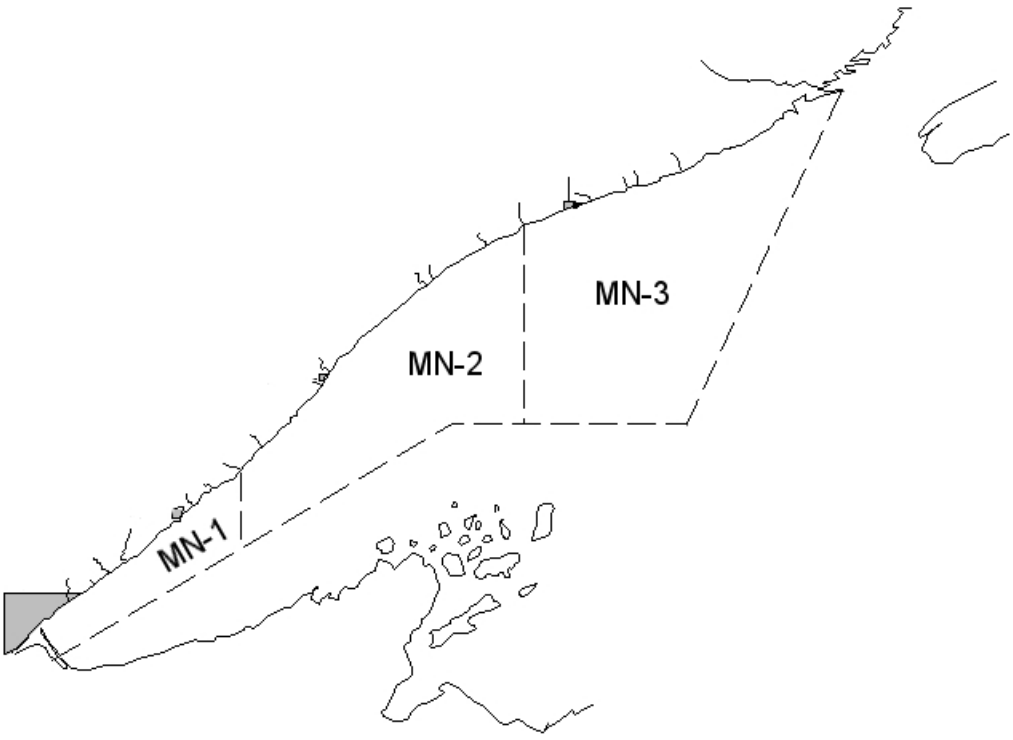
Chapter Summary Sheets

for the

FISHERIES MANAGEMENT PLAN FOR THE MINNESOTA WATERS OF LAKE SUPERIOR



Minnesota Department of Natural Resources
Division of Fish and Wildlife
Section of Fisheries

Habitat

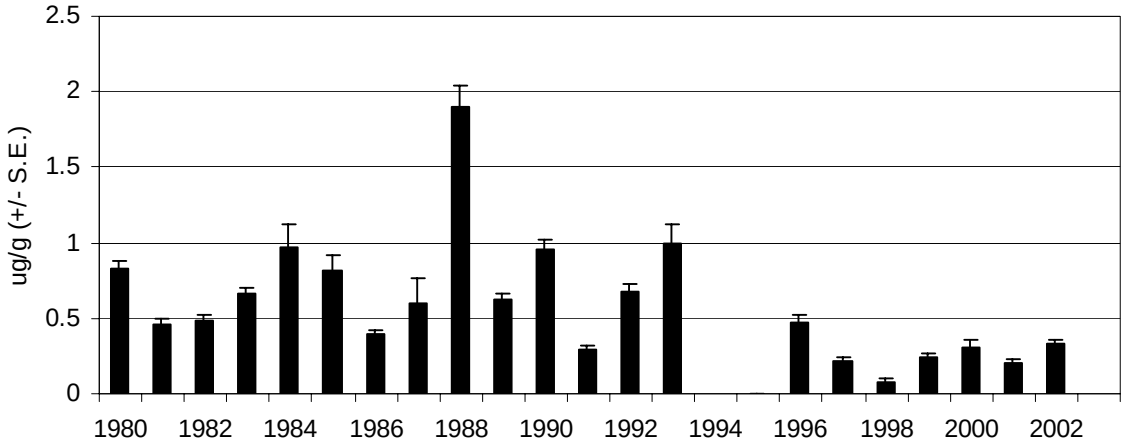


Figure 1. PCB concentration in four to six-year-old whole lake trout from Lake Superior, 1980-2002. Data source: M. Whittle, Department of Fisheries and Oceans, Canada.

