**Bio-Blitz in the UBC Herbarium at the Beaty Biodiversity Museum**

**FACILITATOR LESSON PLAN**

**Background**

The UBC Herbarium contains nearly 700,000 specimens available for research and celebrated its centennial in 2016-17. We are one of the largest shared specimen-based databases in Canada and have partnered with many biological portals, including locally with E-Flora BC and BC Conservation Centre, globally with Canadensys and The Consortium of the Northwest Pacific Herbaria, and globally with GBIF, along with countless others.

A key goal of the Herbarium is to improve accessibility and accuracy within our 5 biological collections. One way to achieve this goal is to find out exactly what is in our collection. Though this collection has been tracked for 100 years, it has been by many different methods, and we find ourselves 100 years later not knowing exactly what we have.

**Bio-Blitz Project Goal**

The goal of this 2017 UBC Herbarium Bio-Blitz is to introduce the SCIE 001 undergraduate students to one of the largest dried plant collections in Canada, while they simultaneously contribute to the first ever inventory of our entire collection.

**Tutorial Dates related to the Bio-Blitz**

Session 1: Sept 12 (Tues) and Sept 14 (Thurs), 2-4pm; Sept 15 (Fri), 10am-12pm

Session 2: Sept 26 (Tues) and Sept 28 (Thurs), 2-4pm; Sept 29 (Fri), 10am-12pm

**Activity Overview**

**Location:** Beaty Museum Discovery lab

**Logistics:**

* 24-25 students: First: tour the museum
* Discovery lab: work in pairs (may have one group of 3). 12 groups total. Pairs rotate through 3 stations, each focused on one of the learning objectives (see below). Each pair completes a worksheet at each station.
* Each station duplicated (3 topics = 6 stations total). Each pair visits 3 stations, covering each topic once. Each station has two pairs (4 students total) at any given time.
* ~65 minutes total: 5 min intro, ~15 minutes per station (45 total), 10-15 min wrap.

**SESSION 1 LESSON PLAN: BEATY TOUR AND INTRO TO COLLECTIONS**

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| **COURSE:** Science One [SCIE 001] | **DATE:** September 12, 14, 15, 2017 |
| **BRIDGE:** TBD |
| **OBJECTIVES (Students):**1. Tour Beaty Biodiversity Museum and recognize role of the BBM in collections-based research and preserving a historical record of biodiversity.
2. Observe and measure variation within a single species, demonstrated using Beaty collections.
3. Brainstorm research questions using sample Beaty collections as inspiration.
4. Identify key information from specimen labels and recognize importance of good record keeping (and consequences of poor record keeping?)

**OBJECTIVES (Museum):*** Generate partial inventory of research collection [in week 2 of project].
* Demonstrate potential for research projects that collaborate with early and large-enrollment Biology Program courses.
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| **PREASSESSMENT:** 2-minute paper “What is the Beaty Biodiversity Museum?”  | **MATERIALS:**Google form survey <http://bit.ly/2gZPuuO> |
| **PARTICIPATORY LEARNING** |
| TIME | ACTIVITY | RESOURCES |
| 45 min1hr 5min – 5 intro– 15 / station–10-15 wrap | Tour Museum floor (Linda)Activity in Discovery lab* Students, in pairs, rotate through 3 stations total.
* Each pair completes a worksheet at each station. See below for worksheets.
 | – collection books (Linda has)- 12 Clipboards and pens (1/pair)- 12 Worksheets (1/pair)- 6 station labels (2x Station 1, Station 2, Station 3)- Station materials: presses - station 1: string x 4, rulers x 4- Whiteboard (?) |
| **POST-ASSESSMENT:*** Collect worksheets for instructor review. Scan, return to Pam to return to students.
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| **SUMMARY/CLOSURE**1. Ask 1-2 groups for answer to select Qs from each worksheet and “did anyone have anything different or to add?”. Summarize key take-home message at each station.
	* Station 3: “If you were to collect (even photograph) specimens, let’s say trees around UBC campus, what types of info are important to record?” “Looking ahead to projects you do in SCIE 001 and beyond, what can you do to ensure your notes are connected to specimens you collect?” **Important to keep detailed and organized note books, lab books, etc. Good habit to begin practicing now.**
	* Station 1: “How tall is this species? Avg. height”. Individuals within a species vary a lot, for many reasons. Important for a collection like the UBC Herbarium to represent that variation. **Important for researchers to be consistent with what and how they measure variation, record and report their methods.**
	* Station 2: Example research questions? Something that thinks beyond the branches? **The practice of “looking closely”, making observations, jotting down whatever big or small questions that occur as you observe—this leads to interesting research questions. Potential for research projects in the fields of mathematics, physics, computer science, etc. that use biological specimens.**
2. Connect back to larger project goals and rationale. Connection and preview to next session in Beaty.
	* A key goal of the Herbarium is to improve accessibility and accuracy within our 5 biological collections. One way to achieve this goal is to find out exactly what is in our collection. You’re participating in the first-ever inventory. When next week meet, in two weeks, we will go into a bit more depth about collections-based research and spend some time in the cabinets counting a sub-set of research collections.
3. Encourage students to reflect on collections while in Bamfield.
	* Next week when you’re visiting the Bamfield Marine Sciences Center and you see these species live and in their habitat, make some comparisons between preserved fresh specimens, think about how you could use a combination of fresh and preserved material to answer questions.
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| **INSTRUCTOR DE-BRIEF*** Was each station’s worksheet completed by most groups?
* Any questions/sections particularly challenging or too easy/unengaging?
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