NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

A 'DAY IN THE LIFE' OF THE HUDSON & HARBOR
DATE_____
http://www.ldeo.columbia.edu/dayinthelife

Please immediately submit fish, salinity and D.O. data directly online at the following url. https://tinyurl.com/2018DITL

NEXT please fax, email or send the <u>full set of sampling data (including fish, salinity and DO)</u> as noted in the following directions to Margie Turrin! Thank you!

PLEASE INCLUDE THIS COVER SHEET WITH YOUR SUBMITTAL
- **Do all or some of these tests**
- **Support activities are at the website link above**
- **Please submit your results ASAP**
- **Include this cover sheet with your data**

Send to Margie Turrin (845-365- 8156 (fax) or e-mail mkt@ldeo.columbia.edu) within 24-48 hours of collection! Questions? 845-365-8494.   THANK YOU!

<u>RECORDING SHEET I - BACKGROUND INFORMATION.</u>

1. Site contact person_____

   Organization_____

   Street_____

   City_____State____Zip_____

   phone_____fax_____email_____

2. School/group name_____District_____

   Name of teacher/group leader_____

   Street_____

   City_____State_____ Zip_____

   phone_____fax_____email_____

   Number of school students_____   Number of Adults_____

   Student grade level & course if applicable _____

3. Where are you sampling. Please be as specific as possible.
(Example: swimming beach, Kingston Point, City of Kingston, Ulster County.)

_____

4. If you know your location in River Miles please include it. (The Battery at the southern tip of Manhattan is River Mile 0; the Federal Dam at Troy is River Mile 153.)
River mile _____

GPS Latitude_____ Longitude_____
If you have a way to determine the latitude and longitude of your site, enter that here.

DITL Surroundings Data: Name_____ Date_____ Location_____

Examine your sampling site. You will describe the site and any plants in and around your collection area. Include plant materials growing in the water, as well as along the edge of the water.
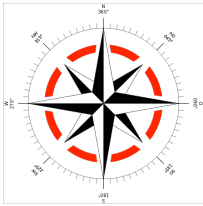
 1. Sketch your sampling site. Be sure to include a compass rose showing N/S/E/W and locate the River on your sketch, and note your sampling site.

2. **Land type** around your sample site? Check all that apply.	__Pier __Grassy __Forested __Parking Lot
3. **Surrounding land uses as percentage** (for example 50% is half the usage)	____ Urban/residential ____Forested ____ Industrial/commercial ____Beach ____ Other_____
4. **Describe the shoreline - check** percentage below and then all that apply in next column: ____Sandy ____ Muddy ____Rocky	__Beach __Covered in vegetation __Banks altered __RipRap (Large rocks) __Wood Bulkhead __Concrete Bulkhead __Pipe entering the water
5. **Describe the water area** at the sampling site	___Estimated Water Depth ___Bottom muddy ___Bottom sandy ___Bottom weedy ___Bottom rocky
6. **Describe the water itself**	____Calm ___Choppy
7. **Plants in the water (water chestnut, water celery etc.)** that you have identified & percent of total area covered. **IF NONE please check None.**	% _____ Plant_____ % _____ Plant_____ % _____ Plant_____ % _____ Plant_____ _____No Plants in the water area

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Observations

Note what you see in the area; are there bits of brick on the ground? lumps of coal? water chestnut seeds (devil's heads), shell pieces or full shells? Crab shells? Is it overgrown?

Is there anything about your site that you think might have any "impact" on your data today?

What else do you see? Birds? Animals? Butterflies? Dragonflies? What else?

The river is used for business and pleasure. Record how it is being used.

8. **Commercial traffic**: Record any <u>large boats, tugs, or barges</u> traveling on the Hudson. Please record the name and color! A loaded barge is full of cargo and rides lower in the water than a light one.

Time: name   color   North or Southbound   loaded or light
_____

Time: name   color   North or Southbound   loaded or light
_____

Time: name   color   North or Southbound   loaded or light
_____

9. **Recreational Traffic:** List recreational vessels you see on the Hudson (sail, speedboats)

Time: name   color   North or Southbound
_____

Time: name   color   North or Southbound
_____

Time: name   color   North or Southbound
_____

DITL Physical Conditions Data: **Name**_____ **Date**_____ **Location**_____
(weather, tides, currents)

1. **Location**: We will be comparing data with other groups along the Hudson, so it is important to note our exact location. Location Name _____
Using your Hudson River Estuary map, give your location in *river miles*: _____ and if possible
GPS Latitude:_____   GPS Longitude: _____