- The habitat for fish in Lake Superior is influenced by the physical properties of the watershed and activities within the basin.

- Point source pollution has been greatly reduced in the Lake Superior Basin over the last 30 years. However, non-point sources of pollution continue to cause problems of accumulation of contaminants in aquatic organisms within the Lake Superior fish community.

- In general, mercury and PCB concentrations in lake trout have decreased over the last 20 years.

- We will continue to work with other agencies and organizations to protect habitat within the Lake Superior basin through the regulatory process.

- We will continue to work with forest managers to ensure BMTs are implemented and advocate for additional protection of riparian areas in the Lake Superior watershed.

- Much of the substrate along the Minnesota shoreline has been mapped, and potential lake trout spawning areas have been defined. We will attempt to map the remaining shoreline over the next 10 years.

- We will increase protection of streams in the Lake Superior watershed by implementing habitat improvement recommendations in MNDNR fisheries management plans.

Prey

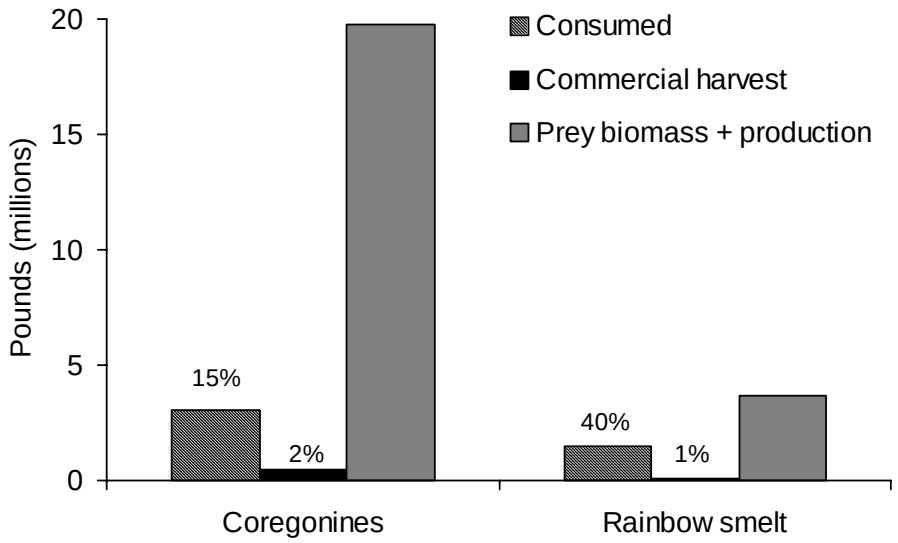


Figure 1. Amount of prey available (biomass + production), consumed by predators, and harvested commercially in Minnesota waters of Lake Superior in the year 2000.

Lake Herring

- Lake herring abundance has rebounded since 1985, although recruitment has remained highly variable
- The commercial harvest of lake herring is small compared to availability.
- Limit commercial licenses to 25.
- For the commercial lake herring fishery, we propose to establish a total allowable catch (TAC) based on 10% of the lower limit of the average spawning stock biomass estimate determined by hydroacoustic surveys. TAC would be based on a three-year average and would be in place for three years.
- Allocation of TAC would be determined by discussions among MNDNR and commercial operators.

Rainbow Smelt

- Rainbow smelt abundance has decreased dramatically since the late 1970s as predator abundance has increased.
- The commercial harvest of rainbow smelt is small (1%) compared to predator consumption and availability.
- We propose to limit commercial harvest of rainbow smelt by licensing only one operator and limiting gear to 5 pound nets.

