are all accessible only by hiking through the dunes. North Glenada Lake contained many downed logs and snags. Sampling with the rake was limited due to the large amount of submersed brush in the water. South Glenada Lake has a larger aquatic plant assemblage and more open water. A pair of osprey with chicks in the nest was observed in a tree at the north end of this lake. Unnamed #1 had some open water however, most of its area was covered with downed logs and an emergent scrub/shrub wetland dominated by *Spirea douglasii*. Bear Lake, which had very dark stained water, contained only trace amounts of aquatic vegetation. The surrounding shoreline had bear, coyote, deer, and raccoon tracks and newts were observed in the lake. No INUS were found in any of these waterbodies and they are at low risk for invasion due to their limited human access.

MP 202 Pond, Carter Orphan, Countyline Pond, Perkins Lake, North Perkins Pond, and Woahink Orphan are all small, cutoff lakes or ponds formed by the construction of U.S. Highway 101. The highway either cut through naturally occurring lakes (e.g., Woahink) or ponds were formed in the borrow pits adjacent

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to the roadbed. Recreational walk-in fishing occurs in some of these small roadside ponds and lakes and it is possible that aquatic nuisance plant propagules could be transported on fishing gear from an infested lake to these small waterbodies.

Cleawox Lake lies on the west side of U.S. Highway 101 within J.M Honeyman State Park. The lake has a public boat ramp, a visitor center, and boat rental concession. Most of the recreational use of the lake (swimming, canoeing) occurs in the wide portion of the lake and relatively little in the long narrow arm which projects northward. The lake supports large mats of the native bladderwort, *Utricularia vulgaris*, which were blooming at the time of the survey. Even though Cleawox Lake has a public boat ramp, it contains only a small colony of a single INUS (*Nymphaea odorata*), located in the northeast quadrant. The *Nymphaea* infestation is small enough that it could probably be eradicated from the lake either by digging or by continuously removing new leaves as they form, thus weakening and, ultimately, killing the plant. At a minimum, flowers should be removed before seeds are set and dispersed. It is remarkable that the lake appears to contain no *M. aquaticum* or *Egeria densa* (Brazilian egeria) as it is close to large infestations of both of these species in the surrounding area. High priority should be placed on prevention and monitoring in this lake as eradication of small infestations has the highest success rate at the lowest cost.

Taylor Lake has no boat ramp but is easily accessible to the public via a boardwalk from the parking area to the lake. The lake had a total of 14 different species of aquatic plants established in it, none of which are INUS. Such diversity should be maintained by preventing aquatic weed infestation.

Carter Lake, adjacent to the east side of U.S. Highway 101, is a long narrow lake running approximately north to south, parallel to the highway. Carter Lake has a large, concrete public boat ramp on its west shore which is easily accessible from Highway 101. Carter Lake is as yet uninfested with INUS and prevention of such infestation should be a high priority. The lake is a popular

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fishing lake and is at high risk for infestation from transport of propagules from surrounding, infested lakes.

Lost Lake and **CZ Lake** are small lakes located to the east of U.S. Highway 101. There is no vehicle or boat access to them, only an unimproved trail through the brush. A patch of the aggressive wetland grass *Phalaris arundinacea* (Reed's canary grass) was observed on the north bank of Lost Lake.

Elbow Lake is not accessible to boaters via public boat ramp. There is, however, an old boat ramp on the west side of the lake which is no longer usable. The lake contained only four aquatic plant species of which one is the INUS *E. densa*. *E. densa* forms a dense band of submersed vegetation around the perimeter of Elbow Lake. The surface of the perimeter is covered with the native *Nuphar polysepalum* (Spatterdock). *E. densa* has already colonized most, if not all, of the suitable habitat within this lake. Management efforts here should focus on preventing transport of INUS from this lake to other, uninfested waterbodies.

Butterfly Lake is a dunal lake which is accessed by walking through steep sided dunes. There is a steep, brushy trail down to the lakeshore which is accessible only to foot traffic. Risk of invasion is low in this lake due to its inaccessibility.

Threemile Lake and **Hookhats Lake** are dunal lakes located behind the deflation plain south of Tahkenitch Lake. Both can be accessed by hikers via a well traveled trail which branches off of Sparrow Park Rd. The north end of Threemile Lake can only be accessed by hiking in over the dunes. Threemile Lake is bordered to the west by a steep sand dune beyond which lies the deflation plain and the Pacific Ocean. The lake bottom is sandy and the water is clear. The extreme northern end of Threemile Lake is bordered by a large wetland dominated by emergent vegetation (*Scirpus* sp.). Although the lake contained 10 different aquatic plant species, none of them were found in great abundance. Numerous plant fragments were observed on the shore of the lake and it appeared that plants were more abundant earlier in the year when water

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levels were higher. Fragments of *Elodea canadensis* (Common waterweed) were among those found on shore although no specimens were present in samples taken from lake waters.

Hookhats Lake is a small, shallow waterbody to the south of and connected to Threemile Lake by a small stream. Public access to the north end of the lake is via the Threemile Lake trail. Standing water in the lake at the time of the survey was low and confined to the southern portion. Emergent land supported plant species typical of boggy areas such as *Drosera rotundifolia* (Round leaf sundew) and *Sisyrinchium californicum* (Golden blue-eyed grass).

Gardiner Reservoir is a small reservoir lying to the north of the Umpqua River east of the town of Gardiner, OR. There is a paved road to the reservoir although it is fenced and access to the reservoir is limited. Survey personnel gained entry into the reservoir grounds by meeting with the Gardiner Salmon and Trout Enhancement Program which hatches and rears salmon there.

Woahink Lake is a large lake located three miles inland from the Pacific Ocean on the east side of U.S. Highway 101. The dendritic shape of the lake is typical of lakes formed by the impoundment of stream systems. Woahink Lake is connected to the larger Siltcoos Lake by Woahink Creek which exits the lake at its southwest corner. Three INUS were detected in this lake: *Cabomba caroliniana* (fanwort), *M. aquaticum*, and *N. odorata*. *C. caroliniana* is native to South America, naturalized in the southeastern U.S., and has become invasive in the northeast and northwest portions of the country. It was found in Sutton Lake in the 2003 survey, although the population there was quite small. In Woahink Lake, it was found at one sample point on one transect. The patch was approximately one meter in diameter and plants were in bloom. As noted in the 2003 report, the presence of *C. caroliniana* in the mid-coast lakes represents a range expansion of this invasive, aquatic plant. A cursory aquatic plant survey done in this lake in summer 2000 (T. Pennington, unpub. data) did not find *Cabomba* in the lake. A pH value of 7.3 was measured in water samples from

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this survey – slightly above neutral. *Cabomba* is pH sensitive, preferring slightly acidic to neutral waters and does best in waters below pH 7.8. *Cabomba* is one of the dominant aquatic plants in Cullaby Lake on the Clatsop Plains. The pH of Cullaby Lake is between 6.7 and 7.1 (Sytsma et al 2004). This small population of *Cabomba* should be monitored. *M. aquaticum* is plentiful in the arms of the lake lying to the north of the Canary Road bridges. It has been present in Woahink Lake since at least 2000 (T. Pennington unpub. data) and is likely to spread to other portions of the lake. *V. americana* was not in any of the samples taken in the 2004 survey, however, it was found by Pennington in 2000 (unpubl data).

Siltcoos Lake, the largest of the Oregon coastal lakes, was found to contain a total of 16 aquatic plant species, three of which are INUS: *C. caroliniana*, *E. densa*, and *N. odorata*. *C. caroliniana* was found on eight of the ten transects, although not in high abundance. The pH of Siltcoos Lake (8.1) is at the high end of this species range of pH tolerance, thus, its growth here may remain relatively limited. Even if it does not form dense monocultures as it has in other, more acidic waterbodies such as Cullaby Lake in Clatsop County (Sytsma et al, in press), it will likely continue to spread to additional sites within the lake.

E. densa was found in moderate to high abundance on all ten transects. This aquatic nuisance plant is common throughout the state of Oregon. Only male plants are present in North America, thus it produces no seed and all reproduction is vegetative. It readily forms new plants from fragments which are easily produced and transported by boats. Its abundance in this lake when combined with the high amount of trailered boat traffic makes Siltcoos Lake a reservoir of *E. densa* propagules which could infest other waterbodies.

V. americana is native to North America but is introduced in this region. It does not appear to have the negative impacts of other introduced aquatics like *E. densa* and *M. aquaticum*, thus its placement in the INON category. It could have been transported into Siltcoos Lake on a trailered boat from other another lake or

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from Woahink Lake via Woahink Creek. The small population in Siltcoos Lake was in flower and appeared to be vigorous and well established.