2. **Tides**: Tides cause the water of the Hudson River to rise and fall due to the gravitational pull of the sun and the moon. Tides can be measured over time with a **Tide Meter Stick**, or another marker to see if the water is rising, falling, or staying the same. First record the time, then check the water level using your measuring stick or tape. Check the stick again regularly (every 15 to 30 minutes) and record. *if on a dock measure down from the dock	Technique: _____Tide Stick _____Dock to Water *Circle Ebb(E) /Flood (F) or Still (S) for each Start time: _____Water height in cm.____ E F S Check time: _____ Water height in cm.____ E F S Check time: _____Water height in cm.____ E F S Check time: _____Water height in cm.____ E F S Check time: _____Water height in cm.____ E F S Check time: _____Water height in cm.____ E F S Check time: _____Water height in cm.____ E F S
3. **Currents**: Currents record the direction of water movement. A current are named for how they flow. **Record: Ebb** or **Flood** or **Still**: • *Ebb*, a current moving downriver • *Flood* a current moving upriver • *Still* no measurable movement in the water Toss an orange or a solid stick as far as you can out into the river and watch to see which way it moves. Time it for 30 secs and record, then divide by 30 to get cm/sec of movement. *To determine knots: measure distance orange or stick travels in 30 secs. Divide by 30 for cm/sec and then divide by 51.4 for knots. The formula for knots is (cm/sec)/51.4	Time: _____ Circle: ebb - flood – still __Cm/30secs___Cm/sec ____Knots* Time: _____ Circle: ebb - flood – still __Cm/30secs___Cm/sec ____Knots* Time: _____ Circle: ebb - flood – still __Cm/30secs___Cm/sec ____Knots* **Record**: Could anything about the shoreline cause the current near shore to flow in a different direction than the current in the middle of the Hudson?
4. **Air Temperature**: How to convert: $°C = 0.556 \times (°F - 32°)$ $°F = (1.8 \times °C) + 32°$	Time:_____ Air temperature: _____°F _____°C Time:_____ Air temperature: _____°F _____°C Time:_____ Air temperature: _____°F _____°C
5. **Wind speed:** If you use the Beaufort chart record Beaufort force #. If you use a wind meter record number registered AND units.	Time:_____ Beaufort # __ Wind Meter: __ Units___ Wind Direction (wind comes from) _____
6. **Cloud Cover**: Select from the scale provided a percentage of cloud cover.	Time: _____ __clear ____partly cloudy__mostly cloudy,__overcast (<25%) (26-50%) (51-75%) (>75%)
7. **Rain (Precipitation) Today & Weather for the past 3 days:** Rain can affect our readings as can extreme changes in temperature over a short period. Record weather today and for the last 3 days.	Time: _____Rain ____ If yes how steadily did it rain? _____ Briefly describe the weather for the last 3 days: Rain, wind, unusual temperatures?_____

DITL Turbidity Data Name_____ Date_____ Location_____

Turbidity is a cloudiness of the water. Estuaries like the Hudson River are naturally turbid. Turbidity can be caused by phytoplankton and zoo planktons, bits of dead plants, salt, sand and mud. Light can penetrate farther in clear water than it can in turbid water which means plant and phytoplankton growth is controlled by the amount of turbidity.

Measure the turbidity at your site on the river – be careful if you are collecting water for a site tube NOT to step in the water as you collect it or you will add turbidity to your sample.

   Time: _____   Circle equipment used

1)Secchi disk (cm)   2) Long Sight tube (cm)   3) Short Site Tube (JTU)

4)Turbidimeter (NTU)

_____   _____   _____   _____
      Reading 1   Reading 2   Reading 3   Average

(Make sure that you **RECORD** the correct unit for the piece of equipment that you are using; feet, cm, meters, JTU's or NTU's)

Observations
How turbid to you think your water is? How would you describe it in words?

DITL Chemical Description   Name_____Date_____ Location_____

pH – **Expected Range - Most fish prefer 6.5 to 8.5 (there are NO UNITS with pH).** Measured on a scale from 0-14 pH tells us how acidic or basic (alkaline) a solution is. Neutral is 7.0, acidic <7 and basic >7.

BE SURE TO MARK THE EQUIPMENT YOU ARE USING FOR THE TEST:
Test Strips_____   color match test kit _____   meter _____   pH pen _____

Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____
Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____
Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____

Salinity **- Expected Range - ~40 ppm in freshwater section up to 30,000 ppm (30 ppt) in harbor.** Measures the amount of salts in the river. The listed instruments measure salinity in 'parts per million' (ppm) in the fresher sections and 'parts per thousand' (ppt) in the saltier sections. Full ocean water is 35 ppt. In the freshwater 'quantabs' only measure chloride so we convert the readings later to compare the full river.

