

Southeastern Partners in Amphibian and Reptile Conservation

Task Team: Hellbender Working Group

February 28 & 29, 2020

Camp McDowell

Nauvoo, Alabama



Speakers Jeronimo Silva (left) and Kat Diersen (right) addressing the participants

Coordinators

John D. Groves, North Carolina Zoological Park (Curator Emeritus)

Jeronimo Silva, Private Lands Biologist, Southeastern Hellbender Conservation Initiative, Tennessee.

Participants

Bill Sutton, Jill Newman, Freddy Ortega, Emily Nolan, Brad Nissen, John Connock, Zack Vegso, Alex Fonk, Will Selman, Melissa Lanbardi, Wally Smith, Kevin Hutcheson, Ben Stegenga, Madeline Coggins, Eric Teitsworth, Steve Price, Sarah Tomke, Kathryn Greene, John Groves, Jeronimo Silva, Dale McGinnity, Kirsten Hecht, JD Kleopfer, Kat Diersen, and (several others who did not sign in)

Minutes taken by:

Jill Newman, NC Wildlife Resources Commission

Photographs by:

Kirsten Hecht

Communications

- The SEPARC Hellbender Working Group can communicate with members and with the general public by a Facebook page that was started in 2016. This Facebook page is called Hellbender Conservation in the American South and can be reached at <https://www.facebook.com/SoutheastHellbenders/> This page is currently administered by **Kirsten Hecht** (University of Florida). The Coordinators thank her for administering this Facebook page.
- Another communications outlet for the Working Group is a listserv that is used by members of the working group and it is administered by **Jeronimo Silva** (Hellbender Conservation Initiative, Tennessee).

Current Working Projects

1. Hellbender Conservation Plan

This plan is being written by a group of 9 hellbender biologists. Originally, we had hoped to complete it by the end of 2019, but administrative and teaching schedules did not allow all of our contributors to meet this deadline. About $\frac{3}{4}$ of the plan is completed in the first draft and we are planning to complete this first draft by the end of July 2020. It will then be edited, and edits of each section will be sent back to the contributors of these sections for final approval. The plan will then be sent out to three reviewers so that it is peer-reviewed. The plan will also be reviewed by the NEPARC Hellbender/Mudpuppy Group so that they are aware of what we are planning. The plan consists of 10 sections and currently consists of about 30 pages. This may be reduced in size after the edits and comments on it are completed. The group discussed whether we wanted this to be range-wide or focused on the southeast, and it was decided to focus on the southeast. The final project is planned to be completed by the end of 2020.

John Groves and **Dale McGinnity** discussed Relocation, Repatriation, and Translocation Of hellbenders. Some consider this a conservation strategy, but there has been no long term (10+ years) follow-up on the success of this strategy.

The discussions were:

- Why put them back?
 - Poor water quality
 - Sediment in streams

- Sometimes adults can't breed, or you don't see juveniles
- Interested in using the phrase "Experimental strategy" rather than conservational
 - Three strategies could be used to put animals in environments under good study conditions:
 - Repatriation - returning or releasing individuals of a species back to an area that they historically occupied within their native range
 - Translocation - the capture, transport and release or introduction of species from one location to another
 - Relocation - movement of species, populations, or genotypes to places outside the areas of their historical distributions
 - Need to consider habitat constraints, disease
 - Need to consider genetics of populations
 - Be prepared for long-term monitoring program -10 years or more
- It was agreed to add a section in the conservation plan or as an appendix to include this as an experimental strategy.

2. Brochures/signs Posters through SEPARC

Kat Diersen discussed an educational outreach project that she will head up with a team of three members and herself consisting of **Jeronimo Silva, Lorie Stroup, and Lori Williams**. This project is to produce signs, posters, or other items to draw attention to "Do Not Move Rocks" in hellbender habitat. What they decide to produce will depend on funding from SEPARC which has informed the group that they have some funds for special projects. Kat will attempt to have a proposal to be submitted to the officials of SEPARC for approval and for funding. Many recreational participants spend much of their time in hellbender habitat moving rocks which is detrimental to hellbenders of all age groups, and recreationists are unaware of what their activities by moving rocks is doing to the aquatic life in various waterways. We hope to help instruct people of the perils of this activity by posting notices in areas where this activity is occurring.

Goals for this project are to increase awareness, change behaviors towards target species, provide informational resources, and gain feedback from stakeholders.

Questions discussed were:

- Who is available for outreach in the group?
- What would we want to do?
- Who are we trying to reach? - People who recreated, bait shops, anglers, canoeists, and river floaters

Material ideas discussed were:

- Pamphlets (could get soggy, end up as litter)
- Pocket sized fliers (could get soggy, end up as litter)
- Fish measuring boards with a hellbender on it
- Hellbender posters for counties where they exist with QR codes (two-dimensional bar code to scan into a cell phone) so that people can take photos and receive more information.
- Laminated card for older audiences (will have contact information, and other information)
- Boxes at trailheads to hold posters or other information
- Hellbender fishing line cutters (80/90 c per unit) (Virginia have used these with success according to **JD Kleopfer** and **Wally Smith**).