Tahkenitch Lake contained only one INUS, *E. densa*. The 2004 survey indicated that it is not yet established throughout the entire lake. It is conspicuously absent from Fivemile Arm, a long, shallow arm of the lake which contains particularly abundant populations of native, aquatic plant species. This is the only lake surveyed so far in the Siuslaw National Forest which contains *Hippuris vulgaris* (Mares tail). *H. vulgaris* has a broad geographical range and is not rare but has, so far, proven to be uncommon in the mid-coast lakes.

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Section 1.05 **Literature cited**

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Section 1.06 Acknowledgements

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Appendix A Plant species and growth forms

Table 5. Constructed ponds at south jetty Siuslaw River

Botanical name	Common name	Aquatic	Emergent
<i>Brasenia schreberi</i>	Watershield	+	
<i>Callitriche stagnalis</i>	Pond water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Eleocharis palustris</i>	Common spikerush		+
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Potamogeton foliosus</i>	Leafy pondweed	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pectinatus</i>	Sago pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Sparganium</i> sp.	Bur reed		+

Table 6. Constructed ponds near Siltcoos River

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Elodea canadensis</i>	Common waterweed	+	
<i>Lilaeopsis occidentalis</i>	Lilaeopsis	+	
<i>Myriophyllum aquaticum</i>	Parrotfeather	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Nitella</i> sp.	Nitella	+	
<i>Potamogeton foliosus</i>	Leafy pondweed	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Sparganium</i> sp.	Bur reed		+

Table 7. North Glenada Lake

Botanical name	Common name	Aquatic	Emergent
<i>Ludwigia palustris</i>	Water purslane	+	

Table 8. South Glenada Lake

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Ludwigia palustris</i>	Water purslane	+	
<i>Nuphar polysepalum</i>	Spatdock	+	

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<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 9. "North Bear Lake"

Botanical name	Common name	Aquatic	Emergent
<i>Nuphar polysepalum</i>	Spatdock	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 10. Bear Lake

Botanical name	Common name	Aquatic	Emergent
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 11. Woahink Orphan

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche heterophylla</i>	Different leaved water starwort	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Ludwigia palustris</i>	Water purslane	+	
<i>Nuphar polysepalum</i>	Spatdock	+	
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 12. Little Woahink Lake

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche stagnalis</i>	Pond water starwort	+	
<i>Callitriche verna</i>	Spring water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Nuphar polysepalum</i>	Spatdock	+	
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Potamogeton epihydrus</i>	Ribbonleaf pondweed	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Sparganium</i> sp.	Bur reed		+

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Table 13. Cleawox Lake

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche stagnalis</i>	Pond water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Lilaeopsis occidentalis</i>	Lilaeopsis	+	
<i>Ludwigia palustris</i>	Water purslane	+	
<i>Nitella</i> sp.	Nitella	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Potamogeton amplifolius</i>	Bigleaf pondweed	+	
<i>Potamogeton epihydrus</i>	Ribbonleaf pondweed	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Scirpus subterminalis</i>	Water bulrush	+	
<i>Sparganium</i> sp.	Bur reed		+
<i>Utricularia vulgaris</i>	Common bladderwort	+	

Table 14. Lilly Lake

Botanical name	Common name	Aquatic	Emergent
<i>Chara</i> sp.	Muskgrass	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	

Table 15. Siltcoos Lagoon

Botanical name	Common name	Aquatic	Emergent
<i>Azolla mexicana</i>	Mexican water fern	+	
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Ceratophyllum demersum</i>	Coontail	+	
<i>Egeria densa</i>	Brazilian egeria	+	
<i>Elodea canadensis</i>	Common waterweed	+	
<i>Hydrocotyle ranunculoides</i>	Marsh pennywort	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Lemna minor</i>	Duckweed	+	
<i>Ludwigia palustris</i>	Water purslane	+	
<i>Myriophyllum aquaticum</i>	Parrotfeather	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	

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<i>Najas flexilis</i>	Slender water nymph	+	
<i>Polygonum</i> sp.	Smartweed		+
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Sparganium</i> sp.	Bur reed		+
<i>Utricularia vulgaris</i>	Common bladderwort	+	

Table 16. Carter Lake

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Ludwigia palustris</i>	Water purslane	+	
<i>Polygonum amphibium</i>	Water smartweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 17. Carter Orphan

Botanical name	Common name	Aquatic	Emergent
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Sparganium</i> sp.	Bur reed		+

Table 18. Perkins Lake

Botanical name	Common name	Aquatic	Emergent
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Potamogeton</i> sp.	Pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 19. Lost Lake

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Callitriche heterophylla</i>	Different leaved water starwort	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Polygonum</i> sp.	Smartweed		+
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Sparganium</i> sp.	Bur reed		+
<i>Veronica catenata</i>	Chain speedwell	+	

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Table 20. Hookhats Lake

Botanical name	Common name	Aquatic	Emergent
<i>Chara</i> sp.	Muskgrass	+	
<i>Drosera rotundifolia</i>	Round leaved sundew		+
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Nitella</i> sp.	Nitella	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	

Table 21. Three Mile Lake

Botanical name	Common name	Aquatic	Emergent
<i>Eleocharis</i> sp.	Spike rush		+
<i>Isoetes nutallii</i>	Quillwort	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Polygonum amphibium</i>	Water smartweed	+	
<i>Potamogeton robbinsii</i>	Fernleaf pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 22. "North Perkins Pond"

Botanical name	Common name	Aquatic	Emergent
<i>Carex</i> sp.	Sedge		+
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 23. "Countyline Pond"

Botanical name	Common name	Aquatic	Emergent
<i>Carex</i> sp.	Sedge		+
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Typha latifolia</i>	Cattail		+

Table 24. Butterfly Lake

Botanical name	Common name	Aquatic	Emergent
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<i>Callitriche heterophylla</i>	Different leaved water starwort	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 25. Elbow Lake

Botanical name	Common name	Aquatic	Emergent
<i>Ceratophyllum demersum</i>	Coontail	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Egeria densa</i>	Brazilian egeria	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	

Table 26. Gardiner Reservoir

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche stagnalis</i>	Pond water starwort	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Sparganium</i> sp.	Bur reed		+
<i>Veronica catenata</i>	Chain speedwell	+	

Table 27. "MP 202 Pond"

Botanical name	Common name	Aquatic	Emergent
<i>Brasenia schreberi</i>	Watershield	+	
<i>Callitriche stagnalis</i>	Pond water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Potamogeton epihydrus</i>	Ribbonleaf pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Sagittaria latifolia</i>	Arrowhead		+
<i>Sparganium</i> sp.	Bur reed		+
<i>Typha latifolia</i>	Cattail		+

Table 28. Taylor Lake

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche heterophylla</i>	Different leaved water starwort	+	
<i>Callitriche stagnalis</i>	Pond water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	

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<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Ludwigia palustris</i>	Water purslane	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Ranunculus flammula</i>	Small creeping buttercup	+	
<i>Scirpus subterminalis</i>	Water bulrush	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 29. "CZ Lake"

Botanical name	Common name	Aquatic	Emergent
<i>Callitriche heterophylla</i>	Different leaved water starwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Lilaeopsis occidentalis</i>	Lilaeopsis	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Veronica catenata</i>	Chain speedwell	+	

Table 30. Woahink Lake

Botanical name	Common name	Aquatic	Emergent
<i>Brasenia schreberi</i>	Watershield	+	
<i>Cabomba caroliniana</i>	Fanwort	+	
<i>Chara</i> sp.	Muskgrass	+	
<i>Elodea canadensis</i>	Common waterweed	+	
<i>Juncus supiniformis</i>	Spreading rush	+	
<i>Myriophyllum aquaticum</i>	Parrotfeather	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Nitella</i> sp.	Nitella	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Scirpus subterminalis</i>	Water bulrush	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	

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Table 31. Siltcoos Lake

Botanical name	Common name	Aquatic	Emergent
<i>Cabomba caroliniana</i>	Fanwort	+	
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Ceratophyllum demersum</i>	Coontail	+	
<i>Egeria densa</i>	Brazilian egeria	+	
<i>Elodea canadensis</i>	Common waterweed	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Nitella</i> sp.	Nitella	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Nymphaea odorata</i>	Fragrant waterlily	+	
<i>Potamogeton amplifolius</i>	Bigleaf pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Potamogeton richardsonii</i>	Richardson's pondweed	+	
<i>Potamogeton zosteriformis</i>	Flat-stem pondweed	+	
<i>Utricularia vulgaris</i>	Common bladderwort	+	
<i>Vallisneria americana</i>	Tapegrass	+	

