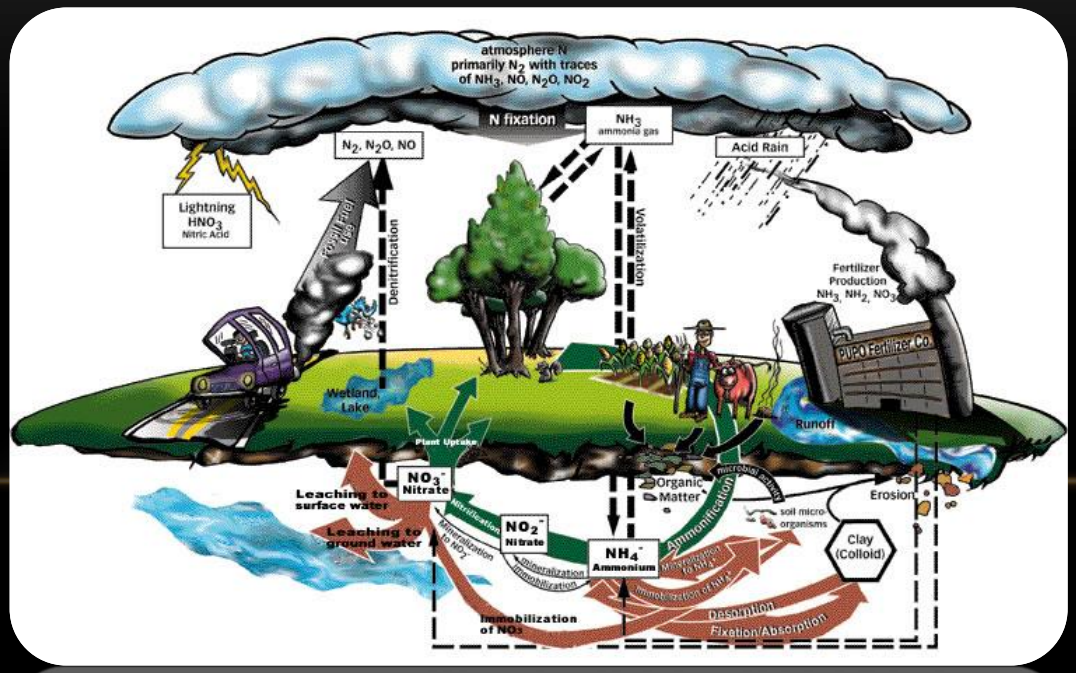
THREAT OF URBANIZATION ON WATER QUALITY



Team Seahorse

Wanda Briscoe

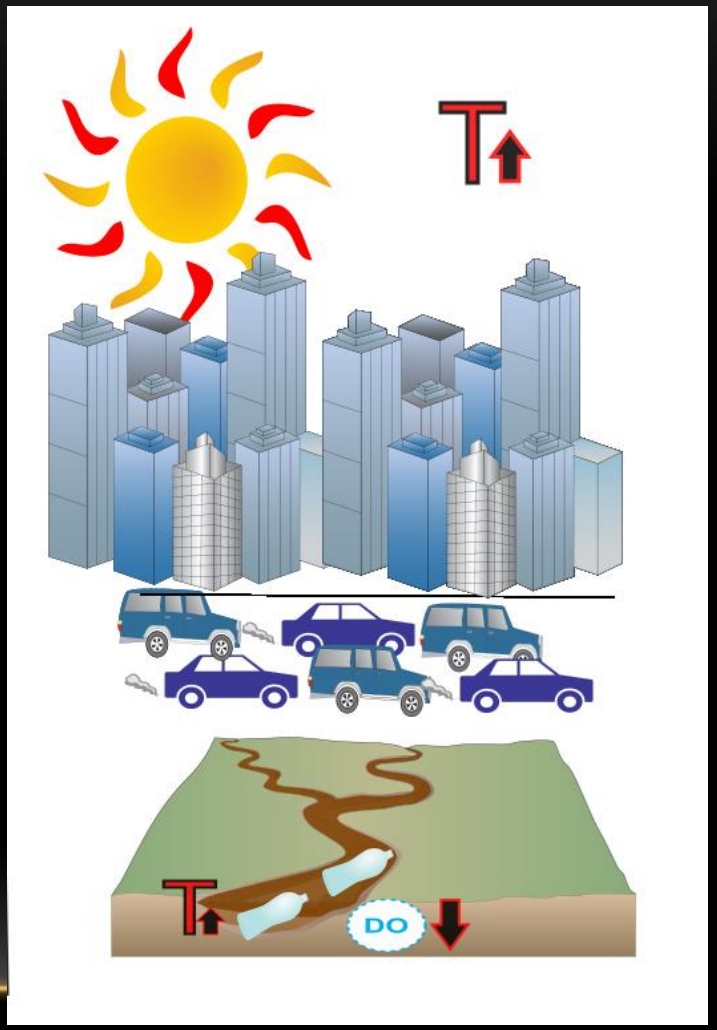
Mariana Quiñones Rosado

Greg Patton

Joy Semien

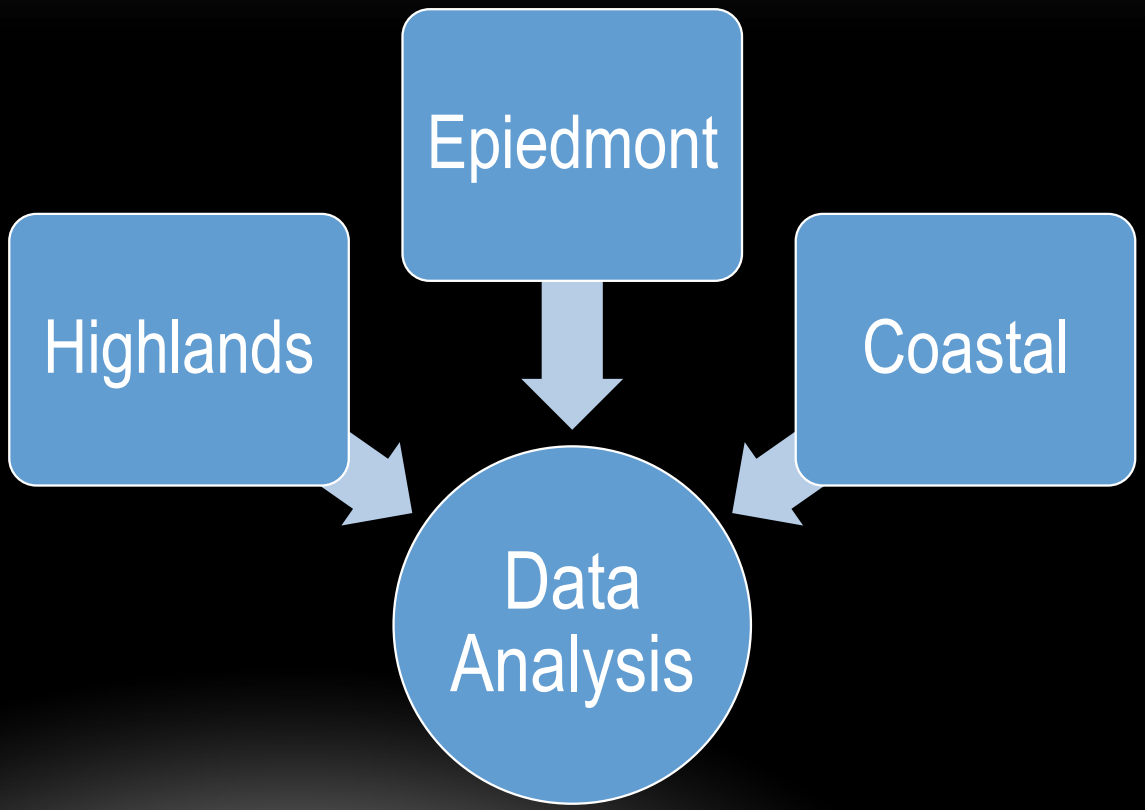
HYPOTHESIS

There is an inverse relationship between the variables (nitrogen, phosphorus, temperature and urbanization) and brook trout population.

