



Background – Fish Management Agreement

- **Deed 10/30/66:** Nicholas Co. Dev. Corp. & Com. of Kentucky.
 - Transfers “portion of the land covered by Lake Carnico” and “a strip of land surrounding the water impounded by the dam extending 100’ from the permeant pool elevation.” to NCDC and its successors.
 - Permeant pool elevation is roughly 900 mean feet above sea level.
 - Essentially \pm 180 acres.

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 2. To hold KDFWR free from claims, demands, damages actions, costs and charges.

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This portion gives us the authority to
“Manage the Fisheries”.

We manage through 3 activities:

- 1. Sampling**
- 2. Regulations**
- 3. Stockings**

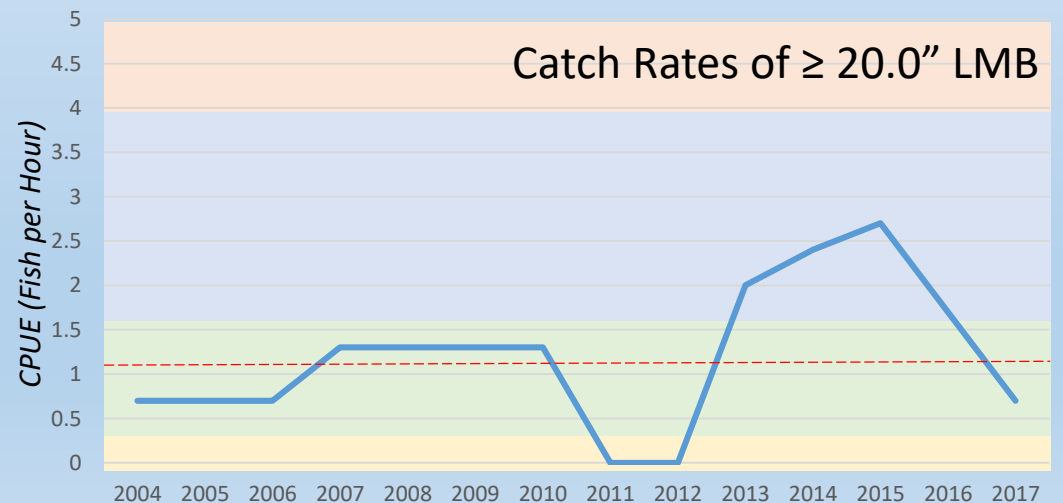
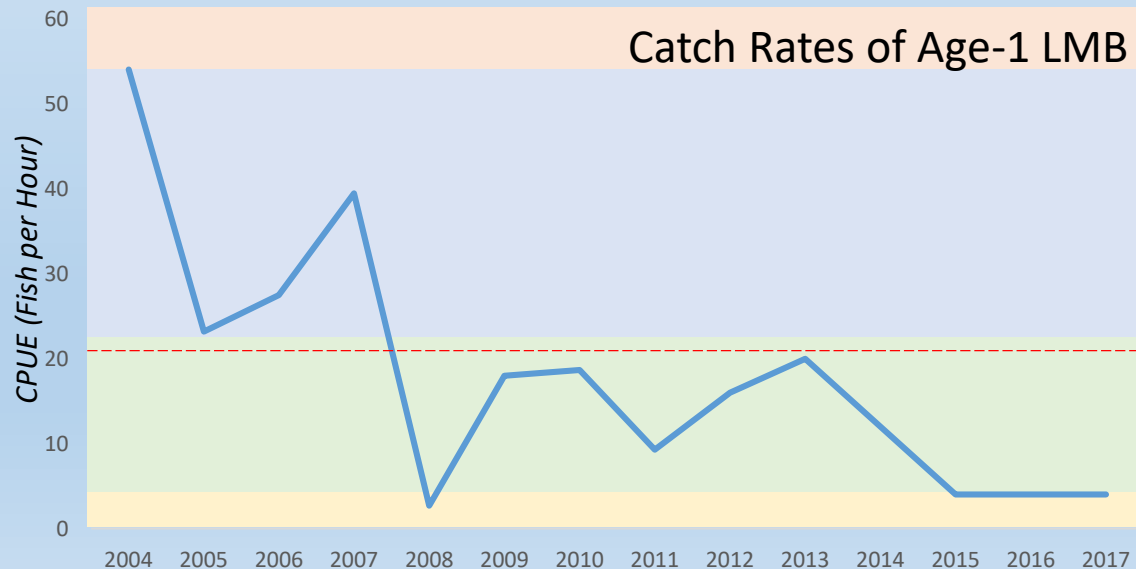
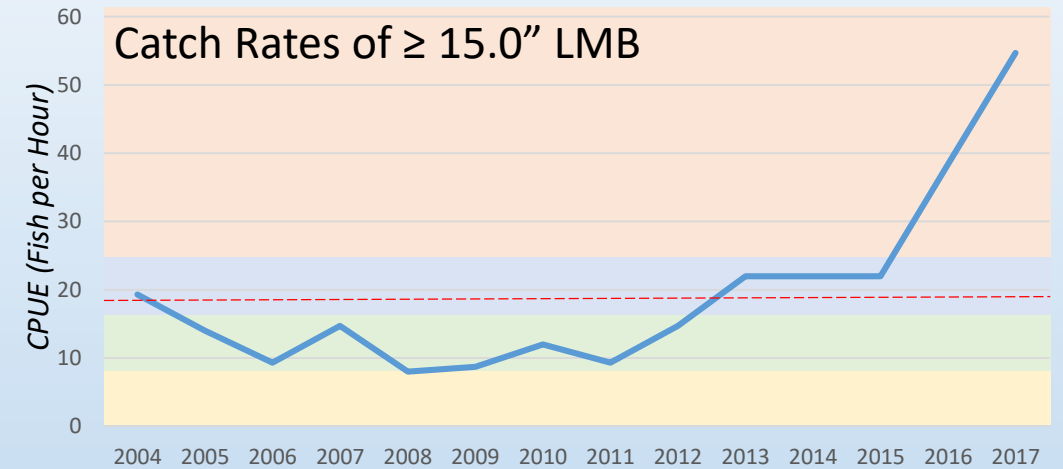
Fish Management: Part 1: Sampling

