Downeast Lobster Pound Study

Technical Report

Methods

On 11 June and 20 June 2020, 4mm floating oyster bags were deployed in several lobster pounds located in Washington and Hancock counties (Figure 1). The bags contained a HOBO temperature logger which recorded the water temperature every 30 minutes. Most of the bags also contained 100 American Oyster (*Crassostrea virginica*) seed with an average shell length of 7.5 mm. The bags deployed in two pounds in the town of Addison did not have oyster seed. Where possible, bags were placed outside of the pounds to compare water temperature. Pound owners periodically flipped the bags and allowed them to air dry overnight to kill fouling organisms, a standard protocol for rearing oysters.

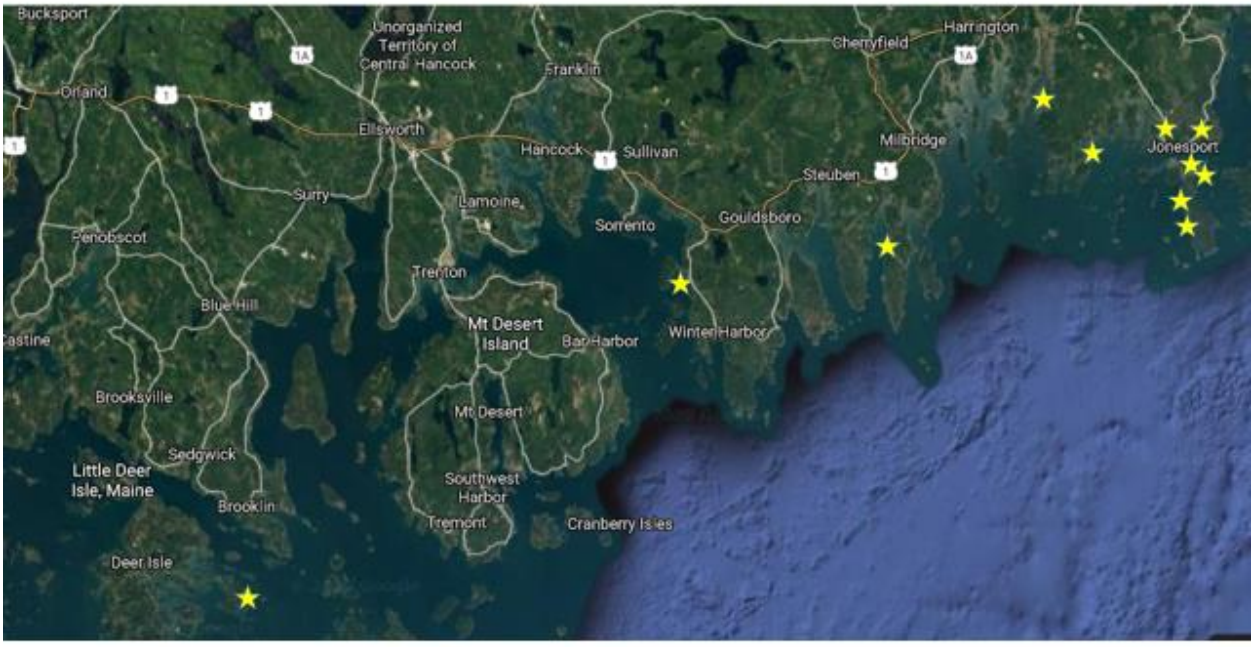

Figure 1. Location of oyster bags deployed in lobster pounds in Washington and Hancock Counties.

In October and November 2020, the bags were removed and the data was uploaded from the temperature loggers. Using this data, we determined the average temperature over the course of the growing season. The oyster seed was removed from the bags and 50 oysters from each bag were selected at random and measured to establish the average final shell length. This

information allowed us to determine whether temperature and oyster growth is sufficient for oyster farming.

Results

The average water temperature in the oyster bags varied greatly depending on geographic location, size of the pound and location within a given pound (Figure 2). The average final shell length for the oysters in the lobster pounds varied greatly but was commonly associated with water temperature. The pounds with the highest average temperatures and the most instances of temperatures greater than 70^0F had the best growth.

