



Forests after Florence: Application of 360° Photography and Oral History to Document Hurricane Impacts on Urban Forests and Communities in Coastal North Carolina

Michael Caslin, Madhusudan Katti, Kelly Lynn Mulvey, Deniz Eseryel, and Darby Orcutt
North Carolina State University



Problem Statement

With climate change, the increasing frequency of major hurricanes are becoming the new normal. Academic commitments following a disaster is especially challenging. Prior research has demonstrated high rates of stress among students following natural disasters. Our aim is to promote science learning through community-engaged research as a pathway to persistence for disaster-impacted students.



Background

Hurricane Florence made landfall on September 14, 2018 in Wrightsville Beach as a Category 1 hurricane with sustained winds up to 90 mph. Statewide, about 2,200 primary and secondary roads were closed due to substantial flooding. Florence dropped a total of 35.93 inches of rain in Elizabethtown, North Carolina, which made Florence the wettest tropical storm ever recorded for the Carolinas. By the morning of September 16, the city of Wilmington had recorded more rain from Hurricane Florence than any other weather event in the city's history.

Selection of Students

A total of 4,797 NC State students, which represents 15% of the student population were impacted from Hurricane Florence to some degree. Initial surveys found that 32.3% reported minor impacts, 21.9% reported some impact, and 23% reported major or substantial impacts.

Of the 4,797 NCSU students impacted in 2018, we selected 50 to participate in a learning experience focusing on student resilience and hurricane impacts in urban forests. Selected participants represented diverse ethnicities (75% White/European-American; 0.04% Hispanic/Latino; 9.1% Black/African American; 6.8% Asian/Asian-American; and 9.06% other).

