

Digitizing Vascular Plant Specimens from a Country at War



David Giblin, Ph.D.
Herbarium Collections Manager and Research Botanist
University of Washington, Burke Museum

Eric DeChaine, Ph.D.
Herbarium Curator and Professor of Biology
Western Washington University

Steffi Ickert-Bond, Ph.D.
Herbarium Curator and Professor of Biology
Museum of the North - University of Alaska Fairbanks

Presentation Overview

- **Project Background**
- Digitization Activities and Workflow
- Project Impacts and Issues

What is a Herbarium?

- Botanical research collection of dried plant (vascular, nonvascular), fungi (macrofungi and lichenized fungi), and algae (freshwater and marine) specimens
- Document taxonomic diversity and distribution of these organismal groups over space and time
- Support range of research activities (alpha taxonomy, phylogenetics, ethnobotany, climate change, invasive species, rare species, etc.)



HERBARIUM OF
419670
UNIVERSITY OF WASHINGTON

U. Washington Herbarium (WTU)



WTU-V-042993



Plants of Washington

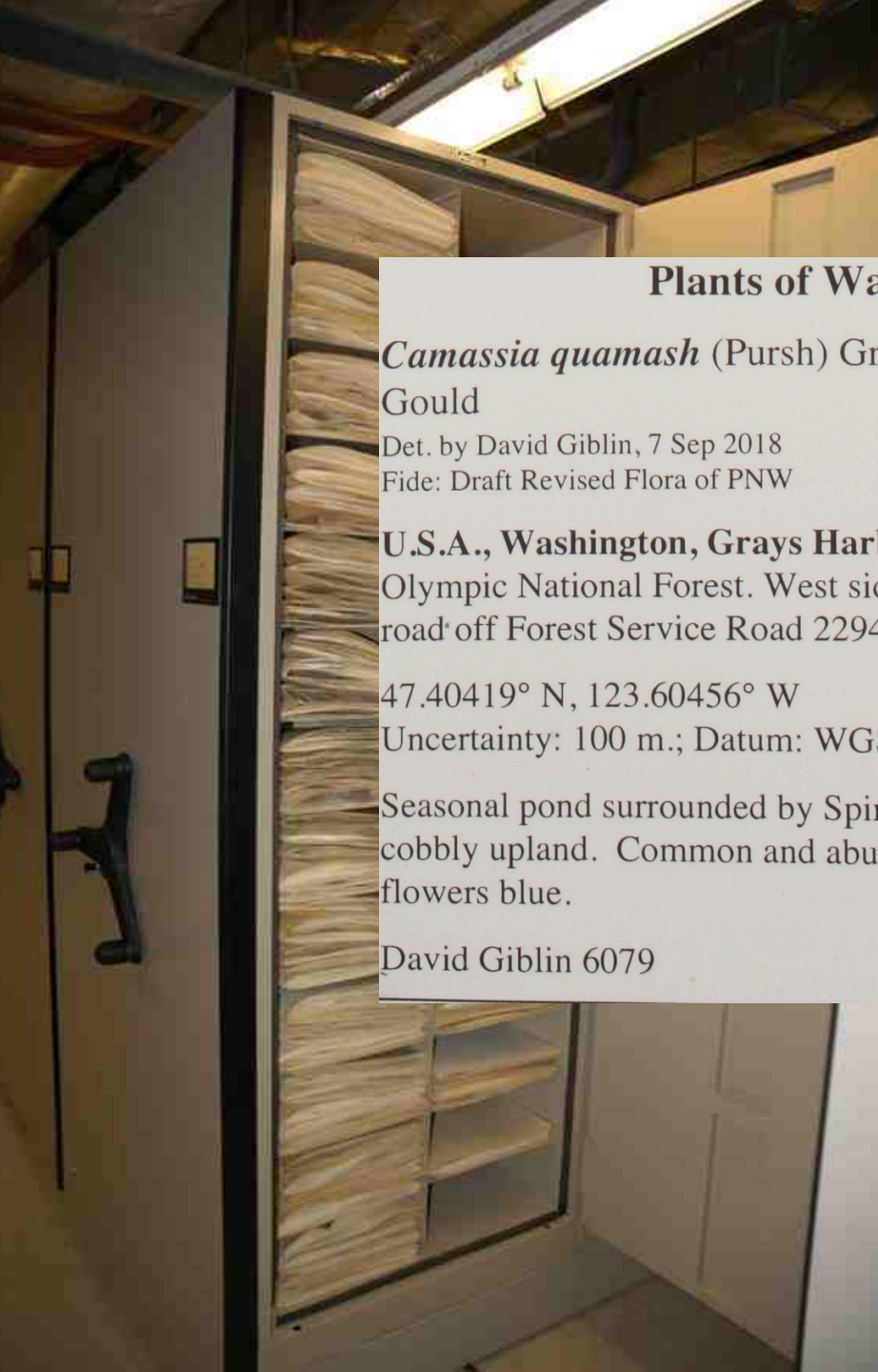
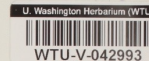
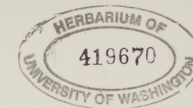
Camassia quamash (Pursh) Greene ssp. *azurea* (Heller)
Gould
Det. by David Giblin, 7 Sep 2018 (Asparagaceae)
File: Draft Revised Flora of PNW