Site	Location	Average Temperature (F) June 20th-October 1st	Final Average shell length (mm)
Deer Isle (Figure 3)	Inside Pound	62.5	39.09
Deer Isle (Figure 4)	Outside Pound	61.8	36.27
Winter Harbor (Figure 5)	Pound Dam	63.2	30.72
Winter Harbor (Figure 6)	Head of Pound	63.3	39.28
Steuben (Figure 7)	Small pound	64.0	50.3
Steuben (Figure 8)	Outside small pound	61.5	N/A
Steuben (Figure 9)	Dam of big pound	65.4	55.4
Steuben (Figure 10)	Head of big pound	64.4	52.0
Addison (Figure 11)	Pound 1	64.1	N/A
Addison (Figure 12)	Pound 2	60.7	N/A
West Jonesport (Figure 13)	Inside pound	60.9	35.0
East Jonesport (Figure 14)	Inside Pound	59.1	14.4
Beals-Perio Point (Figure 15)	Small pound	60.0	34.1
Beals-Perio Point (Figure 16)	Medium pound	60.4	36.4
Beals-Flying Place (Figure 17)	Inside pound	64.1	50.5
Great Wass (Figure 18)	Inside pound	61.7	43.9

Figure 2. Table of average water temperature and average final shell length of oysters from 16 oyster bags deployed inside and outside of lobster pounds located in Washington and Hancock Counties.

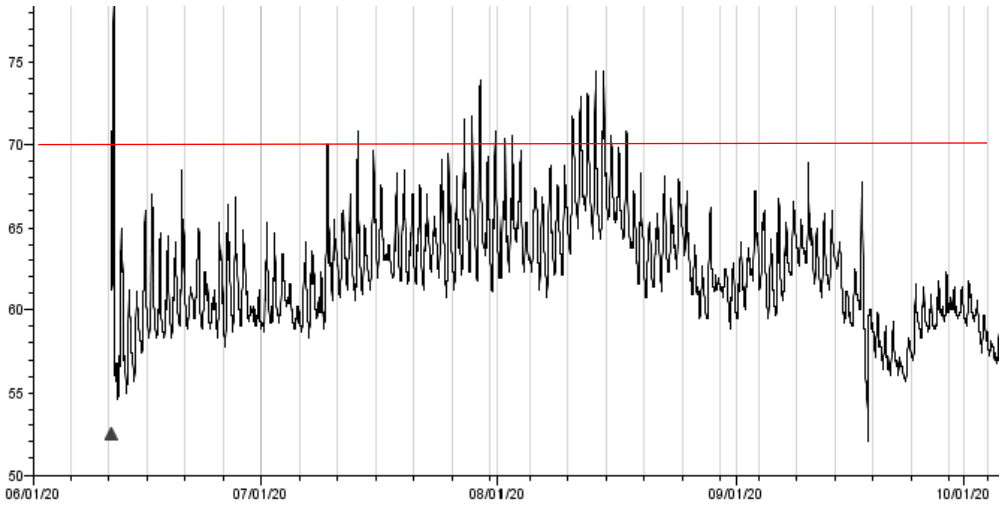

Figure 3. Water temperature data from oyster bag inside lobster pound on Deer Isle

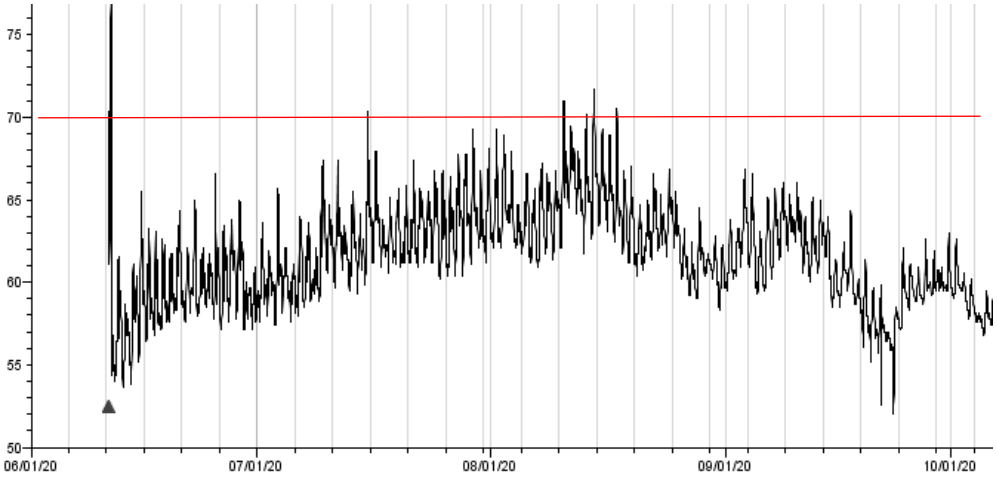

Figure 4. Water temperature data from oyster bag outside lobster pound on Deer Isle

