Lake Gaston Stakeholders Board - Technical Advisory Group (TAG)
Meeting Minutes – February 3, 2009

Attendance (9 voting members):
Rob Richardson (chairman), Rob Emens (secretary), Kurt Getsinger, Vic Dicenzo, Mike Grodowitz, Mike Smart, Kirk Rundle &, *Bill Bolin, Kelly Wills.*

Also present: Jeff Meyers, Doug Henderson, Justin Nawrocki, Wally Saylco, Pete Deschenes Brian McRae, Bob Lohr, Chuck Wiley, Daniel Stich, Sarah Miller, Steve Hoyle, Mark Heilman, & *Brian Murphey, Chris Cheek, Skip Weigersma*.

Italicized names notate attendance via conference call.

Agenda

1. ReMetrix report
2. Grass carp telemetry study
3. Grass carp aging study utilizing bow-fishermen
4. Re-vegetation
5. Determine grass carp recommendations for 2009
6. Biocontrol (*Hydrellia* flies) summary
7. Chemical control R&D

Dr. Richardson brought the meeting to order at 9:30 AM

1. Jeff Myers (ReMetrix) reports on 2008 survey:

- Hydroacoustic transects and point sampling was performed on entire lake. Data interpreted to estimate the following:
  - SAV - 1,504 acres total
  - Hydrilla - 1,244 acres (of which 950 acres are monoculture beds)
- A total of 856 rake sampling points were conducted. A printed report describing the methodology and detailed results of the survey was distributed
- The total acreage of standing crop hydrilla did not significantly differ from the 2007 survey results, although the variation in distribution throughout Lake Gaston was measurable

Emens: Please point out locations where Eurasian milfoil was observed.
Myers: Only a small amount was found up in the flats.

Grodowitz questioned the value of hydroacoustic data since it only shows presence/absence of SAV, not composition. He suggested increasing in the number of rake sampling points to increase resolution of the qualitative measurement.

The importance of conducting annual surveys was reiterated. Effective management relies heavily on data collected during the fall survey. The manner in which data is collected and interpreted should be done carefully, accurately, using consistence techniques. The LGWCC must continue to appropriate sufficient funds for annual surveys. TAG discussed survey types in general.

Grodowitz: Request that ReMetrix produce a map that shows only hydrilla acreage, and a second which shows change in distribution from 2007.

***** Action Item *****

ReMetrix to respond to Grodowitz request.

The group discussed the littoral zone and how it should be measured. ReMetrix used the deep edge of SAV beds or the 10' contour line where SAV was not present to resolve the littoral zone. There is some concern that hydrilla tubers may exist below the 10' contour line, and if so, the annual surveys may be overlooking these areas. Since our management plan is revolving around the outcome of these surveys, it is necessary that they are comprehensive.

***** Action Item *****

ReMetrix to review historical ACOE surveys of Gaston and incorporate relevant data to strengthen the delineation of the littoral zone.

2. Brian Murphey (Virginia Tech) reviewed the grass carp telemetry study:

- Objective is to determine dispersal and movement patterns throughout Lake Gaston using radio tags.
- 29 grass carp were tagged in 2007.
- 32 grass carp were tagged in 2008.
- There was a significant loss early after release in 2007; the small size of the fish was thought to be the primary cause of this. An effort was made to obtain larger fish in 2008 to mitigate this problem (stress of transmitter surgery is inversely proportional to size of fish).
- Releasing the fish in cooler temperatures will also be less stressful on the fish, and likely increase survival.
- The tags used in 2008 included mortality sensors; a component that has been providing very useful data. Mortality of radiotagged fish was estimated to be 31% for 2008.
- No evidence that tags are being shed.
- No evidence that carp are emigrating to areas downstream of the dam. A flight was run down to the coast and no signals were picked up.
- Results show that most grass carp are not moving large distances, but rather "settling" into shallow coves and creeks (movement average = 72 ft/day).

- Migration from stocking sites has been relatively low and average movements are exaggerated by the long-distance migrations of a few fish.

TAG recommended that GC tagging work be continued in 2009.

3. Vic Dicenzo provided an update on the grass carp aging study:

- Goals of study are to determine size and age distributions, growth and mortality (life expectancy) of grass carp in Lake Gaston.
- 114 specimens have been harvested by bow-fishermen between 2006-2008.
- Average size of harvested grass carp was 919 mm (range 417-1,350 mm).
- 112 fish have been aged by otolith inspection.
- Identifying the 1st year-band is difficult.
- Data was graphed (total length of fish vs. age) and this showed that carp at age-2 averaged 605 mm and by age-7 the growth curve begins to asymptote.

The group agreed by vote that this study is producing valuable information and that it needs to be continued if possible. The longevity of grass carp in this system has yet to be determined.