Lake Trout

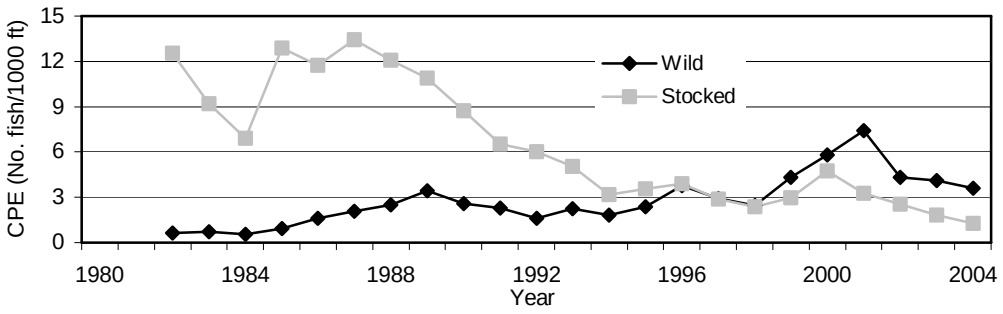


Figure 1. Catch per Unit Effort (Number of fish per 1000 ft) of wild and stocked lake trout in the May assessment, whole Minnesota shore, 1982-2004.

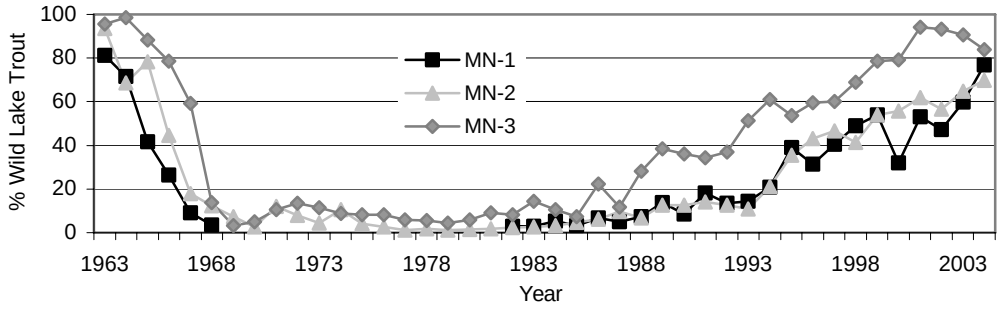


Figure 2. Percent wild lake trout in the May assessment by management zone, 1963-2004.

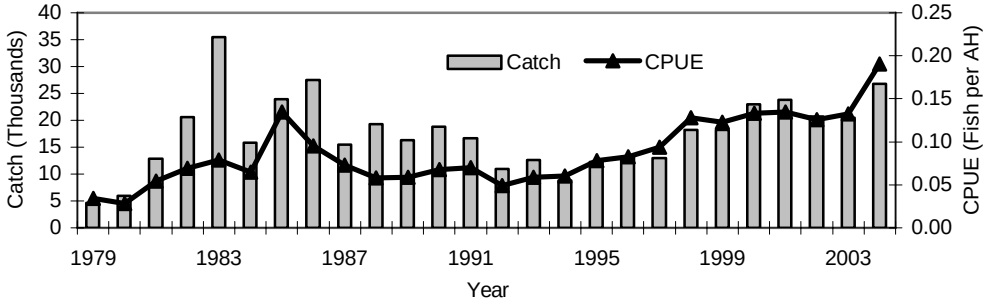


Figure 3. Catch and CPUE (number of fish per angler-hour) in the summer Lake Superior creel survey, 1979-2004.

- In the May assessment, the CPUE of stocked lake trout has declined and the CPUE of wild lake trout has increased in the last 25 years, and the CPUE of wild lake trout has been higher than that of stocked lake trout since the mid-1990s.
- The percent wild lake trout in the May assessment has increased steadily in all 3 management zones since the late 1980s.
- Catch and catch rate (number of lake trout per angler-hour) in the summer recreational fishery has been increasing since the early 1990s. Numbers prior to 1985 are for harvested fish only.
- Lake trout are no longer stocked in management zone MN-3. With the increased abundance of wild lake trout and the extremely low survival of stocked fish, we propose to discontinue stocking lake trout in MN-2 and reduce stocking in MN-1.
- We propose to implement an experimental summer assessment fishery in MN-3 to determine the feasibility of a limited commercial fishery for lake trout.