U.S.A., Washington, Grays Harbor County:
Olympic National Forest, West side of Wynooche Lake. Spur
road off Forest Service Road 2294. Elevation 320 m.

47.40419° N, 123.60456° W
Uncertainty: 100 m.; Datum: WGS 84; Source: Digital map
Seasonal pond surrounded by *Spiraea douglasii* with adjacent
cobbly upland. Common and abundant in wet to moist upland;
flowers blue.

David Giblin 6079

22 May 2018



Plants of Washington

Camassia quamash (Pursh) Greene ssp. *azurea* (Heller) Gould

Det. by David Giblin, 7 Sep 2018
Fide: Draft Revised Flora of PNW

(Asparagaceae)

U.S.A., Washington, Grays Harbor County:

Olympic National Forest. West side of Wynooche Lake. Spur road off Forest Service Road 2294. Elevation 320 m.

47.40419° N, 123.60456° W

Uncertainty: 100 m.; Datum: WGS 84; Source: Digital map

Seasonal pond surrounded by *Spiraea douglasii* with adjacent cobbly upland. Common and abundant in wet to moist upland; flowers blue.

David Giblin 6079

22 May 2018



Plants of Washington

Camassia quamash (Pursh) Greene ssp. *azurea* (Heller) Gould

Det. by David Giblin, 7 Sep 2018
Fide: Draft Revised Flora of PNW

(Asparagaceae)

U.S.A., Washington, Grays Harbor County:

Olympic National Forest. West side of Wynooche Lake. Spur road off Forest Service Road 2294. Elevation 320 m.

47.40419° N, 123.60456° W

Uncertainty: 100 m.; Datum: WGS 84; Source: Digital map

Seasonal pond surrounded by *Spiraea douglasii* with adjacent cobbly upland. Common and abundant in wet to moist upland; flowers blue.

David Giblin 6079

22 May 2018

Why Digitize Vascular Plant Specimens from the Russian Far East?

- Long history of plant exploration (from mid-19th century onward)
- Of particular interest to North American and Russian botanists due to floristic (plant species) affinities between eastern Asia/Eurasia and North America
- Extensive contemporary (since 1990s) collecting in Kuril Islands, Sakhalin Island, Kamchatka
- Increased difficulty of doing field work/exchanging specimens by mail – future very uncertain

