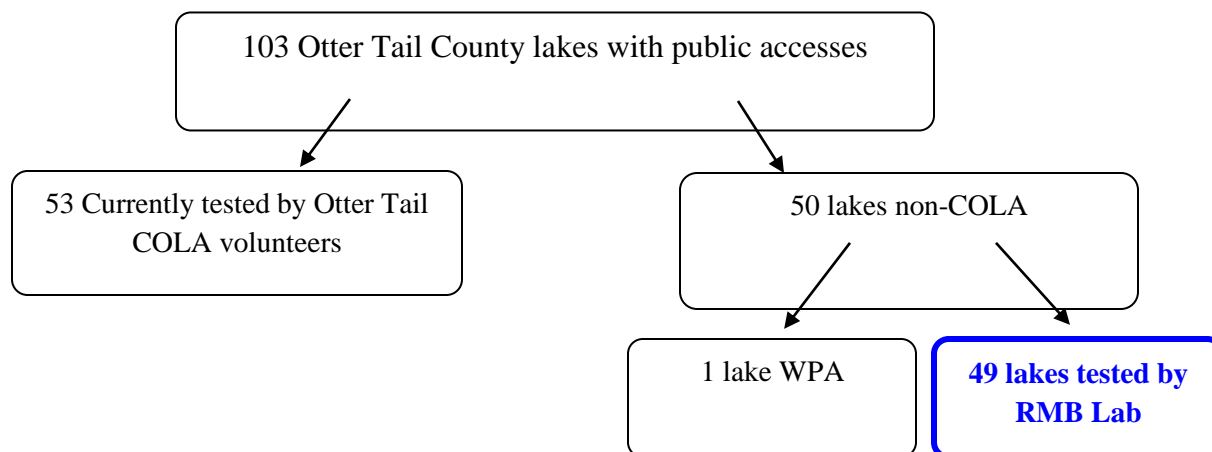


Otter Tail COLA Lake Testing, 2018

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In 2018, RMB Environmental Laboratories staff collected water samples on 49 lakes in Otter Tail County that did not have volunteer monitors. The parameters tested include Total Phosphorus, Chlorophyll a, Secchi depth. The lakes were tested once a month, May through September, for a total of five samples on each lake. Otter Tail COLA paid for calcium tests on the remaining COLA lakes that did not have calcium data. Those samples were collected by the volunteers on the COLA lakes.

Calcium was tested because of its importance in zebra mussel shell formation (Mackie & Schloesser 1996). Alkalinity, hardness and pH would be the next most important parameters for determining zebra mussel suitability (Mackie & Claudi 2010; Hincks & Mackie 1997). Lastly, Secchi depth, chlorophyll a and total phosphorus can be considered, although they are not sufficient parameters alone to assess risk (Mackie & Claudi 2010).

Total phosphorus and chlorophyll a are useful for determining the lake's trophic state, which does affect suitability for Zebra mussels. Zebra mussels thrive best in mesotrophic lakes (Karatayev *et al.* 1998, Nelepa 1992). Eutrophic lakes have a lower suitability due to too much phosphorus and chlorophyll a, and usually softer substrates.

Table 1. Water column Zebra mussel suitability criteria (Mackie and Claudi 2010).

Parameter	Risk		
	Low Little Potential for Larval Development	Moderate (survivable, but will not flourish)	High (favorable for optimal growth)
Calcium (mg/l)	8-15	15-30	>30
pH	7.0-7.8 or 9.0-9.5	7.8-8.2 or 8.8-9.0	8.2-8.8
Hardness (mg/L)	30-35	55-100	100-280
Alkalinity (mg/L)	30-55	55-100	100-280
Specific Conductance (umhos)	30-60	60-110	>110
Secchi depth (m)	1-2 or 6-8	4-6	2-4
Chlorophyll a (ug/L)	2.0-2.5 or 20-25	8-20	2.5-8
Total Phosphorus	5-10 or 35-50	10-25	25-35