Table 32. Tahkenitch Lake

Botanical name	Common name	Aquatic	Emergent
<i>Brasenia schreberi</i>	Watershield	+	
<i>Callitriche hermaphroditica</i>	Autumnal water starwort	+	
<i>Ceratophyllum demersum</i>	Coontail	+	
<i>Egeria densa</i>	Brazilian egeria	+	
<i>Elodea canadensis</i>	Common waterweed	+	
<i>Hippuris vulgaris</i>	Mare's tail	+	
<i>Myriophyllum sibiricum</i>	Northern watermilfoil	+	
<i>Najas flexilis</i>	Slender water nymph	+	
<i>Nitella</i> sp.	Nitella	+	
<i>Nuphar polysepalum</i>	Spatterdock	+	
<i>Potamogeton amplifolius</i>	Bigleaf pondweed	+	
<i>Potamogeton natans</i>	Floating leaved pondweed	+	
<i>Potamogeton pusillus</i>	Small pondweed	+	
<i>Potamogeton richardsonii</i>	Richardson's pondweed	+	
<i>Sparganium</i> sp.	Bur reed		+
<i>Utricularia vulgaris</i>	Common bladderwort	+	

Appendix B. Plant sampling locations and species

Table 33. South jetty constructed duck ponds 6/29/04 – 6/30/04

Latitude	Longitude	Species			
43°58.389'	124°07.943'	<i>Eleocharis palustris</i>	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	
43°58.348'	124°07.991'	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.		
43° 58.366	124° 08.076	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>		
43°58.308	124°08.048	<i>Potamogeton natans</i>			
43°58.286	124°07.980	<i>Potamogeton pusillus</i>			
43°58.237	124°08.037	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.186	124°08.033	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>		
43°58.158	124°08.073	<i>Potamogeton foliosus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.
43°58.192	124°08.094	<i>Potamogeton pusillus</i>	<i>Potamogeton pectinatus</i>	<i>Potamogeton natans</i>	<i>Chara</i> sp
43°58.254	124°08.121	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.471	124°08.277	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.	
43°58.452	124°08.215	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.417	124°08.160	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.418	124°08.114	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.409	124°08.053	<i>Potamogeton natans</i>	<i>Chara</i> sp.		
43°58.388	124°08.165	<i>Potamogeton natans</i>	<i>Chara</i> sp.		
43°58.374	124°08.189	<i>Potamogeton pusillus</i>	<i>Potamogeton pectinatus</i>	<i>Potamogeton natans</i>	<i>Chara</i> sp
43°58.410	124°08.246	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.364	124°08.293	<i>Potamogeton pusillus</i>	<i>Potamogeton pectinatus</i>	<i>Potamogeton natans</i>	
43°58.311	124°08.291	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.291	124°08.243	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.253	124°08.304	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.211	124°08.291	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.
43°58.185	124°08.296	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.165	124°08.221	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.201	124°08.227	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.		
43°58.225	124°08.231	<i>Potamogeton natans</i>	<i>Chara</i> sp		
43°58.242	124°08.203	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.		
43°58.243	124°08.227	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	

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43°58.268	124°08.194	<i>Potamogeton pusillus</i>	<i>Potamogeton pectinatus</i>	<i>Potamogeton pectinatus</i>	
43°58.281	124°08.193	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton pectinatus</i>	
43°58.300	124°08.208	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.326	124°08.206	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton pectinatus</i>	<i>Potamogeton natans</i>
43°58.351	124°08.217	<i>Potamogeton pectinatus</i>	<i>Potamogeton pectinatus</i>		
43°58.374	124°08.197	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.334	124°08.200	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.		
43°58.292	124°08.186	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.270	124°08.175	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.247	124°08.177	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Brasenia schreberi</i>
°	°	<i>Sparganium</i> sp.			
43°58.224	124°08.175	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.052	124°08.243	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Callitriche stagnalis</i>
43°58.079	124°08.232	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.111	124°08.261	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.127	124°08.245	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.114	124°08.193	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.097	124°08.194	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°58.061	124°08.135	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Callitriche stagnalis</i>	<i>Nymphaea odorata</i>
43°58.101	124°08.115	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Nymphaea odorata</i>
43°58.102	124°08.113	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.		
43°58.190	124°08.092	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	
43°57.380	124°08.251	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.
43°57.716	124°08.072	<i>Potamogeton natans</i>			
43°57.414	124°08.383	<i>Potamogeton natans</i>	<i>Chara</i> sp.		
43°57.492	124°08.355	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.
°	°	<i>Callitriche stagnalis</i>			

Table 34. Siltcoos lagoon area constructed duck ponds 7/1/04

Latitude	Longitude	Species			
43°52.316	124°09.095	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Myriophyllum aquaticum</i>	<i>Nitella</i>
°	°	<i>Callitriche hermaphroditica</i>	<i>Najas flexilis</i>	<i>Elodea canadensis</i>	
43°52.205	124°09.270	<i>Potamogeton natans</i>	<i>Elodea canadensis</i>	<i>Myriophyllum sibiricum</i>	<i>Utricularia vulgaris</i>

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43°52.205	124°09.273	<i>Potamogeton natans</i>	<i>Myriophyllum sibiricum</i>	<i>Sparganium</i> sp.	
43°52.193	124°09.277	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Myriophyllum sibiricum</i>
43°52.155	124°09.288	<i>Potamogeton natans</i>	<i>Potamogeton foliosus</i>	<i>Najas flexilis</i>	<i>Elodea canadensis</i>
°	°	<i>Myriophyllum sibiricum</i>	<i>Utricularia vulgaris</i>		
43°52.116	124°09.308	<i>Potamogeton pusillus</i>	<i>Chara</i> sp.	<i>Potamogeton natans</i>	<i>Najas flexilis</i>
43°52.075	124°09.300	<i>Potamogeton natans</i>	<i>Chara</i> sp.	<i>Najas flexilis</i>	<i>Najas flexilis</i>
°	°	<i>Sparganium</i> sp.			
43°52.030	124°09.310	<i>Potamogeton natans</i>	<i>Potamogeton foliosus</i>	<i>Utricularia vulgaris</i>	<i>Lilaeopsis occidentalis</i>
43°51.992	124°09.344	<i>Potamogeton natans</i>	<i>Chara</i> sp.	<i>Najas flexilis</i>	
43°51.934	124°09.364	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.		
43°51.910	124°09.341	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.	<i>Lilaeopsis occidentalis</i>	
43°51.881	124°09.339	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.		

Table 35. North Glenada Lake

Latitude	Longitude	Species			
43°57.631	124°06.891	<i>Ludwigia palustris</i>			

Table 36. South Glenada Lake 7/5/04

Latitude	Longitude	Species			
43°57.408	124°06.954	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Callitriche hermaphrodita</i>	<i>Utricularia vulgaris</i>
°	°	<i>Veronica catenata</i>	<i>Juncus supiniformis</i>	<i>Ludwigia palustris</i>	<i>Nuphar polysepalum</i>
43°57.440	124°06.903	<i>Callitriche hermaphrodita</i>	<i>Utricularia vulgaris</i>	<i>Veronica catenata</i>	<i>Juncus supiniformis</i>
°	°	<i>Ludwigia palustris</i>	<i>Nuphar polysepalum</i>		

Table 37. "North Bear Lake" 7/6/04

Latitude	Longitude	Species			
43°57.085	124°07.196	<i>Potamogeton natans</i>	<i>Veronica catenata</i>	<i>Utricularia vulgaris</i>	<i>Nuphar polysepalum</i>

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Table 38. Bear Lake 7/6/04

Latitude	Longitude	Species			
43°56.646	124°07.365	<i>Juncus supiniformis</i>	<i>Ranunculus flammula</i>		
43°56.682	124°07.253	<i>Juncus supiniformis</i>	<i>Ranunculus flammula</i>	<i>Veronica catenata</i>	

Table 39. Woahink Orphan 7/6/04

Latitude	Longitude	Species			
43°54.005	124°06.999	<i>Callitriche heterophylla</i>	<i>Juncus supiniformis</i>	<i>Ranunculus flammula</i>	<i>Veronica catenata</i>
°	°	<i>Ludwigia palustris</i>	<i>Nuphar polysepalum</i>	<i>Nymphaea odorata</i>	<i>Utricularia vulgaris</i>

