



# Lake Vegetation Management Plan

- Variance Requested by Cooperator
- Variance Approved (see Section VI)

## **Section I: Lake Information**

Name Caribou; DOW Number 69048900; County St. Louis;  
 Fisheries Area Duluth; Surface Acres 546; Littoral Acres 486;  
 Classification:  Natural Environment  Recreational Development  General Development  
 Cooperator(s): Caribou Lake Association and MN DNR

## **Section II: Water Quality and Plant Community**

### A. Water Quality

- Total Phosphorus .007-0.0215 ppm, 0.014 ppm mean, 3 obs. (data from MPCA and DNR-Fisheries) Date 1992-2005
- Secchi Disc 4.6-9.5 ft., 6.9 ft. mean, 19 obs. (data from MPCA, MN DNR, and CLMP) Date 1975-2006
- chlorophyll 'a' 3.9-9.25 pbb, 5.8 ppb mean, 3 obs. (data from MPCA and DNR-Fisheries) Date 1992-2005

Narrative (describe water quality concerns, quantify TSI) Carlson trophic state index values calculated from the collected data ranged from 42.4 - 49.2 with a mean of 46.5. This value classifies Caribou Lake as mesotrophic. The Carlson trophic state index was developed for use with lakes that have few rooted aquatic plants and little non-algal turbidity. Use of the index with lakes that have these characteristics should be done cautiously. The 1999 MPCA report, Duluth Area Lakes Water Quality Assessment: Caribou, Grand, and Pike Lakes – 1999, further explains the findings, trends, and implications for Caribou Lake (<http://www.pca.state.mn.us/water/pubs/lar-69-0489.pdf>).

Citation: Anderson, J., S. Heiskary, R. Axler, and J. Henneck. 2001. Duluth Area Lakes Water Quality Assessment: Caribou, Grand, and Pike Lakes – 1999. Minnesota Pollution Control Agency, Final Report, St. Paul.

Caribou lake residents in conjunction with county boards are exploring a wastewater system for Caribou Lake. Updates can be found at <http://savecariboulake.org/>.

### B. Plant Community

Narrative (describe plant community, list common, rare, or other important aquatic plant species, list plant surveys) Caribou Lake is 546 acres, with 89% littoral area, and a maximum depth of 21 feet. Caribou Lake has abundant aquatic vegetation, moderate to high development, two public accesses, and is located on the northern edge of the Duluth metropolitan area. The following is a list of plants found during the last full survey conducted by MN DNR Duluth Area Fisheries Office in 2005.

Emergent: Water Arum, Sedges, Spikerush Group, Horsetail Group, Blue Flag Iris, Swamp Fivefinger, Hardstem Bulrush, Boad-Leaved Arrowhead, River Bulrush, Floating-Leaf Burreed Group, Grass-Leaved Arrowhead, Softstem Bulrush, Narrow-Leaved Cattail, Broad-Leaved Cattail, Pickerelweed, Leather-Leaf, Buckbean

Floating Leaf: Water Shield, Star Duckweed, Common White Waterlily, Little Yellow Waterlily, Common Yellow Waterlily, Little White Waterlily, Floating-Leaf Pondweed



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Submergent: Bladderwort Group, Muskgrass Group, Coontail, Canada Waterweed, Quillwort Group, Water Marigold, Northern Milfoil, Stonewort Group, Bushy Pondweed, Large-Leaf Pondweed, Variable-Leaf Pondweed, Claspings-Leaf Pondweed, Narrow-Leaf Pondweed Group, Robbins' Pondweed, Flat-Stem Pondweed, Water Celery, Pipewort

### **Section III: Public Input Process** (narrative)

This plan was reviewed at a Caribou Lake Association meeting, Insert Date. It was made available to both association members and non-members for comment. In addition, the Duluth Area Fisheries office solicited comments from the general public through a news release and website posting. The comment period lasted 14 days. Comments were reviewed and taken into consideration for the final draft that was sent out for approval by lake residents. Endorsement of this plan required 50% plus one signatures from lakeshore property owners (non-voters count as a no vote). This plan received Insert Approval %. The Lake Association has an internal process that allows for a review of this document.

### **Section IV: Problems to be Addressed in this Plan** (narrative)

The Caribou Lake Association has been cutting aquatic vegetation in the commons area since 1979 (year lake acquired a mechanical harvester) to enhance recreational value. The lake receives a high volume of recreational users. The high amount of aquatic plants inhibits some of these activities. The dense aquatic vegetation makes it difficult to run outboard motors because of plant material getting tangled in the prop.

### **Section V: Goals for Management of Aquatic Plants** (narrative, include a description of efforts to protect rare features)

1. Short Term – Temporary reduction of aquatic vegetation in high use commons areas will be achieved through mechanical harvest. This plan will establish aquatic plant cut zones and can be referenced when applying for the annual APM permit. Acceptance of this plan would allow the lake association to forgo annual collection of signatures for the permit until this plan expires or is terminated.
2. Long Term – Reduction of nutrient inputs from sewer systems..