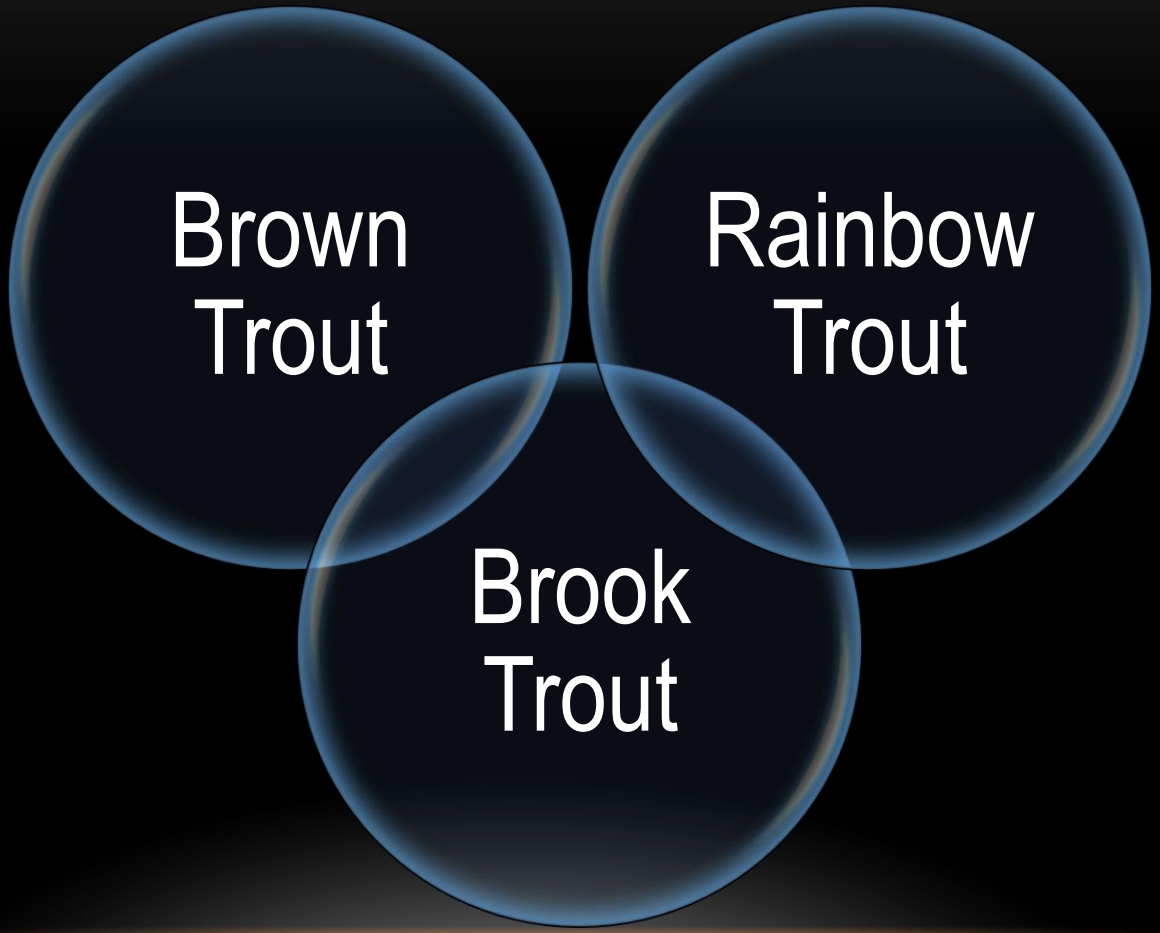


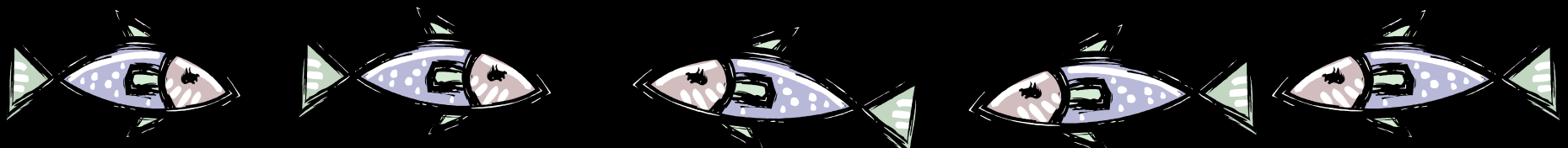
METHODOLOGY

- MBSS
- 2010 Census Tract Population
- Temperature
- Total Nitrogen
- Total Phosphorus