Chinook Salmon

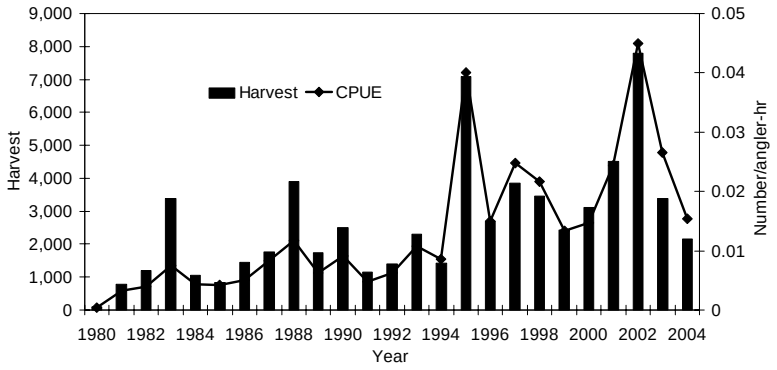


Figure 1. Catch-per-unit-effort (CPUE) and harvest of Chinook salmon in the summer creel survey, 1980-2004.

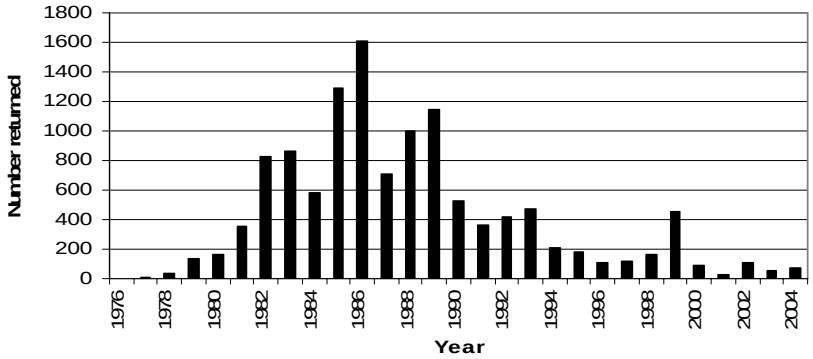


Figure 2. Returns of Chinook salmon to the French River adult trap, 1976-2004.

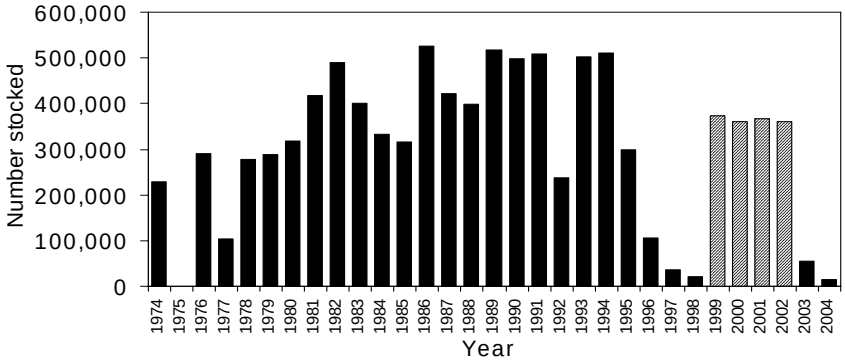


Figure 3. Chinook salmon stocked in Minnesota waters of Lake Superior, 1974-2004. Lake Huron strain Chinook salmon were stocked from 1999-2002 (cross-hatched bars).

- Chinook salmon catch in the summer fishery has increased since 1995 and is primarily composed of naturalized Chinook salmon originating from other jurisdictions in Lake Superior.
- Since 2000, over 95% of Chinook salmon caught in the Minnesota summer fishery were wild, originating from other jurisdictions, while less than 5 percent of the catch were from Chinook salmon stocked in Minnesota.
- Catches in the fall creel and returns to the French River trap have declined to very low levels since 1995.
- Four years of experimental stocking of Lake Huron strain Chinook salmon has not produced expected returns and criteria established to continue the program have not been met.
- We propose to discontinue Chinook salmon stocking program following criteria established in 1998. Only 13, 20 and 9 pairs of adults returned to spawn in the French River from 2003-2005, respectively.