Collaborative Project

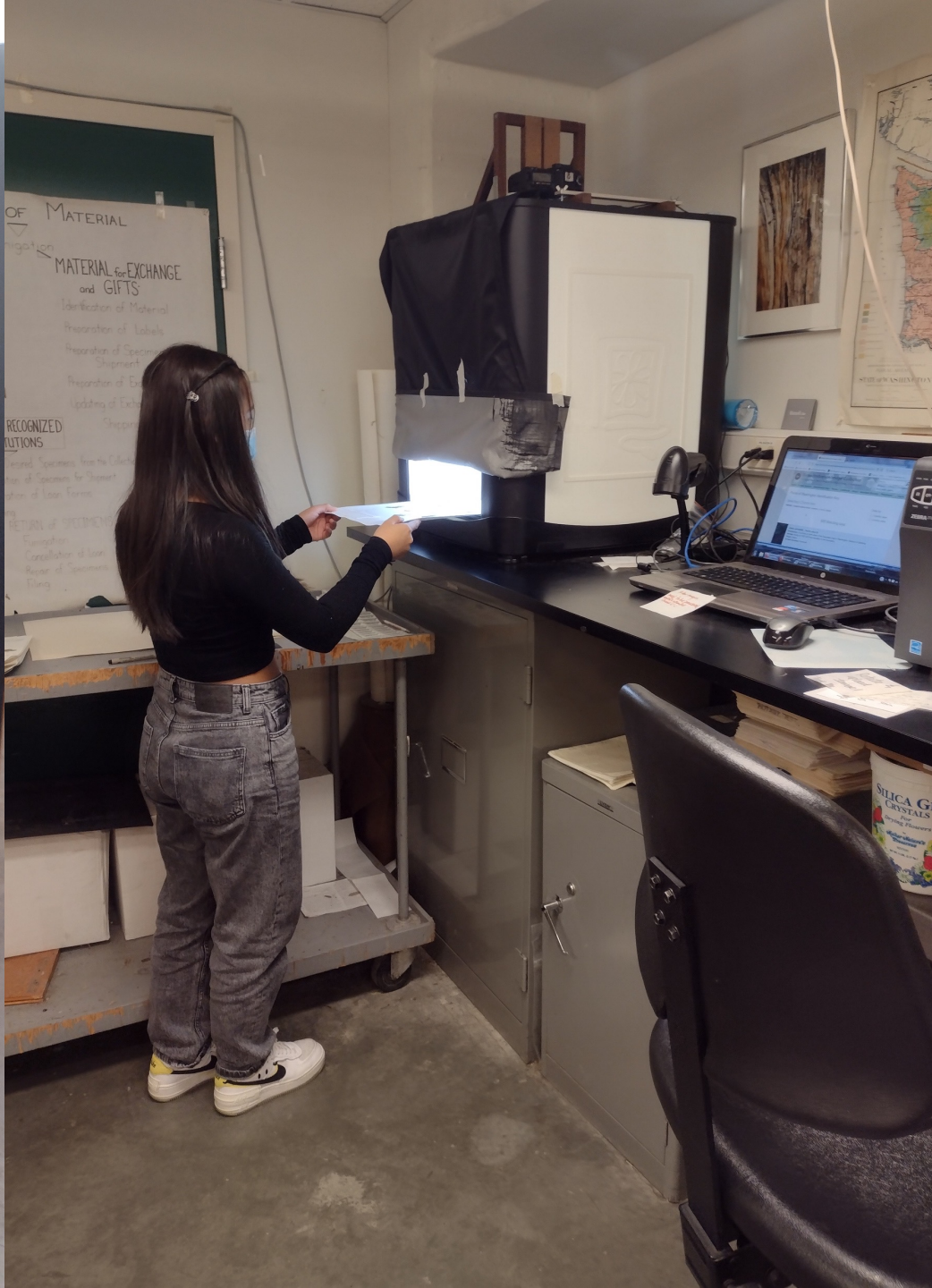
- University of Washington Herbarium, Burke Museum (WTU)
- University of Alaska Herbarium, Museum of the North (ALA)
- Pacific Northwest Herbarium, Western Washington University (WWB)
- Collectively hold historic and contemporary vascular plants specimens from the Russian Far East; goal = digitize 23,000 specimens