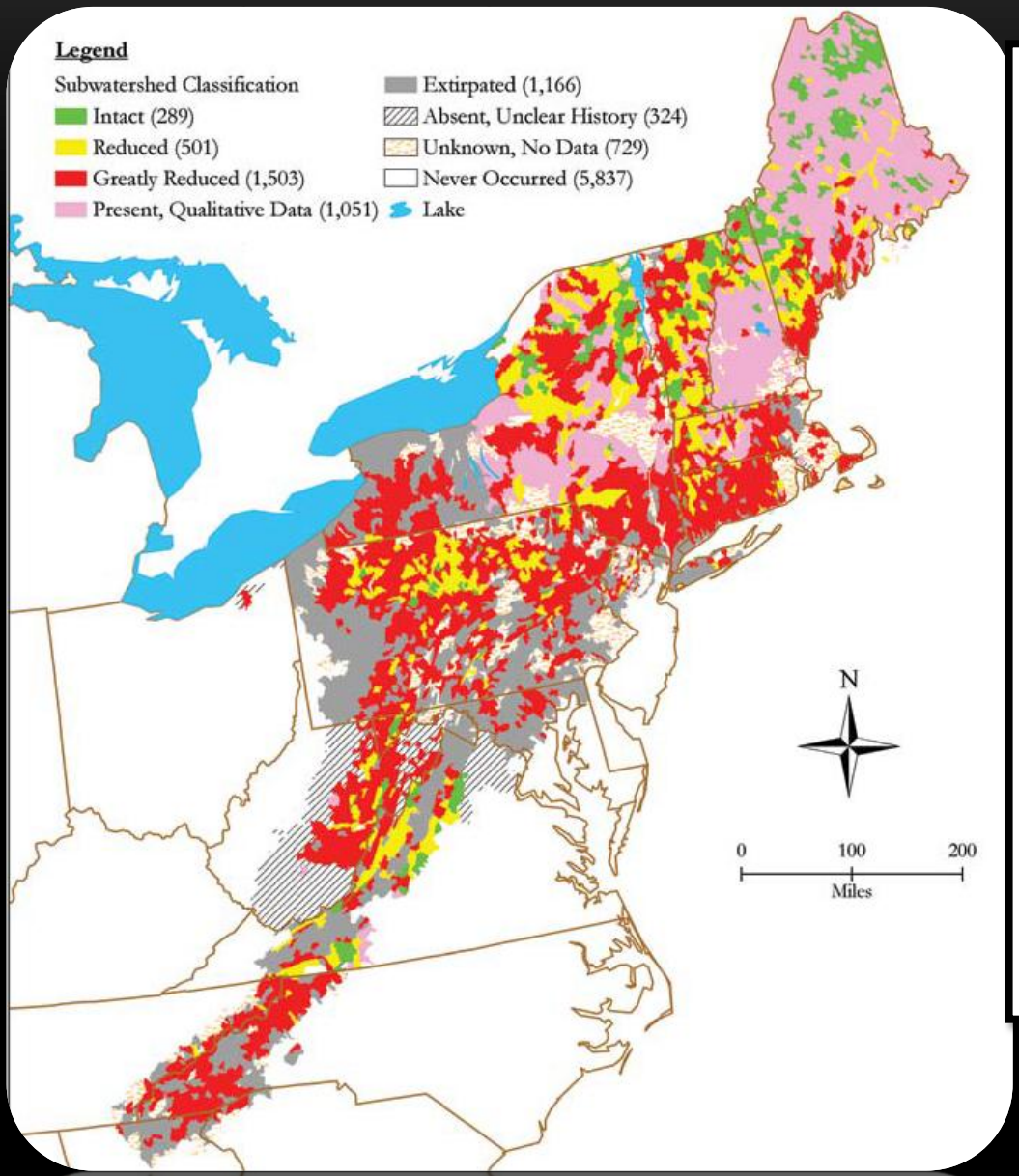


TROUT POPULATION DYNAMICS





N.E. AS LAST HAVEN FOR BROOK TROUT

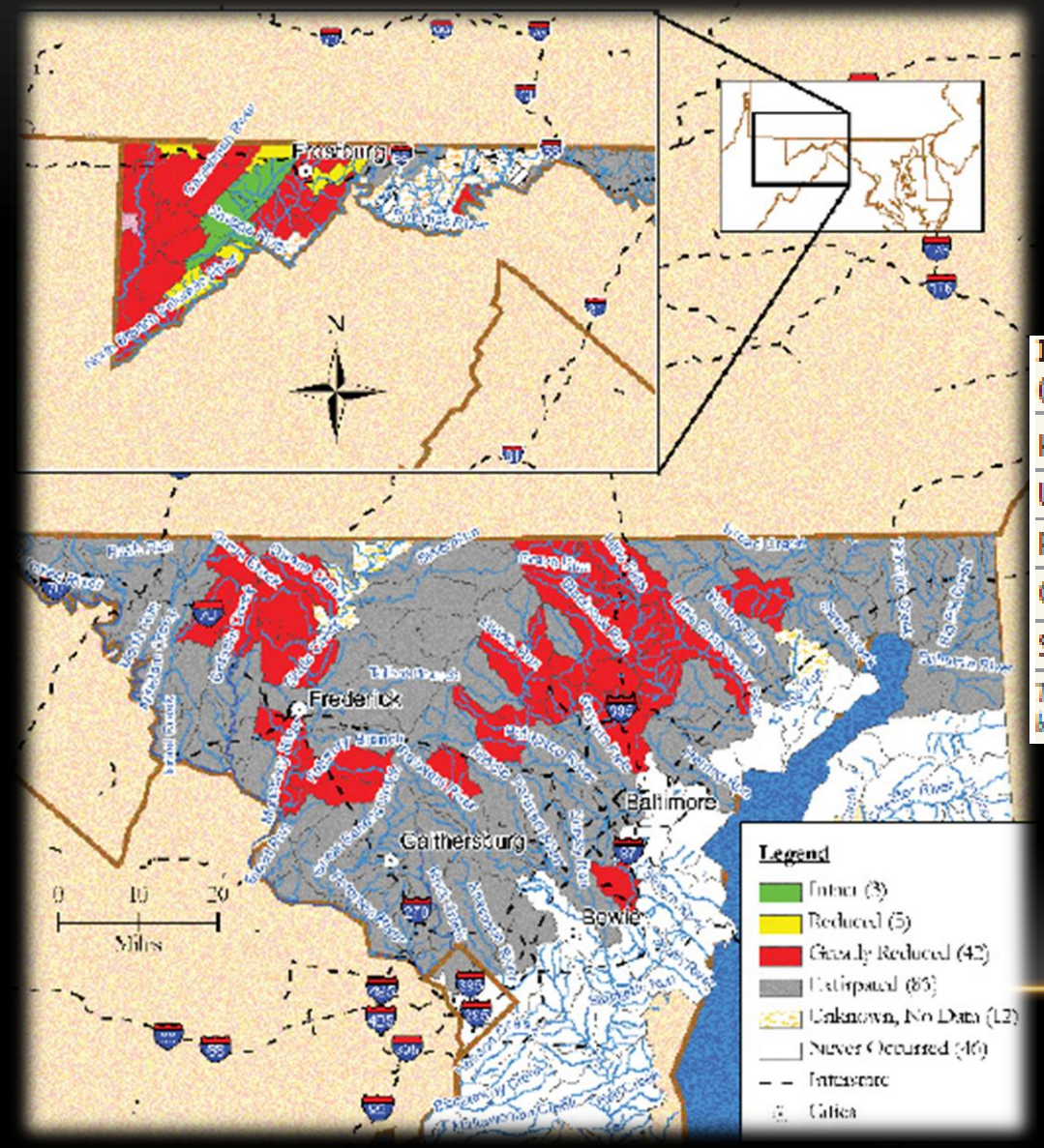


Primary Threats to Brook Trout

Rank	Disturbances (High or Medium)	Number of Subwatersheds	Percentage of Subwatersheds
1	Poor Land Management	1647	37%
2	High Water Temperature	1629	36%
3	Sedimentation (Roads)	1225	27%
4	One or More Non-Native Fish Species	1189	26%
5	Urbanization	1141	25%
6	Riparian Habitat	1029	23%
7	Brown Trout	853	19%
8	Stream Fragmentation (Roads)	767	17%
9	Dam Inundation/Fragmentation	705	16%
10	Forestry	642	14%

Threats information based on professional opinion of regional experts. Figures do not add to 100% because zero, one, or multiple disturbances may occur in each subwatershed.