Table 40. Little Woahink Lake 7/7/04

Latitude	Longitude	Species			
43°56.133	124°05.433	<i>Potamogeton natans</i>	<i>Juncus supiniformis</i>	<i>Nymphaea odorata</i>	
43°56.145	124°05.434	<i>Potamogeton epihydrus</i>	<i>Callitriche verna</i>	<i>Callitriche stagnalis</i>	<i>Juncus supiniformis</i>
°	°	<i>Myriophyllum sibiricum</i>			
43°56.065	124°05.412	<i>Potamogeton natans</i>	<i>Potamogeton epihydrus</i>	<i>Juncus supiniformis</i>	<i>Nymphaea odorata</i>
°	°	<i>Nuphar polysepalum</i>			
43°56.057	124°05.384	<i>Chara sp.</i>			
43°56.079	124°05.269	<i>Potamogeton epihydrus</i>	<i>Juncus supiniformis</i>	<i>Myriophyllum sibiricum</i>	
43°56.006	124°05.184	<i>Potamogeton natans</i>	<i>Potamogeton epihydrus</i>	<i>Juncus supiniformis</i>	<i>Nuphar polysepalum</i>
°	°	<i>Sparganium sp.</i>			
43°56.010	124°05.249	<i>Potamogeton epihydrus</i>	<i>Chara sp.</i>	<i>Juncus supiniformis</i>	<i>Myriophyllum sibiricum</i>
°	°	<i>Callitriche verna</i>			

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 Table 41. Cleawox Lake 7/7/04, 8/4/04

Latitude	Longitude	Species			
43°55.839	124°06.525	<i>Callitriche stagnalis</i>	<i>Juncus supiniformis</i>		
43°55.840	124°06.579	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>	<i>Nitella</i> sp.	
43°55.803	124°06.628	<i>Juncus supiniformis</i>	<i>Ranunculus flammula</i>	<i>Utricularia vulgaris</i>	<i>Lilaeopsis occidentalis</i>
43°55.776	124°06.743	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>	<i>Potamogeton natans</i>	<i>Potamogeton epihydrus</i>
°	°	<i>Potamogeton natans</i>	<i>Chara</i> sp		
43°55.786	124°07.056	<i>Nitella</i> sp.			
43°55.913	124°06.940	<i>Juncus supiniformis</i>	<i>Ranunculus flammula</i>	<i>Potamogeton natans</i>	
43°55.976	124°06.946	<i>Utricularia vulgaris</i>			
43°55.973	124°07.059	<i>Juncus supiniformis</i>	<i>Ludwigia palustris</i>	<i>Utricularia vulgaris</i>	
43°55.958	124°06.874	<i>Juncus supiniformis</i>	<i>Ludwigia palustris</i>	<i>Lilaeopsis occidentalis</i>	
43°55.997	124°06.802	<i>Juncus supiniformis</i>	<i>Ludwigia palustris</i>	<i>Utricularia vulgaris</i>	
43°56.060	124°06.707	<i>Juncus supiniformis</i>	<i>Ludwigia palustris</i>	<i>Utricularia vulgaris</i>	<i>Chara</i> sp.
43°56.053	124°06.686	<i>Juncus supiniformis</i>	<i>Potamogeton natans</i>	<i>Utricularia vulgaris</i>	<i>Nitella</i> sp.
°	°	<i>Potamogeton amplifolius</i>	<i>Nuphar polysepalum</i>		
43°56.114	124°06.530	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>	<i>Potamogeton amplifolius</i>	
43°56.029	124°07.165	<i>Juncus supiniformis</i>	<i>Potamogeton natans</i>	<i>Sparganium</i> sp.	
43°55.884	124°06.605	<i>Juncus supiniformis</i>	<i>Potamogeton natans</i>		
43°55.908	124°06.595	<i>Nymphaea odorata</i>			
43°55.830	124°06.614	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>	<i>Scirpus subterminalis</i>	<i>Nitella</i> sp.
43°56.093	124°06.665	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>	<i>Scirpus subterminalis</i>	<i>Nuphar polysepalum</i>
43°56.038	124°07.080	<i>Sparganium</i> sp			
43°56.058	124°07.027	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>	<i>Scirpus subterminalis</i>	<i>Nitella</i> sp.
43°56.184	124°07.048	<i>Nymphaea odorata</i>			
43°56.825	124°06.844	<i>Juncus supiniformis</i>	<i>Utricularia vulgaris</i>		

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 43°56.584 124°06.942 *Juncus supiniformis*

Table 42. Lilly Lake 7/7/04

Latitude	Longitude	Species			
43°55.632	124°06.725	<i>Juncus supiniformis</i>	<i>Potamogeton natans</i>	<i>Utricularia vulgaris</i>	<i>Ranunculus flammula</i>
43°55.622	124°06.723	<i>Juncus supiniformis</i>	<i>Potamogeton natans</i>	<i>Nymphaea odorata</i>	<i>Utricularia vulgaris</i>
°	°	<i>Chara sp.</i>			

Table 43. Siltcoos Lagoon 7/8/04

Latitude	Longitude	Species			
43°52.667	124°08.614	<i>Myriophyllum aquaticum</i>	<i>Ludwigia palustris</i>	<i>Juncus supiniformis</i>	<i>Potamogeton natans</i>
°	°	<i>Utricularia vulgaris</i>	<i>Potamogeton pusillus</i>	<i>Elodea canadensis</i>	<i>Polygonum sp.</i>
°	°	<i>Sparganium sp.</i>			
43°52.669	124°08.663	<i>Myriophyllum aquaticum</i>	<i>Ludwigia palustris</i>	<i>Elodea canadensis</i>	<i>Hydrocotyle ranunculoides</i>
°	°	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Lemna minor</i>	
43°52.752	124°08.651	<i>Myriophyllum aquaticum</i>	<i>Elodea canadensis</i>	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>
°	°	<i>Hydrocotyle ranunculoides</i>	<i>Ranunculus flammula</i>	<i>Utricularia vulgaris</i>	<i>Callitriche hermaphroditica</i>
°	°	<i>Azolla mexicana</i>	<i>Egeria densa</i>	<i>Myriophyllum sibiricum</i>	<i>Najas flexilis</i>
43°52.798	124°08.651	<i>Myriophyllum aquaticum</i>	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Elodea canadensis</i>
		<i>Ceratophyllum demersum</i>	<i>Lemna minor</i>	<i>Utricularia vulgaris</i>	<i>Sparganium sp.</i>
		<i>Egeria densa</i>	<i>Nitella sp.</i>		
43°52.832	124°08.568	<i>Myriophyllum aquaticum</i>	<i>Potamogeton natans</i>	<i>Elodea canadensis</i>	<i>Hydrocotyle ranunculoides</i>
°	°	<i>Ranunculus flammula</i>	<i>Utricularia vulgaris</i>	<i>Lemna minor</i>	

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Table 44. Carter Lake 7/8/04

Latitude	Longitude	Species			
43°51.319	124°08.827	<i>Ludwigia palustris</i>	<i>Veronica catenata</i>	<i>Callitriche hermaphrodita</i>	<i>Polygonum amphibium</i>
°	°	<i>Ranunculus flammula</i>			
43°51.223	124°08.887	<i>Veronica catenata</i>	<i>Polygonum amphibium</i>		
43°51.139	124°08.891	<i>Veronica catenata</i>	<i>Ranunculus flammula</i>		
43°50.805	124°08.864	<i>Veronica catenata</i>	<i>Ranunculus flammula</i>	<i>Polygonum amphibium</i>	<i>Ludwigia palustris</i>
43°50.853	124°08.849	<i>Veronica catenata</i>	<i>Polygonum amphibium</i>	<i>Callitriche hermaphrodita</i>	<i>Ludwigia palustris</i>
43°51.391	124°08.692	<i>Veronica catenata</i>	<i>Polygonum amphibium</i>	<i>Callitriche hermaphrodita</i>	<i>Ludwigia palustris</i>

Table 45. Carter Orphan 7/8/04

Latitude	Longitude	Species			
43°50.553	124°08.914	<i>Potamogeton natans</i>	<i>Nuphar polysepalum</i>	<i>Sparganium</i> sp	

Table 46. Perkins Lake 7/9/04

Latitude	Longitude	Species			
43°49.625	124°08.965	<i>Veronica catenata</i>	<i>Ranunculus flammula</i>	<i>Juncus supiniformis</i>	<i>Myriophyllum sibiricum</i>
°	°	<i>Potamogeton</i> sp.			
43°49.63	124°08.976	<i>Veronica catenata</i>	<i>Juncus supiniformis</i>	<i>Myriophyllum sibiricum</i>	
43°49.518	124°08.914	<i>Veronica catenata</i>	<i>Juncus supiniformis</i>	<i>Potamogeton</i> sp.	