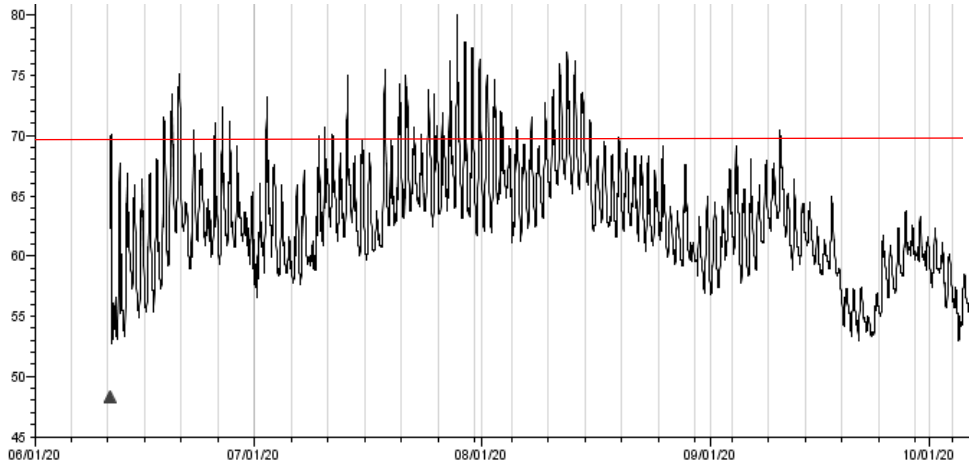

Figure 5. Water temperature data from oyster bag deployed near the dam of a lobster pound in Winter Harbor.

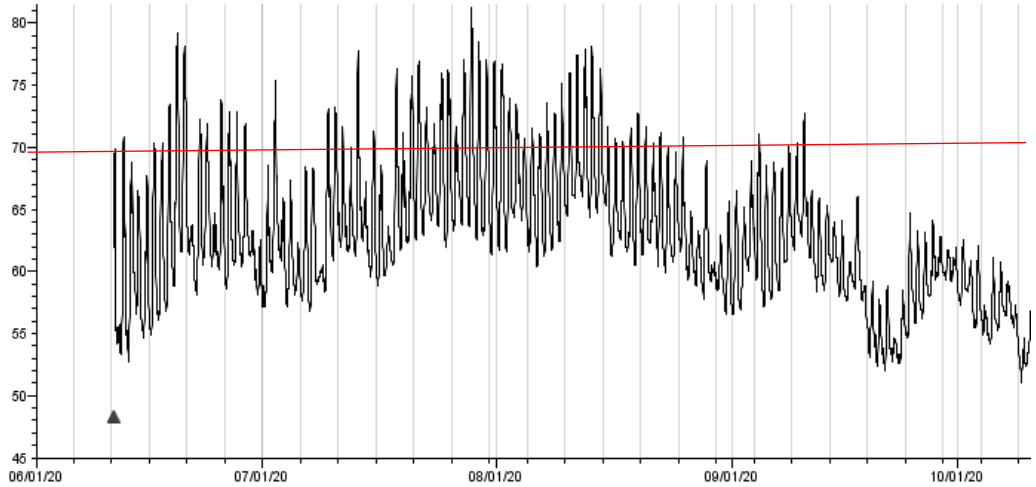

Figure 6. Water temperature data from oyster bag deployed at the head of a lobster pound in Winter Harbor.

