

NPDN News

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VOUCHER SPECIMENS? YES PLEASE!

Megan Romberg and Yazmín Rivera, USDA APHIS and Lisa Castlebury, USDA ARS

Voucher specimens are pressed or dried plant material that has been preserved and maintained under controlled conditions in a herbarium. These specimens are used to compare morphological and molecular characteristics of fungi collected in the past with those in the present. Voucher specimens are essential for understanding fungal systematics and serve as a resource for future studies as well as documentation of the existence of a species in a particular place at a point in time. Deposition of a voucher specimen in a curated collection ensures the maintenance and long term availability of this specimen to the scientific community. For example, recent research on the population changes of potato late blight, *Phytophthora infestans*, (Saville et al. 2016 <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0168381>) was made possible because of historic specimens, a majority of which came from the USDA Agricultural Research Service's U.S. National Fungus Collections.

Curated fungal collections in the U.S. include the U.S. National Fungus Collection (BPI, <https://nt.ars-grin.gov/fungalatabases>), the New York Botanical Garden (NY, <http://sweetgum.nybg.org/science/fungi.php>), the Arthur (PUR)

and Kriebel (PUL) Herbaria at Purdue University (<https://ag.purdue.edu/btny/Herbaria/Pages/default.aspx>), and the Charles Gardner Shaw Mycological Herbarium at Washington State University (WSP, <http://plantpath.wsu.edu/herbarium/>). A list of herbaria around the world can be found at *Index Herbariorum* (<http://sweetgum.nybg.org/science/ih/>). (This includes herbaria dedicated to plant collections and is not specific to fungal collections.)

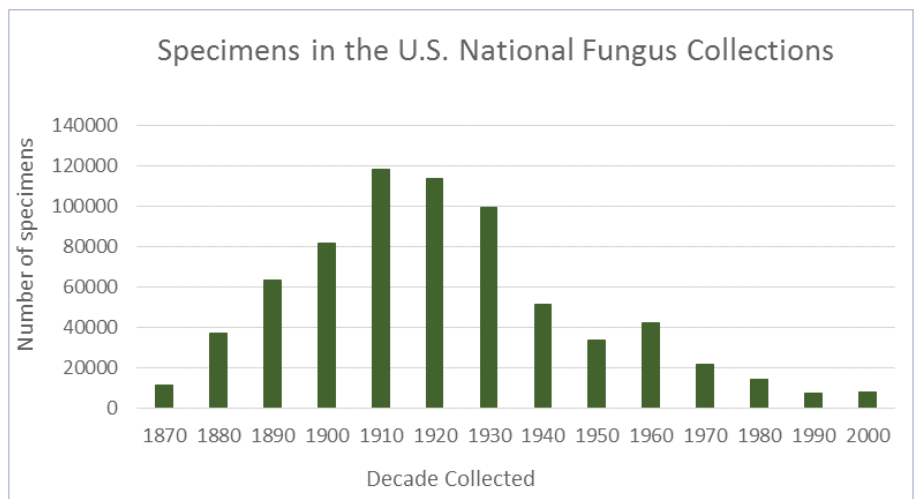


Figure 1. The number of specimens collected and deposited in the U.S. National Fungus Collections is shown by decade through 2010. The collections from the early decades of the 20th century provide a rich source of information on the fungi present in the U.S. and globally at that time.



Issue Highlights

- Qualtrics survey regarding fees for diagnostic services
- Conference on soilborne plant pathogens
- GPDN 2017 webinar series

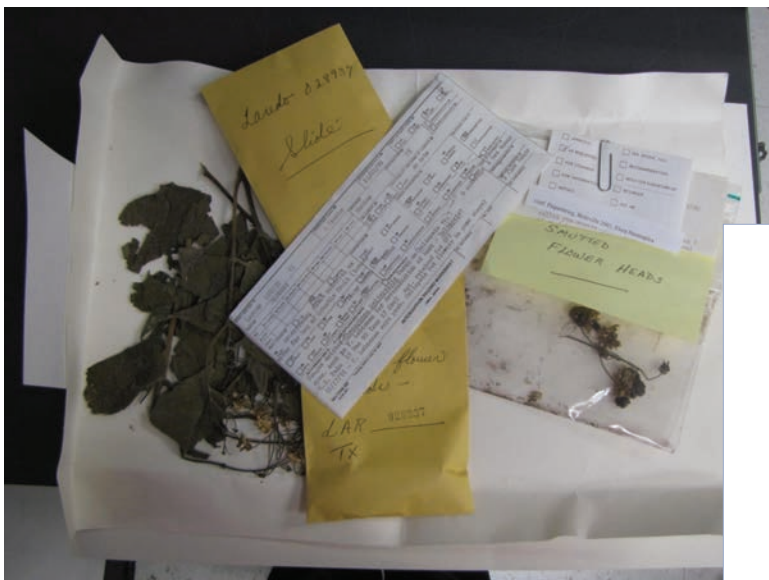
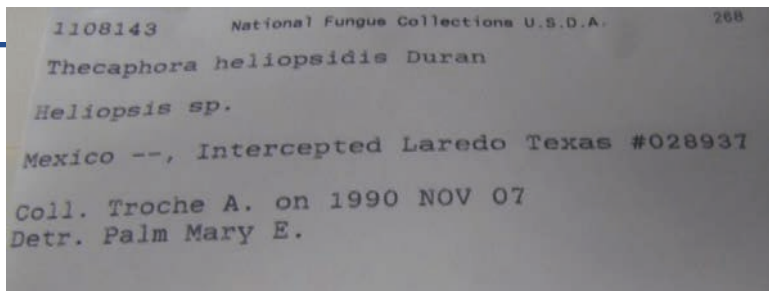