- Annual sampling done from 1977 to Present
 - In 2013 change to to bi-annual.
- Largemouth bass and sunfish population assessments.
- Channel Catfish monitoring.
- Generalized fish population checks.



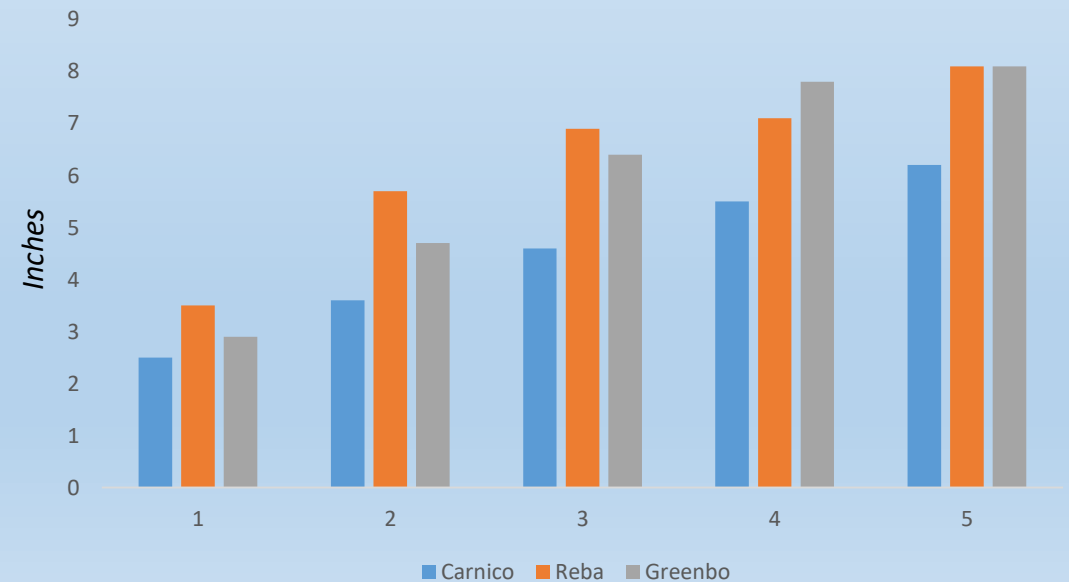
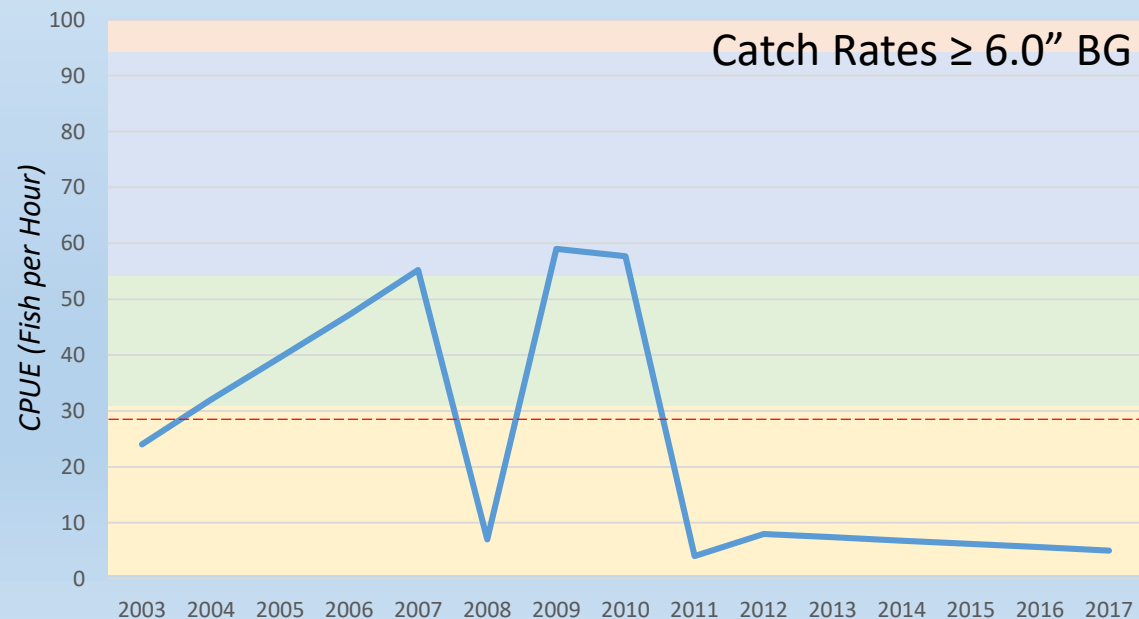
Fish Management: Part 1: Sampling

- Bass Work
 - Since 2004 rated as a “Fair” LMB Fishery.
 - Lower recruitment = Low numbers of big fish