Coho Salmon

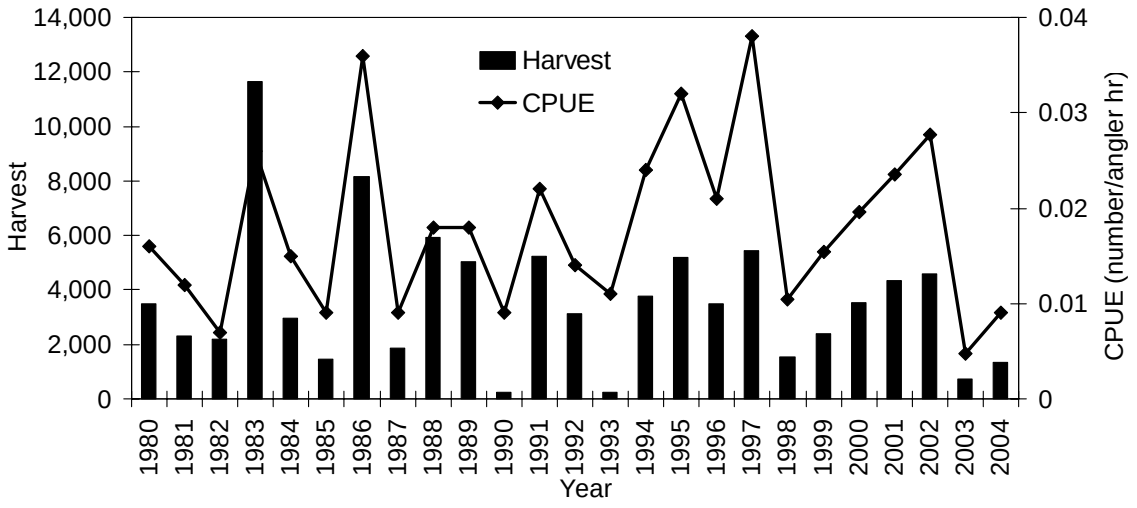


Figure 1. Harvest and catch rates of coho salmon in summer boat fishery in the Minnesota waters of Lake Superior, 1980-2004.

- Coho salmon have become naturalized throughout Lake Superior and provide a high quality, but variable fishery to Minnesota anglers.
- Spawning occurs in Minnesota tributaries, but reproductive success is low due to limited groundwater habitat. Natural reproduction in other jurisdictions and migration to Minnesota waters account for the success of the fishery.
- The average summer harvest of coho salmon in Minnesota waters from 1995-2004 was 3,261. Coho salmon fluctuates with Chinook salmon as the second or third most frequently caught salmonine behind lake trout in the summer fishery.
- Fluctuating year-class strength leads directly to fluctuations in harvest and catch rate since the fishery is based predominantly on a single year-class.
- Stocking coho salmon in Lake Superior has not been successful at increasing abundance.