Zebra Mussel Suitability of Otter Tail County Lakes

DOW	Lake	Average Calcium	Suitability
56-0031-00-201	ADLEY	26.3	Moderate
56-0770-00-201	BASS	33.1	High
56-0240-00-202	BLANCHE	23.9	Moderate
56-0710-00-201	ANDERSON	35	High
56-0716-00-201	ANDERSON	43.9	High
56-0570-00-201	BASS	28.4	Moderate
56-0069-00-201	BEAR	47.8	High
56-0724-00-201	BEERS	24.7	Moderate
56-0386-01-201	BIG MCDONALD	28.7	Moderate
56-0130-00-207	BIG PINE	39.4	High
56-0079-00-201	BLOCK	30.7	High
56-0212-00-201	BOEDIGHEIMER	32.3	High
56-0315-00-201	BROWN	38.9	High
56-0780-00-201	CHAUTAUQUA	28.3	Moderate
56-0559-00-201	CLEAR	34.5	High
56-0238-00-206	CLITHERALL	28.1	Moderate
56-0383-00-205	DEAD	27.6	Moderate
56-0298-00-201	DEER	23.2	Moderate
56-0882-00-201	DEVILS	18.9	Moderate
56-0200-00-201	DONALDS	21.8	Moderate
56-0253-00-202	EAGLE	28	Moderate
56-0138-00-204	EAST BATTLE	32.1	High
56-0378-02-203	EAST LOST	89.3	High
56-0306-00-201	ELBOW	19.75	Moderate
56-0517-00-201	EAST SILENT	24.2	Moderate
56-0178-00-201	ELLINGSON	44.6	High
56-0193-00-201	ETHEL	25.4	Moderate
56-0302-01-201	FIRST SILVER	18.8	Moderate
56-0768-00-201	FISH	31.3	High
56-0066-00-101	FISH	26.8	Moderate
56-0430-00-201	FISKE	32.5	High
56-0759-00-203	FRANKLIN	23.1	Moderate
56-0423-00-202	GERMAN	44.8	High
56-0695-00-201	HEILBERGER	28.8	Moderate
56-1627-00-201	HOFFMAN	26.5	Moderate
56-0782-00-201	HOOT	33.4	High
56-0877-00-101	JEWETT	18.5	Moderate
56-0370-00-201	JOLLY ANN	32.7	High
56-1636-00-201	KERBS	21.9	Moderate
56-0532-02-201	LEEK	27.2	Moderate
56-0760-01-201	LIZZIE	25.8	Moderate
56-0328-00-201	L.MCDONALD	23	Moderate
56-0761-00-202	L. PELICAN	34	High
56-0142-00-201	LITTLE PINE	38.3	High
56-0210-00-202	LONG	22.1	Moderate
56-0390-00-201	LONG	19	Moderate
56-0523-00-203	LONG	23.9	Moderate
56-0784-00-102	LONG	33.7	High
56-0243-00-201	MARION	28.7	Moderate
56-0116-01-202	MIDDLE LEAF	37.7	High
56-0303-00-201	MOLLY STARK	24.5	Moderate
56-0229-00-201	MURPHY	46.4	High
56-0126-00-201	NITCHE	45.8	High
56-0569-01-201	NORWAY	33.6	High

DOW	Lake	Average Calcium	Suitability
56-0784-00-102	LONG	33.7	High
56-0523-00-203	LOON	25	Moderate
56-0243-00-201	MARION	28.7	Moderate
560386-03-201	MCDONALD	25.2	Moderate
56-0116-01-202	MIDDLE LEAF	37.7	High
56-0303-00-201	MOLLYSTARK	24.5	Moderate
56-0229-00-201	MURPHY	46.4	High
56-0126-00-201	NITCHE	45.8	High
56-074701-208	NORTH LIDA	25.8	Moderate
56-0379-00-201	N. TURTLE	32.4	High
56-0569-01-201	NORWAY	33.6	High
56-0242-00-206	OTTER TAIL	26.7	Moderate
56-0335-00-201	PAUL	25.3	Moderate
56-0829-00-201	PEBBLE	23.6	Moderate
56-0786-00-026	PELICAN	32.3	High
56-0202-00-201	PELICAN BAY	55.3	High
56-0475-00-203	PICKEREL	27.9	Moderate
56-0449-00-201	PLEASANT	29.2	Moderate
56-0140-01-201	PORTAGE	22.3	Moderate
56-0915-00-101	PRAIRIE	21.3	Moderate
56-0363-00-201	RICE	42.1	High
56-0360-00-203	ROSE	24.9	Moderate
56-0522-00-201	ROUND	21.1	Moderate
56-0297-00-201	ROUND	25.6	Moderate
56-0522-00-201	ROUND	34	High
56-0141-00-205	RUSH	28.2	Moderate
56-0942-00-201	SAND	31.4	High
56-0358-00-101	SEVEN	25.8	Moderate
56-0369-00-203	SIX	21.7	Moderate
56-0747-02-202	SOUTH LIDA	20.3	Moderate
56-0377-00-201	S. TURTLE	27.3	Moderate
56-0160-00-101	SPITZER	28.3	Moderate
56-0437-00-202	STALKER	26.2	Moderate
56-0385-00-201	STAR	26.4	Moderate
56-0191-01-203	STUART	29.7	Moderate
56-0781-00-202	SWAN	31.3	High
56-0387-00-201	SYBIL	25.3	Moderate
56-0931-00-201	TAMARAC	16.8	Moderate
56-0613-00-201	TEN MILE	34.1	High
56-0532-01-203	TROWBRIDGE	26.4	Moderate
56-0382-00-101	TWIN	22.8	Moderate
56-0310-00-201	WALKER	30.9	High
56-0658-00-204	WALL	36.2	High
56-0239-00-202	W. BATTLE	22.9	Moderate
56-0114-00-202	WEST LEAF	34.3	High
56-0481-00-201	WEST LOST	32.2	High
56-0386-02-201	W.MCDONALD	23.1	Moderate
56-0950-01-201	WEST OLAF	28.3	Moderate
56-0519-00-201	WEST SILENT	23.7	Moderate
56-0355-00-201	WIMER	25.2	Moderate