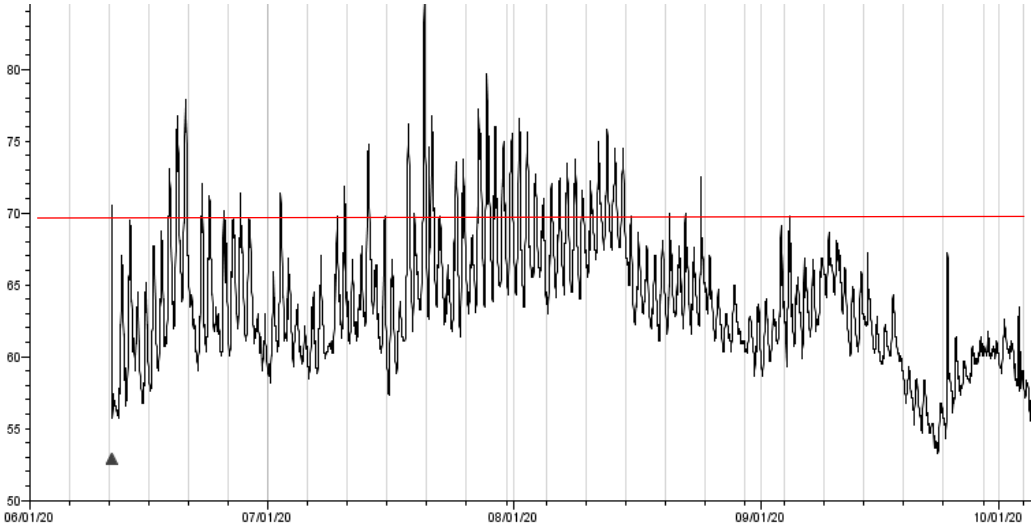

Figure 7. Water temperature data from oyster bag deployed in the small lobster pound in Steuben.

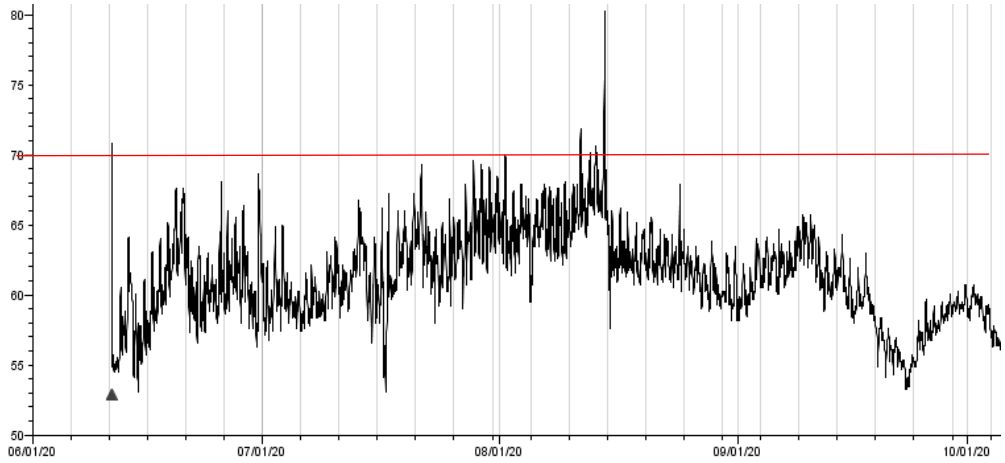

Figure 8. Water temperature data from oyster bag deployed outside the small lobster pound in Steuben.

