

Ordinary High Water Mark

The point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.



OHWM at Mallwood Subdivision shoreline. OHWM elevation 778.31 msl.



OHWM at Charlie Bluff boat landing shoreline. OHWM elevation 778.23 msl.



OHWL at Gilberts Bay (Vinnie Ha Ha) shoreline. OHWL elevation 778.83 msl.



OHWL at Bingham's Bay (Oxbow) shoreline. OHWL elevation 778.32 msl.

ECOLOGICAL RESPONSE TO OPERATING ORDER CHANGE

HIGHER SUMMER TARGET & ELIMINATE DRAWDOWN

FACTORS EVALUATED

AQUATIC VEGETATION

WATER QUALITY

WILDLIFE

FISHERIES

EROSION

RECREATIONAL USE

AQUATIC VEGETATION

HIGHER SUMMER TARGET LEVEL

POSITIVE IMPACT

INCREASE IN COVERAGE OF SUBMERGENTS

NEGATIVE IMPACT

REDUCE DIVERSITY OF EMERGENTS

ELIMINATE DRAWDOWN

POSITIVE IMPACT

**REDUCE FREEZING OF SEDIMENTS, ROOT
SYSTEMS AND TUBERS**

NEGATIVE IMPACT

LOSS OF SEDIMENT COMPACTION

WATER QUALITY

HIGHER SUMMER TARGET LEVEL

POSITIVE IMPACT

REDUCE SEDIMENT SUSPENSION

INCREASE WATER CLARITY & PHOTIC ZONE

NEGATIVE IMPACT

**INCREASE SEDIMENT EROSION ON
UNPROTECTED SHORELINES**

ELIMINATE DRAWDOWN

POSITIVE IMPACT

INCREASE DISSOLVED OXYGEN (VOLUME)

NEGATIVE IMPACT

LOSS OF SEDIMENT COMPACTION

WILDLIFE

HIGHER SUMMER TARGET LEVEL

POSITIVE IMPACT

**INCREASE VEGETATIVE SUBSTRATE FOR
INVERTEBRATES**

**INCREASE SUBMERGENT VEGETATION FOR
FALL WATERFOWL FEEDING**

ELIMINATE DRAWDOWN

POSITIVE IMPACT

REDUCE FREEZING OF BENTHIC FAUNA

**MORE WILDLIFE ACCESS TO SHALLOW
MARSHEs**

FISHERIES

HIGHER SUMMER TARGET LEVEL

POSITIVE IMPACT

**INCREASE GAME- AND PANFISH SPAWNING &
REARING HABITAT THAT MAY HELP IN
CONTROL OF ROUGHFISH**

NEGATIVE IMPACT

**IMPROVE ACCESS TO SHALLOW MARSHES BY
ROUGHFISH**

ELIMINATE DRAWDOWN

POSITIVE IMPACT

REDUCE FREEZING OF INVERTEBRATES

MORE ACCESS TO SHALLOW AREAS

NEGATIVE IMPACT

REDUCE MORTALITY OF STRANDED ROUGHFISH

EROSION

HIGHER SUMMER TARGET LEVEL

NEGATIVE IMPACT

**INCREASE EROSION OF UNPROTECTED
SHORELINES**

ELIMINATE DRAWDOWN

POSITIVE IMPACT

**REDUCE FREEZING OF ORGANIC MAT &
SEDIMENTS**

NEGATIVE IMPACT

LOSS OF SEDIMENT COMPACTION

RECREATIONAL USE

HIGHER SUMMER TARGET LEVEL

POSITIVE IMPACT

IMPROVE NAVIGATION & USER ENJOYMENT

**IMPROVE LOCAL ECONOMY THROUGH
INCREASED USE**

ELIMINATE DRAWDOWN

POSITIVE IMPACT

MORE ACCESS TO SHALLOW AREAS

Positive Impacts

Increased submergent macrophyte communities in the lake proper and in open water areas of the surrounding shallow marshes.

Increase in water levels throughout the growing season may allow for increased uptake of nutrients by submergent and emergent vegetation.

Increase in available wildlife habitat in shallow bays during the winter period.

Reduced potential for freezing of sediments that effect benthic fauna, and root systems and tubers of aquatic macrophytes.

More access to shallow marshes by wildlife and protection from overwinter mortality.