### **Section VI: Operational Treatment Plan** (map marked with areas where control of plants is anticipated)

#### A. Commons Area (>150' from shore)

Mechanical Control: To be determined acres to be treated, % of littoral area

Narrative: Aquatic vegetation cutting zones were determined through a joint effort between the area APM specialist and lake association representatives, and approved by a majority of shoreline owners. This zone abides by all APM rules.

1. Use of chemicals is NOT permitted.
2. No cutting of emergent vegetation or floating leaf vegetation (even if it occurs in the cut zone)
3. No cutting permitted within 25 ft of emergent or floating leaf vegetation (even if it occurs in the cut zone)
4. The zone is located at least 150' from the shoreline.
5. All cut vegetation must be removed and disposed of above the ordinary high water mark.



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Mechanical harvest of aquatic vegetation will only be done with the harvester owned by the Caribou Lake Association. If a different harvester is going to be used, prior inspection and approval by Duluth Area Fisheries must be obtained.

Herbicide Control:            acres to be treated,            % of littoral area  
Product(s)  
Rate of Application  
Timing of Application  
Narrative:

Other:            acres to be treated,            % of littoral area  
Narrative:

**B. Individual Permit Standards (new permits)**

Chemical Treatment of Submerged Vegetation: 50 feet along shore 50 feet lakeward

Narrative: An individual APM permit IS required for any chemical treatment of aquatic plants. Residents applying for a permit for the first time or modifying treatment areas are required to have a site inspection by the area APM specialist. The maximum amount allowed is 50 feet or 1/2 the total length of the owners shoreline, whichever is less, and the treatment area does not exceed 2,500 square feet in area. An APM permit is NOT required if cutting or pulling submerged vegetation does not exceed 50 feet or 1/2 the total length of the owners shorelined, whichever is less, and that does not exceed 2,500 square feet in area.

Mechanical Treatment of Emergent Vegetation: 15 feet along shore to open water

Narrative: An APM permit IS required for any treatment of emergent vegetation. Treatment of emergent vegetation is limited to a 15 foot wide channel to open water and must be located in the same spot from year to year. An APM permit is NOT required for mechanical treatment of floating leaf or submerged vegetation in the 15 foot wide channel as long as it does not move in location from year to year. The following conditions apply:

1. Harvesting can be done by hand, rakes, or similar equipment that does not significantly alter the lake bottom. Draglines, bulldozers, hydraulic jets, suction dredges, automated untended aquatic plant control devices, or bedsprings may not be used.
2. Cutting or pulling takes place in the same location each year unless an APM permit has been obtained authorizing a change in location.
3. Plants that have been cut or pull must be disposed of above the high water mark.

Other Treatment -            :            feet along shore            feet lakeward

Narrative: Contact your local APM specialist to determine if the method is allowed and if an APM permit is required.

**Section VII: Funding** [check all that apply]

- Lake Association
- DNR Grant
- Lake Improvement District (LID)
- Conservation District

Narrative: The Caribou Lake Association owns an aquatic plant harvester. They also provide the funding to operate it during the summer. The lake association will contact the local APM specialist if a different harvester is scheduled to be used.



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## **Section VIII: Variance(s) and Justification(s)** [check all that apply]

- Application of pesticides to control submerged vegetation along more than 100 feet of shoreline per site belonging to an individual riparian property owner (M.R. 6280.0350, Subpart 4, A), (list justification below) [Example justification: To maximize the control of curly-leaf pondweed by treating as large a contiguous area as possible to minimize dilution of herbicide.]
- Application of pesticides to control dense growths of aquatic macrophytes that do not interfere with watercraft use, swimming, or other traditional recreational uses (M.R. 6280.0250, Subpart 2, A, (2)) [Includes the prohibition on application of pesticides to improve the appearance of undeveloped shoreline (M.R. 6280.0250, Subp. 4, B)].
- Application of pesticides to control submerged vegetation in more than 15 percent of the littoral area (M.R. 6280.0350, Subp. 4, A). (list justification below)
- Application of pesticides to control aquatic macrophytes in natural environment lakes established pursuant to part 6120.3000 (M.R. 6280.0250, Subp. 4, E.). (list justification below)
- Mechanical control of aquatic macrophytes in more than 50 percent of the littoral area (M.R. 6280.0350, Subp. 3, B). (list justification below)

Justifications (identify which variance and provide the rational for all items checked above):  
 No variances are requested.

**Variance approved without condition(s)**

**Variance approved with following conditions(s):**

**Pretreatment data collection**

**Narrative:**

**Post treatment data collection**

**Narrative:**

**Evaluation**

**Narrative:**

**Other:**

**Narrative:**



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## Section IX: Signatures

This Lake Vegetation Management Plan is in effect for 5 years from date of Regional Fisheries approval.

DNR Approval

Submitted By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

_____	_____
Area Fisheries Supervisor	Date
_____	_____
Regional Fisheries Approval	Date
_____	_____
Regional Ecological Services Approval	Date

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I affirm that I am an authorized representative of Caribou Lake Association and acknowledge our participation in the development and implementation of this lake vegetation management plan.

_____	_____
Cooperator's Signature and Title	Date

Either party may terminate participation in this plan at any time, with or without cause, upon 30 days' written notice to the other party.