Presentation Overview

- Project Background
- **Digitization Activities and Workflow**
- Project Impacts and Issues

Locating, Digitizing, and Publishing Specimens

- Working list of potential names from skeletal records
- Manually search for specimens and pull for imaging



Locating, Digitizing, and Publishing Specimens

- Working list of potential names from skeletal records
- Manually search for specimens and pull for imaging
- Database specimens from images

Specimen Database Interface

Burke WTU VASCULAR PLANT DATABASE

Logout Help
David Giblin (administrator)

Specimen Data Entry

5702 of 5873

Family: Crassulaceae Accepted Name: Rhodiola rosea

Identified As: rhoros Rhodiola rosea

Collector: Kharkevich = S. Kharkevich Coll. # 456a

Coll. Date: 21 Aug 1974

Site # [] Site Lookup Find Matches Update Matches Duplicate

Country: Russia State or Province: Kamchatka

Locality: Olyoutorskiy district, vicinity of village Medvezhka.

Site Description or Habitat: Lagly stony low shrub tundra.

Specimen Notes: Frequent. Insect damage or debris noted, October 1996, University of Washington Herbarium.

Phenology: Flowers [] Origin: Native

Site Georef. Latitude: 54.586143 Longitude: 160.957895 Uncertainty: 1500 m. Datum: WGS 84