Rainbow Trout

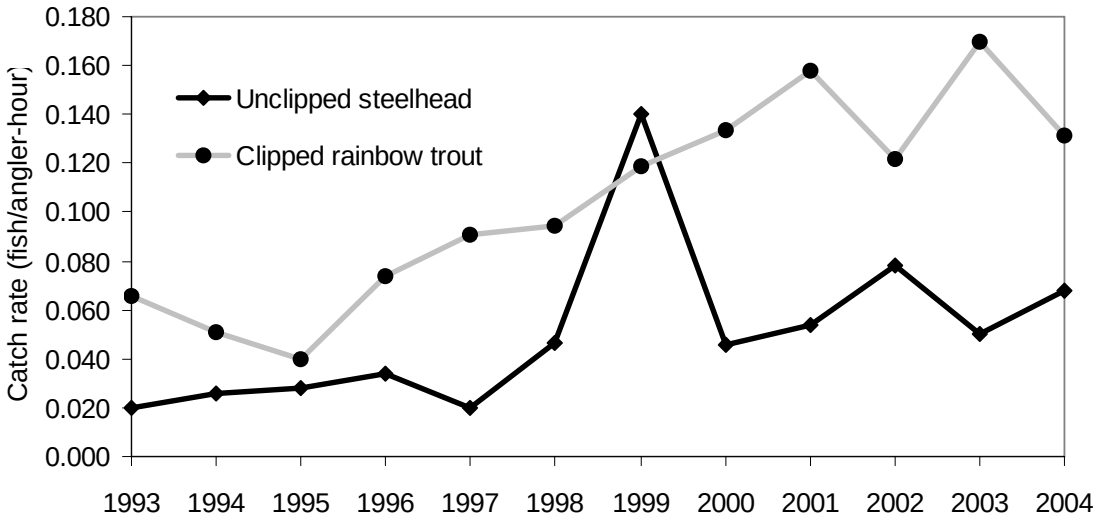


Figure 1. Catch rates for steelhead and Kamloops strain rainbow trout of legal size (> 16 inches) from spring anadromous creel surveys 1993-2004.

- Catch rates for steelhead and Kamloops strain rainbow trout have increased over the last 10 years.
- Continue to implement steelhead rehabilitation strategy as described in 2003 Rainbow Trout Management Plan.
- Focus initial rehabilitation strategy for steelhead on the Knife River system.
- Cooperate with MNDNR Ecological Services, US Dept. of Agriculture, and interested citizens to reduce the amount of predation by cormorants on emigrating Knife River steelhead.
- Propose minor changes in sanctuary dates to simplify regulations.

Brook Trout

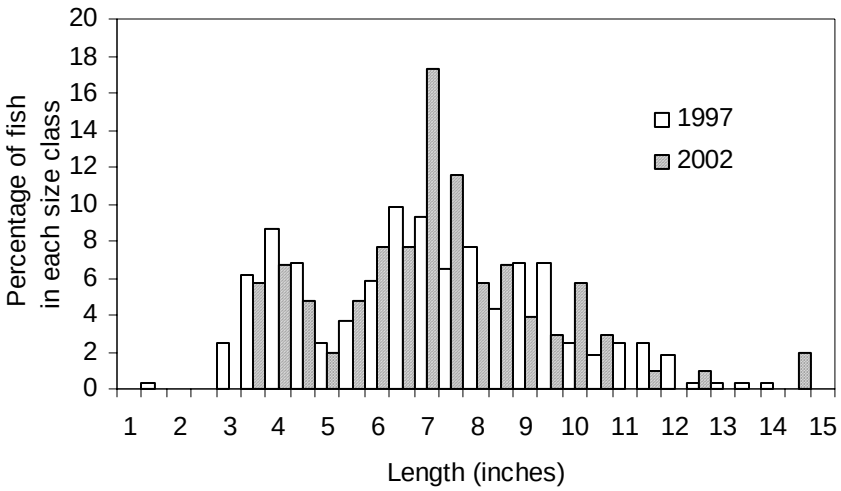


Figure 1. Length frequencies of brook trout sampled in fall electrofishing surveys below barriers in selected streams, 1997 and 2002.

- Coaster brook trout are defined as a brook trout that spends a portion of its life in Lake Superior. Lake wide efforts are being implemented in an attempt to rehabilitate coaster brook trout populations.

- Restrictive harvest regulations were implemented in Minnesota in 1997 in an attempt to enhance coaster brook trout populations. Similar restrictive regulations are currently in place basin-wide.

- Few large brook trout have been observed in fall electrofishing surveys. Population response to restrictive regulations will take time.

- Coaster brook trout are unlikely to support a harvest fishery and expectations need to focus on a trophy or memorable experience type of fishery.

- Coaster brook trout rehabilitation is a long-term effort, and may take 10-100 years depending on habitat, the status of remnant stocks, and interactions with other species.

- The strategy that carries the least genetic risk allows rehabilitation to occur without stocking, requiring time for remnant stocks to build and/or recolonization to occur.