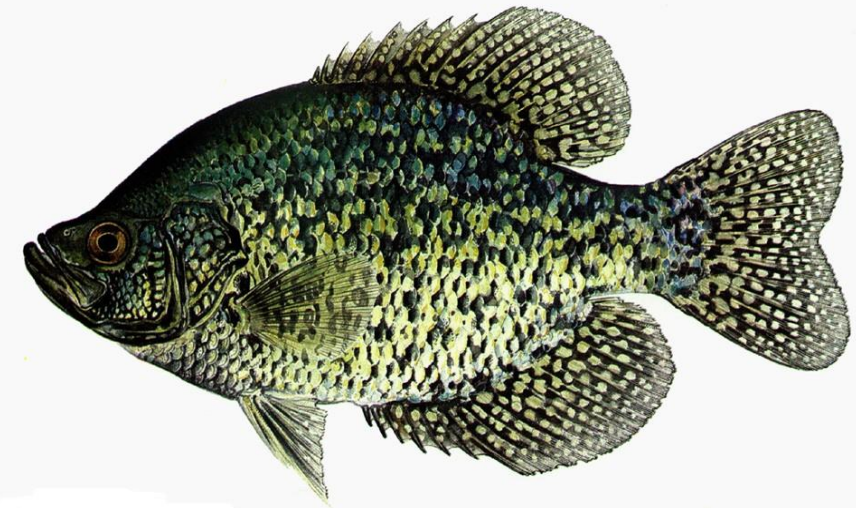
Fish Management: Part 1: Sampling

- Sunfish Work
 - Since 2003 lake ranked as a “Fair” BG fishery.
 - Issue is lower numbers overall and slow growth.



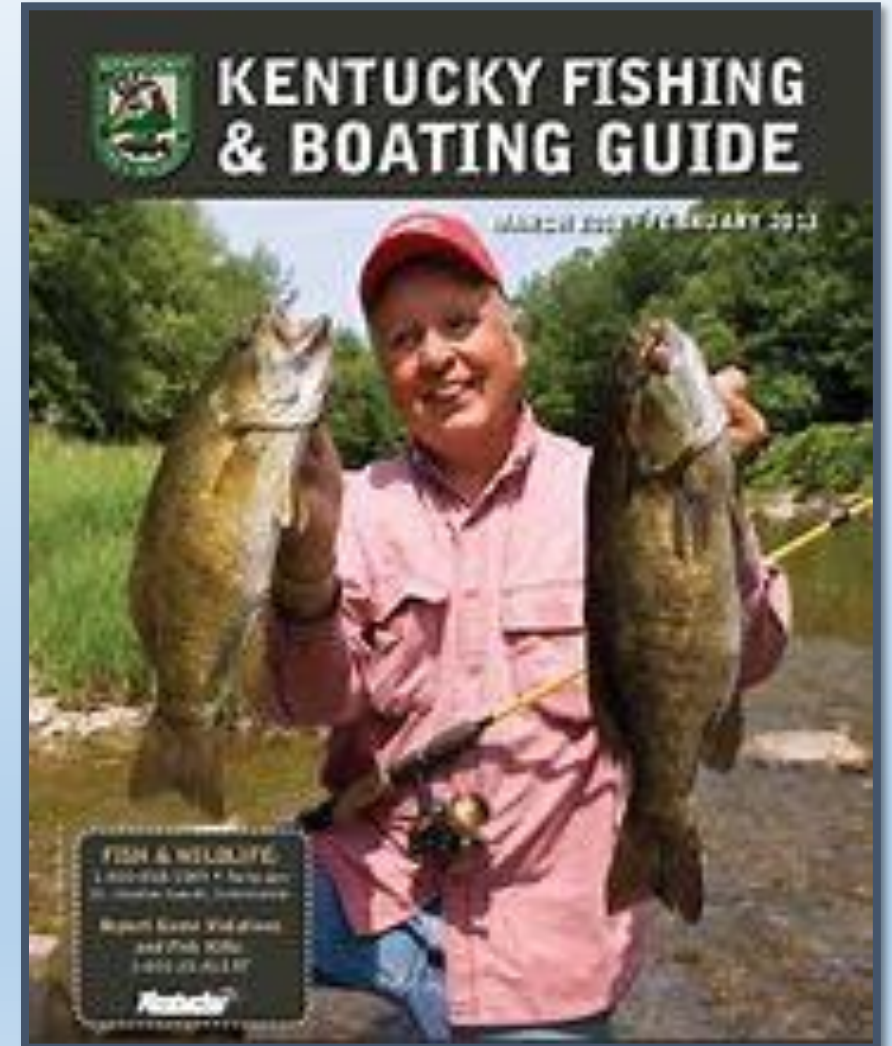
Fish Management: Part 1: Sampling

- Crappie in Small Impoundments
 - We don't manage crappie small lakes
 - WHY?!?
 1. Crappie have high reproduction rates
 2. Lower harvest and lack of predators cause stunting by slowing growth
- Carnico classic example: a few good fish but generally it is a smaller, stunted population.