Georef. By: Dan Post Georef. On: 2022-09-22 06:58:51

Created By: Dan Post On: 2022-09-22 06:55:41

Modified By: Dan Post On: 2022-09-22 19:40:11

Georef. to Matching Sites

Allow record online Use Field Notes mode for data entry

Allow locality online UUID: caabead7-02e5-4d9e-a416-8dd6afc67864

Images Documents Map Browse

Show Thumbnails Hide Image Viewer Upload Images 1 image attached

Insect damage or debris noted
October 1998
University of Washington Herbarium

PLANTAE VASCULARES ORIENTIS EXTREMI ROSSICI (VLA)
FLORA EXSICCATA

456a Rhodiola rosea L.
Bezdeleva, 1995, Vasc., 7:217

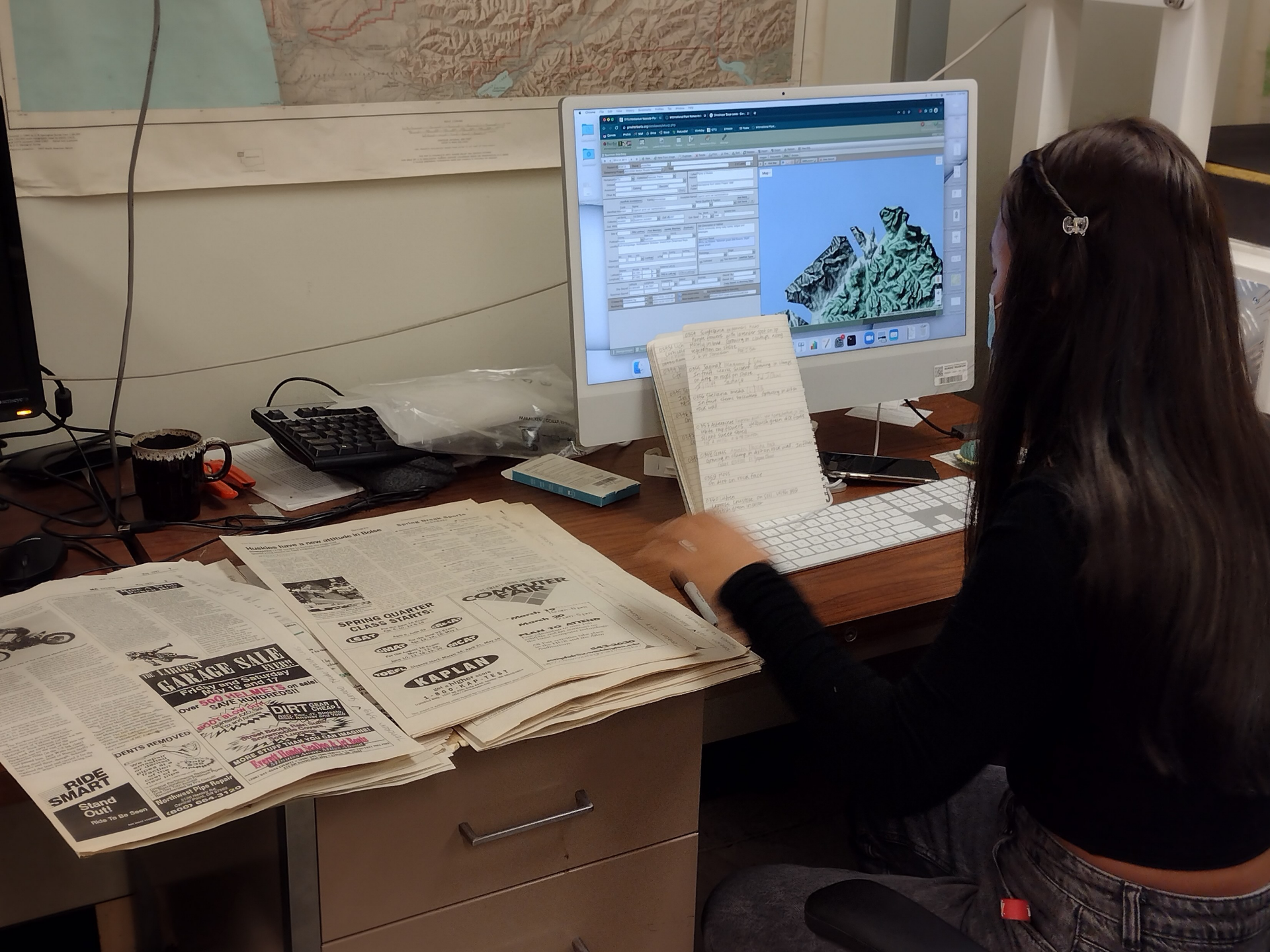
Kamchatskiy region, Olyoutorskiy district, vicinity of village Medvezhka, lagly stony low shrub tundra, frequent

Leg. S.Kharkevich, T.Buch
Det. S.Kharkevich
1974 VIII 21

Keyboard shortcuts | Image may be subject to copyright | Terms of Use

Locating, Digitizing, and Publishing Specimens

- Working list of potential names from skeletal records
- Manually search for specimens and pull for imaging
- Database specimens from images
- Database unmounted specimens from field notes



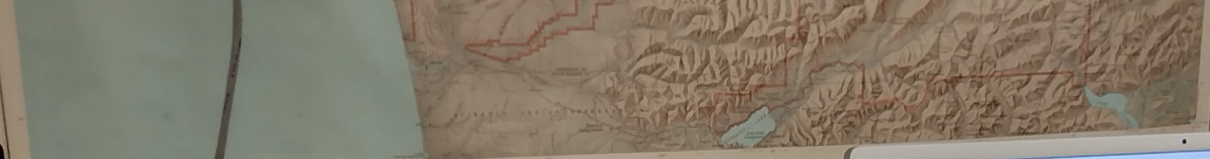
Software interface showing a 3D topographic map on the right and a data table on the left. The table has columns for various parameters and values.

Parameter	Value
...	...
...	...
...	...

Handwritten notes in a notebook, likely related to the software or the map data being viewed.

Stack of newspapers and magazines on the desk. Visible advertisements include:

- THE LARGEST GARAGE SALE EVER!** Friday and Saturday, May 16 and 17. Over 500 items on sale! SAVE HUNDREDS!
- DIRT** GREAT CHAIRS! DIRT, DIRT, DIRT!
- KAPLAN** KAPLAN UNIVERSITY 1-800-4-A-1-1-1
- SPRING QUARTER CLASS STARTS!**
- COMPUTER FAIR** March 19 - March 20. PLAN TO ATTEND!