Table 47. Lost Lake 7/9/04

Latitude	Longitude	Species			
43°49.895	124°08.875	<i>Ranunculus flammula</i>	<i>Veronica catenata</i>	<i>Callitriche hermaphrodita</i>	<i>Nuphar polysepalum</i>
		<i>Sparganium</i> sp.	<i>Polygonum</i> sp.		
43°49.905	124°08.840	<i>Ranunculus flammula</i>	<i>Nuphar polysepalum</i>	<i>Callitriche hermaphrodita</i>	<i>Callitriche heterophylla</i>

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Table 48. Hookhats Lake 7/10/04

Latitude	Longitude	Species			
43°45.187	124°10.246	<i>Juncus supiniformis</i>	<i>Nuphar polysepalum</i>	<i>Myriophyllum sibiricum</i>	<i>Chara sp.</i>
43°45.169	124°10.218	<i>Juncus supiniformis</i>	<i>Nuphar polysepalum</i>	<i>Myriophyllum sibiricum</i>	<i>Chara sp.</i>
°	°	<i>Drosera rotundifolia</i>	<i>Potamogeton natans</i>	<i>Nitella sp.</i>	

Table 49. Three Mile Lake 7/10/04, 7/20/04

Latitude	Longitude	Species			
43°45.331	124°10.325	<i>Polygonum amphibium</i>	<i>Myriophyllum sibiricum</i>	<i>Ranunculus flammula</i>	<i>Potamogeton robbinsii</i>
°	°	<i>Veronica catenata</i>			
43°45.975	124°10.196	<i>Juncus supiniformis</i>	<i>Isoetes nuttallii</i>	<i>Polygonum amphibium</i>	<i>Eleocharis sp.</i>
43°46.436	124°10.140	<i>Potamogeton robbinsii</i>	<i>Polygonum amphibium</i>	<i>Ranunculus flammula</i>	<i>Nuphar polysepalum</i>
°	°	<i>Utricularia vulgaris</i>			

Table 50. "North Perkins Pond" 7/19/04

Latitude	Longitude	Species			
43°49.648	124°08.954	<i>Ranunculus flammula</i>	<i>Carex sp.</i>		
43°49.655	124°08.955	<i>Ranunculus flammula</i>	<i>Veronica catenata</i>		
43°49.656	124°08.968	<i>Ranunculus flammula</i>			
43°49.765	124°08.968	<i>Ranunculus flammula</i>	<i>Veronica catenata</i>		

Table 51. "Countyline Pond" 7/19/04

Latitude	Longitude	Species			
44°13.284	123°26.009	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>	<i>Nuphar polysepalum</i>	<i>Typha latifolia</i>
°	°	<i>Carex sp.</i>			

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 Table 52. Butterfly Lake 7/20/04

Latitude	Longitude	Species			
43°47.186	124°09.765	<i>Callitriche heterophylla</i>	<i>Veronica catenata</i>	<i>Juncus supiniformis</i>	
43°47.172	124°09.716	<i>Juncus supiniformis</i>			

Table 53. Elbow Lake 7/21/04

Latitude	Longitude	Species			
43°47.204	124°08.853	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.182	124°08.848	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.164	124°08.827	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.137	124°08.862	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.184	124°08.940	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>	<i>Ceratophyllum demersum</i>	
43°47.209	124°08.988	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.214	124°09.082	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.148	124°09.197	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		
43°47.213	124°09.175	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>	<i>Chara sp.</i>	
43°47.254	124°09.144	<i>Egeria densa</i>	<i>Nuphar polysepalum</i>		

Table 54. Gardiner Reservoir 7/21/04

Latitude	Longitude	Species			
43°43.430	124°06.171	<i>Potamogeton natans</i>	<i>Najas flexilis</i>		
43°43.490	124°06.132	<i>Potamogeton natans</i>	<i>Najas flexilis</i>	<i>Potamogeton pusillus</i>	<i>Callitriche stagnalis</i>
		<i>Sparganium sp</i>	<i>Veronica catenata</i>	<i>Juncus supiniformis</i>	
43°43.484	124°06.159	<i>Najas flexilis</i>			
43°43.59	124°06.125	<i>Potamogeton natans</i>	<i>Najas flexilis</i>	<i>Potamogeton pusillus</i>	<i>Callitriche stagnalis</i>
		<i>Sparganium sp</i>			

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43°43.463 124°06.254 *Najas flexilis*

Table 55. "MP 202 Pond" 7/21/04

Latitude	Longitude	Species			
43°49.039	124°09.120	<i>Najas flexilis</i>	<i>Potamogeton pusillus</i>	<i>Callitriche stagnalis</i>	<i>Ranunculus flammula</i>
°	°	<i>Chara</i> sp	<i>Myriophyllum sibiricum</i>	<i>Potamogeton epihydrus</i>	<i>Brasenia schreberi</i>
		<i>Sparganium</i> sp	<i>Typha latifolia</i>	<i>Sagittaria latifolia</i>	
43°49.044	124°09.082	<i>Potamogeton pusillus</i>	<i>Myriophyllum sibiricum</i>	<i>Chara</i> sp	

Table 56. Taylor Lake 7/22/04

Latitude	Longitude	Species			
43°51.702	124°08.506	<i>Najas flexilis</i>	<i>Potamogeton pusillus</i>	<i>Callitriche stagnalis</i>	<i>Myriophyllum sibiricum</i>
°	°	<i>Potamogeton natans</i>	<i>Ranunculus flammula</i>	<i>Nuphar polysepalum</i>	<i>Ludwigia palustris</i>
°	°	<i>Scirpus subterminalis</i>	<i>Utricularia vulgaris</i>	<i>Callitriche heterophylla</i>	<i>Juncus supiniformis</i>
43°51.686	124°08.489	<i>Scirpus subterminalis</i>	<i>Utricularia vulgaris</i>	<i>Nuphar polysepalum</i>	<i>Potamogeton pusillus</i>
°	°	<i>Potamogeton natans</i>	<i>Juncus supiniformis</i>	<i>Ranunculus flammula</i>	
43°51.708	124°08.486	<i>Callitriche heterophylla</i>	<i>Ludwigia palustris</i>	<i>Veronica catenata</i>	<i>Callitriche stagnalis</i>
°	°	<i>Potamogeton pusillus</i>	<i>Najas flexilis</i>	<i>Scirpus subterminalis</i>	<i>Chara</i> sp
43°51.777	124°08.530	<i>Nuphar polysepalum</i>	<i>Veronica catenata</i>	<i>Ludwigia palustris</i>	<i>Potamogeton natans</i>
°	°	<i>Potamogeton pusillus</i>	<i>Najas flexilis</i>	<i>Ranunculus flammula</i>	<i>Scirpus subterminalis</i>
°	°	<i>Chara</i> sp			
43°51.777	124°08.476	<i>Nuphar polysepalum</i>	<i>Myriophyllum sibiricum</i>	<i>Potamogeton pusillus</i>	<i>Potamogeton natans</i>
°	°	<i>Chara</i> sp	<i>Scirpus subterminalis</i>	<i>Utricularia vulgaris</i>	<i>Juncus supiniformis</i>
°	°	<i>Ludwigia palustris</i>	<i>Veronica catenata</i>		
43°51.736	124°08.474	<i>Nuphar polysepalum</i>	<i>Myriophyllum sibiricum</i>	<i>Potamogeton natans</i>	<i>Utricularia vulgaris</i>
°	°	<i>Scirpus subterminalis</i>			
43°51.784	124°08.443	<i>Scirpus subterminalis</i>	<i>Nuphar polysepalum</i>	<i>Veronica catenata</i>	<i>Ludwigia palustris</i>
°	°	<i>Ranunculus flammula</i>			

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Table 57. "CZ Lake" 7/22/04

Latitude	Longitude	Species			
43°49.746	124°08.933	<i>Juncus supiniformis</i> <i>Chara</i> sp <i>Najas flexilis</i>	<i>Nuphar polysepalum</i> <i>Potamogeton natans</i> <i>Lilaeopsis occidentalis</i>	<i>Utricularia vulgaris</i> <i>Veronica catenata</i>	<i>Callitriche heterophylla</i> <i>Potamogeton pusillus</i>

Table 58. Woahink Lake 8/4/04

Latitude	Longitude	Depth (m)	Species		
TRANSECT 1					
43°55.544	124°06.036	0.3	<i>Juncus supiniformis</i> (3)	<i>Nuphar polysepalum</i> (1)	
°	°	1	<i>Juncus supiniformis</i> (3)		
°	°	1.5	<i>Juncus supiniformis</i> (1)		
43°55.490	124°05.970	2	<i>Juncus supiniformis</i> (3)	<i>Utricularia vulgaris</i> (1)	
TRANSECT 2					
43°55.108	124°06.410	1	<i>Juncus supiniformis</i> (3)	<i>Utricularia vulgaris</i> (2)	<i>Scirpus subterminalis</i> (2)
°	°		<i>Brasenia schreberi</i> (3)		
°	°	2	<i>Juncus supiniformis</i> (3)	<i>Utricularia vulgaris</i> (2)	<i>Scirpus subterminalis</i> (2)
°	°		<i>Brasenia schreberi</i> (3)		
°	°	3.2	<i>Myriophyllum aquaticum</i> (2)	<i>Juncus supiniformis</i> (1)	<i>Scirpus subterminalis</i> (1)
°	°	4.1	0		
TRANSECT 3					
43°54.949	124°06.367	0.5	<i>Juncus supiniformis</i> (3)	<i>Utricularia vulgaris</i> (1)	<i>Nymphaea odorata</i> (2)
°	°	1	<i>Juncus supiniformis</i> (3)	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (1)
°	°	3	0		
TRANSECT 4					
43°54.588	124°06.614	1	<i>Brasenia schreberi</i> (3)	<i>Nymphaea odorata</i> (3)	<i>Juncus supiniformis</i> (2)