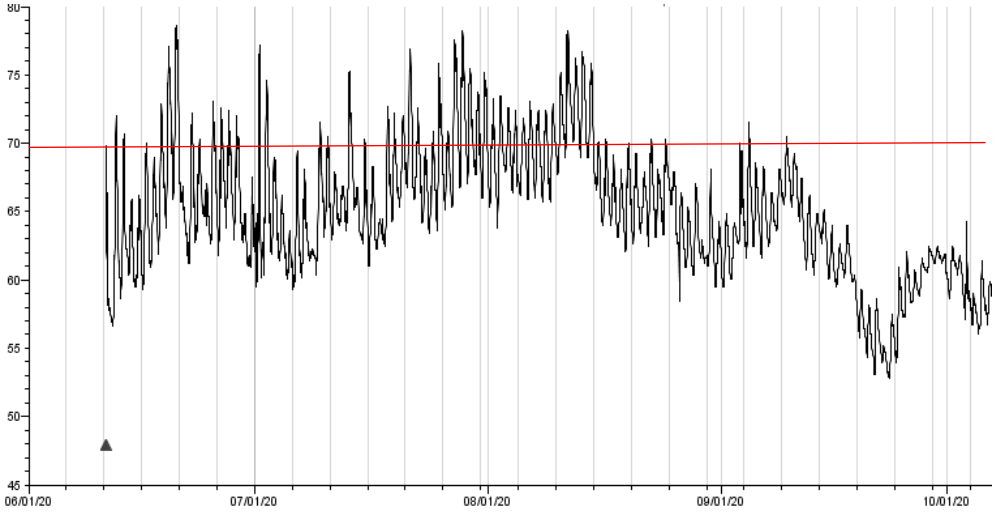

Figure 9. Water temperature data from oyster bag deployed near the dam of the big lobster pound in Steuben.

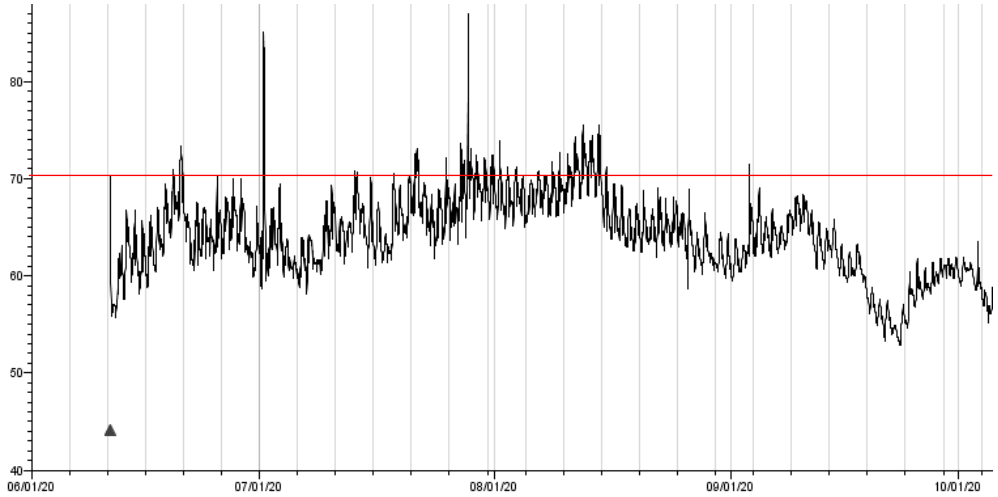

Figure 10. Water temperature data from oyster bag deployed at the head of the large lobster pound in Steuben.

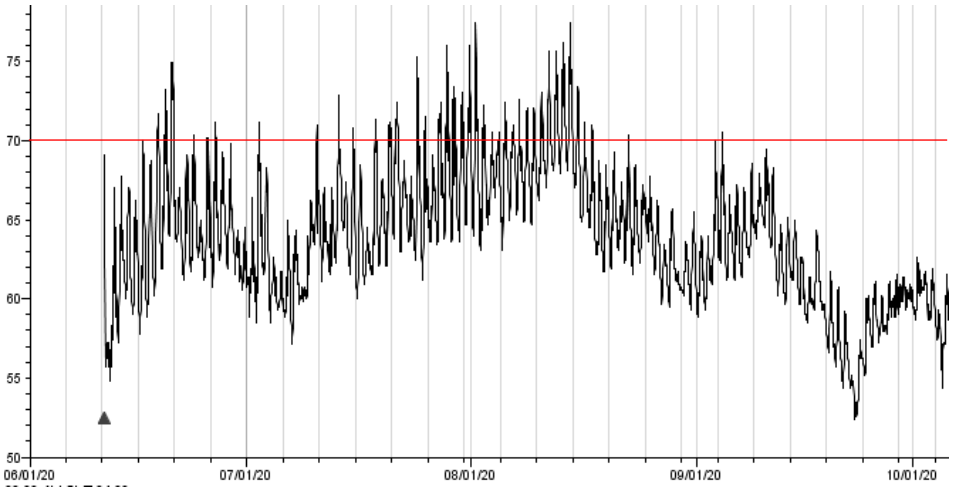

Figure 11. Water temperature data from oyster bag deployed inside of pound 1 in Addison.