Fish Management: Part 2: Regulations

- 2 “Special Regulations” on Lake Carnico
 1. 15” MSL on LMB
 - Done to protect the fish to get to a good spawning size
 2. 15 Fish Creel on Sunfish (New in 2019)
 - Being done just to protect the fish due to the limited number observed in samples.
- *Neither of these regulations would be possible or enforceable with the Fish Management Agreement.*



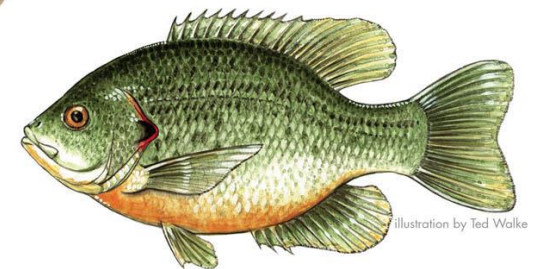
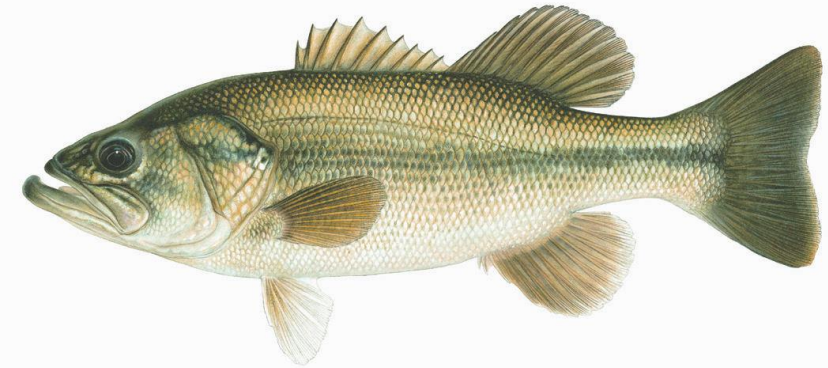
Fish Management: Part 3: Stocking

- In the last 10 years KDFWR has stocked nearly 50,000 fish into Lake Carnico.
 - Channel Catfish: Even year stocking
 - Largemouth Bass: annually since 2015
 - Saugeye: New stocking (more to follow)
 - BG & RE: Stocked in 2015 and again in 2018
 - Grass Carp: stocked in 2016 and 2018
- Estimated cost from a private dealer for these same fish (if you could get them) = \$10,000 a year.
 - Grass Carp alone are a \$2,500 stocking plus delivery.



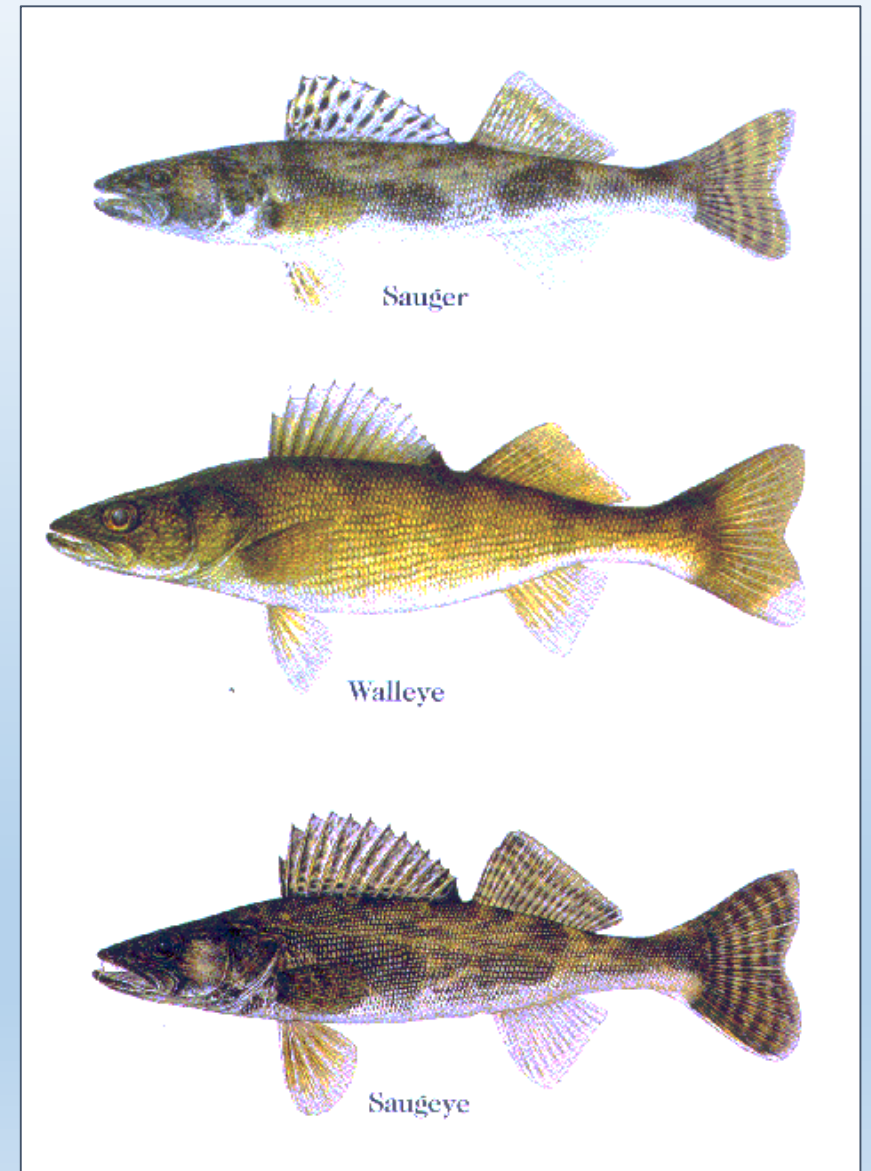
Fish Management: Part 3: Stocking

- Channel Catfish would not exist in the lake without stockings.
- Bass stockings are done to combat the poor recruitment our sampling shows.
- BG/RE stockings are done to combat the overall lower numbers.
- All stockings are done based on results and because of our sampling and monitoring of the lake.