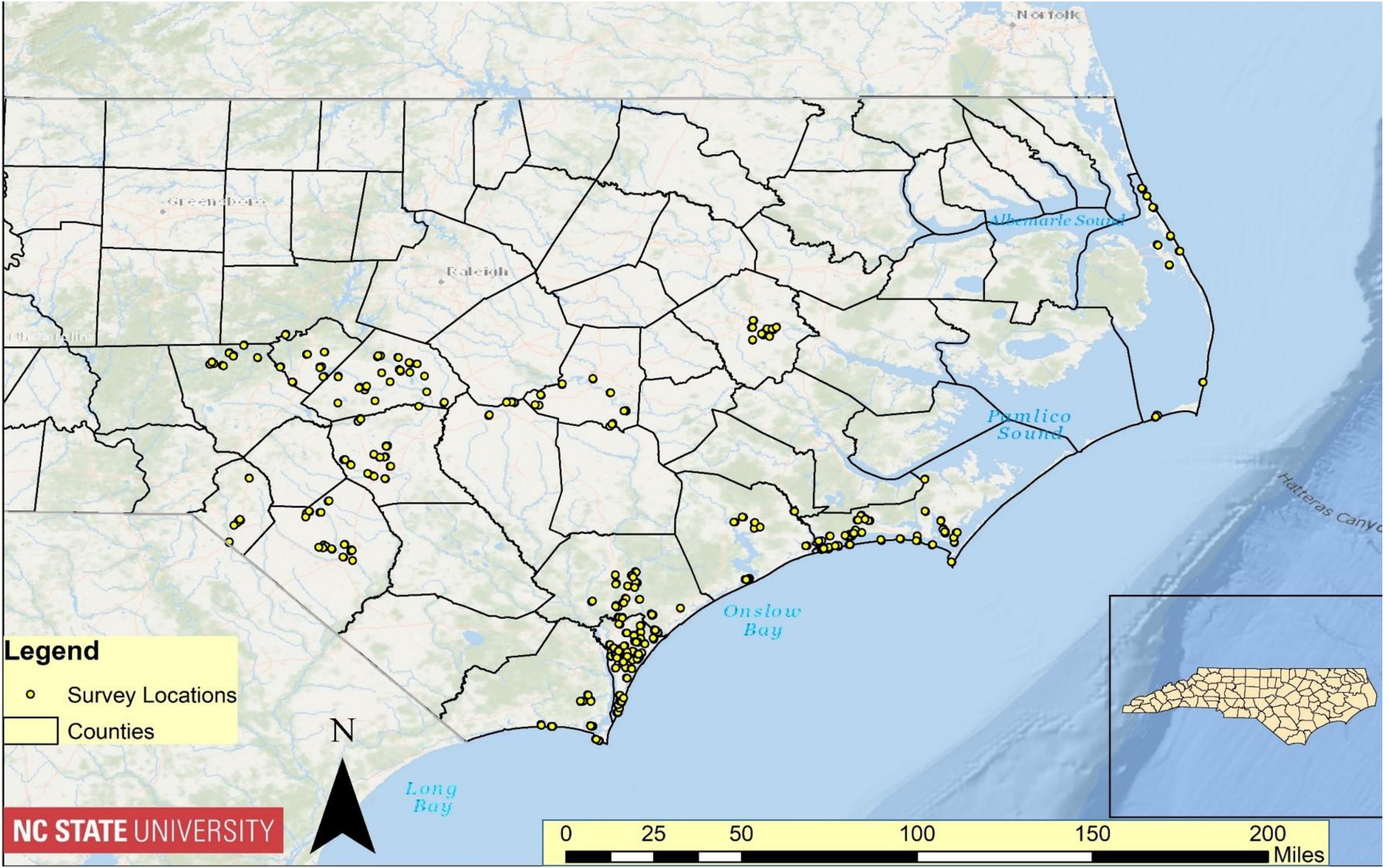
Methods

Students formed teams that consisted of 2 members except for two teams which had four. For each of the 22 teams, students selected up to 10 survey points where damage occurred and then each team was also assigned 10 randomly generated control points. During the summer of 2019, students documented damage to the forests in their communities through:

1. 360° photography at survey sites
2. Oral history interviews with community members

The following was conducted for 120 photos in Robeson and New Hanover Counties so far:

- Assessing forest damage for each 360° photo using a damage scale from the Georgia Forestry Commission
- Assessing the predominant land cover associated with each 360° photo



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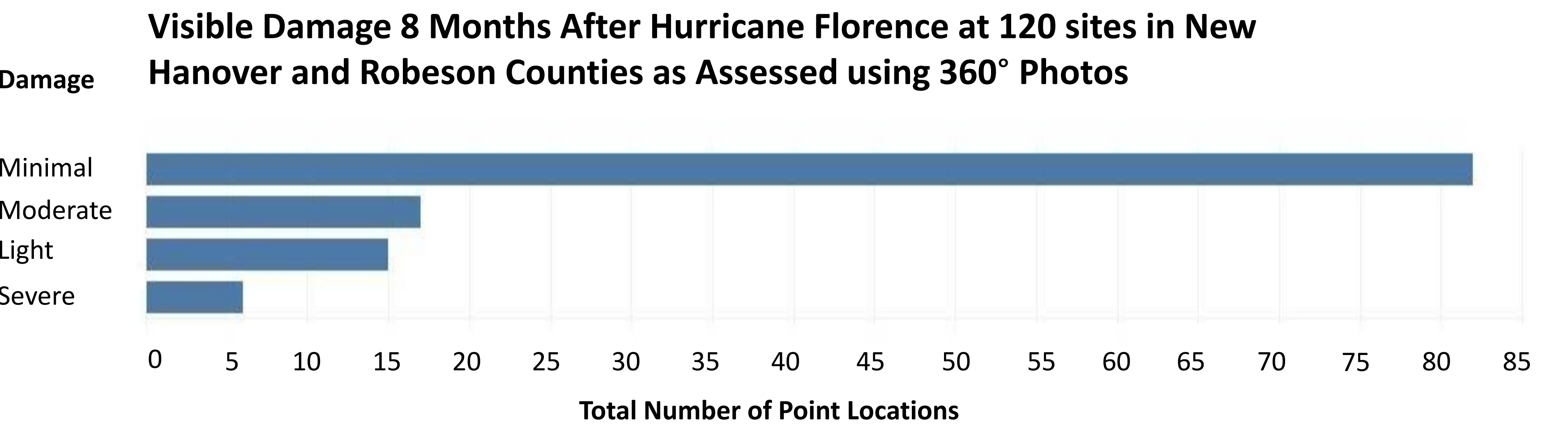