BE SURE TO MARK THE EQUIPMENT YOU ARE USING FOR THE TEST-units are listed by equipment:
Quantab strips/Circle: High OR Low range)   meter/probe   refractometer   hydrometer
Quantab unit_____ (ppm chloride) _____   (PPT) ____   (PPT) _____   (PPT) _____

Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____ (note correct units)
Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____ (note correct units)
Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____ (note correct units)

Water temperature Expected High Temperature in October would be ≤ 25°C

Record water temperature in degrees Celsius or degrees Fahrenheit. To convert between the two:
$$°C = 0.556 \times (°F - 32°) \qquad °F = (1.8 \times °C) + 32°$$

* Time: _____ water depth (feet):_____
Reading 1: _____ °C _____°F   Reading 2: _____ °C _____°F   Average: _____ °C _____ °F

* Time: _____ water depth (feet):_____
Reading 1: _____ °C _____°F   Reading 2: _____ °C _____°F   Average: _____ °C _____ °F

* Time: _____ water depth (in feet): _____
Reading 1: _____ °C _____°F   Reading 2: _____ °C _____°F   Average: _____ °C _____ °F

Alkalinity, a measure of the water buffering capacity, is recorded in mg/L. Please record method of measuring. _____ (Expected range would be 20-120 mg/L)
Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____

Nitrates, recorded as mg/L. Please record your method of measuring. _____

Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____

Phosphates, recorded as mg/L. Please record your method of measuring. _____

Time: _____   Reading 1: _____   Reading 2: _____   Reading 3: _____

Dissolved oxygen (DO)   Healthy Expected Range 5.0-11.0 mg/L

The amount of dissolved oxygen in the water is one of the most important factors in telling how healthy that ecosystem is. Many variables affect DO, including temperature, time of day, presence of plants, and wind conditions. DO measurements are given in mg/l and as percent saturation. 100% saturation means that the water cannot hold any more oxygen at that temperature. If more oxygen is added (such as by a high wind or a waterfall) the oxygen will go from the water into the air. **Select equipment used for the test:**

   meter _____   drop count kit _____   other _____

    For test temperature use average from water temperature (#3) above. For % saturation calculation use chart on bottom of page.

    * Time: _____ Water temperature in °C _____   DO (mg/l) or PPM: _____ % saturation _____

    * Time: _____ Water temperature in °C _____   DO (mg/l) or PPM: _____ % saturation _____

    * Time: _____ Water temperature in °C _____   DO (mg/l) or PPM: _____ % saturation _____

5. % Saturation of Dissolved Oxygen (DO) Healthy Expected Range 90% or above
Chart Source: http://waterontheweb.org/under/waterquality/oxygen.html

For a quick and easy determination of the percent saturation value for dissolved oxygen at a given temperature, use the saturation chart below. Locate your DO reading on the bottom scale (ppm equals mg/L). Locate the temperature of the water in degrees C on the top scale. Draw a straight line between the temperature and DO. The % saturation is the value where the line intercepts the saturation scale.
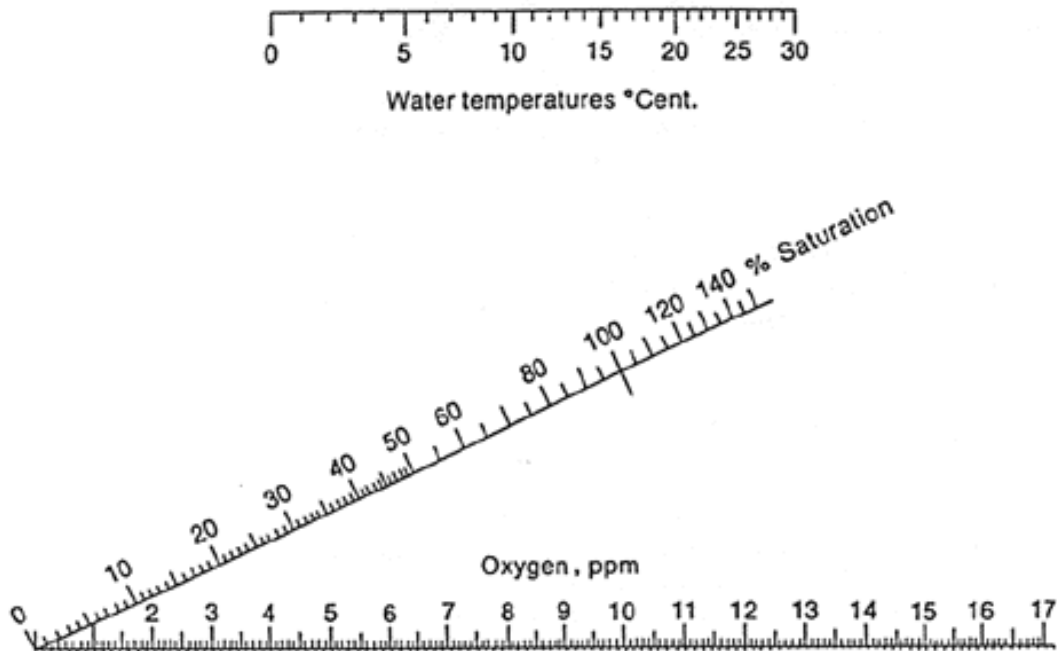
DITL Fish and Macroinvertebrates Name_____Date_____ Location_____
Please use separate sheet for each fishing method/seine OR note what was caught in each seine by noting seine #. Fish can be tricky to ID. Our goal is careful fish IDs. The image of the Atlantic Silverside is in the format we ask you to use when sending photos for confirmation of fish ID – full body, head left. We LOVE to ID fish so please send photos from the field and we will get right back to you!! OR collect photos to send in with your data!