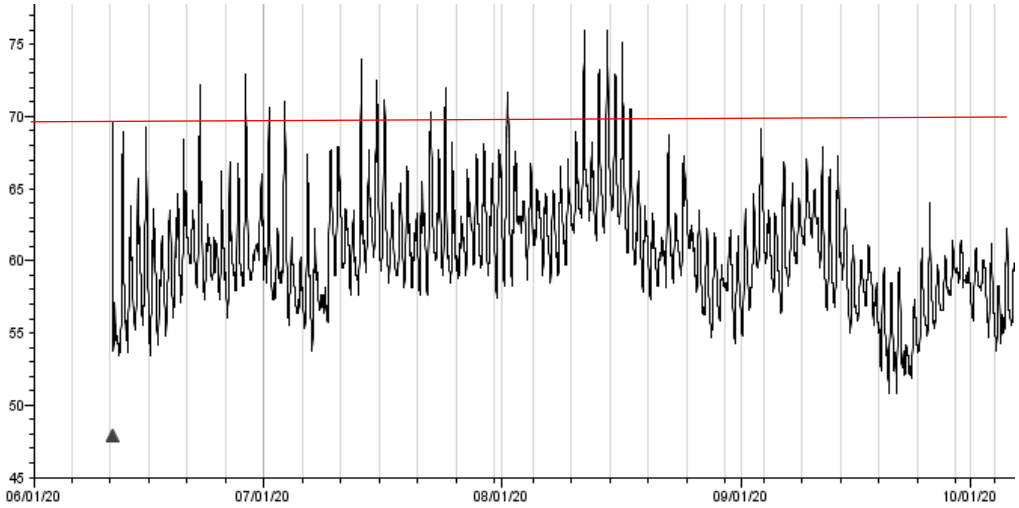

Figure 12. Water temperature data from oyster bag deployed inside of pound 2 in Addison.

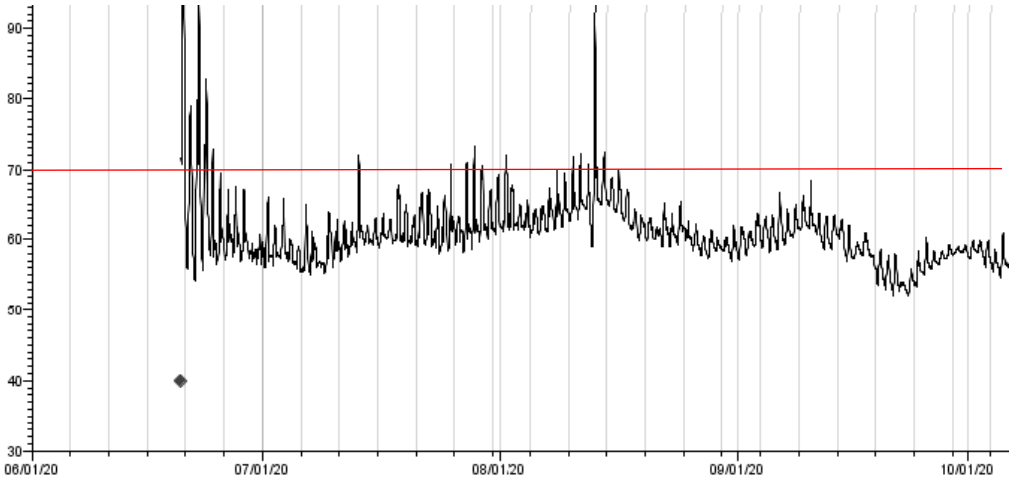

Figure 13. Water temperature data from oyster bag deployed inside a lobster pound in west Jonesport.

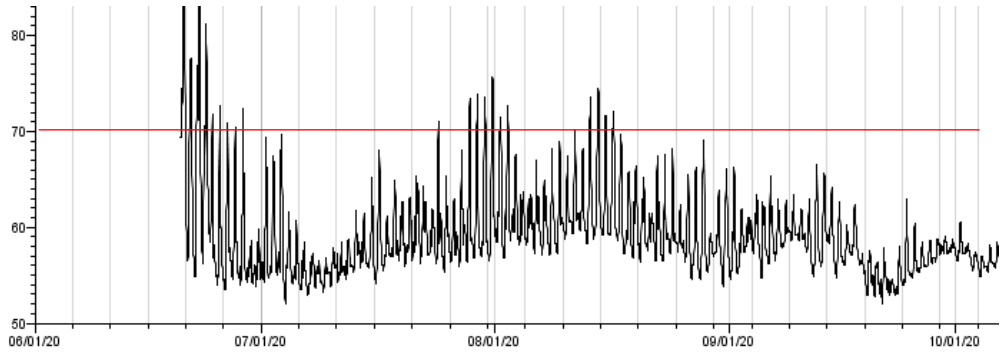

Figure 14. Water temperature data from oyster bag deployed inside a lobster pound in east Jonesport.

