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Green Crabs shrinking from 2015-2021 at
Reid State Park, Fort Popham, and Todd's
Landing

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Abstract

My investigation question is how are green crabs growing. This is important because if we know this, we will know how to deal with them. I investigated the size of green crabs at Three sites over Seven years. I measured at Reid State Park, Fort Popham, and at Todd's Landing. The green crabs were shrinking. I believe that the green crabs are shrinking because all the big crabs are being caught. So only small ones are left.

Introduction

Green crabs are extremely bad for ecosystems. They feed on clams, oysters, mussels, and juvenile crabs. They dig up mud flats ripping up tons of eelgrass on their hunt for food. Dr. Hilary Neckles states that “Green crabs uproot the plants in their search for food”(Porter, 2015). The green crab population is also impacting some fish populations by ripping up eelgrass and destroying the fish's Habitat. It also impacts fish by stealing the fish's food. So the question is how are green crabs growing, are they growing or are they shrinking? We need to find this out because if we find it out we can see how we can deal with green crabs and how they are going to grow. I am using data from 3 sites over 7 years.

The data I am using is from Reid State Park, Todd's Landing, and Fort Popham. It is from 2015-2021.

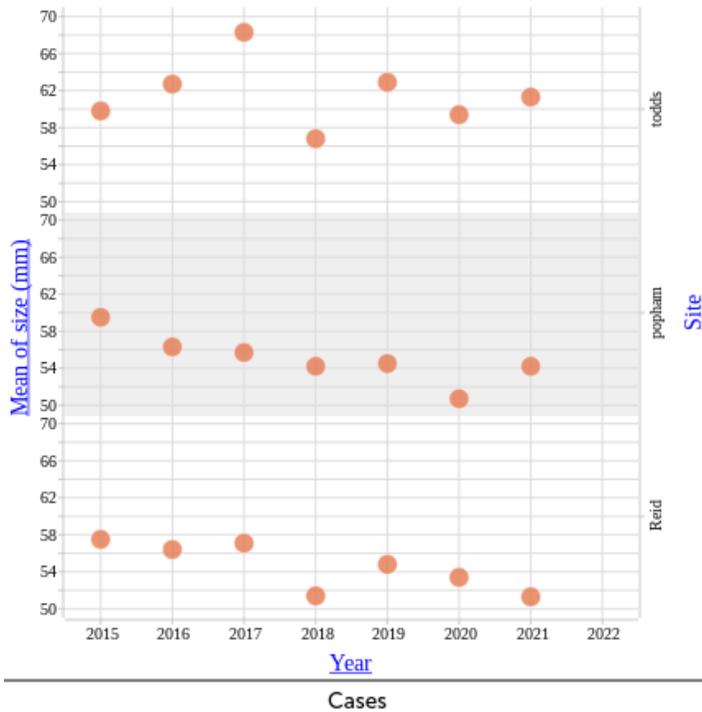
Methods

This is how we got the data. First our class got ready and spun a spinner to randomly pick out our quadrat position along a 100 meter transect. Next we went to all 3 locations only at low tide on three days. We went on 10/25/21, 10/28/21, and 10/29/21. At Fort Popham and Reid we went out and collected quadrat data and trap data. We had 3 circular traps

at those 2 locations. Todd's Landing was a bit different. Because there we only set 1 rectangular trap and had no quadrat data. And on all days we went except 10/29/21 we took the crabs and threw them back and reset the traps with the sardine oil. For 10/25/21 we set the trap on 10/24/21. Previous years we went to the same sites and had the same methods and it was in the same time frame of mid October to early November and one year we went in May too.

We originally scheduled for 2021 to go on 10/25, 10/26, and 10/27 but unfortunately it rained on 10/26 and 10/27. Those changes did not impact my data. We chose to go to all the data sites on the same day to make it fair. We also chose to make our quadrats random so that we did not choose the sites where all the crabs are and just stay there and also so we could get reliable data. We also used 1 sq meter quadrats. We set our traps with 2 cans of sardines in oil. We also put red and yellow nail polish on the crabs on 10/25 and 10/28 to see if the crabs came back to the traps. We also used millimeters to measure the widest part of carapace, to find out how big the crab was to find the answer to the question: are green crabs growing or shrinking.

Results:



This graph shows the year and size of the crabs. on the x axis is the year that we measured the crab. On the y axis it is showing the size. So the graph is showing the change of size over time at each site. One thing you can see is that the crabs at Reid and Popham are shrinking. The crabs at Todd's on the other hand are changing, one year they could be growing, then all the big crabs die. So we can say that other than the Todd's Landing site the green crabs are shrinking.

Discussion and Conclusion

The green crab population is shrinking. I noticed from the data that at the sites that green crabs are slowly shrinking. They have been shrinking from the 2015 mean size of about 60 mm to the 2021 mean size of about 56mm. This evidence could mean multiple things.

One thing it could mean is that we are catching the larger crabs and that all the small crabs are now becoming larger in population because we are increasing how many we catch. Or another thing it could mean is that

we are catching more and more small ones because the population is growing so then more and more crab eggs can be hatched.

It would be hard to make a clear conclusion with the evidence I have because the crabs could be shrinking through evolution but it also could be that we are catching the big one, but to give a clear conclusion you would need tens of thousands if not hundreds of thousands of crabs over 2-3 decades to have a proper sample size for this experiment. But, I believe that we are catching so many that the smaller crabs are not growing at the speed we catch them. So as we catch more and more we will probably see a better conclusion. If we catch smaller and smaller crabs every year it will make the conclusion more clear. So I believe if we were to come back 10-15 years from now and did this again it would probably make a more clear conclusion.

Acknowledgement

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References Cited

Porter, Tom. 2015 "Scientists Battle to Save Maine's Eelgrass from Destructive Invasive Crab." *Maine Public Radio*, www.mainepublic.org/post/scientists-battle-save-maines-eelgrass-destructive-invasive-crab.