Figure 2. A voucher specimen in BPI showing a) the information on the label, b) the actual specimen with plant material, slide and documentation.

In recent years, the number of voucher specimens collected and deposited in herbaria such as the U.S. National Fungus Collections has declined greatly (Figure 1). The decline of depositions into fungal collections threatens our ability to understand changes in fungal populations over time, decreases our ability to look at fungal diversity overall and decreases our ability to know which fungi are present in a particular area if not adequately documented with a physical specimen.

How can the NPDN help?

Fungal plant pathogens found on new hosts or in new locations should be submitted to recognized collections to document these reports and preserve material for future research. Collections associated with first reports published as Disease Notes would be ideal candidates.

What should you deposit?

A voucher specimen should contain enough material (leaves, twigs, fruit peel, root sections, stems) to illustrate the signs and symptoms associated with the fungus on the host, and ideally would contain enough material for preparation of new slides and for DNA extraction. For more information go to <https://nt.ars->

grin.gov/fungal-databases/specimens/specimens.cfm, or contact one of the herbaria mentioned above for more detailed instructions.

Figure (2) illustrates an ideal voucher specimen. This herbarium sample contains dried, pressed plant material containing all of the structures of a fungus needed for morphological identification, the original slide mount used for identification of the fungus, documents associated with the specimen (laboratory reports, notes, etc.) Dried, non-viable cultures can also be deposited.

HERBARIUM DEPOSITION FORM

Dr. Lisa A. Castlebury, Director
U.S. National Fungus Collections (BPI)
Mycology & Nematology Genetic Diversity & Biology Lab
USDA-Agricultural Research Service
Room 239, Building 010A
10300 Baltimore Avenue
Beltsville, MD 20705-2350 USA
301-504-6921, FAX 301-504-5062
HerbariumBPI@ars.usda.gov

Data supplied on this form are of scientific importance; they will be entered into the BPI specimen database available on the Internet and used to generate specimen labels.

Scientific name & authority	_____
Scientific name of host	_____
Substrate/Plant part	_____
Country	_____
State & county	_____
Additional locality data	_____
Lat./Long., Elev.	_____
Habitat	_____
Date collected	_____
Collector(s)	_____
Collection number	_____
Determiner	_____
Is this a Type specimen?	_____
Other herbarium numbers	_____
Isolation data	_____
Culture/GenBank numbers	_____
Literature citation	_____
Depositor	_____
Institution	_____
Address	_____
E-mail	_____
Date	_____

The Herbarium Deposition Form for the U.S. National Fungus Collections (BPI).

Voucher specimen checklist

- ✓ Dried plant material (with enough fungal material for future slide mounts and/or DNA extraction)
- ✓ (Leaves should be pressed, twigs cut to 12cm length, contact the herbarium about larger samples)

- ✓ Slides (mounted in a slow drying medium like lactic acid and with the coverslip ringed in nail polish) (optional but great if you have them)
- ✓ Documents associated with the specimen
- ✓ Herbarium deposit form (found at <http://nt.ars-grin.gov/sbmlweb/collections/FungusCollection/BPIDepositForm.cfm>)

For more information on depositing specimens to the U.S. National Fungus Collections, contact: HerbariumBPI@ars.usda.gov

FAQs

Q. What does it cost to deposit a voucher specimen?

A. Nothing! The only cost involved is that of shipping dry, light plant material.

Q. Do I need a permit to deposit a voucher specimen?

A. No. The receiving institution will have the appropriate permits when necessary.

Q. What about images?

A. Bugwood (www.Bugwood.org) is a good place to submit the images you've taken of your specimen. The herbarium accession number you'll receive for your specimen can be linked to the images, so there will always be a link between the curated physical specimen and your images.

Q. What if I don't have all the information requested on the herbarium deposit form?

A. The name of the fungus, locality and date collected should all be known. Hosts should be identified to the best of your ability. GPS coordinates are ideal, but not required.