Higher water levels during fall may provide more submergent macrophyte utilization (feeding) by waterfowl.

Increased water levels may reduce turbidity to enhance game- and panfish productivity that may in turn help reduce the population of roughfish fry.

Increased water levels may encourage more recreational use benefiting local economy.

Negative Impacts

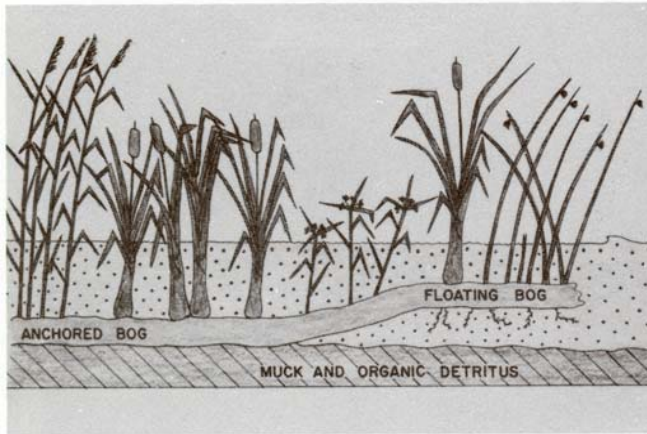
Reduced diversity of emergent macrophyte community.

Potentially an increase in wave erosion on unprotected wetland shorelines.

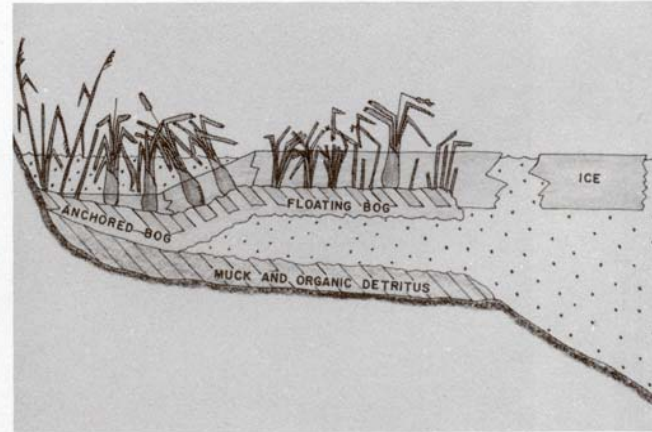
Potentially more access to shallow marshes by roughfish.

Higher water levels may cause shallow marshes to proceed to lake phase resulting in reduced emergent macrophytes and aquatic insect populations.

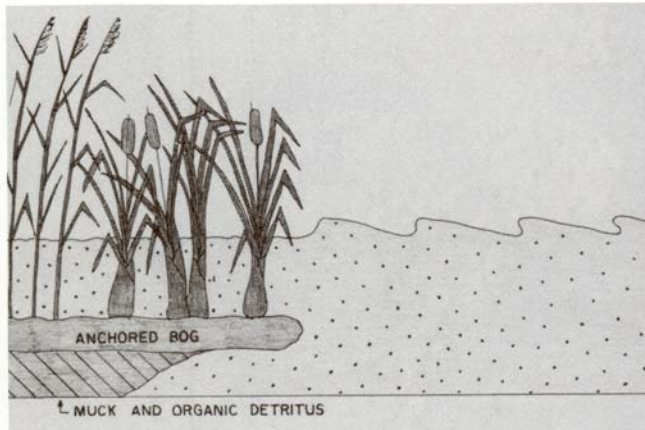
Sediment compaction will not occur over winter in shallow marsh areas if drawdown is eliminated.



