



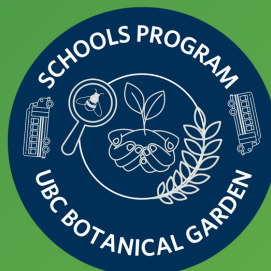
UBC
Botanical
Garden

Educational
Resource
For Teachers

Apple Diversity Hybrid Workshop K-7 and 8-12

2026

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Schools Program Coordinator





1 - Apple Dissection

Apple Explorers

K-7/8-12

Activity 1 / group

Apple Dissection

Duration: 50 min



Introduction:

In this hands-on activity, students become Apple Explorers, investigating the inner structure of apples to deepen their understanding of plant anatomy and biodiversity. Through careful observation and dissection, learners will explore the distinct parts of an apple, discover how each part contributes to the apple's growth and reproduction, and reflect on the diversity found even within a single fruit.

This lesson supports inquiry-based learning and scientific observation skills, while also connecting to broader themes of plant biology, food systems, and environmental awareness.



Students will:

- Observe and describe the external features of an apple (color, texture, shape)
- Dissect the apple to identify and classify its internal parts (e.g., stem, skin, core, seeds, flesh)
- Use scientific vocabulary to label and draw the apple's anatomy
- For older students, explore more detailed botanical terms such as exocarp, mesocarp, endocarp, and pedicel



Materials:

- scissors
- apple
- student scalpel or knife
- peeler
- magnifying hand lenses



Instructions:

1. Cut the 5 words on the bottom and label the Apple Diagram.
2. Observe the apple before cutting and note the color and texture.
3. Cut the apple in half from top to bottom (vertical cross-section).
4. *Separate the 5 parts of the apple (Stem, Core, Skin, Flesh, Seeds)
5. Classify the components of the apple and place them on its space on the Apple Anatomy worksheet.
6. Draw a half apple illustrating each part and label them.



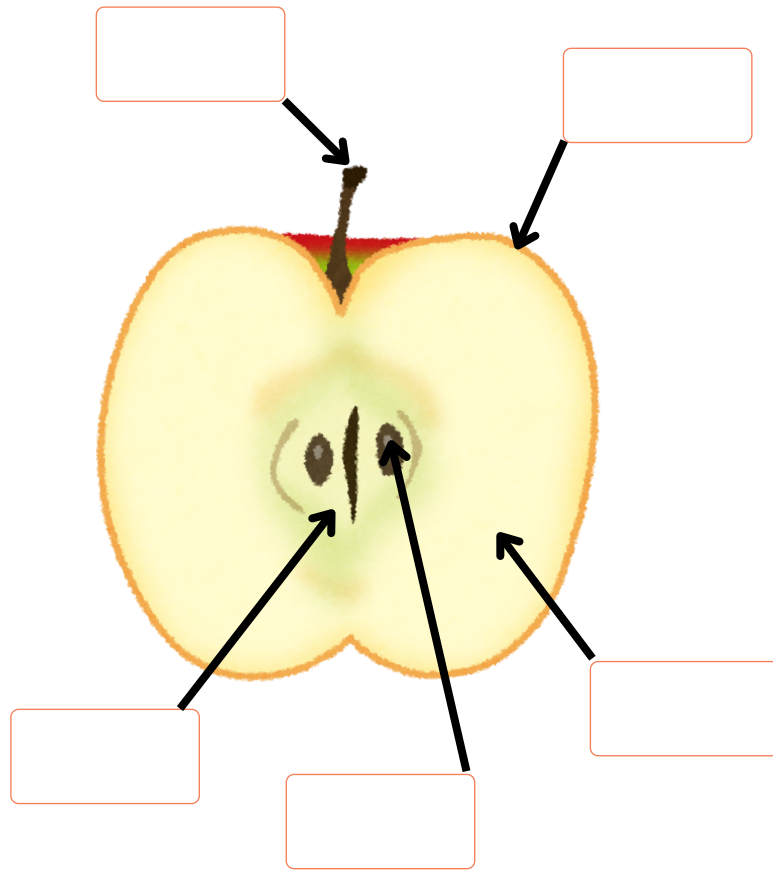
*Modification for Secondary students:

Step 4. Separate the parts of the apple: Pedicel (stem), Exocarp (skin), Sepals, Stamens, Styles, Mesocarp (flesh), Endocarp (core), and Pip (seeds)



UBC
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Apple Diagram



Seed

Flesh

Core

Skin

Stem



UBC
Botanical
Garden

Apple Anatomy

Seed

Skin

Core

Flesh

Stem



2- Apple Under a Microscope

Apple Explorers

8-12

Activity 2/ individual

Apple under a microscope

Duration: 50 min



Introduction:

In this individual activity, students will explore the microscopic world of apples and apple tree leaves to uncover the intricate structures that support plant life. Using microscopes and prepared slides, learners will observe and document key cellular components, gaining a deeper understanding of plant anatomy, function, and diversity.

