



STUDENT WORKSHEET - CORK FLOAT LAB

Student/Group Name: _____

Stream Name:

Date:

Water Temperature:

Present Weather:

In this exercise we will be releasing a large quantity of bottle corks into the stream in order to observe and describe what happens to large objects as they float downstream. These observations will also help you to understand how organic matter can be trapped and then stored in the stream.

Materials Needed

- Wine bottle corks (≈100 per release)
- Measuring Tape
- Net or similar devise to capture corks
- Field observation notebook / data sheets

Procedure

You will be working in a part of the stream that is at least 200 ft. (≈60 meters) long. Your teacher has included several different stream features as listed below.

Stream Feature Abbreviation

T= twigs

Ri = Riffle

H = herbaceous vegetation

Ro = root wad

DD = Debris Dam

IT = in transit

S = Seine - netting

E = edge vegetation

Ed = eddy

LP = leaf pack

Mark the study area with the measuring tape. A marker every 10 feet will help you to measure the distance of the trapped corks from the starting point.

Several of the group will need to be below the end of the study area so they can gather the corks that do not get trapped in the reach.

When everyone is ready all the corks will be released at once. Allow 15 to 20 minutes for the corks to float downstream and get caught in the different areas. When the time is up, walk along the bank record the distance from the starting point where the corks are trapped, how many are trapped, and the feature that trapped the corks.

Your teacher might ask a group to record the time the first and last corks arrive at the end of the study area to help calculate the stream's velocity.

Record your results in a data table similar to the one below:

	Distance from start (ft)	Feature Code (Ri, E, H etc)	Number of Corks at Site
Site #1	_____	_____	_____
Site #2	_____	_____	_____
Site #3	_____	_____	_____
Site #4	_____	_____	_____
Site #5	_____	_____	_____
Site #6	_____	_____	_____
Site #7	_____	_____	_____

Add as many observation sites as you need by modifying the table.

Results

Now that you have gathered the data we can explore what happens to the corks as they move downstream and then we will develop an understanding for how the different stream features provide storage.

Movement Downstream

As the mass of corks moved down the stream, some of them got trapped in parts of the stream by various obstacles. You might be wondering if there is a pattern to how quickly the corks get trapped and how many floated to the end of the study area. Another question is: "Do the corks get trapped a few at a time, or is there one area that holds a lot of the corks?"

We can see a pattern and answer those questions by graphing the percent of corks that are floating downstream at various distances from the starting point.

First copy the distance from the start and the number of corks at each site from your data sheet.

	Distance from start (ft)	Number of Corks at Site
Site #1	_____	_____
Site #2	_____	_____
Site #3	_____	_____
Site #4	_____	_____
Site #5	_____	_____
Site #6	_____	_____
Site #7	_____	_____

Next, add the number of corks at each site to the number of corks at the previous site. This gives the total taken out of the water flow in each area. Do your calculations in the table below:

	Distance	Number of Corks At Site	Total Number of Corks Removed
Site #1	_____	_____	_____
Site #2	_____	_____	_____
Site #3	_____	_____	_____
Site #4	_____	_____	_____
Site #5	_____	_____	_____
Site #6	_____	_____	_____
Site #7	_____	_____	_____
TOTAL =			

Now we need to calculate the percent of corks that are still floating in the stream (in transit). For each site divide the total numbers of corks removed by the total number of corks and subtract that value from one, then convert that number to percent. Use the table below to calculate the percent of corks in transit for your stream.

	Total Number of Corks Removed	Percent in Transit
Site #1	_____	_____
Site #2	_____	_____
Site #3	_____	_____
Site #4	_____	_____
Site #5	_____	_____
Site #6	_____	_____
Site #7	_____	_____

To visualize the effect, graph the Distance vs. Percent in Transport.

STORAGE AREAS

Another observation that you made was that different features like riffles and leaf packs trapped different numbers of corks. You might wonder how each of the features compares to the others in their ability to trap corks. We can answer that question by graphing the percent of corks trapped by each of the stream features.

First, copy the data for each feature and how many corks are trapped at each feature.

	Feature Code (Ri, E, H etc)	Number of Corks at Site
Site #1	_____	_____
Site #2	_____	_____
Site #3	_____	_____
Site #4	_____	_____
Site #5	_____	_____
Site #6	_____	_____
Site #7	_____	_____

Now, we will calculate what percent of the corks are trapped at each site. Simply divide the number of corks at each site by the total number of corks and convert your answer to a percent.

	Feature Code (Ri, E, H etc)	Number of Corks at Site	Percent trapped at each site
Site #1	_____	_____	_____
Site #2	_____	_____	_____
Site #3	_____	_____	_____
Site #4	_____	_____	_____
Site #5	_____	_____	_____
Site #6	_____	_____	_____
Site #7	_____	_____	_____

Finally add up the percents if any features have more than one occurrence. This will give you the total percent for the features.

Feature Code	Total Percent trapped at each site
T	_____
Ri	_____
H	_____
Ro	_____
DD	_____
IT	_____
E	_____
Ed	_____
LP	_____

To visualize how each feature contributes to the overall storage in a stream, draw a bar graph with the different features on the "X" axis and the percent of corks stored at each site on the "Y" axis.

Your teacher will provide you with some [discussion questions](#) based on the results of this exercise.