

Status of Whirling Disease and Gill Lice Sampling and Detection

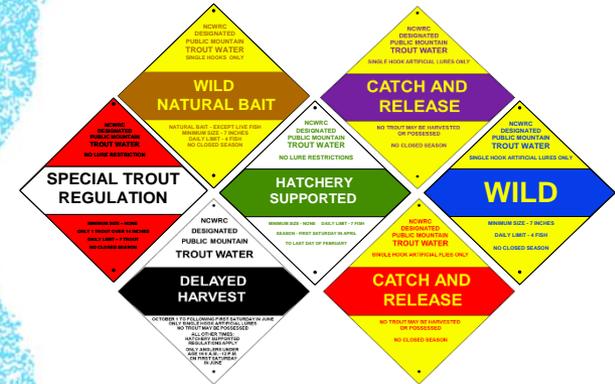
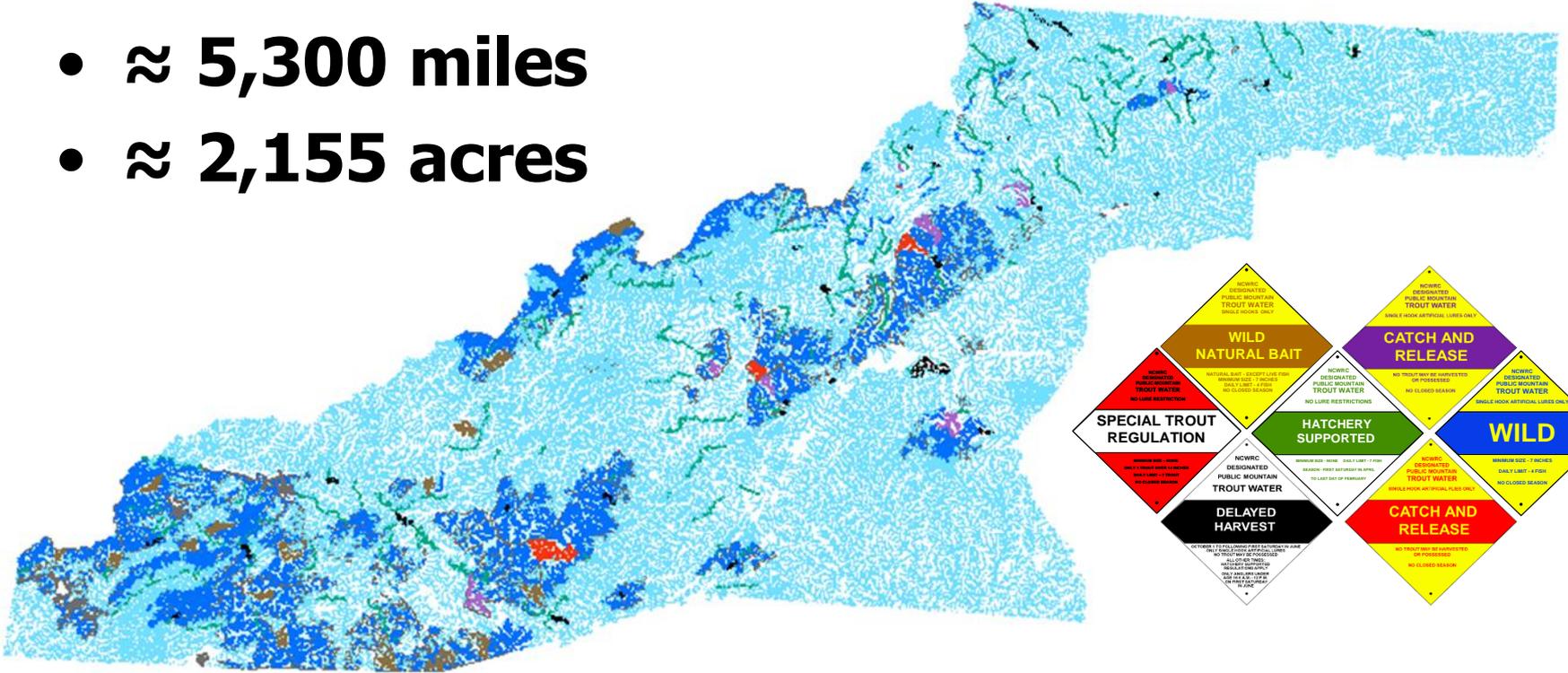