By examining apple leaves and fruit slices under magnification, students will identify features such as cell walls, chloroplasts, and vacuoles in leaves, and ovaries and anthocyanin pigments in the fruit. This activity encourages scientific inquiry, precision, and observation—skills essential to biology and environmental science.



Students will be able to:

- Prepare and examine microscope slides of apple leaves and fruit slices
- Identify and describe key plant cell structures: cell walls, chloroplasts, vacuoles, and fruit ovaries
- Recognize the presence and function of anthocyanin pigments in apple skin
- Understand how microscopic structures relate to plant growth, reproduction, and biodiversity
- Practice safe and accurate use of scientific tools and techniques



Materials:

- Microscope (40X to 100X lens)
- Red apple fruit slice with skin and/or apple tree leaves
- Plastic or glass clean slide
- Coverslip
- Scalpel
- Forceps
- Pipette dropper
- Paper towel
- A glass with water
- Toothpick



2- Apple Under a Microscope cont'd

Apple Explorers

8-12

Activity 2/ individual

Apple under a microscope

Duration: 50 min



Instructions:

STEP 1

1. Prepare the samples from the leaves and fruit slices. To be able to see through it the slices must be thin, and you should use the bottom lighting of the microscope.
2. Carefully use the scalpel to cut thin slices of the leave, skin and fruit.

STEP 2 Making the slides

3. Put a drop of water on a clean plastic slide. 2. Add a drop of whatever on top of your sample (thin layer of apple leave, fruit and skin) and mix with a toothpick. 3. Carefully place a coverslip on top of the drop. Start at one end and slowly lay down the coverslip to avoid making giant air bubbles in your sample. 4. At the end of the lesson, rinse and save used slides and coverslips separately for re-use.

STEP 3

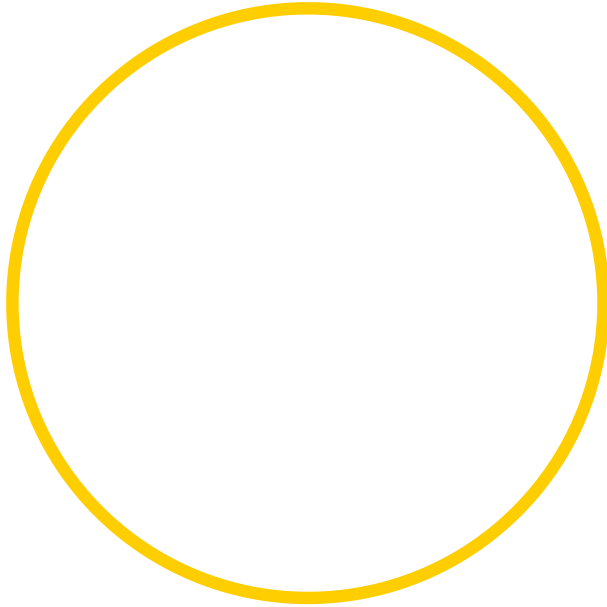
4. Observe the leave structure under 40x to 100x magnification. Find the cells walls, chloroplasts, and vacuoles.
5. Observe the fruit skin under 40x to 100x magnification. Find the red pigments, anthocyanin.
6. Observe the fruit flesh under 40x to 100x magnification. Find the ovaries.