Locating, Digitizing, and Publishing Specimens

- Working list of potential names from skeletal records
- Manually search for specimens and pull for imaging
- Database specimens from images
- Database unmounted specimens from field notes
- Georeferencing specimens lacking lat./long. values

Georeferencing Text Localities

Burke WTU VASCULAR PLANT DATABASE

Logout Help
David Giblin (administrator)

Specimen Data Entry

5702 of 5873

Family: Crassulaceae Accepted Name: Rhodiola rosea

Identified As: rhoros Rhodiola rosea

Collector: Kharkevich = S. Kharkevich Coll. # 456a Day: 21 Aug Year: 1974

Country: Russia State or Province: Kamchatka Locality: Olyoutorskiy district, vicinity of village Medvezhka

Site Georef. Latitude: 54.586143 Longitude: 160.957895

Georef. By: Dan Post Georef. On: 2022-09-22 06:58:51

Created By: Dan Post On: 2022-09-22 06:55:41

Modified By: Dan Post On: 2022-09-22 19:40:11

Map: ФГУ Кроноцкий государственный заповедник

Locating, Digitizing, and Publishing Specimens

- Working list of potential names from skeletal records
- Manually search for specimens and pull for imaging
- Database specimens from images
- Database unmounted specimens from field notes
- Georeferencing specimens lacking lat./long. Values
- Publish specimen record and image online through Consortium of Pacific Northwest Herbaria and Global Biodiversity Information Facility (in progress)

Consortium of Pacific Northwest Herbaria online database

(<https://www.pnwherbaria.org/data/search.php>)

Consortium of Pacific Northwest Herbaria
Providing access to specimen data and digital resources from herbaria throughout Pacific Northwest North America

Home | Specimen Data | Online resources | Member Herbaria | External Links | Documentation | About | Contact Us

5628 matching records found. 5394 records displayed on map.
Search terms: (Classification = "Vascular Plants" AND Country = "Russia").
Sort By: [] Options: exclude cultivated specimens, limit to herbaria: WTU.

« Search

Russia
Mongolia
North Korea
South Korea
Japan
China

Sea of Okhotsk
Bering Sea
Sea of Japan
Yellow Sea

Beijing
Seoul
Osaka
Tokyo
Busan

View as: Table Labels Images

Group by: [not grouped] sort by: Collection Year Larges

0 - 49

- 1. *Empetrum nigrum* L. var. *japonicum* (R.D.Good) H.Hara** Ericaceae
Russia, Kuril Archipelago, Raikoke: Kuril Archipelago: Raikoke, inland from small cove on southeast-east side of island. Elev. 100 m.
48° 17' 45" N, 153° 15' 25" E
Stabilized scree with *Empetrum*, *salix*, *Penstemon*, and mosses dominant. Berries spherical, abundant, and black. Reproductive state: Fruits. Origin: Unknown.
Sarah Gage SG 2337 Aug 13, 2019
WTU: 342893, WTU-V-060724
- 2. *Botrychium robustum* (Rupr.) Underw.** Ophioglossaceae
= *Sceptridium robustum* (Rupr.) Lyon
Russia, Sakhalin: Kurile Islands, northwest shore of Shumshu Island. Elev. 15 m.
50.769° N, 156.249° E
Coordinate Source: Specimen Label.
On flat and crests of dunes near shore, full sun, maritime tundra over volcanics, with *Rosa rugosa*, *Empetrum nigrum*, *Lilium debile*, *Equisetum hyemale*, *Cyripedium macranthum*, *Geranium erianthum*. Occasional. Reproductive state: Spores. Origin: Native.
L. Bakalin 6730 Jul 29, 2014
WTU: 400266, WTU-V-006760
- 3. *Botrychium lunaria* (L.) Sw.** Ophioglossaceae
Russia, Sakhalin: Kurile Islands, northwest shore of Shumshu Island. Elev. 15 m.
50.769° N, 156.249° E
Coordinate Source: Specimen Label.
On crests of dunes near shore, full sun, maritime tundra over volcanics, with *Rosa rugosa*, *Empetrum nigrum*, *Lilium debile*, *Equisetum hyemale*, *Cyripedium macranthum*, *Geranium erianthum*, *Botrychium boreale*, *B. robustum*, *B. lanceolatum*. Fronds shiny green; locally common. Reproductive state: Spores. Origin: Native.
L. Bakalin 6733 Jul 9, 2014
WTU: 400281, WTU-V-006775
- 4. *Botrychium boreale* Milde** Ophioglossaceae
Russia, Sakhalin: Kurile Islands, northwest shore of Shumshu Island. Elev. 15 m.
50.769° N, 156.249° E
Coordinate Source: Specimen Label.
On flat and crests of dunes near shore, full sun, maritime tundra over volcanics, with *Rosa rugosa*, *Empetrum nigrum*, *Lilium debile*, *Equisetum hyemale*, *Cyripedium macranthum*, *Geranium erianthum*, *Botrychium lunaria*, *B. robustum*, *B. lanceolatum*. Stem red-brown, shiny, leaves shiny green, variably dissected, sporophores turning yellow; occasional. Reproductive state: Spores. Origin: Native.