Fish Management: Part 3: Stocking

- Saugeye Stockings are being done to help with stunting of crappie populations.
- Studies have shown benefits to crappie populations through stockings:
 1. Increase in numbers of quality and preferred fish.
 2. Increases in growth rates
 3. Increases in angler harvest size
 4. Increase in percentage of big fish caught by anglers
 5. Increases in weights of fish.



Fish Management: Part 3: Stocking

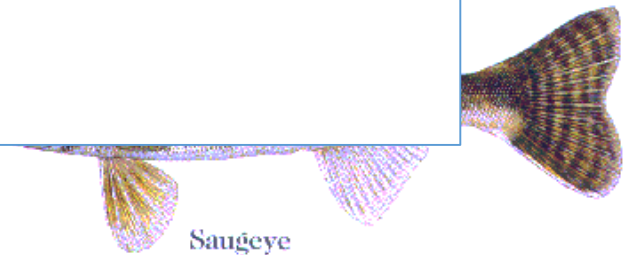
- Saugeye with st

- Studies popula

1. Inc fis
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***NOT TO MENTION THE ADDED
BENEFIT OF A UNIQUE AND EXCELLENT
FISHERY***

*Saugeye are a cross between walleye
and sauger some of the best eating fish
around and they grow to tremendous
size!*



Saugeye

WALLEYE



Saddles less distinct
Dorsal fin not spotted

SAUGER



Distinct saddles
Spotted dorsal fin

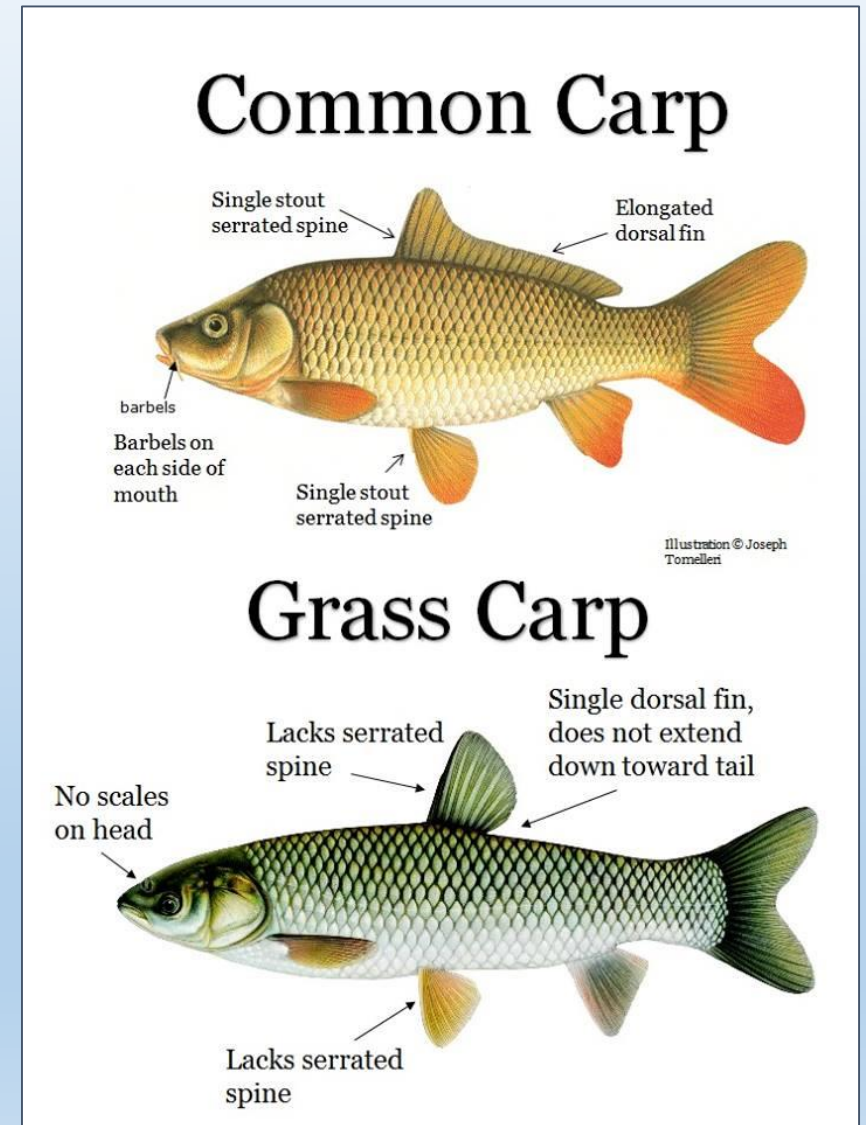
SAUGEYE



Saddles similar to sauger
Streaked dorsal fin, not spotted

Fish Management: Part 3: Stocking

- Grass Carp Stockings
 - It is a common misconception that grass carp eat all vegetation.
 - Only actually control underwater forms of vegetation
 - Shoreline vegetation and algae are not controlled by stockings
- Stockings are being done in stages
 - Prolongs their usefulness
 - Older fish not successful in control
 - We don't want to wipe out all the vegetation



Types of carp

Four types of Asian carp are listed under the federal Lacey Act as invasive species that could be harmful to native species. Only two — the bighead and silver carp — are of major concern to the Great Lakes region. All together, there are five types of carp in the U.S.