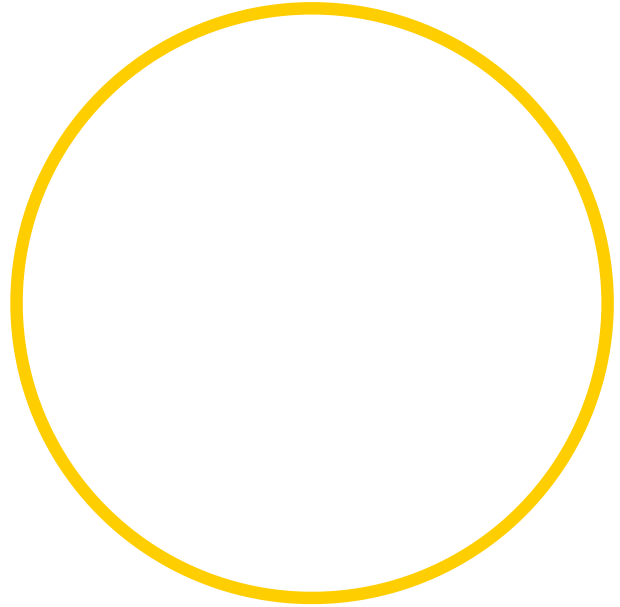
Apple under a microscope



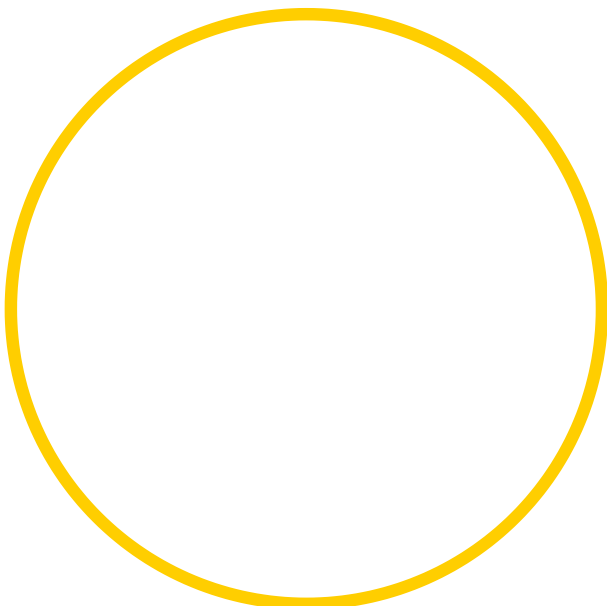
Draw the samples observed under the microscope in each space. Color the structures seen, and try to identify them.



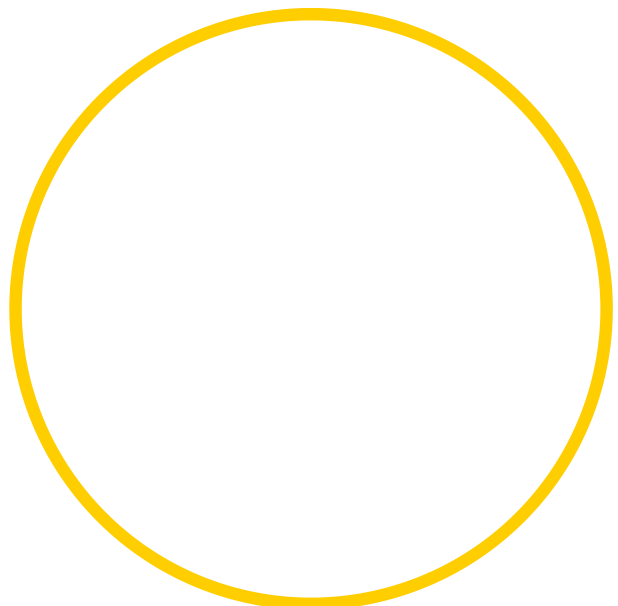
Leaf cell walls



Leaf vacuoles and chloroplasts



Flesh ovaries



Skin Red pigment



3-Orchard Walk

Apple Ambassador
K-7/8-12

Activity 3 / individual

Orchard Walk

Duration: 50 min

Adaptations for K-3

Classrooms:

Teachers lead a full-class demonstration of the online tool using a shared screen.



Introduction:

This interactive outdoor and digital activity invites students to explore plant characteristics and biodiversity. Students will begin by closely observing and sketching a crabapple plant, focusing on its leaf shape, arrangement along the stem, flower structure, and overall proportions. They will then use the UBC Botanical Garden's Garden Explorer tool to investigate apple species growing in the garden and complete a plant identification card.



Note:

See the native crabapple identification photo (herbarium sample) and the taxonomic classification on the attached page. It is also available online at the link [Beaty Museum Collections](#).



Materials:

- Computer or mobile device to access [UBC Botanical Garden Garden Explorer](#) tool



Instructions:

1. Sketch the crabapple plant. Observe the leaf shape, distribution from the main stem, flower shape, and relative proportions.
2. Visit the UBC Botanical Garden Website - Garden Explorer page at ubc.gardenexplorer.org.
3. Use the search tool to find apple species at UBC Botanical Garden. Type "apple" in the common name search box or "malus" in the genus search box.