TIME:_____   LENGTH OF NET:_____
FISHING METHOD: Seine___Traps___ Rod & Reel___Electro-Shocking___ Trawl___ Other (Explain)___

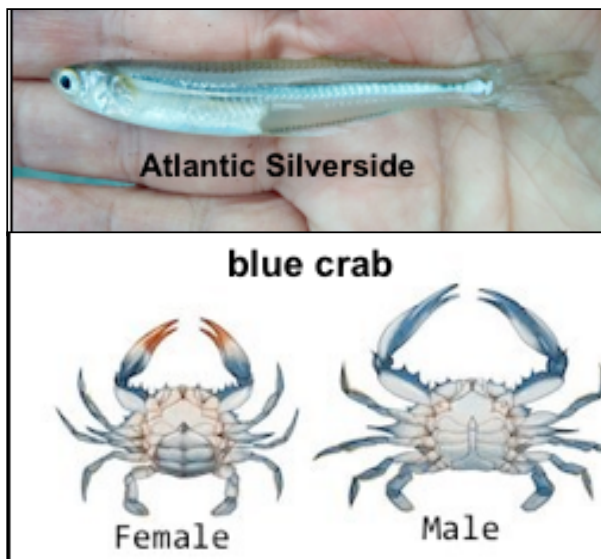| Fish Species:	# of individuals:	Size of largest (unit)
1._____	_____	_____ ____
2._____	_____	_____ ____
3._____	_____	_____ ____
4._____	_____	_____ ____
5._____	_____	_____ ____
6._____	_____	_____ ____
7._____	_____	_____ ____
8._____	_____	_____ ____
9._____	_____	_____ ____
10._____	_____	_____ ____

MACROINVERTEBRATES:
COLLECTION METHOD: Seine___ Kick Net___ Trap___ Eel Mop___Other (Explain)_____
(For crabs include species (blue, mud, Asian, etc.) & sex (M/F)

1._____#_____

2._____#_____

3._____#_____

4_____#_____

5._____#_____

6._____#_____

7_____#_____

8._____#_____

9._____#_____

Atlantic Silverside

blue crab
Female   Male

If your group can compute **Catch Per Unit Of Effort** please record this here.
Seine #____ Time_____ Catch Total_____ Length of Pull_____ Computed CPUE_____

DAY in the LIFE PUSH CORE SEDIMENT LOG

GRAB ID#	Site Name		DATE	FORM COMPLETED BY:	
				GROUP #	
TIME	**LATITUDE**	**LONGITUDE**		**WATER DEPTH**	**LOCATION**

	Yes	No			Descriptors - Please note additional observations	
H₂S smell					H₂S smells of rotten eggs, suggesting anaerobic bacteria	
Oil					Oil creates a slight smell, a slickness and a sheen	
Oxidized top*					*oxidation (reaction with oxygen) creates a distinctly lighter colored layer of sediment.	
					estimate dimensions of oxided layer, etc. and draw below	
	Absent	**Rare**	**Common**	**Abundant**	**Additional Comments**	
Clay					very fine material - grey color & rich dense feel	
Mud					smooth feel between fingers - brown color	
Sand					gritty feeling between fingers	
Gravel					pea sized pieces of stone	
Pebbles					pieces of stone larger than pea	
Leaves						
Wood						
Shells Oysters (dead/alive?)						
Freshwater mussels (except zebra)						
Zebra mussels						
macroinvertebrates						
Brick						
Coal						
Slag					industrial byproduct - chunky look, light, air filled	
Living vegetation:						
Length of Core:					Length of Oxidized core top (if present):	
If Bagged - Number On Core Collection Bag						

Sketch of your core below with measurements for each section & total core (be sure to label the top and bottom):

<--BOTTOM   TOP -->