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o	o		<i>Nuphar polysepalum</i> (1)	<i>Scirpus subterminalis</i> (1)	
o	o	1.5	<i>Nymphaea odorata</i> (3)	<i>Utricularia vulgaris</i> (1)	
o	o	3	0		
TRANSECT 5					
43°54.111	124°06.941	0.5	<i>Juncus supiniformis</i> (3)	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (1)
o	o		<i>Nuphar polysepalum</i> (2)	<i>Nymphaea odorata</i> (1)	
o	o	1	<i>Juncus supiniformis</i> (2)		
o	o	2	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (1)	<i>Najas flexilis</i> (1)
o	o	3	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (1)	<i>Najas flexilis</i> (1)
o	o	5	0		
TRANSECT 6					
o	o	0.5	<i>Juncus supiniformis</i> (3)	<i>Nuphar polysepalum</i> (2)	<i>Brasenia schreberi</i> (3)
o	o	1	<i>Juncus supiniformis</i> (3)	<i>Brasenia schreberi</i> (3)	<i>Utricularia vulgaris</i> (1)
o	o		<i>Scirpus subterminalis</i> (2)		
o	o	2	<i>Juncus supiniformis</i> (3)	<i>Scirpus subterminalis</i> (1)	<i>Utricularia vulgaris</i> (1)
o	o	3	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (2)	
o	o	4	<i>Juncus supiniformis</i> (2)	<i>Scirpus subterminalis</i> (2)	<i>Utricularia vulgaris</i> (1)
o	o	4.5	0		
TRANSECT 7					
43°54.725	124°04.933	0.5	<i>Elodea canadensis</i> (2)	<i>Utricularia vulgaris</i> (3)	<i>Brasenia schreberi</i> (3)
o	o		<i>Nuphar polysepalum</i> (2)	<i>Scirpus subterminalis</i> (1)	
o	o	1	<i>Utricularia vulgaris</i> (3)	<i>Brasenia schreberi</i> (3)	<i>Cabomba caroliniana</i> (2)
o	o	2	<i>Utricularia vulgaris</i> (3)	<i>Brasenia schreberi</i> (3)	<i>Myriophyllum aquaticum</i> (1)
o	o		<i>Scirpus subterminalis</i> (1)	<i>Myriophyllum sibiricum</i> (1)	
o	o	2.5	<i>Utricularia vulgaris</i> (3)	<i>Myriophyllum sibiricum</i> (2)	<i>Scirpus subterminalis</i> (2)
o	o		<i>Nitella</i> sp. (2)		
o	o	3	<i>Nitella</i> sp. (3)	<i>Najas flexilis</i> (1)	
o	o	4	<i>Nitella</i> sp. (2)	<i>Najas flexilis</i> (1)	

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°	°	4.5	<i>Nitella</i> sp. (2)		
°	°	5	<i>Nitella</i> sp. (1)		
°	°	5.5	<i>Chara</i> sp. (1)		
TRANSECT 8					
43°55.163	124°05.289	0.5	<i>Juncus supiniformis</i> (2)	<i>Nymphaea odorata</i> (3)	
°	°	1.5	<i>Juncus supiniformis</i> (3)	<i>Nymphaea odorata</i> (1)	
°	°	3	<i>Najas flexilis</i> (2)		
°	°	3.5	<i>Najas flexilis</i> (2)	<i>Scirpus subterminalis</i> (1)	
°	°	4	0		
TRANSECT 9					
43°55.861	124°06.206		<i>Myriophyllum aquaticum</i> (3)		
TRANSECT 10					
43°56.058	124°06.108	0.5	<i>Utricularia vulgaris</i> (1)	<i>Brasenia schreberi</i> (3)	<i>Nymphaea odorata</i> (2)
°	°		<i>Nuphar polysepalum</i> (2)	<i>Juncus supiniformis</i> (3)	<i>Scirpus subterminalis</i> (1)
°	°		<i>Chara</i> sp.		
		1	<i>Juncus supiniformis</i> (2)	<i>Utricularia vulgaris</i> (1)	
		2	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (2)	
		3	<i>Utricularia vulgaris</i> (1)	<i>Scirpus subterminalis</i> (2)	
		4	<i>Najas flexilis</i> (2)		

Table 59. Siltcoos Lake 8/4/04

Latitude	Longitude	Depth (m)	Species		
TRANSECT 1					
43°53.148	154°06.582	1	<i>Vallisneria americana</i> (1)	<i>Najas flexilis</i> (1)	
°	°	1.2	<i>Egeria densa</i> (2)	<i>Elodea canadensis</i> (1)	<i>Vallisneria americana</i> (2)
°	°		<i>Najas flexilis</i> (1)		
°	°	2	<i>Egeria densa</i> (2)		

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°	°	2.2	<i>Egeria densa</i> (2)	<i>Nitella</i> sp. (2)	
°	°	4	<i>Egeria densa</i> (2)	<i>Nymphaea odorata</i> (2)	
43°53.068	124°06.481	5	<i>Nitella</i> sp. (1)		
TRANSECT 2°					
43°53.607	124°06.327	1	<i>Ceratophyllum demersum</i> (1)	<i>Vallisneria americana</i> (2)	<i>Egeria densa</i> (2)
°	°	1.5	<i>Egeria densa</i> (3)	<i>Cabomba caroliniana</i> (2)	
°	°	2.1	<i>Egeria densa</i> (3)		
°	°	2.7	<i>Vallisneria americana</i> (2)		
43°53.528	124°06.331	3.5	0		
TRANSECT 3°					
43°53.070	124°05.514	0.5	<i>Vallisneria americana</i> (2)	<i>Cabomba caroliniana</i> (1)	
°	°	1	<i>Vallisneria americana</i> (2)		
°	°	1.5	<i>Egeria densa</i> (3)		
°	°	2	<i>Egeria densa</i> (3)	<i>Nuphar polysepalum</i> (2)	
43°53.060	124°05.499	4	0		
TRANSECT 4					
°	°	2	<i>Cabomba caroliniana</i> (3)	<i>Elodea canadensis</i> (1)	<i>Utricularia vulgaris</i> (2)
°	°		<i>Potamogeton amplifolius</i> (2)	<i>Nuphar polysepalum</i> (3)	<i>Nymphaea odorata</i> (2)
°	°		<i>Myriophyllum sibiricum</i> (1)	<i>Callitriche hermaphroditica</i> (1)	<i>Potamogeton pusillus</i> (2)
°	°		<i>Najas flexilis</i> (1)		
°	°	2	<i>Elodea canadensis</i> (1)	<i>Cabomba caroliniana</i> (2)	<i>Utricularia vulgaris</i> (1)
°	°		<i>Najas flexilis</i> (1)		
°	°	2	<i>Elodea canadensis</i> (2)	<i>Cabomba caroliniana</i> (3)	
		2.5	<i>Egeria densa</i> (3)		
		3	<i>Egeria densa</i> (3)		
		3.5	<i>Nitella</i> sp. (2)		
43°54.004	124°05.486	4	0		
TRANSECT 5					
43°53.632	124°04.451	0.5	<i>Myriophyllum sibiricum</i> (3)	<i>Vallisneria americana</i> (3)	<i>Nuphar polysepalum</i> (3)