3-Orchard Walk cont'd

Apple Ambassador
K-7/8-12

Activity 3 / individual

Orchard Walk

Duration: 50 min



THE UNIVERSITY OF BRITISH COLUMBIA

UBC Botanical Garden

Garden Explorer

Search
Map
Browse
Features
Tours

Explore UBC Botanical Garden's Plant Collections!

The mission of UBC Botanical Garden (est. 1916) is to assemble, curate and maintain a documented collection of temperate plants for the purposes of research, conservation, education, community outreach and public display.

This site is intended to give information on the plants within the Garden's collections and grounds. For information on UBC Botanical Garden as a visitor destination, please visit [UBC Botanical Garden's main web site](#).

Download a PDF version of the garden map

UBC Botanical Garden has significant wild-collected collections of:

- *Acer* (maples) from Europe, Asia and North America
- montane flora of the world
- *Clematis* from Asia
- climbing plants
- *Cornus* (dogwoods) from Asia and North America
- ferns & fern allies
- Lardizabalaceae (zabala fruit family) from Asia

Search

Common or scientific name
Genus ☐ common names

Family ☐ common names
Location

Provenance
Accession

Search
Reset

4. Click on the names of the different apple species you would like to learn more about. Observe their name, taxon, and where they are located in the garden.

1 - 20 / 34
Next

Malus asiatica

- Rosaceae
- Chinese pearleaf crabapple

Malus baccata

- Rosaceae
- Siberian crabapple

Malus 'Brownlee's Russet'

- Rosaceae

Malus 'Calville Blanc d'Hiver'

- Rosaceae

Malus domestica 'Akmene'

- Rosaceae
- apple

Malus domestica 'Blushing Susan'

- Rosaceae
- apple

Malus domestica 'Co-op 29' Sundance™

- Rosaceae
- apple

Malus domestica 'Co-op 33' Pixie Crunch™

- Rosaceae
- apple

Malus domestica 'Dayton'

- Rosaceae
- apple

Malus domestica 'Duke of Devonshire'

- Rosaceae

Malus domestica 'Egremont Russet'

- Rosaceae
- apple

Malus domestica 'ETTER 14-9'

- Rosaceae
- Pink Pearmain apple

- *Magnolia* from Asia and North America
- *Rhododendron* from Europe, Asia and North America
- *Sorbus* (mountain ash) from Asia and North America
- *Styracaceae* (storax family) from Asia and eastern North America
- vascular plants from rainforest, Garry oak and alpine ecosystems of British Columbia

In addition, the Garden has excellent collections of cultivated taxa of *Magnolia*, *Rhododendron*, alpine flora of the world, and bamboos.

Please note: to help researchers and students, this site includes some native on-site flora, weeds, and mosses in addition to the plants cultivated in the Garden. It does not include nursery plants. If you are looking for additional information, please contact garden.records@ubc.ca.



3-Orchard Walk cont'd

Apple Ambassador

K-7/8-12

Activity 3 / individual

Orchard Walk

Duration: 50 min

5. After exploring the apples trees in the UBC Botanical Garden, choose one species to complete your apple plant ID (Taxon) card:

UBC Botanical Garden Garden Explorer

Search Map Browse Features Tours Taxon

Taxon

Malus baccata

Scientific name: *Malus baccata* (L.) Borkh.
Common name: Siberian crabapple
Family: Rosaceae (rose family)
Order: Rosales
Distribution: e Asia
Life form: Tree
Leaf Persistence: Deciduous
Edibility: Edible fruit.
Links: Flora of China

Locations

1: Asian Garden • Accession: 1982-0498 • Origin: China • Provenance: Wild • Collection: SL798173

Back

 My apple ID at UBC Botanical Garden

Scientific name: _____

Common name: _____

Family: _____

Order: _____

Location: _____



Native Crabapple ID: Herbarium Sample

The Crabapple ID

Kingdom Plantae
Phylum Tracheophyta
Class Magnoliopsida
Order Rosales
Family Rosaceae
Genus Malus
Specific epithet fusca