4. Mike Smart presented re-vegetation work:

- Most submersed and floating leaf species and all emergent species tested survived and grew in Lake Gaston.
- Some species spread to areas outside of the exclosures.
- Planting is more successful if hydrilla has been removed prior to planting.
- The 2"x 2" mesh size was found to be more effective than the 2"x 4". Herbivores other than grass carp are believed to be entering the 2"x 4" mesh. Turtles are suspect.
- Only limited evidence of grass carp feeding and significant impacts to stands of hydrilla was only observed and this appeared to be confined to the upper end of the lake.
- Unlike past years there was considerable damage to native plantings from the fluridone treatments in 2008.
- The prison farm is producing transplant-ready plants for restoration.
- Old grass carp monitoring exclosures need to be removed and new ones installed.
- Monoecious hydrilla produces tubers earlier and over a longer period than dioecious and these also sprout earlier and in greater numbers. These occurrences need to be considered in herbicide choice and method of application.
- Suggest conducting a restoration planting in conjunction with a granular contact herbicide treatment.

- Demonstration study to determine if lyngbya control can be attained through pickerelweed competition will be evaluated this spring and summer.
- Demonstration planting in the flats to occur in May, 2009.

***** Action Item *****

Identify restoration sites for additional demonstration and founder colony plantings.

5. Grass carp stocking for 2009:

The discussion brought us back to item #1, the survey results. Herbicide applications are eliminating vegetative hydrilla growth in the tune of 1,000 acres annually and grass carp herbivory is eliminating additional acreage. Due to these activities it is realized that the survey is underestimating the actual size of the hydrilla infestation (i.e. not measuring the extent of the tuber bank). A combination of underestimating the hydrilla infestation and applying a conservative target density of 10GC/arce is likely resulting with a less than desirable effect. The persistence of the standing crop of hydrilla (comparing 2007 and 2008 survey results) coupled with visual observations reporting the lack of grass carp feeding impacts support the notion that grass carp are possibly under-represented. In order to justify the inclusion of grass carp in the management plan a more detectable (obvious) impact is desired.

The group fears that the current economic downturn could lead to a smaller budget in 2009, and that would have a direct influence on the herbicide applications. Since herbicide applications represent the bulk of the budget any reduction in available funds would lead to a nearly proportional reduction in treated acreage. It is also realized that a resurgence of hydrilla and subsequent large-scale grass carp stocking response would be an unfortunate set-back in the long-term management plan.

The group decided to re-evaluate the grass carp stocking model and determined that some modifications were in order. First, the model should reflect the mortality data produced from the radio-tagging studies (i.e. mortality is ~30% at least in the first year). Secondly, the target density should be adjusted to 15GC/acre.

TAG agreed that a grass carp stocking should be performed in the spring of 2009, and that the stocking should be timed with availability and addition tagging work. The number of carp will be determined by the modified stocking model.

***** Action Item *****

WRC to incorporate modifications into the grass carp stocking model and provide the new version to members of the TAG. See addendum.

6. Mike Grodowitz updated the group on the *Hydrellia* flies study:

- Study was initiated in 2004.
- Concluded that the monoecious hydrilla in Gaston is less suitable as a host compared to the dioecious bio-type.
    - Greenhouse trials showed reduced survival and longer developmental time.
    - Lower colonization success and subsequent low population growth rates found in larger outdoor systems.
    - Lack of evidence for long-term establishment at Lake Gaston; this is likely due to poor and/or unsuitable over-wintering conditions.
- Fly survey(s) should be conducted in 2009 to determine presence/absence of population.

7. Kurt Getsinger presented results from dye study:

- Overview of Concentration Exposure Time (CET) principles.
    - Factors that influence CET include; water flow, tidal flow, wind generated currents, thermal stratification, life stage of target plant
- Lake Gaston dye study:
    - Objective was to determine water exchange rates
    - Used tracer dye (target = 8 ppb)
    - Applied from boat using subsurface injection system
    - Water samples taken and dye concentration measured w/ flourometer
- Results indicated that the treatment of large protected coves did not result in extended CET.
- CET is better obtained by using granulated formulations which release the AI slowly maintaining a concentrated zone.
- Recommendation is to apply granular fluridone product(s) early in the season when tubers are sprouting.

Dr. Richardson adjourned the meeting at 2:10 PM

Prepared by:
Rob Emens, Secretary
Technical Advisory Group
Lake Gaston Stakeholders Board

Addendum

The following e-mail from Brian McRae summarizes the modifications to the grass carp stocking model that the TAG agreed upon during the Feb 3rd meeting. Also, an interpretation error was realized which had caused an under-estimation of grass carp present during the spring stocking windows.

The modified and corrected model generated a stocking recommendation of 6,520 grass carp for 2009.

From: Brian McRae <mcraebj@nc.rr.com>
Sent: Mon Mar 09 15:47:29 2009
Subject: RE: Carp Stocking

A quick review of what was changed in the model:

* Use 30% mortality for age-1 and age-2 fish
* Use 20% mortality for age-3 through age-14 fish
* 100% mortality at age 15
* Increase stocking density to 15 fish/vegetated acre for 2009

The Error: A traditional cohort analysis predicts the number of fish in the reservoir for January of a given year. The error was using the estimates of the cohort analysis for a given year + the stocked fish for that same year to obtain stocking estimates for the next year. For example, we were using January 2008 estimates of carp + 2008 stocked fish with the fall 2008 estimates of hydrilla to obtain the number of fish to be stocked in 2009. As a result, we were consistently underestimating the number of fish needed to be stocked for a given year to maintain the target density. We have corrected this error and we are now using January 2009 estimates of carp in the population with fall 2008 estimate of hydrilla coverage to obtain number of fish to be stocked in 2009.