How long: Up to 4 feet

Bighead carp

Hypophthalmichthys nobilis

Threat level: **HIGH**

Weight: Up to 100 pounds. Diet: Plankton

Notes: Reported in open waters by early 1980s, they have been found across the U.S. in 26 states. These are one of the largest of the Asian carp and have a heavy appetite that depletes food for other fish. They prefer to live in lakes, but spawn in rivers. When in rivers, they seek out quiet backwaters at least 8 feet deep.



How long: Up to 4 feet

Silver carp

Hypophthalmichthys molitrix

Threat level: **HIGH**

Weight: Up to 40 pounds. Diet: Plankton

Notes: Found in 16, mainly central states, they arrived with bighead and black carp in the early 1970s. They can jump up to 10 feet in the air when agitated and can cause serious injury to boaters and anglers. They threaten other fish by depleting their food source. They prefer to live in lakes, but spawn in rivers. When in rivers, they seek out quiet backwaters.



How long: Up to 5 feet

Black carp

Mylopharyngodon piceus

Threat level: **MEDIUM**

Weight: Up to 150 pounds. Diet: Snails and mussels

Notes: Not as widespread as other Asian carp, they have been found in the lower Mississippi basin in four states. They are considered a threat to native snails and mussels, which are important in maintaining natural wildlife habitat and healthy aquatic ecosystems.



How long: Up to 4 feet

Grass carp

Ctenopharyngodon idella

Threat level: **LOW**

Weight: Up to 100 pounds. Diet: Aquatic plants

Notes: Reported in every state, the fish have been in the U.S. since 1963. They are banned in 12 states, including Michigan. Sterile grass carp are widely stocked in ponds and lakes to control aquatic weeds. Since their diet differs from other fish, these are a low threat.



How long: Up to 4 feet

Common carp

Cyprinus carpio

Threat level: **LOW**

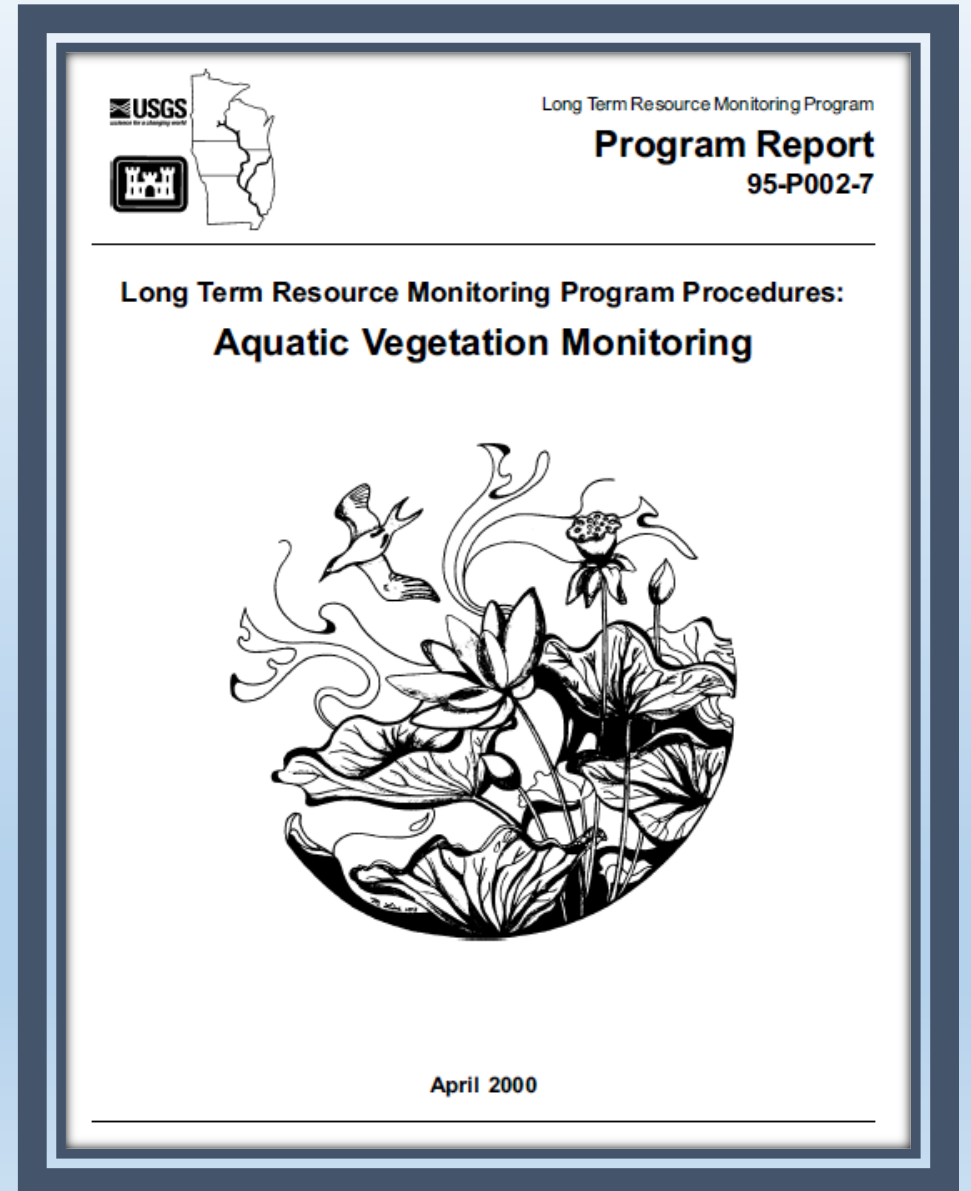
Weight: Up to 100 pounds. Diet: Bottom-feeders, eating insect larvae, vegetation and dead organisms.