Jacob Rash, Coldwater Research Coordinator
N.C. Aquaculture Association, Western Meeting
10 September 2015



Public Mountain Trout Waters

- \approx 5,300 miles
- \approx 2,155 acres



Angler Reports: Whirling Disease

- **Rainbow Trout**
 - Watauga River (1 July 2015)
 - Nantahala River (3 July 2015)
 - Elk River (4 August 2015)
- **Samples provided to Southeastern Cooperative Fish Parasite & Disease Laboratory at Auburn University**

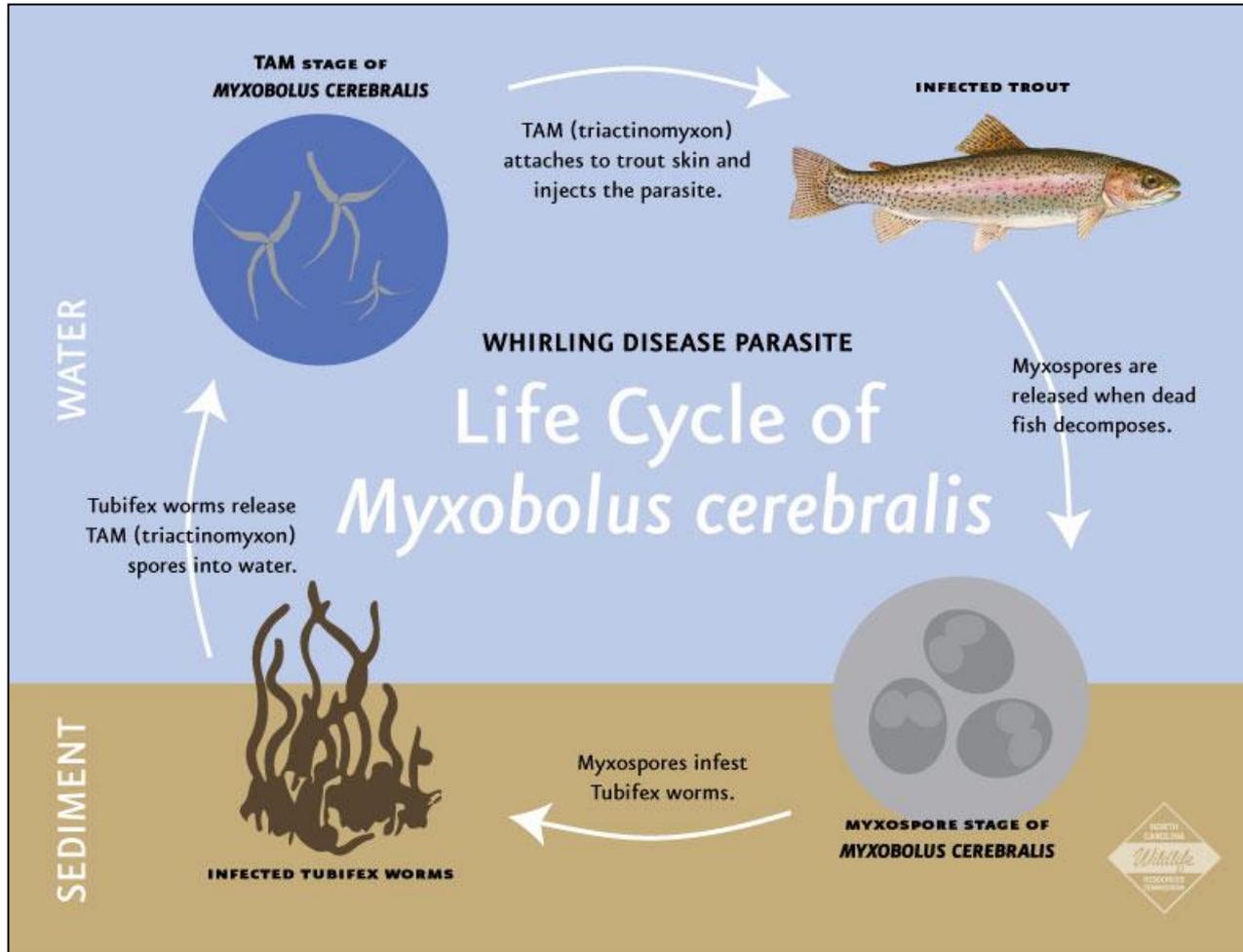


Angler Reports: Whirling Disease

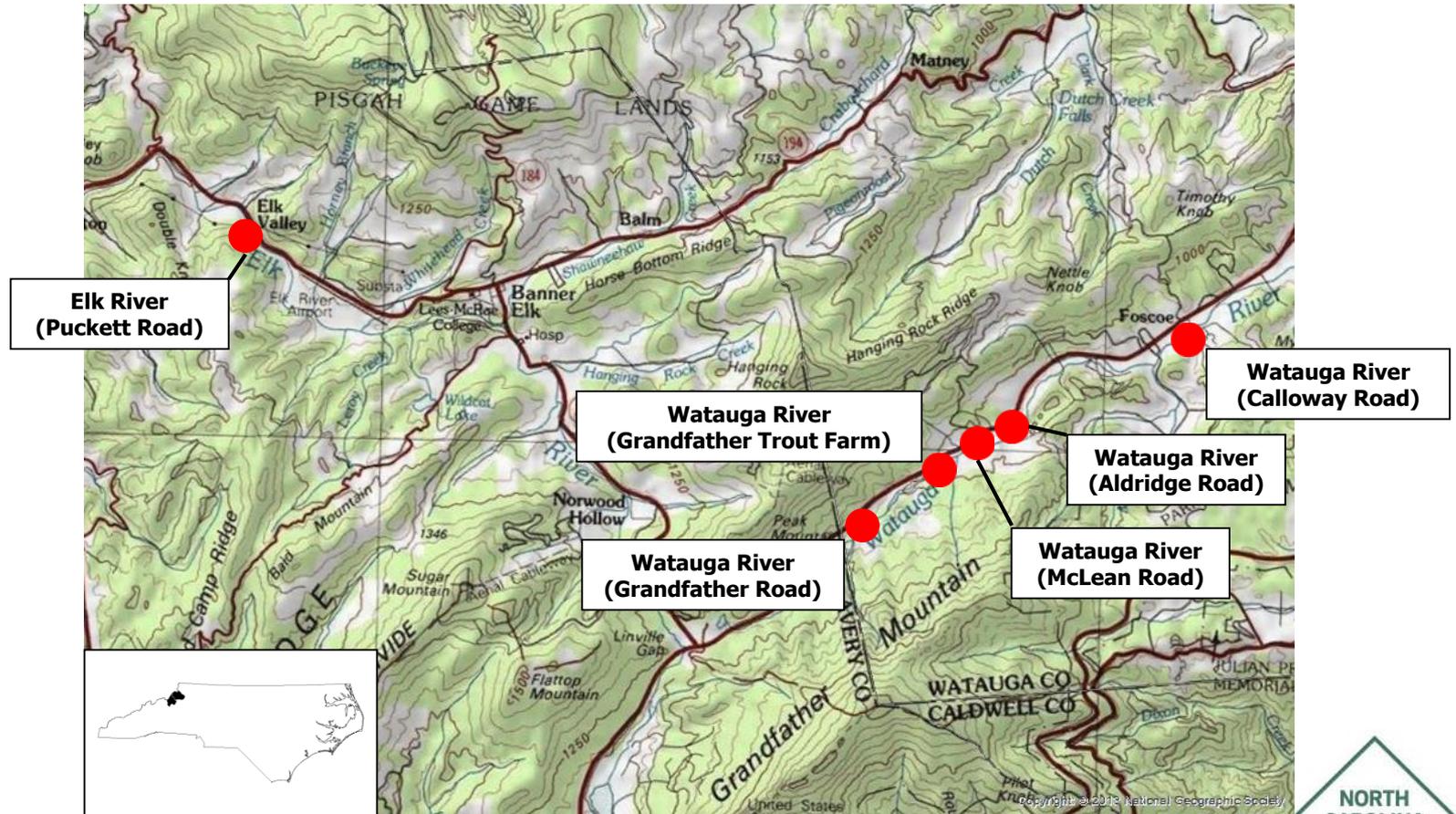
- **Rainbow Trout**
 - Watauga River (1 July 2015)
 - Nantahala River (3 July 2015)
 - Elk River (4 August 2015)
- ***Myxobolus cerebralis* confirmed in Watauga River and Elk River collections**