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°	°		<i>Elodea canadensis</i> (1)	<i>Utricularia vulgaris</i> (1)	
°	°	1	<i>Cabomba caroliniana</i> (2)	<i>Egeria densa</i> (2)	<i>Elodea canadensis</i> (1)
°	°		<i>Vallisneria americana</i> (2)	<i>Nuphar polysepalum</i> (3)	
°	°	1	<i>Ceratophyllum demersum</i> (2)	<i>Cabomba caroliniana</i> (1)	<i>Egeria densa</i> (3)
°	°	1.5	<i>Egeria densa</i> (3)		
°	°	2	<i>Egeria densa</i> (2)		
43°53.534	124°04.418	2.2	<i>Egeria densa</i> (2)		
TRANSECT 6					
43°53.785	124°03.480	1.5	<i>Elodea canadensis</i> (3)	<i>Nuphar polysepalum</i> (3)	
°	°	1.5	<i>Potamogeton amplifolius</i> (3)	<i>Potamogeton pusillus</i> (1)	<i>Utricularia vulgaris</i> (1)
°	°		<i>Cabomba caroliniana</i> (2)		
°	°	1.5	<i>Cabomba caroliniana</i> (2)	<i>Ceratophyllum demersum</i> (3)	<i>Nymphaea odorata</i> (2)
°	°	1.5	<i>Cabomba caroliniana</i> (2)	<i>Ceratophyllum demersum</i> (3)	
°	°	1.5	<i>Egeria densa</i> (1)	<i>Cabomba caroliniana</i> (2)	<i>Ceratophyllum demersum</i> (1)
43°53.728	124°03.317	2	<i>Egeria densa</i> (3)		
TRANSECT 7					
43°52.326	124°04.506	0.5	<i>Callitriche hermaphroditica</i> (2)	<i>Elodea canadensis</i> (3)	<i>Egeria densa</i> (2)
°	°		<i>Nuphar polysepalum</i> (3)		
°	°	1	<i>Potamogeton richardsonii</i> (3)	<i>Elodea canadensis</i> (3)	<i>Vallisneria americana</i> (2)
°	°	1.5	<i>Potamogeton zosteriformis</i> (1)	<i>Elodea canadensis</i> (3)	<i>Utricularia vulgaris</i> (1)
°	°		<i>Cabomba caroliniana</i> (1)		
		2	<i>Egeria densa</i> (3)	<i>Potamogeton zosteriformis</i> (2)	
		2.5	<i>Egeria densa</i> (3)		
43°52.321	124°04.595	2.5	<i>Egeria densa</i> (3)		
TRANSECT 8					
43°51.346	124°03.824	1	<i>Elodea canadensis</i> (3)	<i>Nuphar polysepalum</i> (3)	<i>Ceratophyllum demersum</i> (2)
°	°		<i>Utricularia vulgaris</i> (1)	<i>Cabomba caroliniana</i> (2)	<i>Callitriche hermaphroditica</i> (1)
°	°	1	<i>Elodea canadensis</i> (3)	<i>Ceratophyllum demersum</i> (2)	<i>Potamogeton richardsonii</i> (3)
°	°	2	<i>Elodea canadensis</i> (3)	<i>Ceratophyllum demersum</i> (2)	<i>Egeria densa</i> (2)

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°	°	2.5	<i>Egeria densa</i> (3)	<i>Ceratophyllum demersum</i> (2)	
43°51.302	124°03.882	2	<i>Egeria densa</i> (3)		
TRANSECT 9					
43°51.414	124°06.501	1	<i>Nuphar polysepalum</i> (3)	<i>Callitriche hermaphrodita</i> (3)	<i>Utricularia vulgaris</i> (1)
°	°		<i>Elodea canadensis</i> (3)	<i>Myriophyllum sibiricum</i> (3)	<i>Sparganium</i> sp. (1)
°	°		<i>Potamogeton pusillus</i> (1)	<i>Cabomba caroliniana</i> (1)	
°	°	2	<i>Elodea canadensis</i> (3)	<i>Utricularia vulgaris</i> (1)	<i>Cabomba caroliniana</i> (1)
°	°	2.5	<i>Elodea canadensis</i> (2)	<i>Utricularia vulgaris</i> (1)	<i>Cabomba caroliniana</i> (2)
°	°	3	<i>Egeria densa</i> (3)		
43°51.412	124°06.400	3	<i>Egeria densa</i> (3)	<i>Ceratophyllum demersum</i> (1)	
TRANSECT 10					
43°52.494	124°06.543	1	<i>Potamogeton richardsonii</i> (3)		
°	°	2	<i>Potamogeton richardsonii</i> (3)	<i>Elodea canadensis</i> (2)	<i>Vallisneria americana</i> (2)
°	°	2.5	<i>Egeria densa</i> (1)		
°	°	3	<i>Egeria densa</i> (2)		
43°52.499	124°06.501	4	0		

Table 60. Tahkenitch Lake 8/5/04

Latitude	Longitude	Depth (m)	Species		
TRANSECT 1					
43°48.230	124°08.859	2	<i>Myriophyllum sibiricum</i> (3)	<i>Najas flexilis</i> (1)	<i>Ceratophyllum demersum</i> (3)
°	°		<i>Brasenia schreberi</i> (3)	<i>Potamogeton pusillus</i> (1)	<i>Utricularia vulgaris</i> (1)
°	°	3.5	<i>Brasenia schreberi</i> (3)	<i>Potamogeton pusillus</i> (3)	<i>Utricularia vulgaris</i> (3)
°	°		<i>Elodea canadensis</i> (2)	<i>Potamogeton pusillus</i> (3)	<i>Najas flexilis</i> (2)
			<i>Myriophyllum sibiricum</i> (3)	<i>Nuphar polysepalum</i> (1)	
		2	<i>Brasenia schreberi</i> (1)	<i>Potamogeton pusillus</i> (3)	<i>Utricularia vulgaris</i> (3)
			<i>Myriophyllum sibiricum</i> (3)	<i>Najas flexilis</i> (2)	
		2	<i>Ceratophyllum demersum</i> (3)	<i>Elodea canadensis</i> (3)	<i>Potamogeton pusillus</i> (2)

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			<i>Utricularia vulgaris</i> (1)		
		3	<i>Egeria densa</i> (3)		
		3.5	<i>Egeria densa</i> (3)		
		4	<i>Egeria densa</i> (3)		
43°48.238	124°08.769	5	0		
TRANSECT 2					
43°47.231	124°07.918	1	<i>Egeria densa</i> (3)	<i>Brasenia schreberi</i> (1)	<i>Nuphar polysepalum</i> (2)
°	°	2	<i>Egeria densa</i> (3)		
°	°	3	<i>Egeria densa</i> (1)		
43°47.242	124°07.887	5	0		
TRANSECT 3					
43°46.451	124°07.891	.5	<i>Egeria densa</i> (3)	<i>Brasenia schreberi</i> (3)	<i>Nuphar polysepalum</i> (2)
°	°		<i>Potamogeton amplifolius</i> (1)	<i>Potamogeton pusillus</i> (2)	<i>Sparganium</i> sp. (1)
°	°	1	<i>Nitella</i> sp. (1)	<i>Potamogeton pusillus</i> (3)	<i>Egeria densa</i> (2)
			<i>Brasenia schreberi</i> (3)	<i>Nuphar polysepalum</i> (3)	
		1	<i>Egeria densa</i> (3)	<i>Brasenia schreberi</i> (3)	<i>Nuphar polysepalum</i> (2)
			<i>Utricularia vulgaris</i> (1))		
		1	<i>Egeria densa</i> (3)	<i>Nuphar polysepalum</i> (2)	
		1.5	<i>Egeria densa</i> (3)		
		2	<i>Egeria densa</i> (3)		
		3.5	<i>Egeria densa</i> (3)		
		4.5	<i>Egeria densa</i> (2)		
		4.5	<i>Egeria densa</i> (2)		
		4.5	<i>Egeria densa</i> (1)		
43°46.54	124°07.819	5	0		
TRANSECT 4					
43°46.885	124°05.804	0.5	<i>Brasenia schreberi</i> (3)	<i>Utricularia vulgaris</i> (2)	<i>Potamogeton natans</i> (1)
°	°		<i>Myriophyllum sibiricum</i> (3)	<i>Potamogeton pusillus</i> (2)	<i>Egeria densa</i> (3)
°	°		<i>Ceratophyllum demersum</i> (1)		