Notes: Introduced to the U.S. from Germany as a food source in the 1800s, these carp are found in every U.S. state except Alaska. They are widespread in Michigan, and are present in all five Great Lakes. These fish don't pose the same threat to native fish and mussels as the other four species.

... this is probably a good transition into aquatic vegetation ...

Aquatic Vegetation and Lake Carnico

- Vegetation Survey on Lake Carnico
- Protocols from LTRMP AQVG program
- Sampled 50 randomly chosen sites
 - Sites were less than 10' in depth
 - 23 sites in the north arm, 27 sites in the south arm.
- Data collected included frequency, type and density of AQVG



Aquatic Vegetation and Lake Carnico

- Of the 50 sites:
 - 54% were unvegetated
 - 42% of the had submerged vegetation
 - 12% algae
 - 2% duckweed.
- Dominant submerged vegetation is coontail (28.4%) followed by spiny naiad (7.5%).
- Major deviation between the north and south arms.
 - 70% of north arm sites unvegetated, 35% in south arm.



Aquatic Vegetation and Lake Carnico

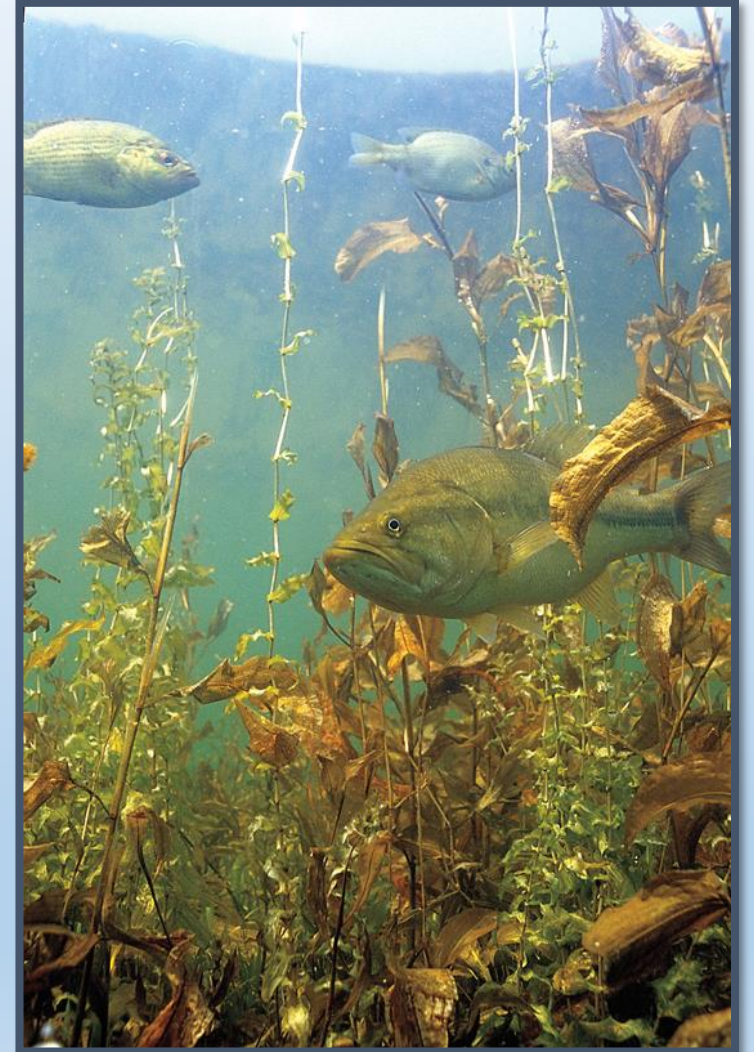
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**Good thing is that Grass
Carp will consume both
Coontail and Spiny Naiad.**