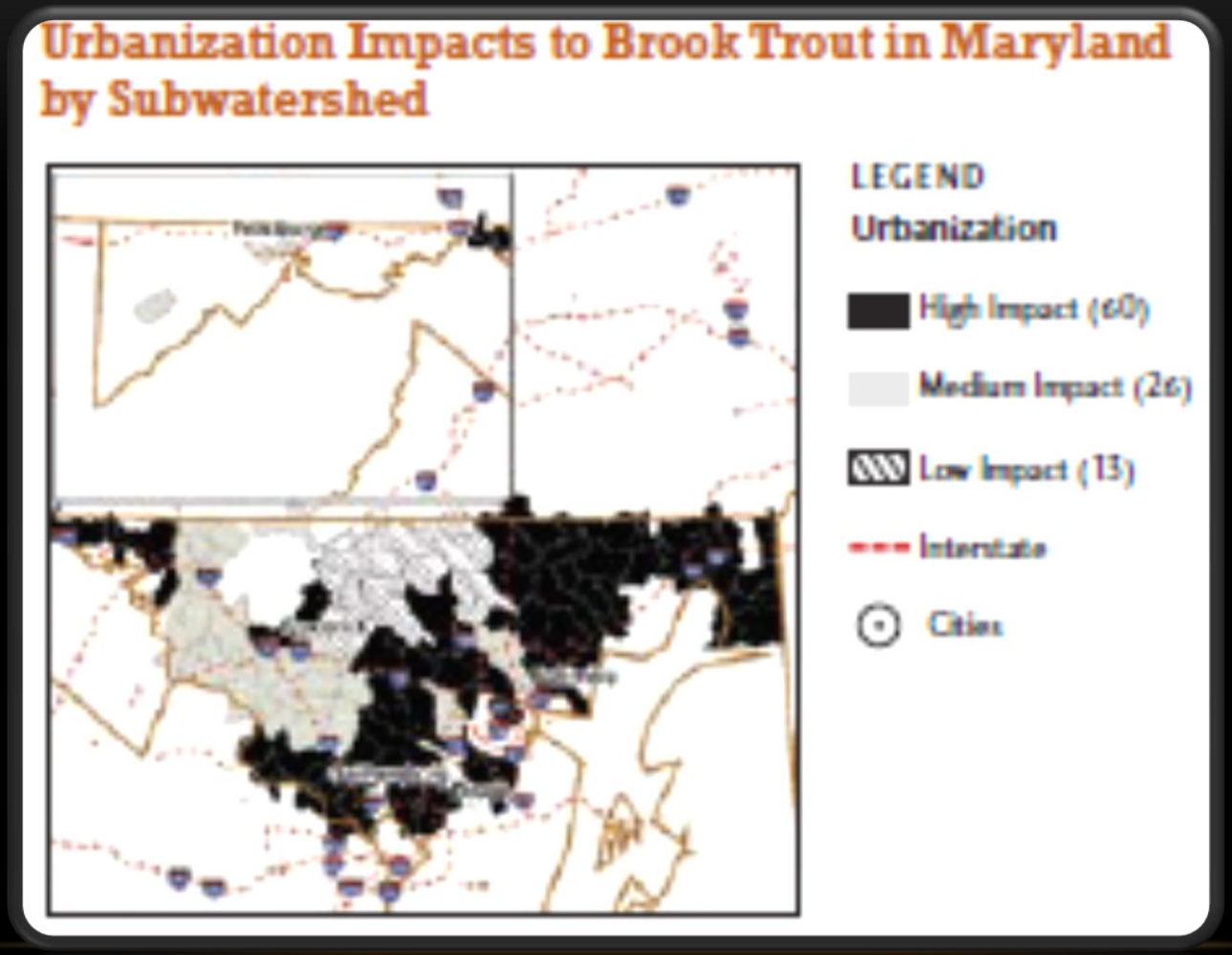
MARYLAND BROOK TROUT DISTURBANCES



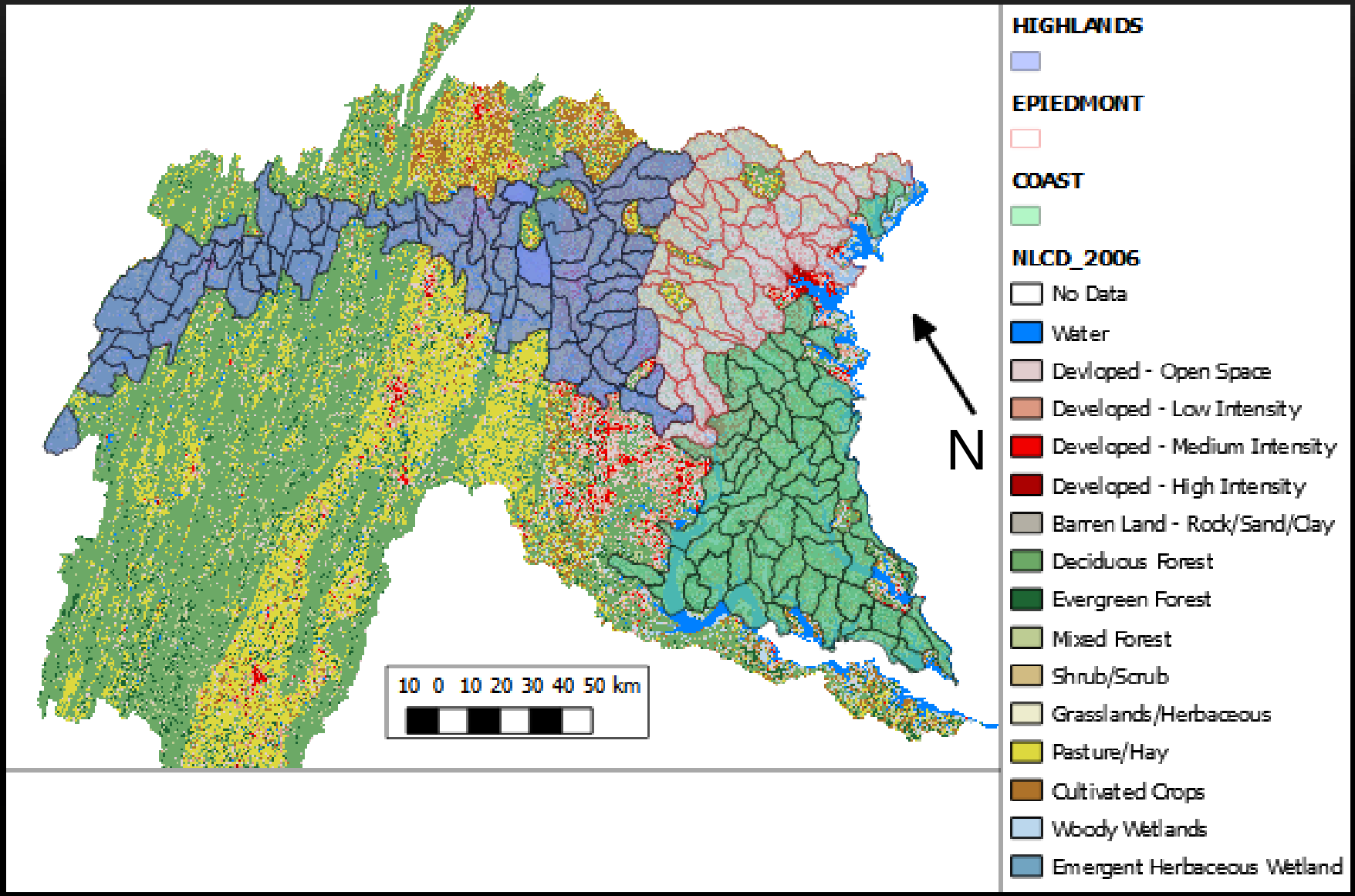
Disturbances (High or Medium)	Number of Subwatersheds	Percentage of Subwatersheds
High Water Temperature	106	79%
Urbanization	100	75%
Poor Land Management	91	68%
Groundwater Withdrawals	75	56%
Surface Water Withdrawals	53	40 %

Threats information based on professional opinion of regional experts. Figures do not add to 100% because zero, one, or multiple disturbances may occur in each subwatershed.