Whirling Disease Life Cycle



Known Whirling Disease Geographic Distribution



Known Whirling Disease Geographic Distribution

- **Marion State Fish Hatchery**
 - **Oligochaete sampling**
 - *M. cerebralis* confirmed
 - Lineage I and III *T. tubifex* detected



Agency Response

ncwildlife.org/whirlingdisease

Whirling Disease

On July 27, 2015, whirling disease was confirmed in rainbow trout collected from Watauga River in Watauga County—the first occurrence of the disease in North Carolina. Whirling disease affects fish in the trout and salmon family with rainbow and brook trout, two species found in North Carolina waters, being the most susceptible. The disease, caused by the microscopic parasite *Myxobolus cerebralis*, damages cartilage and skeletal tissue in trout, causing them to swim in a whirling motion.

While often fatal to juvenile trout, the disease does not infect humans or pets, and eating an infected fish is not known to cause any harmful effects.

Over the next few weeks, Wildlife Commission staff will be collecting trout from Commission-owned hatcheries, as well as from the Watauga River and tributary streams. Staff will send the collected fish to the Fish Disease Laboratory at Auburn University for testing. Staff is working closely with N.C. Department of Agriculture and Consumer Services to sample commercial aquaculture operations in the area where the infected trout were found.

Bookmark this page and check back frequently as we will update this page as test results and more information about whirling disease in North Carolina becomes available.



N.C. Wildlife Resources Commission's Whirling Disease Response Plan from N.C. Wildlife on Vimeo.

News

8/11/2015 Stopping the Spread of Aquatic Nuisance Species Requires Angler Diligence

7/31/2015 Whirling Disease Impacts on Trout Populations in North Carolina

7/29/2015 Whirling Disease Found in Watauga River Rainbow Trout

How Can You Help

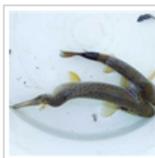
- Do not transport live fish from one water body to another.
- Clean carefully all equipment such as boats, trailers, waders, boots, float tubes, and fins.
- Dispose of fish parts carefully when cleaning fish.
- Contact the Commission if you observe signs of whirling disease in fish.

Whirling Disease Frequently Asked Questions (PDF)

For additional questions, email whirlingdisease@ncwildlife.org.

Submit a Whirling Disease Observation

Angler Gear Care

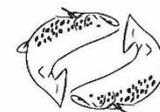


1 2 3 4

ATTENTION ANGLERS

Whirling disease was confirmed in this water. The infectious disease is caused by a microscopic parasite that damages the cartilage and tissue of trout. The parasite is not known to cause disease in other fish, humans, or other animals. Eating an infected fish is not known to cause any harmful effects in humans.

Prevent the Spread of Whirling Disease



- DO** drain boats, equipment, coolers, live bait wells, or anything holding water that could harbor the parasite.
- DO** thoroughly wash mud from vehicles, boats, trailers, waders, boots, fishing equipment and anything that comes in contact with stream bed mud.
- DO** dry equipment.
- DO NOT** transport any fish or aquatic plants from one body of water to another.
- DO NOT** dispose of fish parts or other by-products into any body of water or into sinks.