Results

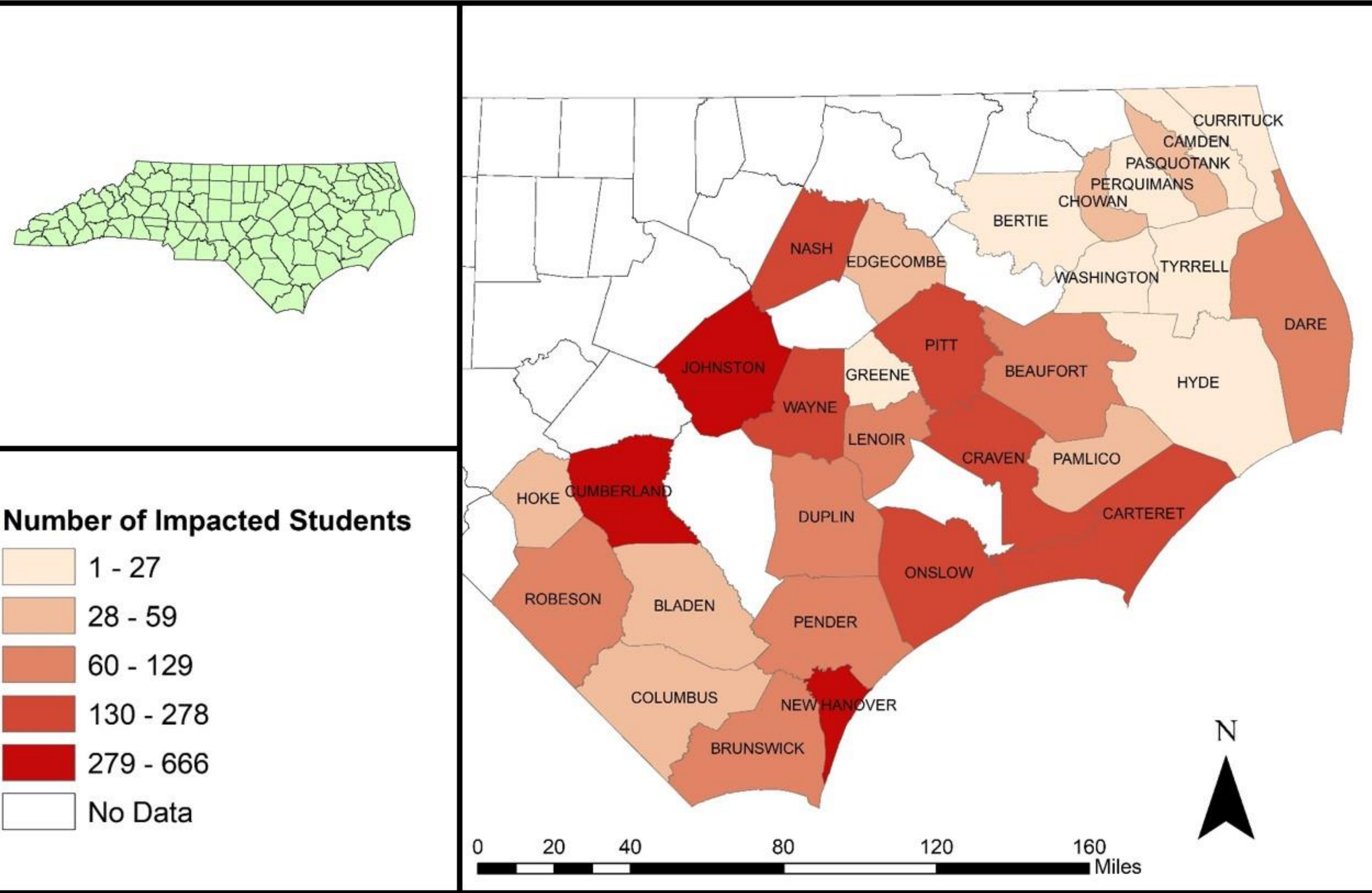
First, it's worth mentioning that some of the student teams went well beyond the call of duty by completing more survey points than was required. We ended up with 126 more points than was expected which resulted in a total of 566 site locations. So far 120 360° photos have been assessed for damage and land use/land cover. The photos assessed are located in New Hanover and Robeson Counties.

The following predominant land cover types contained the bulk of the survey points:

1. Mixed Forest at **28.3%**
2. Developed, Open Space at **22.5%**
3. Developed, Low Intensity at **13.3%**
4. Developed, High Intensity at **9.2%**
5. And Developed, Medium Intensity at **8.3%**



Number of NC State Students Impacted by County from Hurricane Florence in September, 2018



To learn more scan here