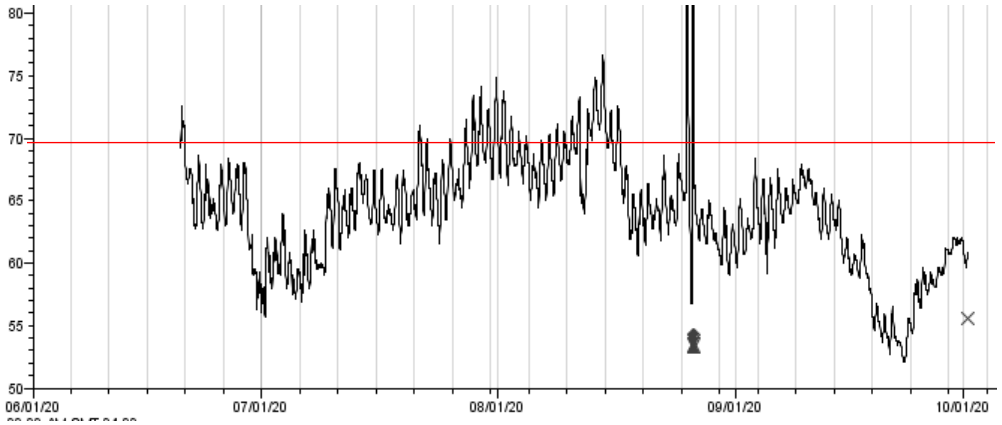

Figure 15. Water temperature data from oyster bag deployed inside a small lobster pound on Perio Point in Beals.

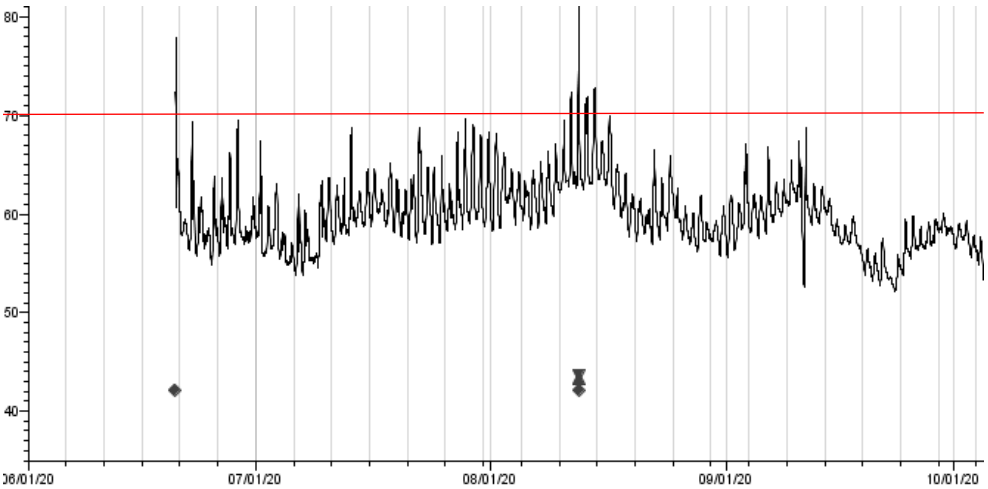

Figure 16. Water temperature data from oyster bag deployed inside a medium lobster pound on Perio Point in Beals.