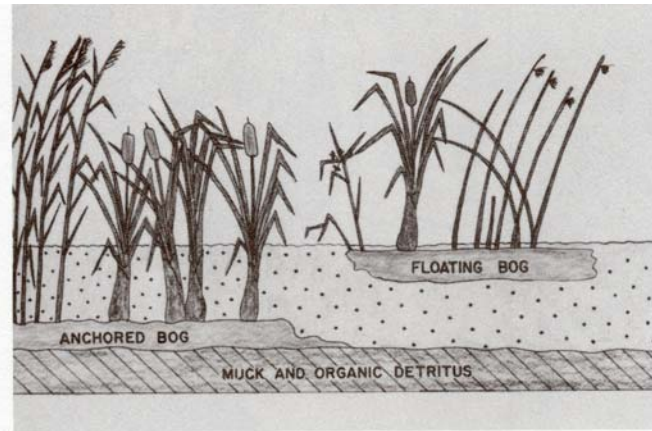
Floating bogs are created when (a) high and fluctuating water levels lift dense rhizomatous mats away from underlying substrates;



(b) rising water levels in spring prior to ice-out lift the ice layer formed within rhizomatous mats, tearing them away from bottom substrates;



(c) substrates under rhizomatous mats are scoured away.



(d) Wave and ice action then break these bogs into small islands that float downstream (illustrations by Arlyn Linde and Tom Janisch).

**WDNR/RKLD COOPERATIVE LAKE STUDY,
LAKE KOSHKONONG**



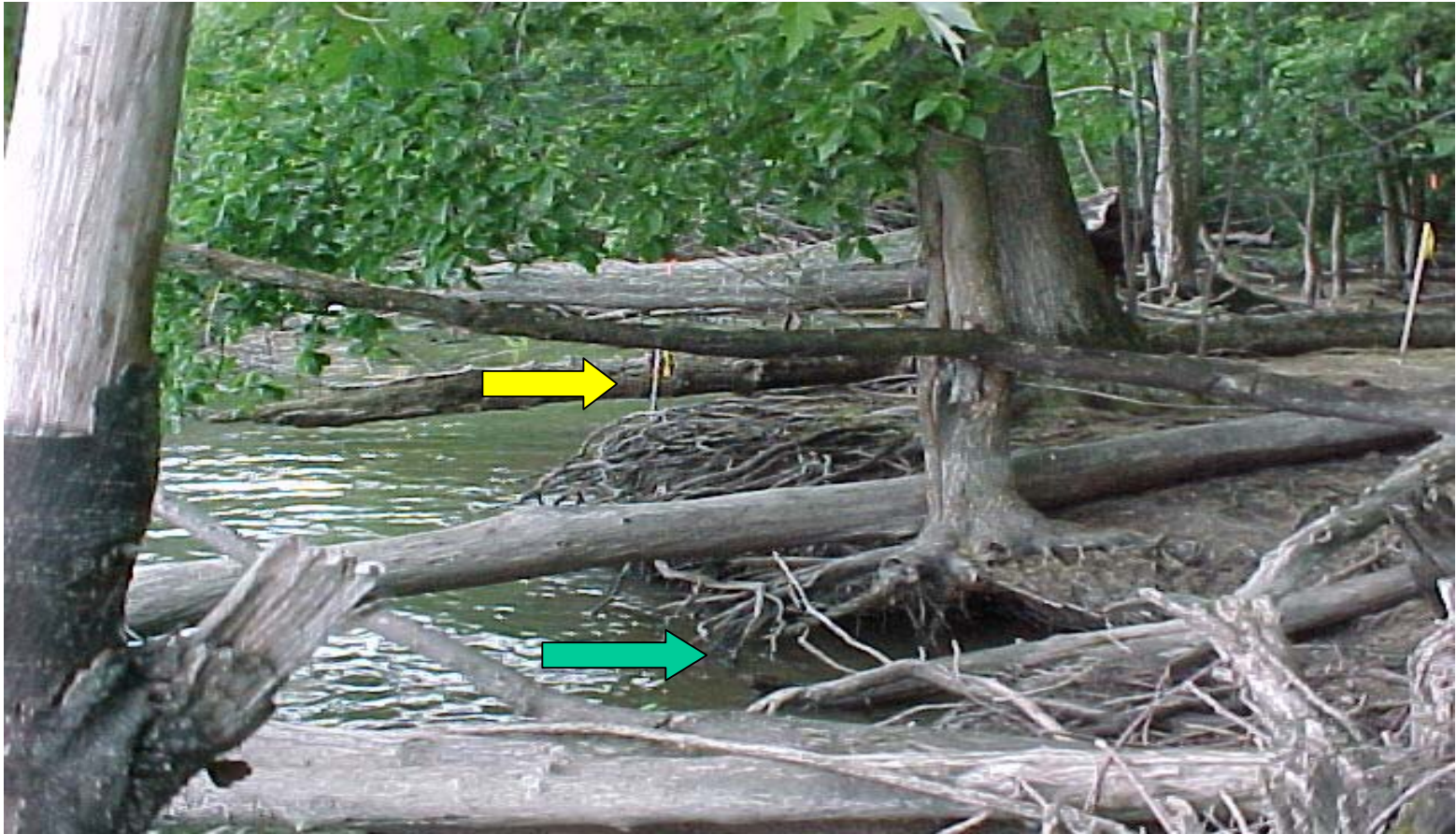
- Location: Carcajou Forested Floodplain Date: 2/22/02 WL: 776.48 msl
- Description: Photo taken from northwest of Quadrant A looking southeast. 25% moss layer coverage and sparse leaf litter. 8" dbh American elm tree healthy with small winter buds and some exposed roots that are scarred. 7" and 18" dbh double trunk silver maple with 4 suckers (.75", 1", 1" and 1.75").

