

Reintroduction of *Nmégos* Arctic Grayling into Michigan



(https://www.fws.gov/fisheries/fishguide/arctic_grayling.html)

Archie Martell

Little River Band of Ottawa Indians



Why Arctic Grayling?



Why Grayling? Why Now?

- Native, iconic, extirpated!
- Regain lost natural resource heritage
- Lower peninsula's dominant stream salmonid
- Interest and Partners
- Better chance of success





michigan
**ARCTIC
GRAYLING**
initiative



www.migrayling.org



Arctic Grayling Initiative

Mission Statement:

- To restore self-sustaining population(s) of Arctic grayling within the species' historic range in Michigan.



Arctic Grayling Initiative

- Cooperative Partnership: LRBOI and MDNR
- First meeting August 2016
- Will be many other partners as well!
- Had over 50 in attendance including:
- 3 tribes, 3 fed agencies, 2 state agencies, 8 universities, 4 nonprofits, 3 angler groups, and Consumers Energy
- Second Meeting October 2017



History of Arctic Grayling in Michigan

- Only native stream salmonid in most of the LP. **Brook Trout were not native to most of the Lower Peninsula!**
- The opposite was true in the UP. Brook Trout *were* native to and abundant in most of the Upper Peninsula, while Arctic Grayling were not.
- They were very abundant in these streams, and were very important to Native Americans prior to European settlement.



Past Arctic Grayling Stocking in Michigan

Year	Waterbody	Amount
1877, 1880, 1925	3 Lower Peninsula Rivers	Unknown (Adult-Translocation)
1900 to 1933	Numerous Rivers and Lakes	>3,330,000 (fry and eyed eggs)
1934 to 1941	Numerous Rivers and Lakes	70,000 (yearlings)
1958 to 1960	Keweenaw County Streams	300,000 (fingerlings)
1987 to 1991	13 Lakes and 7 Streams	145,000 (yearlings)



Why were Arctic Grayling extirpated from Michigan? Three primary reasons:

1. Overharvest
2. Habitat destruction from logging
3. Competition with introduced species; brook trout, rainbow trout, and brown trout



Hodenpyle Dam Construction - 1925



Upper Manistee River Watershed

- LRBOI Interest, Cultural Significances
- One of the original great Arctic Grayling Rivers
- 70+ miles of unfragmented, low gradient, cold water habitat
- No access for Great Lakes migratory fish
- Potential negative- robust brown and brook trout populations



Where Are We?

- LRBOI & MTU – Habitat and RSI (2009-16)
- Consumers Energy Foundation Grant – MDNR-LRBOI – 2017 Upper Manistee R. Habitat and Fish Community evaluation (MTU, ARI)
- LRBOI and GVSU – 2017 RSI Pilot Study
- MDNR – Hatchery & Brood Stock development



Habitat Metric	Range in Literature Values Observed	Data Source
Spawning Temperature (°C)	2.0 – 10.0	9
Summer Temperature (°C)	4.7 – 18.3	3,10,17
Spawning Velocity (m/s)	0.34 – 1.46	9,15
Adult Summer Velocity (m/s)	0.21 – 0.61	1,3,9,10,17,19
Y.O.Y Habitat Velocity (m/s)	0.04 – 0.78	11,19
Adult Mean Water Depth (m)	0.26 – 1.50	3,10,13,17,19
Channel Width (m)	4.0 – 15.0	1,2,10,16
Y.O.Y Water Depth (m)	0.10 – 0.40	12,17
Spawning Substrates	Gravel – Pebble	1,9,11,15
Adult Spawning Substrates	Course Sand – Pebble	7,17
Fry Habitat Substrates	Fines – Pebble	3,11
Adult Median Sediment Size (mm)	4.0 – 89.0	20
Pool : Riffle Ratio	0.27 – 1.51	10
Dissolved Oxygen (mg/L)	1.7 – 11.2	5,10
pH	7.0 – 8.2	9,15
Stream Gradient (%)	0.075 – 0.29	3,9,10,12
Summer Habitat	Deep Pools	3,9,19
Winter Habitat	Large streams and deep pools in small streams	3,7,9,17
Feeding Location	Drift feed in riffles/pools	4,7,9,17

(1) Nelson (1954) (2) Taylor (1954) (3) Vincent (1962) (4) Scott & Crossman (1973) (5) Bendoric (1980) (6) Elliot (1980) (7) Krueger (1981) (8) Kruse (1981) (9) Hubert et al. (1985) (10) Liknes & Gould (1987) (11) Shepard & Oswald (1989) (12) McMichael (1990) (13) Hughes & Dill (1990) (14) Hughes (1992) (15) Bruce and Starr (1985) (16) Byorth & Magee (1998) (17) Barndt & Kaya (2000) (18) Cowe & Blackman (2003) (19) Blackman (2004) (20) Lamothe & Peterson (2007)

LRBOI Remote Site Incubators (RSI)

Incubator types per stream

- 3 Singles and 1 Triple (12 total)
- 1 Stock Tank at Peterson Creek only



Montana (RSI)



Why could it work?

- Grayling reintroduction success in Montana
- Remote Site Incubators (RSIs)
- Natural reproduction in Ruby R.
- Co-occurring brown trout and brook trout



Questions?