LEARN MORE:
ncwildlife.org/whirlingdisease
919-707-0220



NORTH
CAROLINA

Wildlife

RESOURCES
COMMISSION



Sport Fish Restoration Program

Next Steps

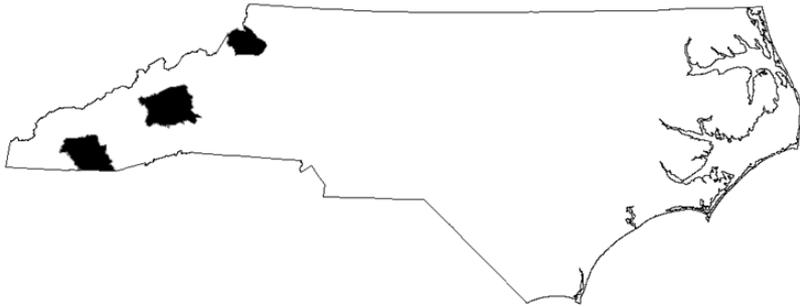
- **Develop Stepwise Sampling**
 - **Oligochaete sampling within 34 Delayed Harvest Trout Waters**
 - **15 self-sustaining trout populations**
 - **Long-term sampling regime**
 - **Private stockings of public waters**
 - **Angler reports**
- **Continue to work with NCDA**
- **Consultation with adjacent states**
- **Develop agency research projects**
 - **Potential distribution**
 - **Potential gradations of infection**