Con

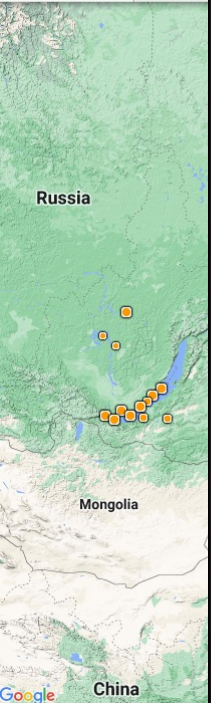
Northwest Herbaria

use

(data/search.php)

Consortium of
Providing access to specimen
throughout Pacific Northwest

Home Specimen Data Online reso
5628 match
Search Ter
Sort By: Ye
« Search



342893

WTU-V-060724

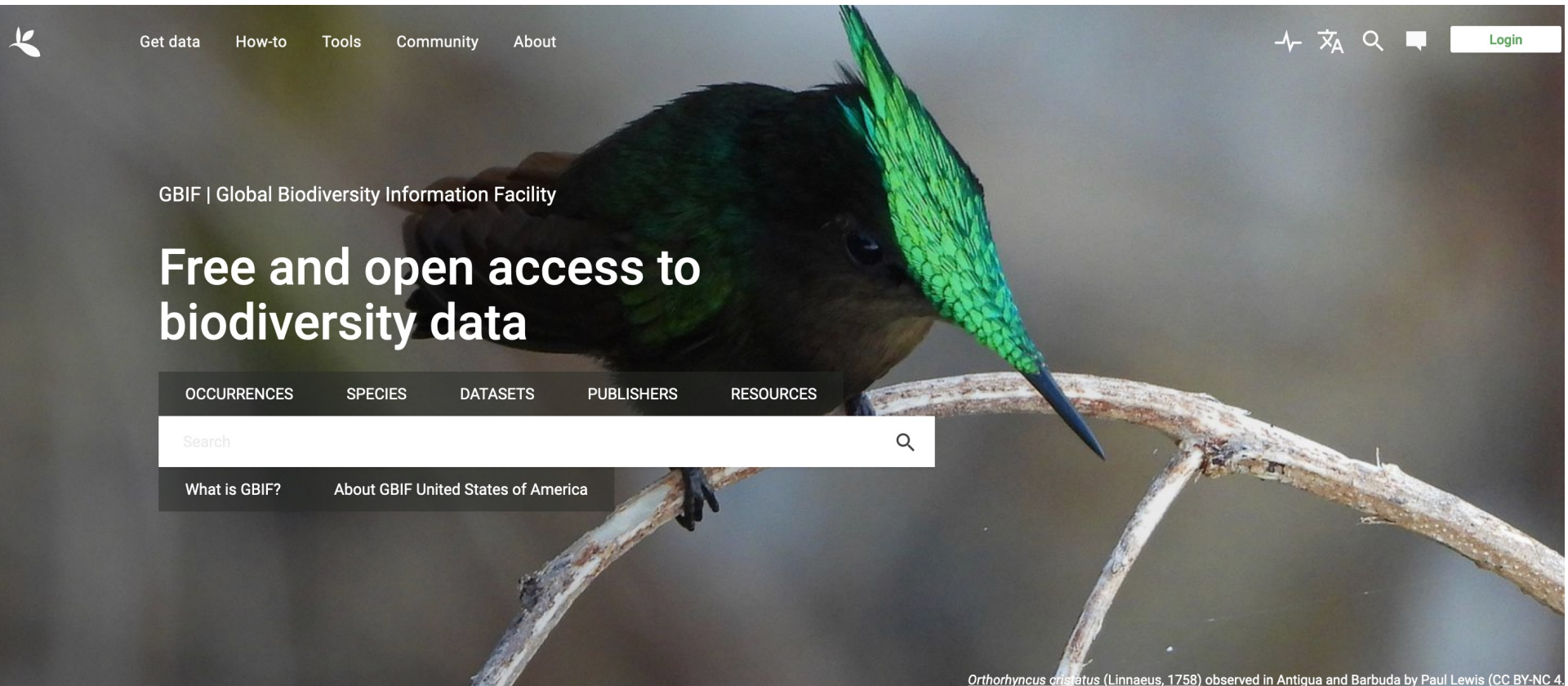
PLANTS OF RUSSIA

Empetrum nigrum L. var. *japonicum* K. Koch.
Empetraceae
Kuril Archipelago: Raikoke, inland from small cove on southeast-east side of island. Stabilized scree with *Empetrum*, *Salix*, *Penstemon*, and mosses dominant. 48° 17' 45" N 153° 15' 25" E. Elev. 100 m. Berries spherical, abundant, and black. Fruitlet bracteate. Fls. of Japan col. SA
Collected by: Sarah Gage, SG 2337 13 Aug 1996
Determined by: Ritsma Droschikaya

INTERNATIONAL KURIL ISLAND PROJECT
UNIVERSITY OF WASHINGTON

Web interface showing search results for Empetrum japonicum, Botrychium robustum, and Botrychium lunaria. Includes a red arrow pointing to the first result.

Global Biodiversity Information Facility (GBIF) Online Database



Orthorhynchus cristatus (Linnaeus, 1758) observed in Antigua and Barbuda by Paul Lewis (CC BY-NC 4.0)

Presentation Overview

- Project Background
- Digitization Activities and Workflow
- **Project Impacts and Issues**

Project Impacts

- Free, worldwide, online access to specimens – already resulted in specimen loans that have supported peer-reviewed publications by Russian scientists
- Liberating and mobilizing specimen data that, without this funding, would remain undiscoverable
- Creating full realization of collaborative Russian-U.S. scientific explorations dating back to 1970s
- Engagement of undergraduate students in digitization process

Project Issues

- Are there ethical concerns associated with digitizing content from a country engaged in war?

Project Issues

- Are there ethical concerns associated with digitizing content from a country engaged in war?
- Degradation of Russia-U.S. relationships may eliminate present and future collaborations with Russian scientists on data quality/accuracy



**Dr. Valentin Yakubov,
Russian Far East Branch of the
Russian Academy of Science
(2011, Washington)**



Project Issues

- Are there ethical concerns associated with digitizing content from a country engaged in war?
- Degradation of Russia-U.S. relationships may eliminate present and future collaborations with Russian scientists on data quality/accuracy
- Underscores importance of digitizing content because cannot anticipate world events that may compromise access to content

Acknowledgments

- CLIR Digitizing Hidden Collections
- Mellon Foundation
- U.S. National Science Foundation
- Far Eastern Branch of the Russian Academy of Sciences
- Hundreds of collectors who deposited specimens at WTU, ALA, and WWB.