**WDNR/RKLD COOPERATIVE LAKE STUDY
LAKE KOSHKONONG, WISCONSIN**



- Location: Carcajou Floodplain Forest Date: 5/28/02 WL: 776.81 msl
- Photo Description: Photo taken east of Quadrant A. Stake in SW corner of Quadrant A missing (replaced on 5/28/02). Evidence of erosional sediment loss in root systems along shore.

**WDNR/RKLD COOPERATIVE LAKE STUDY
LAKE KOSHKONONG, WISCONSIN**



- Location: Carcajou Forested Floodplain Date: 7/9/02 WL: 776.13 msl
- Photo Description: Photo of Quadrant A, yellow arrow is SW corner of quadrant. Green arrow points to observed erosion under tree root systems. More than one foot of sediment loss since February, 2002.

**WDNR/RKLD COOPERATIVE LAKE STUDY,
LAKE KOSHKONONG**



- Location: Carcajou Shallow Marsh Date: 2/22/02 WL: 776.48 msl
- Description: Photo of plot taken from north looking south. 0% tree cover 90% herb layer cover, soil description organic silt/muck,

**WDNR/RKLD COOPERATIVE LAKE STUDY
LAKE KOSHKONONG, WISCONSIN**



- Location: Carcajou Shallow Marsh Date: 7/9/02 WL: 776.14 msl
- Photo Description: Photo of Quadrant D. Evidence of predation on river bulrush and common reed along shore. 10% of this quadrant unvegetated. 70% common reed, 4% river bulrush, 5% water smartweed, 5% arrowhead. Some young river bulrush sprouted along edge of water.

**WDNR/RKLD COOPERATIVE LAKE STUDY
LAKE KOSHKONONG, WISCONSIN**



- Location: Carcajou Shallow Marsh Date: 5/28/02 WL: 776.81 msl
- Photo Description: Photo taken west of Quadrant B. Arrow indicates location of NW corner of Quadrant B. Significant vegetation and organic layer erosional loss. 15% live river bulrush, 35% dead river bulrush stalks, 50% un vegetated.

**WDNR/RKLD COOPERATIVE LAKE STUDY,
LAKE KOSHKONONG**



- Location: Gilberts Bay Forested Upland Date: 3/7/02 WL: 777.12 msl
- Description: Photo taken from west of the transect plot looking east showing the 30 foot width of the plot. Red arrow indicates hole augered into ice 15 feet lakeward of transect center.

W DNR R K L D C O O P E R A T I V E L A K E S T U D Y
L A K E K O S H K O N O N G , W I S C O N S I N



- Location: Gilberts Bay Forested Upland Date: 6/28/02 WL: 776/70 msl
- Photo Description: Photo taken west of midpoint of transect. Stake in center of photo is at O H W M . @ 18 inches of vertical drop from O H W M to water level.

**WDNR/RKLD COOPERATIVE LAKE STUDY
LAKE KOSHKONONG, WISCONSIN**



- Location: Vinne Ha Ha (Gilberts Bay) Date: 7/9/02 WL: 776.13 msl
- Photo Description: Photo of Vinne Ha Ha plot. Edge of water 20 feet from stakes (OHWM). Very little change in vegetation since Spring 2002. Two river bulrush plants (2-inch tall) growing on exposed sediments lakeward of stakes.