- To simplify angling regulations, we propose above boundary bag limits be reduced to 5. This conforms to statewide brook trout regulations.

Brown Trout

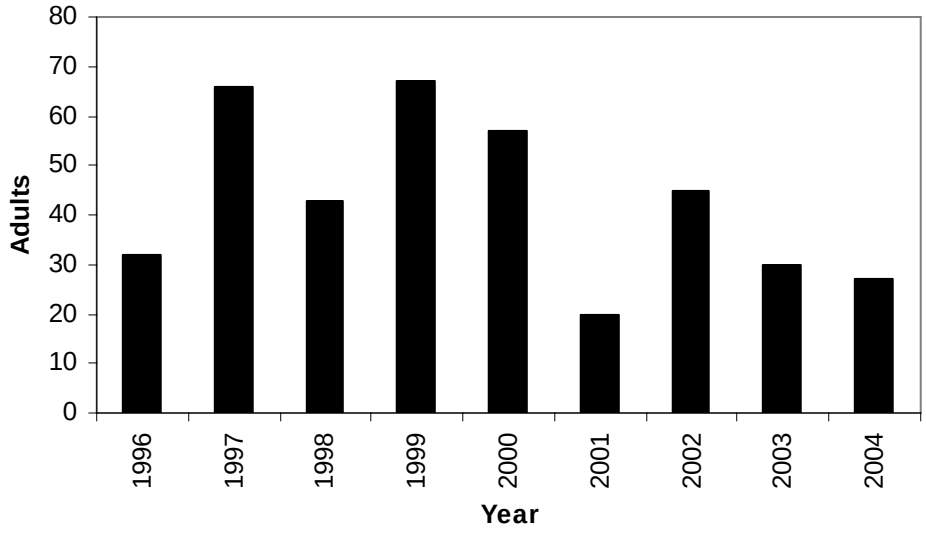


Figure 1. Number of adult brown trap caught in the fall at the Knife River fish trap, 1996-2004.

- Brown trout have established very small naturalized populations in some North Shore streams including the Knife River.
- Habitat for brown trout in Minnesota tributaries is marginal and very limited.
- Brown trout are rarely caught in tributary streams below barriers and are only occasionally caught during the summer boat fishery.
- Stocking has not been successful at increasing brown trout abundance.
- Potential negative interaction exists between brown trout and coaster brook trout.

Walleye

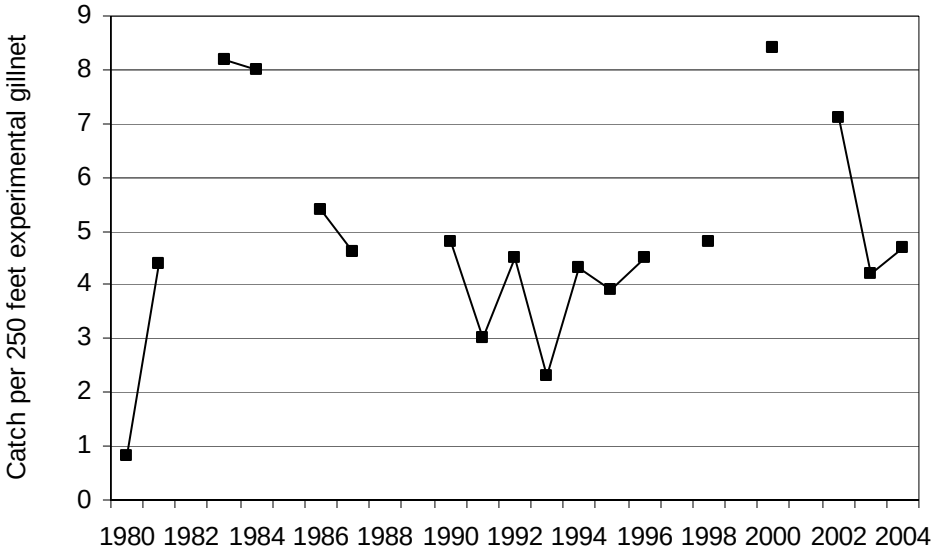


Figure 1. Gillnet catch rates for walleye in the St. Louis River estuary from 1980-2004.