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°	°	2.5	0		
43°46.902	124°05.842	2.5	<i>Brasenia schreberi</i> (3)	<i>Utricularia vulgaris</i> (2)	<i>Myriophyllum sibiricum</i> (2)
			<i>Ceratophyllum demersum</i> (3)		
TRANSECT 5					
43°48.022	124°07.588	3	<i>Egeria densa</i> (3)		
°	°	4.5	<i>Egeria densa</i> (3)		
43°48.022	124°124.589	6	0		
TRANSECT 6					
43°43.960	124°04.093	1.5	<i>Utricularia vulgaris</i> (3)	<i>Callitriche hermaphroditica</i> (2)	<i>Potamogeton natans</i> (2)
°	°		<i>Myriophyllum sibiricum</i> (2)	<i>Nuphar polysepalum</i> (2)	
°	°	1	<i>Utricularia vulgaris</i> (3)	<i>Hippuris vulgaris</i> (2)	<i>Nuphar polysepalum</i> (2)
°	°		<i>Callitriche hermaphroditica</i> (2)	<i>Myriophyllum sibiricum</i> (2)	
43°48.918	124°04.128	2	<i>Najas flexilis</i> (1)		
°	°				
°	°				
TRANSECT 7					
43°48.196	124°04.514	1	<i>Potamogeton natans</i> (2)	<i>Myriophyllum sibiricum</i> (3)	<i>Utricularia vulgaris</i> (2)
°	°		<i>Najas flexilis</i> (1)		
°	°	1.5	<i>Utricularia vulgaris</i> (2)	<i>Potamogeton natans</i> (2)	<i>Myriophyllum sibiricum</i> (3)
°	°		<i>Nuphar polysepalum</i> (2)	<i>Brasenia schreberi</i> (2)	
°	°	2	<i>Potamogeton natans</i> (2)	<i>Myriophyllum sibiricum</i> (3)	<i>Utricularia vulgaris</i> (3)
°	°		<i>Brasenia schreberi</i> (2)		
°	°	2	<i>Potamogeton natans</i> (2)	<i>Myriophyllum sibiricum</i> (3)	<i>Utricularia vulgaris</i> (2)
°	°		<i>Brasenia schreberi</i> (1)	<i>Ceratophyllum demersum</i> (2)	<i>Egeria densa</i> (1)
°	°	2	<i>Utricularia vulgaris</i> (3)	<i>Ceratophyllum demersum</i> (2)	
43°47.767	124°05.913		<i>Potamogeton amplifolius</i> (3)	<i>Potamogeton richardsonii</i> (1)	<i>Elodea canadensis</i> (1)
°	°		<i>Egeria densa</i> (3)		
°	°				
TRANSECT 8					

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43°48.625	124°06.566	1.5	<i>Brasenia schreberi</i> (3)	<i>Nuphar polysepalum</i> (1)	
°	°	1.5	<i>Brasenia schreberi</i> (3)	<i>Nuphar polysepalum</i> (2)	
°	°	2	<i>Brasenia schreberi</i> (1)	<i>Nuphar polysepalum</i> (2)	<i>Utricularia vulgaris</i> (1)
°	°		<i>Potamogeton pusillus</i> (1)		
°	°	2	<i>Egeria densa</i> (3)		
43°48.592	124°06.556	3.5	<i>Egeria densa</i> (3)		
TRANSECT 9					
43°49.645	124°06.004	1	<i>Brasenia schreberi</i> (3)	<i>Nuphar polysepalum</i> (2)	<i>Utricularia vulgaris</i> (2)
°	°		<i>Myriophyllum sibiricum</i> (1)	<i>Juncus supiniformis</i> (2)	
°	°	1	<i>Brasenia schreberi</i> (3)	<i>Utricularia vulgaris</i> (1)	
°	°	1.5	<i>Brasenia schreberi</i> (2)	<i>Egeria densa</i> (1)	<i>Ceratophyllum demersum</i> (2)
°	°	2.5	<i>Nuphar polysepalum</i> (2)	<i>Potamogeton natans</i> (2)	<i>Egeria densa</i> (2)
			<i>Myriophyllum sibiricum</i> (1)	<i>Utricularia vulgaris</i> (2)	
TRANSECT 10					
43°49.761	124°07.052	2	<i>Brasenia schreberi</i> (3)	<i>Potamogeton pusillus</i> (1)	
°	°	2	<i>Brasenia schreberi</i> (3)	<i>Elodea canadensis</i> (1)	<i>Egeria densa</i> (1)
°	°		<i>Potamogeton pusillus</i> (1)		
°	°	2	<i>Elodea canadensis</i> (1)	<i>Egeria densa</i> (1)	<i>Potamogeton amplifolius</i> (1)
°	°	2.5	<i>Egeria densa</i> (1)		
°	°	3	<i>Egeria densa</i> (3)		
°	°	3.5	<i>Egeria densa</i> (2)		
°	°	4	<i>Egeria densa</i> (1)		
43°49.683	124°07.066	4	0		
TRANSECT 11					
43°49.055	124°07.742	1	<i>Egeria densa</i> (3)	<i>Nuphar polysepalum</i> (2)	
°	°	1	<i>Egeria densa</i> (2)	<i>Nuphar polysepalum</i> (2)	
°	°	1	<i>Egeria densa</i> (2)	<i>Potamogeton pusillus</i> (1)	
°	°	2	<i>Egeria densa</i> (3)		
°	°	2.5	<i>Egeria densa</i> (3)		

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°	°	3	<i>Egeria densa</i> (3)		
43°49.035	124°07.690	4	<i>Egeria densa</i> (1)		

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Appendix C. Water chemistry data

Table 61. Water chemistry measurements of samples from lakes and ponds in the Siuslaw National Forest, 2004.

Waterbody	Total-N (mg/l)	Total-P (mg/l)	PO4-P (mg/l)	pH	Alkalinity HCO3-C (mg/l)	Conductivity (lab) (us/cm)	Conductivity (in-situ) (us/cm)	NO3-N +NO2-N (mg/l)	DOC (mg/l)	Secchi (m)
Bear Lake	0.30	0.018	0.004	6.6	1.04	96.8	102.5	*0.000	6.9	
Carter Lake	0.17	0.02	*0.001	7.3	3.08	112.5		0.020	2.7	
Cleawox Lake	0.21	0.013	0.002	7.0	2.19	79.8	89.5	*0.001	3.4	
Lilly Lake	0.34	0.014	0.002	7.3	3.77	113.2	112.6	0.101	3.1	
Little Woahink Lake	0.17	0.016	*0.000	7.1	2.14	57.5	55.9	0.361	1.6	2.4
Lost Lake	0.34	0.023	*0.001	7.3	3.70	121.6	121.4	*0.001	5.6	
No. Glenada Lake	0.37	0.026	0.003	7.3	3.58	110.1	112.3	0.112	2.2	
So. Glenada Lake	0.66	0.034	0.002	7.2	2.04	88.1	88	0.003	6.3	
Perkins Lake	0.20	0.016	*0.000	6.9	2.58	108.7	108.5	*0.000	1.8	
Siltcoos Lagoon	0.35	0.061	*0.000	7.1	5.07	192.0	187.8	*0.001	5.4	
Three Mile Lake	0.23	0.011	*0.000	7.2	2.38	139.3		0.037	3.2	
Unnamed #1	0.70	0.046	*0.000	6.3	2.68	107.2	105.4	*0.000	10.5	
Woahink Orphan	0.26	0.026	0.005	7.1	2.95	53.9	54.4	*0.001	3.8	
Butterfly Lake	0.48	0.017	0.003	7.4	3.23	175.3	186	*0.001	4.1	
Elbow Lake	0.25	0.028	0.004	7.5	5.41	118.6	128	*0.001	3.9	2.3
Gardiner Res	0.30	0.027	0.003	7.5	5.94	87.7	95	0.025	4.1	2.7
Taylor Lake	0.33	0.012	*0.001	7.1	3.00	144.9	156	*0.000	5.1	2.2
Unamed #3	0.26	0.02	0.003	7.2	3.28	143.4	154	*0.001	2.9	
Siltcoos Lake	0.36	0.031	0.003	8.1	4.36	66.0	65	*0.001	2.4	1.5
Tahkenich Lake	0.25	0.021	0.002	7.4	4.19	66.4	64	*0.000	2.9	2.3
Woahink Lake	0.13	0.014	*0.000	7.3	2.41	63.1	61	0.044	1.6	
Carter Orphan							111.5			
Hookhats Lake							152.6			

Appendix D. ANS Prevention Sign

STOP

Harmful Species

Unwanted plants and animals can ruin your favorite fishing and boating waters.

Zebra mussel



Hydrilla



New Zealand mudsnail



It is unlawful to transport zebra mussels, noxious aquatic weeds, and other aquatic nuisance species.
 - OAR 635-056, OAR 603-52-1200



- **REMOVE** all plants and animals from boats, motors, trailers, anchors and gear before and after launching.
- **INSPECT** hard to reach spots, damp areas and other protected places where harmful species can survive for days.
- **DRAIN** all water from boats, trailers, tackle and gear before leaving the area.
- **DISPOSE** of livewell water, bait, plants and other material away from shore or in trash cans.
- **CLEAN** boat & equipment with high pressure or hot water or dry equipment for 5 days before entering new waters

To report harmful species call (toll free) 1-866-INVADER

For more information on harmful invasive species please contact one of these agencies:

						
503-379-6887	503-236-0667	541-947-6000	503-996-4560	503-585-3100	503-609-4510	390-900-2200

Figure 12. Aquatic nuisance species prevention sign