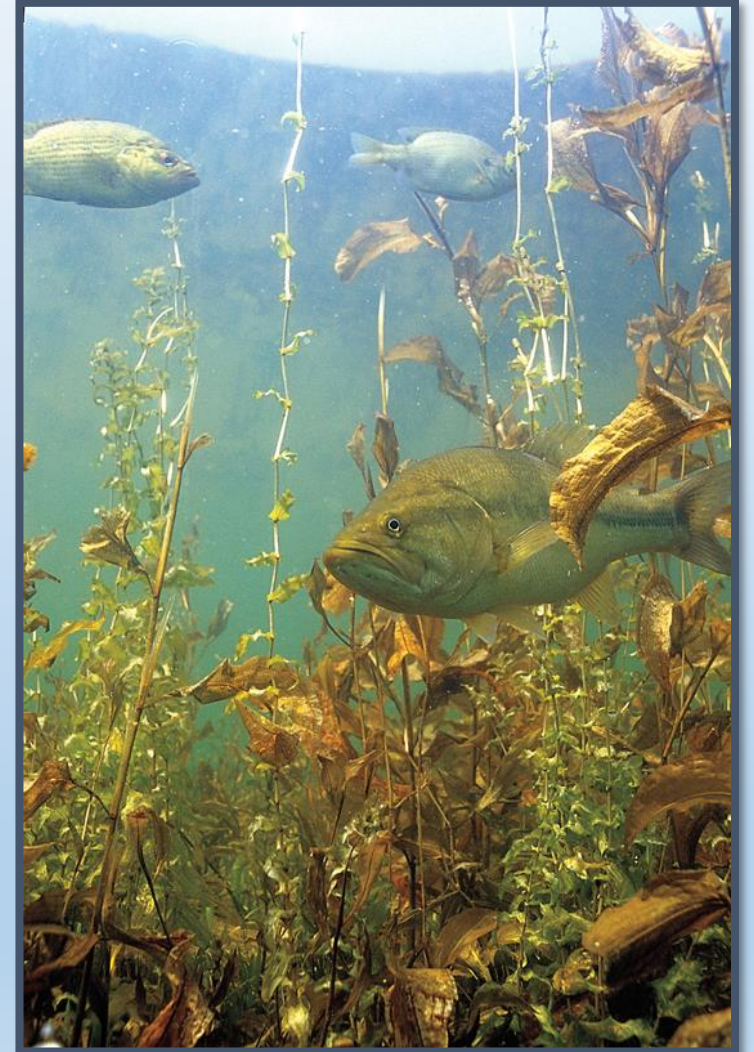
Aquatic Vegetation and Lake Carnico

- KDFWR's role with vegetation
 1. Only treat vegetation when it impacts the fisheries.
 2. Managed with best practices concerning the fisheries.
 - Usually grass carp & limited herbicides.



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- Docks are not our responsibility.
 1. They are private ... issues with selective treatment.
 2. Federal funds we receive PROHIBIT this activity.



Aquatic Vegetation and Lake Carnico

- KDFW's role with vegetation

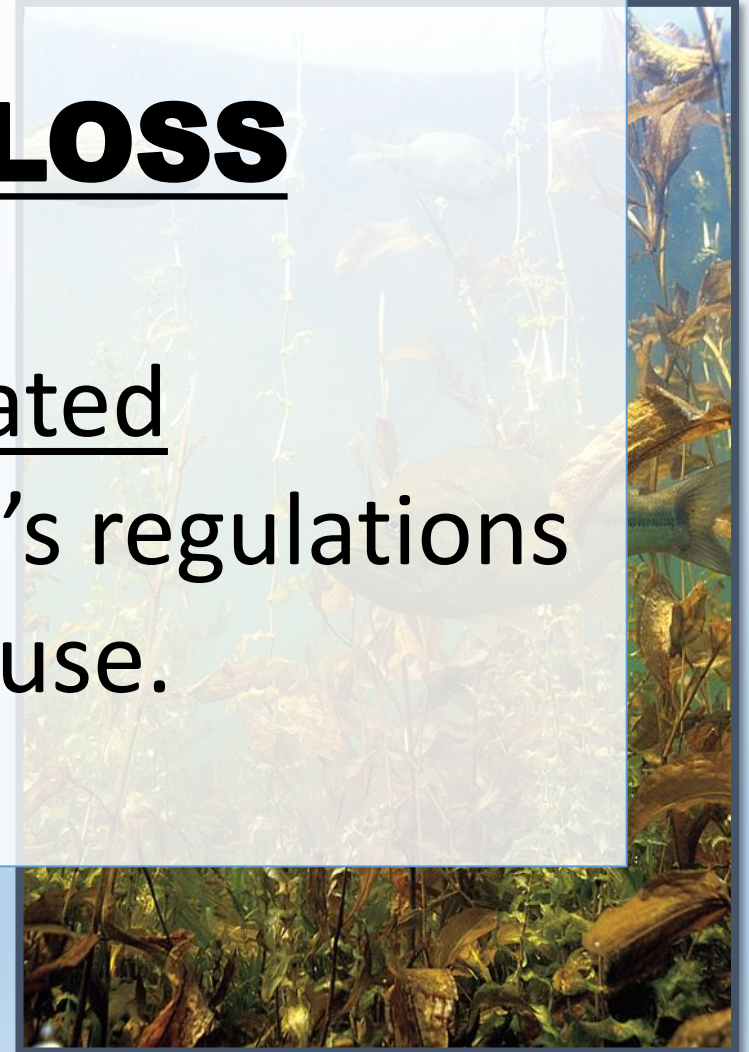
NOT ALL IS AT A LOSS

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Usually grass carp & limited herbicides.
Just need to follow Agriculture's regulations

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- Per KRS217b you cannot apply pesticides to land that you do not own.
 - The land under the lake, along with a 100' buffer on the bank is owned by the NCDC.
 - Refer back to the deed at the beginning...



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- A Commercial Pesticide Operator/Applicator are the only ones who can treat.
 - I have a list of private consultants who can treat the lake for the landowners.
 - We have also given our consent to treat the areas around the docks only.



Aquatic Vegetation and Lake Carnico

- Why can't I pull the weeds??!??
 - Aquatic vegetation reproduces through a process called "Fragmentation"
 - Each broken portion of a plant not removed when you cut, pull or rake the weeds is essentially a seed.
- Pulling the weeds actually makes the problem much worse in the long run...



Aquatic Vegetation and Lake Carnico

1. KDFWR is not going to treat around private docks.
 - Per Federal Funding Rules and Ethical Issues we cannot
2. We have given permission to treat through private consultants.
 - List is available today!
3. Pulling weeds makes the situation worse.
4. Grass Carp stockings will continue and will help.
 - Patience is the key with grass carp... we need to take slow deliberate steps.



Tom Timmermann
District Fisheries Biologist
KDFWR – Northeast District
120 Fish Hatchery Road, Morehead
606-783-8650
tom.timmermann@ky.gov