Preferences discussed by the group:

- Geared towards audiences (Outfitters and their clients and recreationists were determined to be our audiences)
- Posters, topics for posters discussed were, “What’s Good for Trout is Good for Hellbenders” and “Don’t Move the Rocks” (group leaned towards the latter “Don’t Move the Rocks”).

Content:

- Visual imagery (background photograph – will need an artist, Kat may have an intern)
- “Don’t Move the Rocks” (primary topic and add smaller messages in bullets)
- Can add a QR code and contact e-mail for more information

Other Topics

Jerónimo Silva gave a report on the use of riprap (large, loose rocks used to form a foundation/structure to support stream and riverbanks) on stream banks for erosion.

Jerónimo – Use of Riprap on stream banks (pros and cons)

- Riprap is often used to address stream bank failure
- Can increase erosion downstream
- Can affect water chemistry depending on what kind of rocks are being used

- It may be better than nothing depending on the level of erosion and sediment input
- In Tennessee, NRCS no longer required riparian buffer to be implemented with stream bank stabilization
- Riprap does not address runoff. Still have top down erosion (agriculture goes right to riprap)
- Sedimentation is a natural process, so it is impossible to reduce sediment input into streams to zero. How much does riprap help?
- Another option is to use “J-hooks” (upstream pointing line of rocks extending from one bank to the middle of the stream used to redirect stream flow) to divert stream flow from eroding banks.
- Streambank stabilization projects are expensive. Is it worth it to spend our conservation dollar on riprap?
- It’s a tool but we don’t know if it’s working
- Riprap can look natural after natural regeneration occurs. Showed a photo with trees growing out of riprap years later (can’t tell that riprap was there)

Presentation

Freddy Ortega from Appalachian State University gave a PowerPoint presentation on nocturnal surveys for hellbenders. He also presented a poster at the SEPARC meeting on this topic.

Comparing the effectiveness of diurnal and nocturnal dive-lighting surveys for Eastern Hellbenders (*Cryptobranchus alleganiensis alleganiensis*)

Freddy Junior Ortega

Appalachian State University, Department of Biology

Studies designed to better understand perceived hellbender population declines typically use diurnal rock-lifting surveys to detect individuals. However, these methods are invasive as they may alter sheltering or breeding habitat or result in injuries to hellbenders and surveyors. Further, diurnal surveys omit bedrock and large boulders that cannot be lifted. Drawing inspiration from previous studies that employed nocturnal surveying in salamander taxa (Plethodontidae and Cryptobranchidae), I aimed to create a design which would yield the maximum number of detections per unit effort of hellbenders while avoiding invasive activity. Between the months of June and August, 2019, I compared the number of detections and catch per unit effort (CPUE) of nocturnal snorkel surveys, followed by traditional diurnal rock-lifting surveys across 11 sites within the New, Watauga and Nolichucky river drainages in Western North Carolina. An additional late August - late September pass was conducted to reveal any breeding period effect on nocturnal detection rates.

Paired t-tests revealed that number of animals detected did not vary with method (diurnal to nocturnal summer: ($Z = 37$, $df = 10$, $p = 0.08$); nocturnal summer to nocturnal breeding: ($Z = 9$, $df = 7$, $p = 0.68$). Detections increased in 63% of sites in both summer and breeding nocturnal surveys when compared to diurnal rock-lifting surveys. Comparison of hellbender catches across three survey treatments revealed that CPUE was statistically higher in the nocturnal summer treatment ($t = -2.69$, $df = 9$, $p = 0.025$); this difference was not observed between nocturnal-summer and nocturnal-breeding surveys ($t = -0.95$, $df = 7$, $p = 0.37$). During nocturnal snorkel surveys, CPUE increased in 82% and 88% of sites for early summer and late summer treatments with 26% and 13% of

detections being individuals sheltering in bedrock crevices during early summer and late summer nocturnal surveys respectively. Contrastingly, during early summer diurnal surveys, all detections were from beneath boulder substrate.

By targeting the diel period of activity in cryptobranchid salamanders, I observed a more representative enumeration estimate in which all individuals are more equally eligible for detection. I found that nocturnal detection rates were similar to diurnal rock-lifting surveys suggesting that both methods are similarly effective at detecting hellbenders. Nocturnal surveys minimize impacts to the hellbender microhabitats and allow non-invasive sampling during the breeding season when animals are presumably more sensitive to disturbance.