- Walleye abundance and angler catch has increased dramatically since the 1970s as water quality and spawning habitat have improved in the St. Louis River.

- Slow growth of St. Louis River strain walleye makes this population more vulnerable to overharvest when compared to many walleye populations.

- The Pigeon River population is a separate population and is considered in need of rehabilitation. The Grand Portage Band is working on rehabilitation strategies and habitat needs

We propose to:

- Maintain high catch rate and quality size structure of St. Louis River walleye through harvest regulations.

- Monitor walleye population dynamics through assessments in the St. Louis River estuary.

- Protect walleye spawning habitat below the Fond du Lac Dam.

Lake Sturgeon

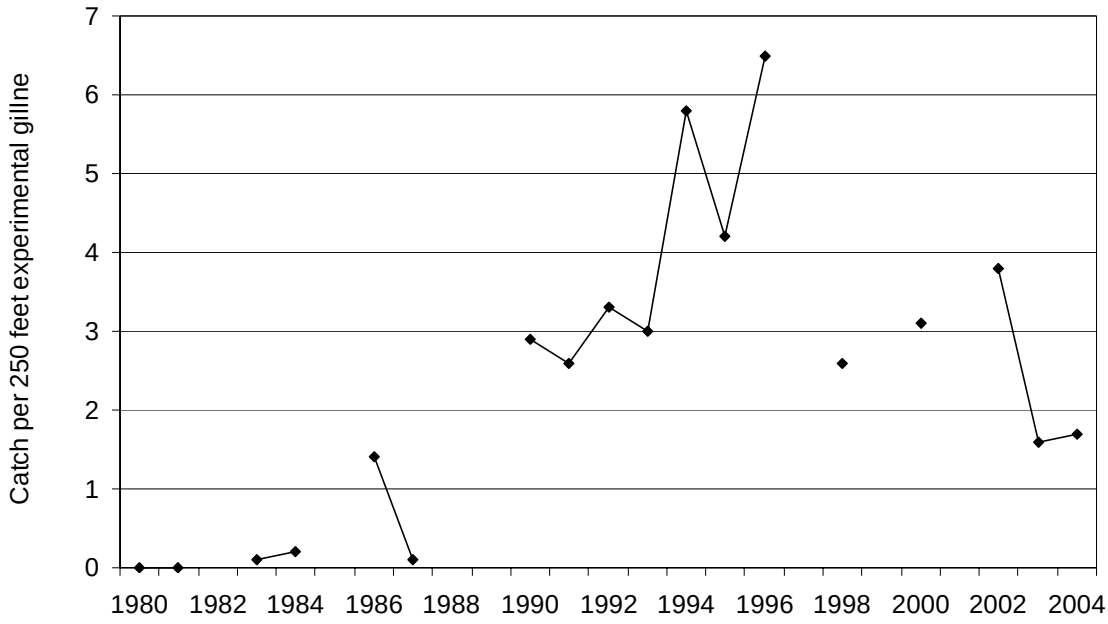


Figure 1. Gillnet catch rates for lake sturgeon in the St. Louis River estuary from 1980-2004.

- The St. Louis River estuary once supported a large lake sturgeon population and fishery, but by the early 1900s, the population was extirpated due to poor water quality, degraded habitat and over-fishing.

- Sturgeon do not reach spawning age until they are 15-25 years old and they may not spawn every year. Because of their longevity, slow growth, and late age of maturity, they are vulnerable to over-harvest.

- Lake sturgeon were stocked in the St. Louis River from 1983 to 2000 as part of a rehabilitation effort by Wisconsin and MN DNR.

- Survival of stocked fingerlings appears to be excellent, with the establishment of year-classes corresponding to each year of stocking.

- Successful rehabilitation within the St. Louis River estuary may provide a "trophy" fishery for anglers. However, the sport fishery will be highly restrictive and will be contingent upon a self-sustaining population that has adequate numbers to support a limited fishery.

- To enhance natural reproduction, a habitat project that creates spawning riffles below Fond du Lac Dam in a historical sturgeon spawning area is being planned.