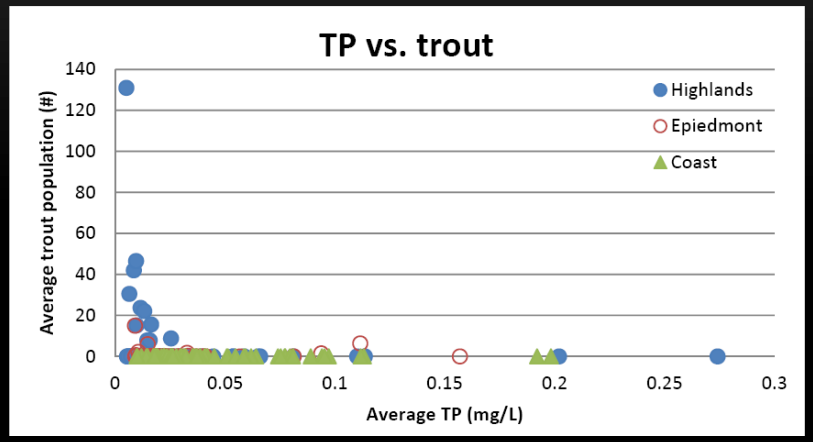
RATIONAL HYPOTHESIS

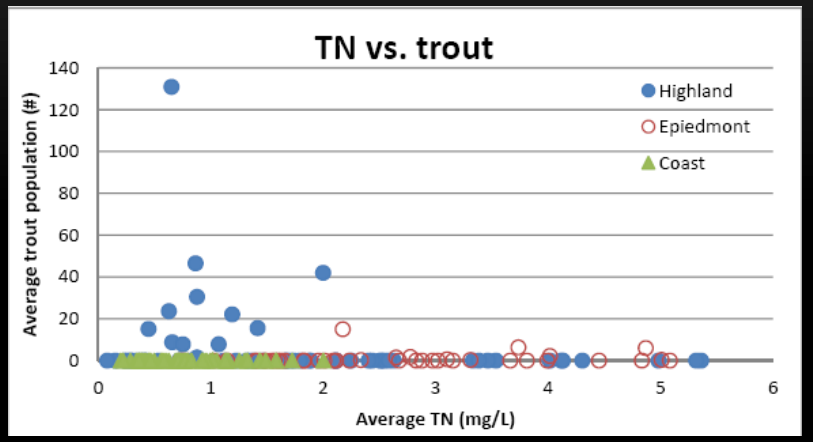


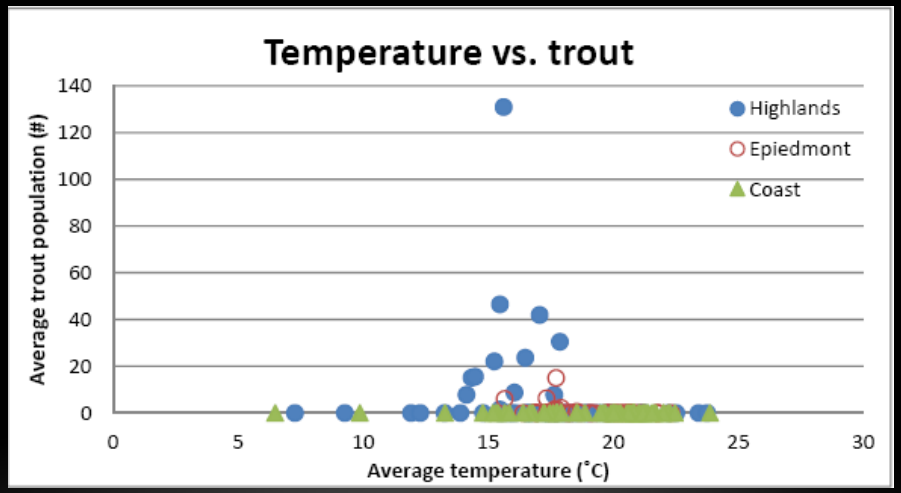
SUBWATERSHED CLASSIFICATION



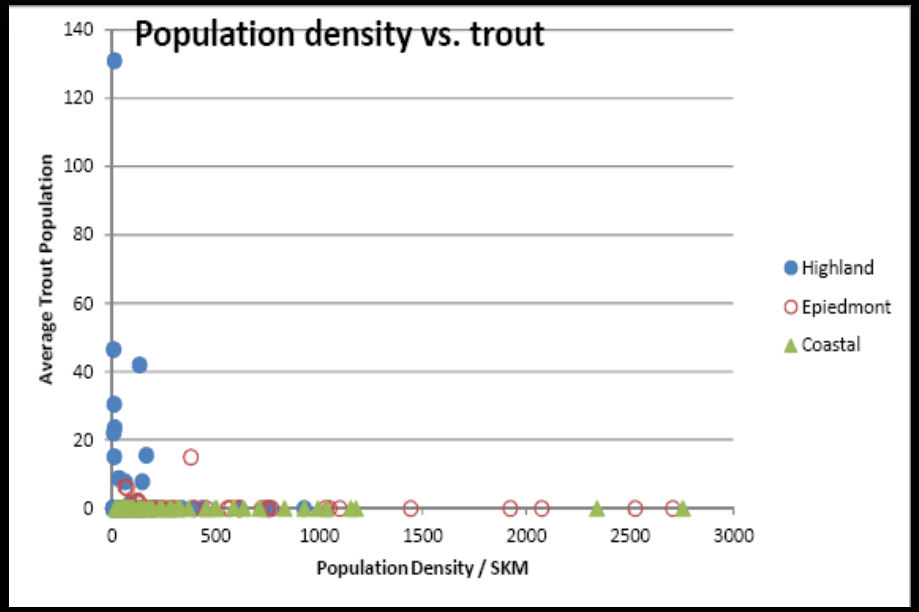
BROOK TROUT: WATER QUALITY INDICATOR?