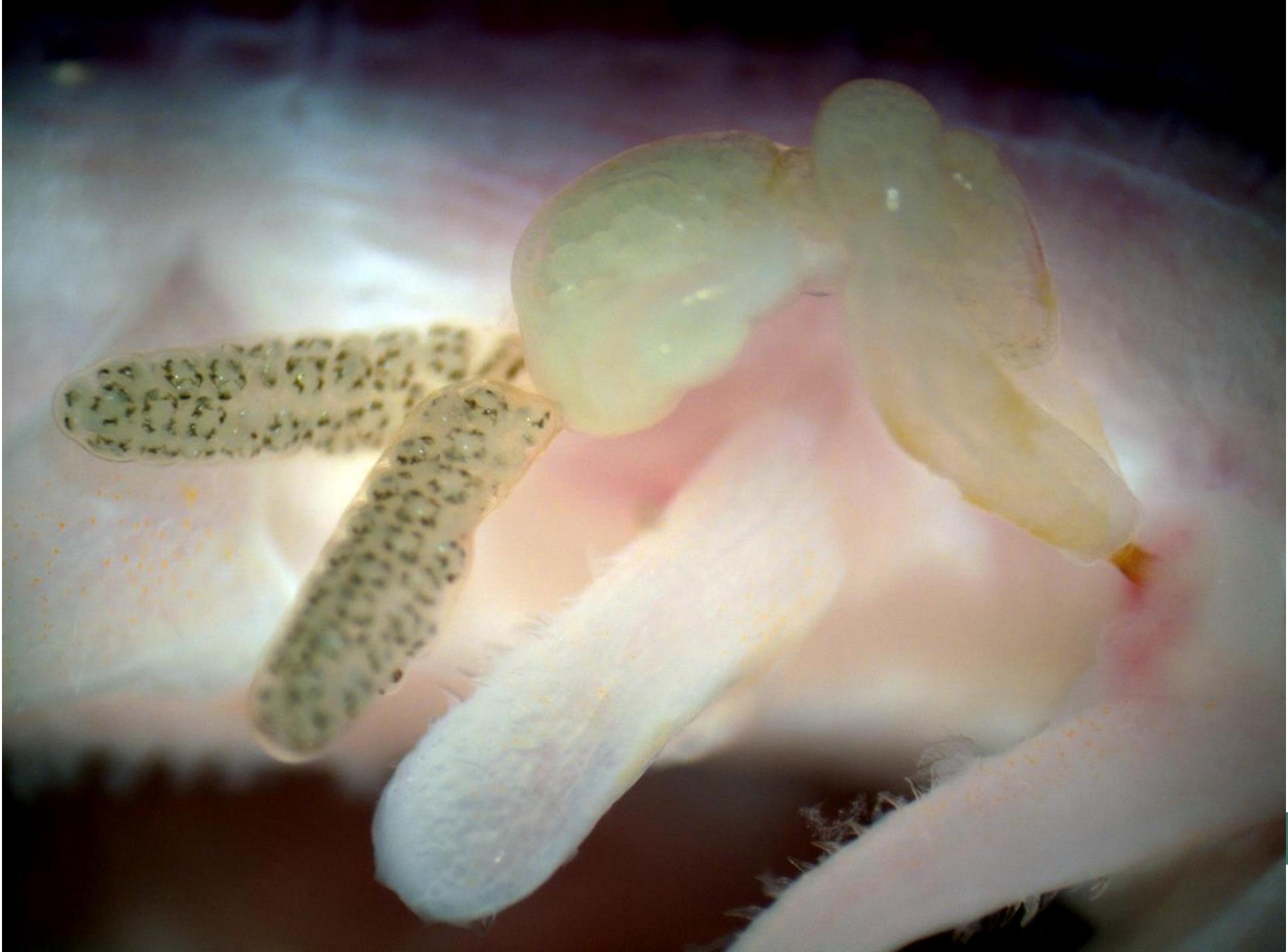


Gill Lice



- Documented within upper Cullasaja River basin, Macon County
–*Salmincola edwardsii*
- Documented within W. Fork Pigeon River, Haywood County, and Boone Fork Creek and Watauga River, Watauga County
–*Salmincola californiensis*











Next Steps

- **Staff will continue to assess distribution**
- **Genetic analyses (USGS)**
 - Verification of strain
 - Development of eDNA techniques for detection
- **Communication with other salmonid managers**



Future Areas of Focus

- **Determine the ultimate distribution**
- **Direct impacts of gill lice to the individual and population**
- **Factors that influence the magnitude and duration of infestation cycles**
- **Transfer mechanisms**
- **Prevention or containment of the spread**
- **Public education and outreach**



ncwildlife.org/fishing/trout

Wildlife Resources Commission

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Trout Fishing in North Carolina

Trout Fishing Maps

Maps displaying publicly accessible trout fishing opportunities in western North Carolina.

Public Mountain Trout Waters Search

Use the Public Mountain Trout Waters Search to locate a great new place to fish for trout in the mountains of North Carolina or learn more about the rules and regulations of trout fishing. This search can help you locate Public Mountain Trout Waters and where you which regulatory classifications apply. You can open a map and zoom to the selected water once you have made a list of locations or save your list as a PDF document to read when you are on the go.

Trout Signs



Trout Stocking

Find detailed information about N.C. Wildlife Resources Commission's stockings of brook, brown, and rainbow trout.

- Weekly Trout Stocking Schedule
- Daily Trout Stocking Update
- Delayed Harvest Trout Waters Stocking Dates (PDF)
- Trout Stockings by County

Trout Species

Three trout species call North Carolina's mountain waters home. Click on the fish icons below to find out more about each species.



Rainbow Trout



Brook Trout



Brown Trout

Whirling Disease Update

For more information view the Whirling Disease web page.

Trout Regulations (PDF)

This section provides information from the North Carolina Inland Fishing, Hunting and Trapping Regulations Digest regarding fishing in Public Mountain Trout Waters.

North Carolina Trout Management Plan (PDF)

A guiding document for trout management in North Carolina.

Economic Impact of Mountain Trout Fishing

A study on the economic impacts of trout fishing opportunities provided and managed by the N.C. Wildlife Resources Commission.

Trout Fishing Partnership Opportunities (PDF)

Trout fishing partnership opportunities for communities in western North Carolina with the N.C. Wildlife Resources Commission.

Mountain Heritage Trout Waters Program

This section provides information on the Mountain Heritage Trout Waters Program, including brook and brown information.

Trout Angling Opportunities on Private Lands (PDF)

Information for anglers and landowners regarding Public Mountain Trout Waters on private lands.

Protect Your Waters From Aquatic Hitchhikers

Learn more about aquatic nuisance species and how to prevent their spread through basic gear care procedures.



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Commission Meeting Webcast

nc.gov

Report Website Issue



Sport Fish Restoration Program

Questions



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