



ACTION: Fish Market Survey Data Collection

Suggested Timing: 20 minutes plus time outside of class

This is the core activity for the Fish Market Survey Action Project. Students will collect samples of fish from local grocery stores or fish markets and then prepare the samples for shipment to the Centre for Biodiversity Genomics in Guelph, Ontario.

Prior Knowledge and Skills

- Ability to follow directions on a mobile app
- Ability to collect and input accurate information

Success Criteria

- Successful submission of samples and data using mobile app

LifeScanner (video on CurioCity)

Class Sampling Plan

Fish Sampling Protocol (PowerPoint)

Letter to Parents/Guardians

BLM A1: Student Sample Collection Checklist

Part 1: Planning

- Show students the [LifeScanner](#) video On CurioCity. This video explains the functionality of the app and the basics of sample collection and data entry.
- Explain to the students that, like in the articles in Minds-On 1: The Fish Hook, they will be going to local grocery stores or fish markets to collect samples of fish which will be sent to a lab to have their DNA sequences (barcodes) identified.
- As a class, you will need to determine who is going to collect samples (there are 4 sample vials in each *LifeScanner* kit) and what fish samples they are going to collect. Ideally the families of the students collecting fish are willing to eat the fish (not used in the sample) in order to minimize food wastage. As well, the locations for sample collection (grocery stores and fish markets) should be determined so that there is good coverage of the retail outlets in your area. Photocopy and give each student that will be collecting samples a **Letter to Parents/Guardians** information letter to take home.
- Provide each student who will be collecting samples with a copy of the **BLM A1: Student Sample Collection Checklist**.
- Have each student that will be collecting samples choose the location he/she wishes to go to. Record these choices on the **Class Sampling Plan**. The students should also write this information at the top of their **Student Sample Collection Checklist** pages. Leave the **Species** column blank for now (will be filled out after the samples are barcoded).
- Each student that will be collecting samples will also need to decide which type of fish (see the list at the bottom of the **Class Sampling Plan**) he/she wants to sample. Ideally all four samples will be of different types of fish from different locations.
- Before students go off to collect samples, show them the **Fish Sampling Protocol** PowerPoint presentation.

The fish species to be collected are:

1. Cod
2. Swordfish
3. Sockeye Salmon
4. King Salmon (also called Chinook Salmon)
5. Red Snapper
6. Snapper
7. Alaskan Halibut
8. Pacific Halibut

Part 2: Sample Collection

- For the sample collection, students will need to go to the stores they selected to get the fish species they chose. The fish can be fresh raw fish (such as from the fresh fish counter) or frozen raw fish, but in either case, the fish should not be breaded or have any spices or sauce. The fish should not be canned or in retort packaging (vacuum-packaged in foil pouches).
- While it is still in its original wrapping or packaging or in its original store display; the students will need to record data about the samples and where they were collected using the *LifeScanner* app. The app is free and can be downloaded from the iTunes store.
- To prepare the fish to bring to school, each student will need to cut off one small (pea-sized) piece of his/her fish and put it into the vial. Once this is done, the students can bring their samples back to school.



Part 3: Shipping the Samples

- Once you have all of the samples, ship back in the padded postage-paid return envelope. The samples will be sent to the Centre for Biodiversity Genomics at the University of Guelph for analysis.

Extensions

- If equipment is available, the class could bring in extra fish and conduct their own DNA extraction, PCR and gel

ADDITIONAL INFORMATION

- <http://www.dfo-mpo.gc.ca/fm-gp/sustainable-durable/index-eng.htm> (Accessed Sept. 9, 2016)
This part of Fisheries and Oceans Canada explains its role in providing Canadians with sustainable fisheries and sustainable aquaculture, and healthy and productive aquatic ecosystems. They also describe their role in Certification and Traceability.
- <https://www.msc.org/> (Accessed Sept. 9, 2016)
The Marine Stewardship Council (MSC) is an international non-profit organization that sets standards, does outreach, conducts education programs, works with fisheries, and informs the public about issues around sustainable fishing and seafood.
- <http://www.asc-aqua.org/> (Accessed Sept. 9, 2016)
The Aquaculture Stewardship Council (ASC) is a non-profit organization that with aquaculture producers, seafood processors, retail and foodservice companies, scientists, conservation groups and consumers to recognize and reward responsible aquaculture through the ASC seafood label., to promote best environmental and social choice when buying seafood and to contribute to transforming seafood markets towards sustainability.
- <http://www.seachoice.org/> (Accessed Sept. 9, 2016)
Launched in 2006, SeaChoice was created to help Canadian businesses and shoppers make the best seafood choices. Working in collaboration with the Monterey Bay Aquarium's Seafood Watch program (see below), SeaChoice undertakes science-based seafood assessments, provides resources for consumers, and supports businesses through collaborative partnerships.
- <http://www.seafoodwatch.org/> (Accessed Sept. 9, 2016)
The Monterey Bay Aquarium Seafood Watch® program helps consumers and businesses make choices for healthy oceans. Their recommendations indicate which seafood items are "Best Choices," "Good Alternatives," and which ones you should "Avoid."
- <http://www.oceanwise.ca/> (Accessed Sept. 9, 2016)
Ocean Wise™ is a Vancouver Aquarium conservation program created to educate and empower consumers about the issues surrounding sustainable seafood. The program works directly with restaurants, markets, foodservices and suppliers to ensure they have the most current scientific information regarding sustainable seafood and to help them make ocean-friendly buying decisions.
- <http://www.oceanwise.ca/news/ocean-wise-iphone-app> (Accessed Sept. 9, 2016)
The free Ocean Wise™ iPhone app allows users to view up-to-date seafood recommendations, search and browse different seafood species and locate nearby Ocean Wise restaurants, markets and eateries.

Videos

- <https://vimeo.com/103143018> - Life Scanner - How does it work? (3:10 min.)