Photo and taxon from
collections.beatymuseum.ubc.ca/specimen





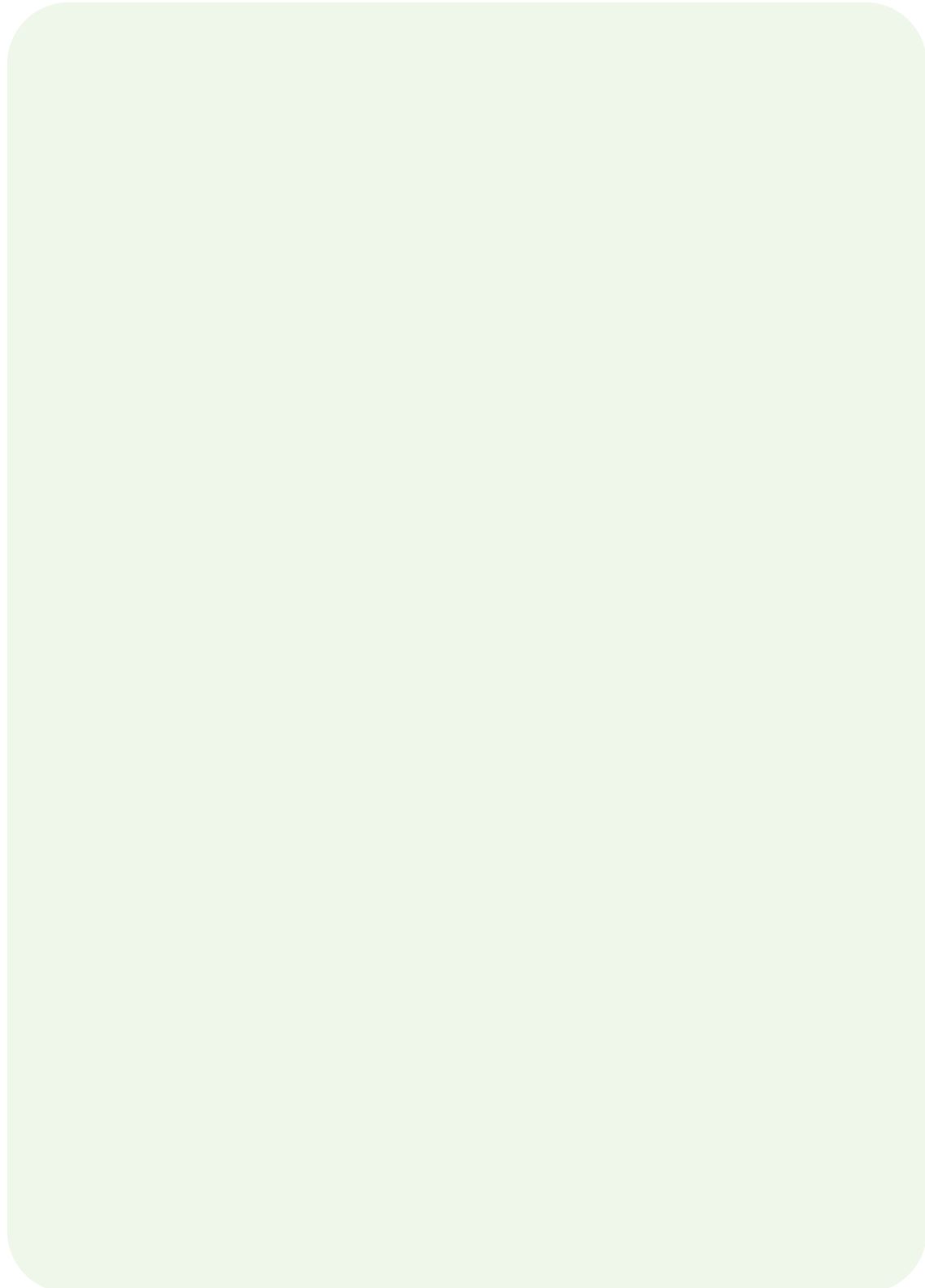
UBC
Botanical
Garden

Apple Ambassador
K-7 / 8-12

The native Crabapple ID Sketching

The Crabapple ID

Kingdom	Plantae
Phylum	Tracheophyta
Class	Magnoliopsida
Order	Rosales
Family	Rosaceae
Genus	Malus
Specific epithet	usca





4- Apple ID BioBlitz

Apple Ambassador

K-7/ 8-12

Activity 4 / group

Apple ID BioBlitz by iNaturalist

Duration: TBD field walks

Adaptations for K-7:

Students must be 13 years or older to create an iNaturalist account. For K to 7 classrooms, teachers can manage the iNaturalist account and upload student photos, data, and observations.