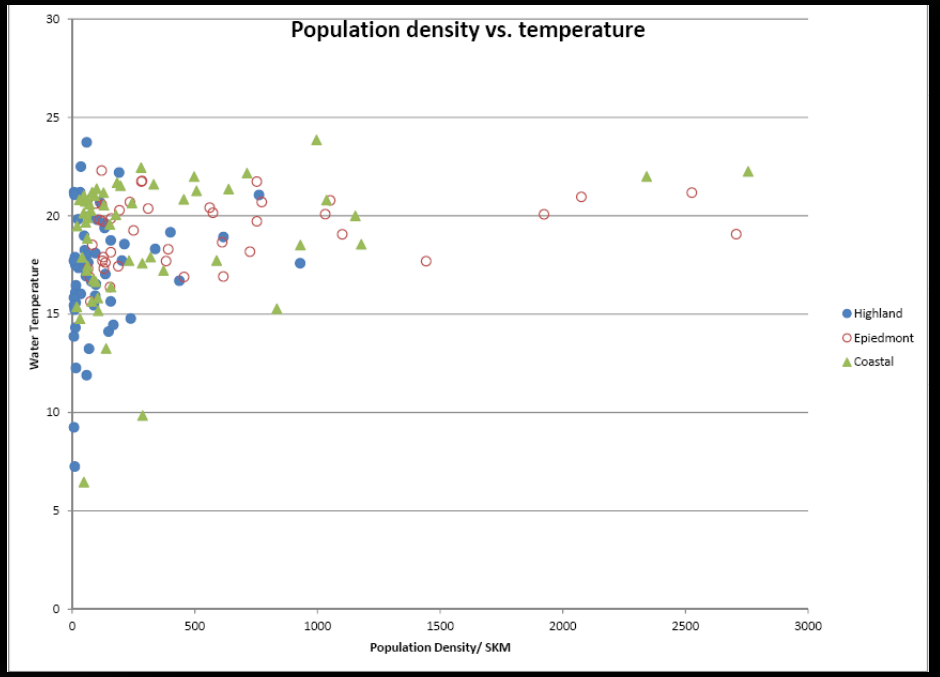




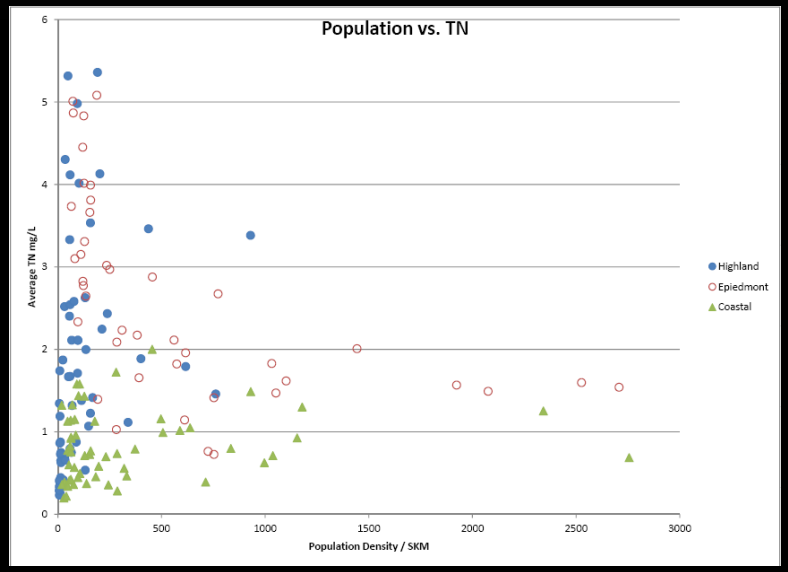


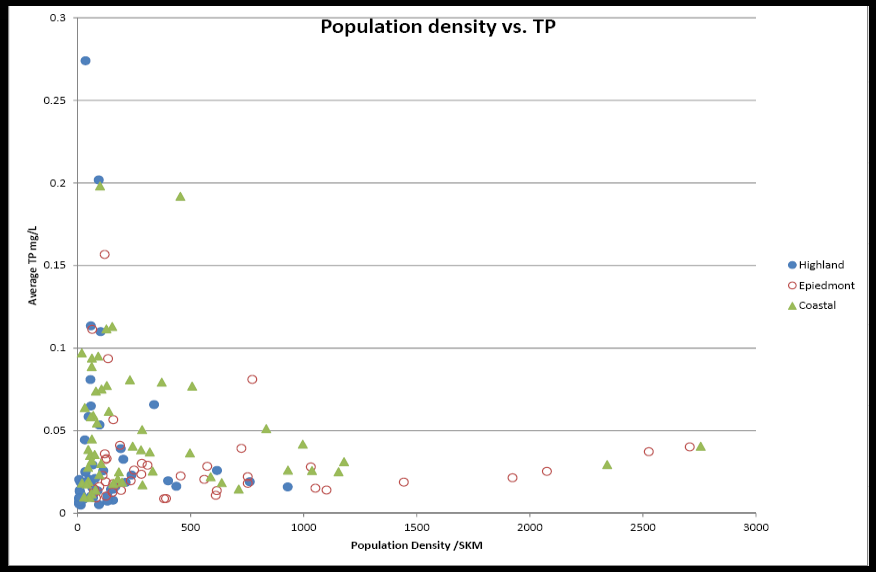
URBANIZATION AND WATER QUALITY





URBANIZATION AND WATER QUALITY





WHAT HAVE WE LEARNED?

- Our original hypothesis has opened up new questions.

  What is the defining characteristic of the Highlands subwatersheds that supports the brook trout population?

WHAT HAVE WE LEARNED?

- As scientists we should not be afraid of being proven wrong.

"There's two possible outcomes: if the result confirms the hypothesis, then you've made a discovery. If the result is contrary to the hypothesis, then you've made a discovery."

~Enrico Fermi
(Italian born American Physicist)
1938 Nobel Prize Winner for Physics

SOURCES

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QUESTIONS?