

Memo

To: P. Ross, Smithers
From: P. Warrington, Victoria.
Date: 21/7/92

Regarding 'Weed' Problems in the Smithers Lakes.

On July 15, 1992 I carried out a brief survey of 4 lakes in the Smithers area; Seymour, Kathlyn, Tyhee and Round. My observations are that there is not yet an aquatic weed problem in Seymour Lake, the beginnings of a problem with *Elodea canadensis* in Kathlyn Lake along the shore between the boat launch and the highway, and significant problems in Round and Tyhee Lakes. These qualitative observations of relative weed problems correlate well with the water retention time estimates of 0.92, 1.15, 3.1 and 5.0 as given in Boyd et al (1985).

Round Lake has extensive beds of *Ceratophyllum demersum* and *Myriophyllum sibiricum* all around the shoreline. These surfacing plants are generally covered in a mat of filamentous green algae and the water column is quite murky. The *Ceratophyllum* and the green algae take all their nutrients from the water column. This indicates that there are considerable quantities of nutrients, especially phosphorus, dissolved in the water column, and likely a large reservoir in the sediments as well. There are several dairy farms around the shores of this small lake.

Tyhee Lake has *Elodea canadensis* mats and extensive shallow-water areas with dense beds of *Myriophyllum sibiricum* and *Potamogeton* spp. There are also considerable amounts of *Lemna minor*, *Lemna trisulca*, *Spirodela polyrhiza*, *Wolffia columbiana* and *Ceratophyllum demersum* in the shallows and protected areas. Non of these latter species are rooted and thus all of their nutrient uptake must come from the water column. This indicates that there are considerable quantities of nutrients, especially phosphorus, dissolved in the water column, and likely a large reservoir in the sediments as well. This is borne out by documented phosphorus levels in these lakes in 1982 as reported in Boyd et al (1985) and subsequent measurements, recorded in SEAM, which show increases in these phosphorus levels.

There is little value in trying to control the weeds until the levels of phosphorus in the water columns are reduced below about 10-12 $\mu\text{g/L}$, since the weeds will simply grow back to nuisance levels very quickly. Phosphorus input needs to be curtailed first and then perhaps the phosphorus reservoir in the sediments can be addressed. There are phosphorus objectives in Boyd et al (1985) and meeting these would be a good start towards controlling the weed problems in these lakes. Action needs to be taken, the problems will not go away, they will in fact get worse, unless nutrient management takes place on a drainage basin basis.

Elodea canadensis is a relatively recent problem in Kathlyn and Tyhee Lakes. Prior surveys in 1977 did not find this species. However the problem is not unique to the Smithers area lakes since this species has been documented as moving into a number of new lakes throughout the Province in the last few years and becoming a nuisance in most cases. The reason for this sudden mobility of *Elodea* is not known but it is being followed with interest. In one lake the maximum level was followed by a population crash in the next year and then a gradual subsequent increase. The final outcome is not yet known as the population has not yet stabilized and annual observations continue to be made.

1985. Boyd, I.T., C.J.P. McKean and R.N. Nordin. Skeena Nass Area. Kathlyn, Seymour, Round and Tyhee Lakes: Water Quality Assessment and Objectives. MOE, Prov. of B.C., Water Man. Branch.