Introduction

Teachers and students across Metro Vancouver are invited to become scientist ambassadors in a community-driven effort to celebrate and document apple diversity. This initiative responds to a national “call to action” to integrate native food plants and wild crop relatives—especially apples and berries—into education. These species hold deep cultural and ecological significance for Canada (Roulston et al., 2025; Migicovsky et al., 2022).

Aligned with BC Curriculum goals, this activity supports learning across subjects such as biodiversity, plant propagation, conservation, climate change, and Indigenous knowledge. It's a hands-on opportunity to explore your local environment, contribute to real scientific research, and deepen your connection to the land.

Become an Apple ID Explorer by helping map apple trees growing on school grounds and in surrounding communities. Using the iNaturalist platform, students and teachers will collect and share observations of apple trees—documenting their location, features, and diversity.

- Bioblitz Survey Dates: Since October 1-14, 2025

By participating, you'll help track apple biodiversity and propagation across Metro Vancouver, contributing to a growing community science dataset that supports conservation and education.



4- Apple ID BioBlitz cont'd



Learning goals:

- Nature observation and inquiry about apples trees, plant propagation
- Identify plant species, apple trees
- Analyse data, record and report
- Participate in the scientific community contributing to mapping apple trees in greater Vancouver area



Materials:

- Computer access
- Mobile device with camera
- Small notebook
- Pencil



Before you start:

- Teachers must be the steward of the class's data, as students must be 13+ for an iNaturalist account. Please review the [Educator's Guide](#).
- Elementary (K-7) classes should have one shared iNaturalist account through the teacher. Students can take photos on their personal devices to share with their teacher. Students should bring their notebook and a pencil on the field explorer walk, taking notes including the plant species, date, and location of observations.
- Secondary (8-12) students can have their own iNaturalist account (recommended to use a mobile phone with GPS). Each upload should have photos, observations, date, and the location of the nature sample. Students should consult their teacher about the data and photos before uploading to iNaturalist. Teachers are responsible for monitoring student activities and data.



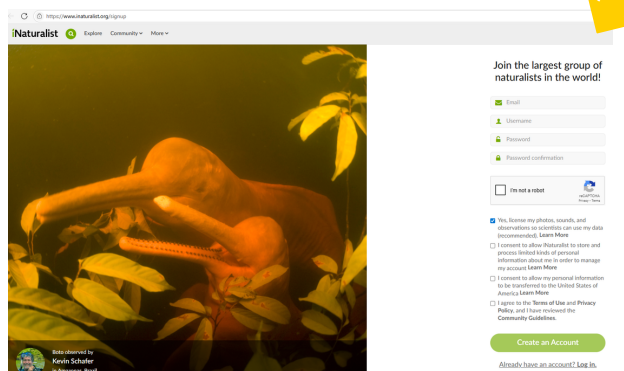
4- Apple ID BioBlitz cont'd



Instructions:

1. Teachers and secondary students:
2. Go to iNaturalist website and download the iNaturalist App in your phone and create an account.

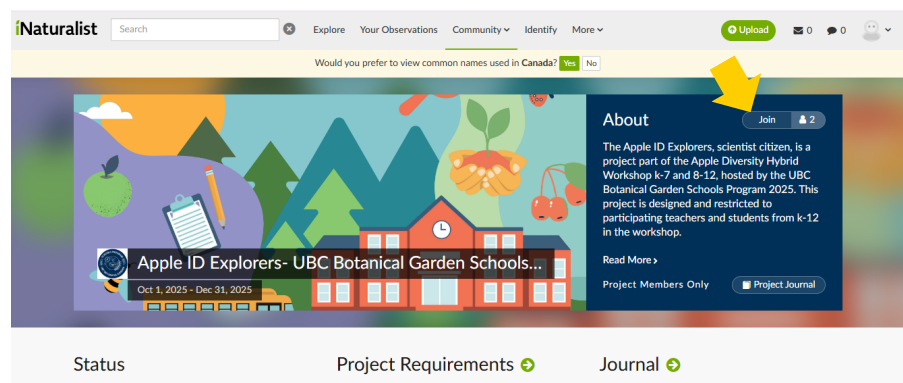
<https://www.inaturalist.org/signup>



4. Search for Apple ID Explorers- UBC Botanical Garden Schools Program 2025
5. Enter 'Apple ID Explorers'
6. Select :Apple ID Explorers-UBC Botanical Garden Schools Program 2025
Or select the QR Code below:



7. Select 'Join' in the top right of the screen





4- Apple ID BioBlitz cont'd

8. Read more about the Project, observe the rules and select the button 'Yes, I want to join'

About this Project

The Apple ID Explorers, scientist citizen, is a project part of the Apple Diversity Hybrid Workshop k-7 and 8-12, hosted by the UBC Botanical Garden Schools Program 2025. This project is designed and restricted to participating teachers and students from k-12 in the workshop.

