

# Case Study: Yellow Rope on the Beach

## Newport 4<sup>th</sup> Grade 2021-22

The following activities were implemented (or are planned) by 4<sup>th</sup> grade teacher Penny McDermott at Sam Case Elementary School in Newport, Oregon. Two classrooms of students were involved in the project; One class in spring 2021 and a different group of students during the 2021-22 school year.



### ENGAGE

The Hatfield Marine Science Center Green Team hosted two 3-hour SOLVE clean-up events along the Yaquina Bay riverbank in Newport in 2021. HMSC staff, students from Newport High School, and other volunteers from the community collected yellow rope (YR) fragments separately during the clean-up. The collected YR fragments were delivered to Sam Case Elementary School for students to sort and count.

### 4<sup>th</sup> Grade Activities:

- Students observed, measured, and drew pictures of the YR fragments.
- Students had to determine what did and did not constitute the type of YR under investigation, and then remove ineligible fragments from the count.
- To add fun, exercise, and fresh air to the effort, the teacher made rope counting into an outdoor relay game.
- Students counted YR by tens and grouping 100s. The teacher noted that “this activity fits well with number sense with place value.”
- In Fall 2021, the class counted their YR *four times* to make sure they had the most accurate count.

Students determined that 2,227 YR fragments were collected at the April 2021 clean up and 986 fragments were collected at the September 2021 clean up. The class shared their data with HMSC Green Team and Oregon Sea Grant.



## EXPLORE

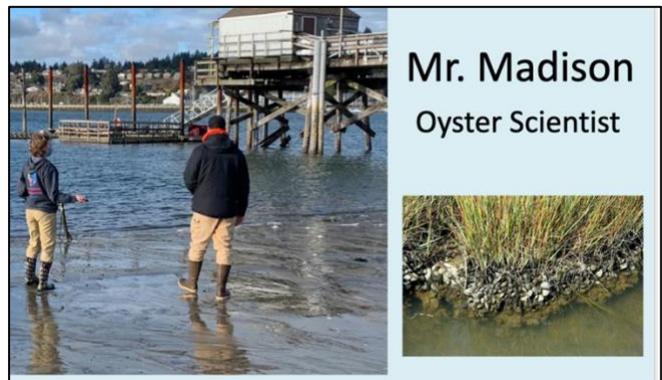
Students were interested to know more about where the YR came from and what impacts it might have.

- They looked at maps of Yaquina Bay to see where the YR was found and discussed their initial ideas about where the rope may have come from. They explored possible sources along the river and talked about tides and currents.
- Students learned about rope construction by watching a video about ropemaking.
- Students observed rope fibers with hand lenses to notice how the strands were made up of smaller fibers that could come apart over time.
- Students tested hypotheses about the buoyancy of YR by putting pieces in a tub of water.



## EXPLAIN

- An Oregon Sea Grant educator connected with the owner of a local oyster farm to talk about the YR that was found and student interests in learning about where the rope may have come from.
- The OSG educator visited the class with photographs and biofacts to talk about how YR is used in certain types of off-bottom oyster farming. Students examined oyster shells and saw how shells could be held between the strands of YR pieces.
- In Spring 2021, students learned more about oyster farming through a virtual visit from oyster researcher David Madison.
- In Fall 2021, students learned more about oyster farming by watching video clips shared in the Yellow Rope on the Beach lesson.
- Students discussed their ideas and asked questions. The teacher shared student questions and ideas about oyster farming with the OSG educator. The OSG educator then presented these questions to the local oyster farmer in an in-person interview and sent an account of the farmer's answers and additional photographs of the processing area back to the students.
- The class took a walking field trip to the beach where they picked up marine debris.



## ELABORATE (in progress)

- The teacher hopes to take the class on a field trip to the oyster farm in Spring 2022.
- An undergraduate student working in the HMSC Innovation Lab is exploring the degree to which YR could be remanufactured into another product using 3D printing or other methods.

### **EVALUATE (in progress)**

- Students will share their ideas to prevent the escape of YR with the oyster farmer, the HMSC Green Team, Innovation Lab staff, and other community audiences.
- The oyster farmer recently installed three “Pick Up the Slack” signs at the oyster facility to alert staff and customers about the problem of YR marine debris. The sign advises “Zero Fragments is the Goal”.
- YR from the next SOLVE clean up (Spring 2022) will be shared with the students.



*Last updated: January 2022*