

Reduction of Crab Mortality in Seed Cages
Final Project Report
Virginia Fishery Resource Grant
Project #: FRGP 2012-08

I started this project to study the mortality rates in oysters from crabs in different types of seed cages. In the past I have had a lot of problems with mortality from crabs. It seems that they get in and stay to feast on my oysters. I started this project with 4 different styles of cages that I built. The four types are as follows:

1. A 3ft x 5ft, ½ inch mesh cage divided into 4 sections (this is the cage I currently use)
2. A 3ft x 5ft, ½ inch mesh cage divided into 4 sections with a 3inch x 4 inch 1 ¼ inch mesh patch (the patch is in the top and covers all 4 sections of the cage)
3. A 3ft x 5ft, ½ inch mesh cage divided into 4 sections with a 2 ¼ inch x ¾ inch funnel in each section on top of the cage
4. A 3ft x 4ft double stack cage with 4 bags per cage, the bags are 3/8 inch mesh 2 on top and 2 on bottom

These cages will be referred to in this report with these abbreviations;

1. Number 1 as plain cages
2. Number 2 as patch cages
3. Number 3 as funnel cages
4. Number 4 as double w/bags

The purpose of this project is to find out what cage design works best to let the crabs escape and reduce mortality. My hope is this study will help others in the aquaculture industry reduce mortality and get more yield from their seed.

The methods used during this study were to build these cages and deploy all in the same area. This deployment area has had crab mortality issues in the past. We periodically pulled up samples of every type of cage. From each cage we took a sample of 200 oysters and counted the crabs in each cage. We also noted the size of the crabs and the growth rate of the oysters. In the months of January thru April, there was very little crab activity. Throughout the months of June thru September cages were sampled, allowing the cages to be measured with longer duration in the water.

DATA

Jan 26 2013 sampled:

- | | | | |
|-------------------|--------------|---------|---------------------|
| • 6-patch cages | 35/1200 dead | 1-crab | mortality rate 3% |
| • 6-funnel cages | 25/1200 dead | 0-crab | mortality rate 2% |
| • 4-double w/bags | 18/800 dead | 1-crab | mortality rate 2.5% |
| • 6-plain cages | 32/1200 dead | 8-crabs | mortality rate 2.6% |

April 6 2013 sampled:

- 2-patch cages 9/400 dead 3-crabs mortality rate 2.25%
- 2-funnel cages 4/400 dead 2-crabs mortality rate 1.25%
- 2-double w/bags 7/400 dead 4-crabs mortality rate 1.75%
- 2-plain cages 24/400 dead 10-crabs mortality rate 6%

NOTE: split all cages and not much crab activity due too winter

June 6 2013 sampled:

- 5-patch cages 18/1000 dead 11-crabs mortality rate 3.3%
- 5-funnel cages 13/1000 dead 10-crabs mortality rate 1.3%
- 5-double w/bags 74/1000 dead 16-crabs mortality rate 7.4%
- 5-plain cages 120/1000 dead 30-crabs mortality rate 16%

July 20 2013 sampled:

- 5-patch cages 33/1000 dead 14-crabs mortality rate 3.3%
- 5-funnel cages 20/1000 dead 25-crabs mortality rate 2%
- 5-doublww/bags 60/1000 dead 24-crabs mortality rate 6%
- 5-plain cages 160/1000 dead 42-crabs mortality rate 16%

August 21 2013 sampled:

- 5-patch cages 202/1000 dead 22-crabs mortality rate 20%
- 5-funnel cages 76/1000 dead 10-crabs mortality rate 7.6%
- 5-double w/bags 118/1000 dead 16-crabs mortality rate 12%
- 5-plain cages 200/1000 dead 48-crabs mortality rate 20%

September 28 2013 sampled:

- 5-patch cages 164/1000 dead 18-crabs mortality rate 16.5%
- 5-funnel cages 132/1000 dead 10-crabs mortality rate 13.2%
- 5-double w/bags 232/1000 dead 16-crabs mortality rate 23.2%
- 5-plain cages 221/1000dead 40-crabs mortality rate 20,2%

Averages:

- Patch cages 12-crabs mortality rate 8%
- Funnel cages 10-crabs mortality rate 4.5%
- Double w/bags 13-crabs mortality rate 8.8%
- Plain cages 30-crabs mortality rate 13.55

Results:

- Crabs in plain cages were significantly larger than the ones in other cages
- Oysters in bags grew much slower than the ones in cages, they were ½ the size of oysters in cages
- Oyster mortality was greater in the summer

- The longer you let your seed cages go unchecked in the summer the more mortality
- Seed in the bags seem to bunch up in one end of the bag and grow from one end of the bag to the other not bottom to top

Conclusions:

- Funnel cages had the best results and the crabs in these cages were not large
- Plain cages had significantly larger crabs and the highest mortality
- Double w/bags did not have the highest mortality rate but oysters in the bag grew a lot slower and less acceptable oyster shape for market oysters
- Patch cages were an improvement over plain cages, but the crabs were still larger than in the funnel cages

Recommendations:

- Funnel cages are the most effective at lowering mortality rates and decreasing mature crabs devouring huge sections of oysters. The crabs that remained in the cages were all small enough to go in and out of the funnel.
- Starting in May check and split your cages every 2-3 months (I recommend 2 months) until the end of November. Doing this will help you reduce the number of crabs in the cages.
- Double w/bags cages do decrease the mortality of oysters, yet they slow the growth and do not produce an ideal shape oyster for the market.
- Always have your cages divided into sections. There is no way to stop 100% of crabs from getting into the cages. Sections limited crabs to one area.



Richard W Harding Jr.
Vice President
Purcells Seafood Inc.