The Schools Program has a mission to make nature-based learning accessible for students and to increase our impact in local school communities providing access to experiential and extended environmental ...more ↓

Project Curators



Rules for Adding Observations

- must be in taxon Malus
- must be observed in Greater Vancouver, CA, BC
- must have quality grades: research, needs ID, casual
- must be observed after 2025-10-01
- must be observed before 2025-12-31
- must have photos

Other

☒ Receive updates from this project

Receive updates about this project on your dashboard and in the daily updates email.

[Yes, I want to join](#) [Cancel](#)



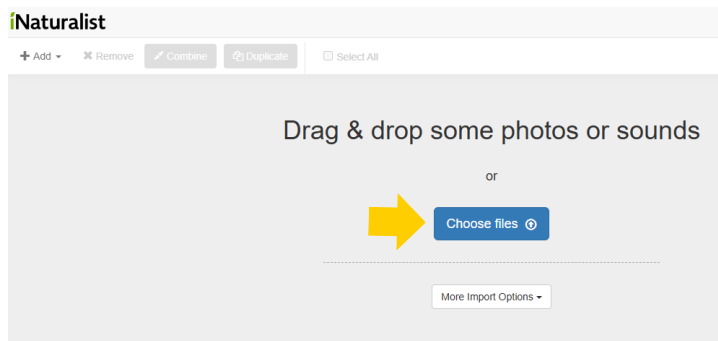
9. Start your journey as an Apple ID Explorer!

10. If you think you found an apple tree, use the Seek App to help you identify. Download using the QR Code below:



10. Take a well- focused photo from multiple views and parts of the plant. A photo of the entire apple tree, in addition to a photo of the leaves, fruit and or flowers if possible.

11. Click the  Upload button on the top right of your page.



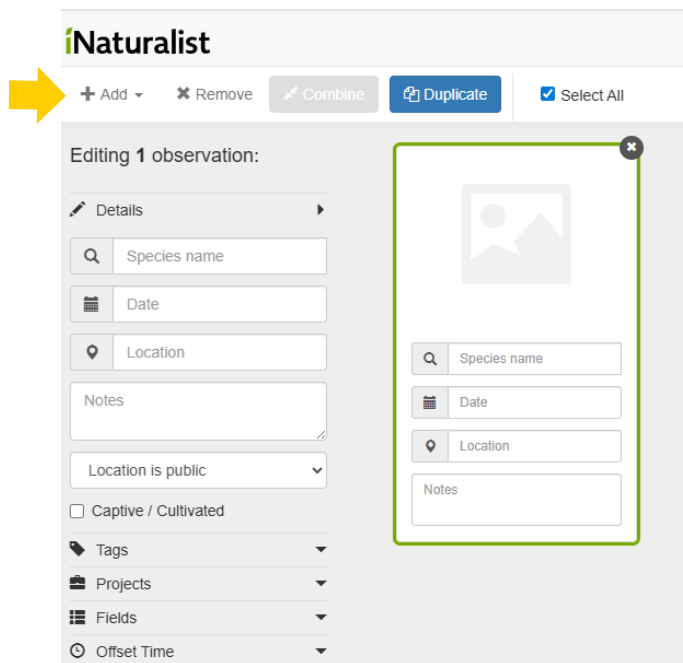
4- Apple ID BioBlitz cont'd

12. Upload your photos and enter the details of your observations, possible common or scientific name, date and location of your observation.

13. Submit your observation.

14. If you make your observation from the App using your phone and you are already joining the project, once you submit your observation it will go to the project automatically.

15. If you are submitting your observation without media or file, click +Add in the left top corner. Input the data annotations.



16. Check out our project page to see what other students are logging or contribute to your own observation. This project aims to help track our community science efforts as we engage with the diversity of apple species and ecosystems at Metro Vancouver.