Use of Grass Carp in Aquatic Plant Management in the Tully Kettle Lakes Area

By: Stradder Caves¹, and Dan Stich¹

¹ Biology Department, State University of New York College at Oneonta, Oneonta, NY 13820
What are Grass Carp?

- Herbivorous fish species
- Eat aquatic plant species
- Stocked for plant control
- Large size and old age
  - Up to 48” and 30 years old
- Recommended stocking rate is 5 fish per vegetated hectare
  - 1 hectare is around 2.5 acres
- Triploid
  - Cannot reproduce
Where are the Tully Kettle Lakes?

- Around 20 miles south of Syracuse, NY
- Border of Onondaga and Cortland Counties
- Series of glacially formed lakes
- West branch of Tioughnioga River
Where were Grass Carp stocked?

* Historically stocked in Song Lake
  * Last Stocked in 2005
* Currently being stocked in Crooked Lake
  * Last stocked in 2017
What was the study?

- Current populations of Grass Carp in Song and Crooked lakes
- How long they will persist in each lake
- Potential management strategies going forward
The study continued

- Exponential growth model was used
- Maximum age of 31
- 90% CI calculated around the average
Song Lake

- Around 115 acres
- Maximum depth of roughly 30 feet
- Loss of oxygen at lower depths during the summer
- Stocked over 2,500 Grass Carp 1995-2005
Stocking rates for Song Lake

![Bar chart showing stocking rates for Song Lake from 1995 to 2005. The number of individuals stocked increases from 1995 to 2005.]

- 1995: 350
- 1997: 227
- 1999: 297
- 2001: 400
- 2003: 630
- 2005: 600
Song Lake Grass Carp Population

![Graph showing estimated population trends from 1995 to 2035. The graph includes mean, lower 90% CI, and upper 90% CI lines.]
What does this mean?

- Currently between 40-130 Grass Carp in Song Lake
- Can persist in the lake into the mid 2030s
- NYS Threatened plant species in the lake
  - Lake Cress
Crooked Lake

- Roughly 105 acres in size
- Maximum depth of 70 feet
- Loss of oxygen at lower depths during the summer months
- 800 Grass Carp stocked 2013-2017
Crooked Lake Stocking

![Bar graph showing the number of individuals stocked in Crooked Lake from 2013 to 2022. The graph indicates a decrease in stocking from 200 individuals in 2013 and 2014 to 0 in 2016, followed by 110 individuals each year from 2017 to 2022.](image)
Crooked Lake Grass Carp Population

The chart shows the estimated population of Grass Carp in Crooked Lake from 2013 to 2048. The population peaks around 2018 and then declines sharply. The black line represents the mean population, the dotted line is the lower 90% confidence interval, and the dashed line is the upper 90% confidence interval. The population is expected to decrease significantly over the next few years.
What does this mean

* Currently between 350-400 fish
* Stocking continues for the next 5 years
  * Maintain the current population size
* Fish can be in the lake through the 2050s
Conclusion

- Song Lake can have fish until 2030s
  - Lake Cress present in the lake
- Crooked Lake can have fish through the 2050s
  - Stocking 110 fish a year to maintain population
- Stocking must be done meticulously to accomplish desired goal
A special thank you to the Cortland-Ondondaga Federation of Kettle Lake Associations for information regarding stocking and for assistance.
Questions?