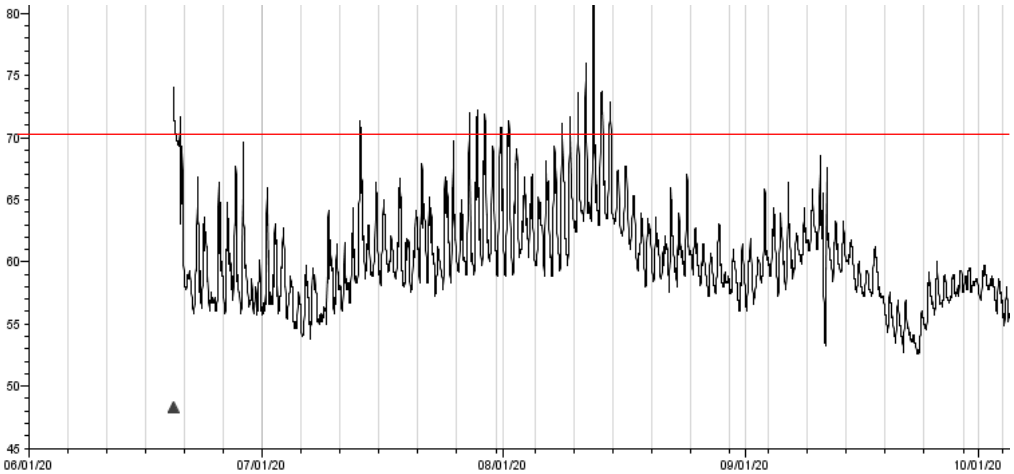

Figure 17. Water temperature data from oyster bag deployed inside a lobster pound on Flying Place in Beals.

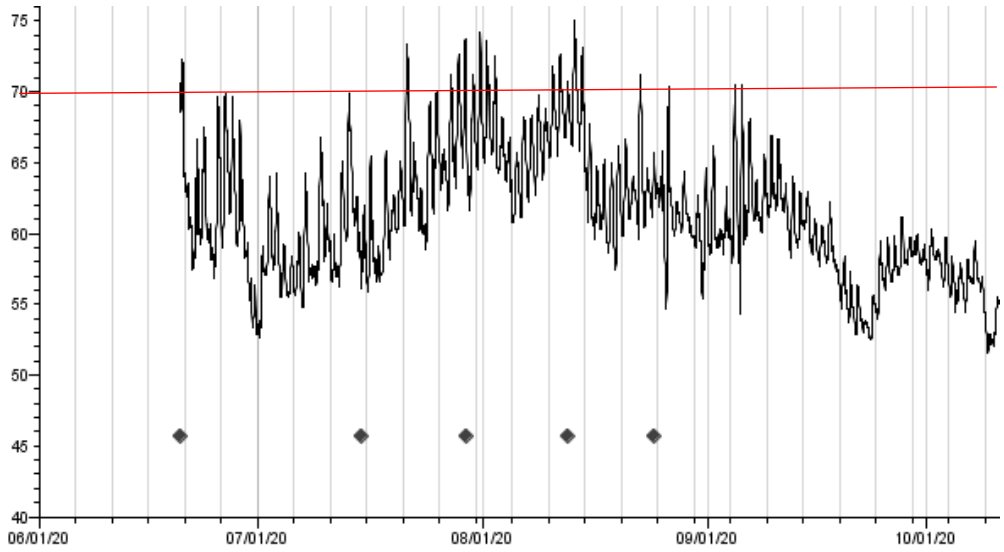

Figure 18. Water temperature data from oyster bag deployed inside a lobster pound on Great Wass Island (Beals).

Conclusions

Based on the data collected, it is possible to establish commercial oyster farms in some lobster pounds in Washington and Hancock Counties. Greater growth was observed in the pounds with warmer water temperatures, and about 1/3 of all locations frequently exceeded 70^0F, which is optimal for oyster growth. While temperature was a significant factor effecting growth, food availability was likely also a contributing factor. From this study it is not possible to determine the carrying capacity of the pounds, but demonstration farms can continually monitor growth rates and densities until a relationship can be established.

Assessments were provided to every pound owner that included the data collected and potential targets for temperatures and growth rates to consider. Seven of the farms experienced oyster growth that resulted in shell length near or over 40 mm. If the temperatures were low and oyster growth was poor, pound owners were encouraged to consider manipulating the pound to hold more water or limit water exchange to increase temperature before deciding whether to farm oysters.

Project Manager:

Kyle Pepperman

207-259-5048

kyle.pepperman@downeastinstitute.org