Q. I don't want the specimen publicly available until my publication is done. How do I accomplish this?

A. State this on your deposition form and contact the herbarium curator when depositing your sample.

Q. What if I'm not 100% sure of my ID?

A. Ideally, specimens and hosts should be identified at least to the generic level. If the host is identified to genus with 100 % confidence, specimens can be stored by tentative genus identification and host genus. Inclusion of sufficient material, slide mounts and other information will help ensure that future work to clarify the identification is possible (even many decades hence!) For questions on specific specimens contact the herbarium curator. 🍃

NPDN welcomes
Dr. Rubella Goswami
as our new national
program leader!

Stay tuned to the
NPDN News to get
to know her!

Pycnidia of ascochyta on chickpea leaves. © Mary Burrows, Montana State University, Bugwood.org



United States
Department of
Agriculture

National Institute
of Food and
Agriculture

Qualtrics survey regarding fees for diagnostic services

Nancy Gregory, University of Delaware

A survey was designed to gather information regarding fee-based cost recovery systems for various NPDN diagnostic labs in the U.S. (what works, what doesn't, helpful hints, etc.). Responses were anonymous, and opinions are those of the individuals. There were 54 full responses to the survey, with variation in response numbers to each question. Key points from the survey include:

- 62% of labs charge a fee
- 55% charge a graduated fee
- Fees ranged from \$5 to \$50 for general diagnosis
- Specialty and extra tests were higher
- Some charge extra for out of state
- 29% requested payment up front
- 94% used an invoicing system

- 57% have clerical assistance for billing
- Most (72%) charge for samples thru county offices
- Most (90%) do not charge for image diagnosis
- Variability high among labs, one size does not fit all

There were a number of other free response comments, including:

- Several labs are investigating implementation of a fee system.
- Most labs do not charge for images (up to 35% of samples), but they tend to take almost as much time, and often a sample is requested.
- If you decide not to charge county offices and other partners, you should have a mechanism to recover the costs of processing their samples. Otherwise, there can be questions about unequal enforcement.
- Some samples that come in through an Extension agent get billed to the ACES business office, not to the Extension agent.

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Conference on Soilborne Plant Pathogens March 28–30, 2017 University of California, Davis

In 2010 the Soil Fungus Conference was renamed Conference on Soilborne Plant Pathogens (CSPP), to include nematodes, bacteria, and viruses and to expand the scope of the meeting. The CSPP is a short meeting with a long list of benefits. Started in 1954 by researchers from the University of California with interests in soilborne fungi, it meets annually at locations in the western U.S. It has progressed into one of the most commonly known and highly valued conferences in plant pathology focused on soilborne fungi.

This meeting has a relatively informal and highly interactive format that allows for provocative, short oral presentations on research and development discoveries, new or increasing disease problems, new applications, products and equipment, and other subjects, followed by questions and spirited, illuminating discussions as the audience pitches in. In some respects, it is a veritable “think tank” with both immediate and long-term benefits. All participants are encouraged to present and/or contribute to the discussions as they choose and time permits. Creative thinking, insights, opinions, and lots of take-home ideas abound under the special climate of this event. Participants come from universities (research, teaching, extension), private industry, technical service organizations, private practice/consulting, municipal and state agencies, crop production, and other areas.

Visit the conference web site at <http://soilfungus.wsu.edu> for registration and travel information.

continued from page 4...

- Some billing is done by student helpers entering data.
- “Business issues such as billing is my biggest problem. I try to be fair but it is so hard to be the person doing the diagnosis and doing the invoicing.”
- Some expenses are covered under grants (billing to awards?)
- You need a clear statement of expectations from your administrators regarding what they mean by cost recovery. What expenses do they hope to stop paying? Get details in writing.
- Make sure your Extension administration is engaged to help you take backlash and offer support. Get details in writing.
- Charging a fee can create a type of competitiveness among labs.
- Although sample numbers will drop after a charge starts, sample quality will be better and numbers will rise over time. 🍃

GPDN 2017 webinar series

The GPDN webinar features speakers from universities and government agencies across the country. There will be topics about invasive pests, modeling and updates on some diseases. These topics are relevant to pest

management specialists and diagnosticians in plant pathology, entomology and weed science. Contact Linnea Skoglund at 406-994-5150 or diagnostics@montana.edu for more information.

Speaker	Affiliation	Date	Seminar Title
Dr. Tamra Jackson-Ziems	University of Nebraska-Lincoln	2/8/2017	Introduction to Bacterial Leaf Streak Disease of Corn
Dr. Diane Alston	Utah State University	2/15/2017	IPM for Primary Insect Pests of Apple and Cherry
Dr. Febina Mathew & Paul Okello	South Dakota State University	2/22/2017	<i>Fusarium</i> spp. interacting with soybean cyst nematode on soybean
Dr. Jim Stack	Kansas State University	3/1/2017	TBA
Dr. Megan Kennelly	Kansas State University	3/8/2017	Solving turf puzzles—It’s not as bad as you think!

To join go to: <http://msuextensionconnect.org/gpdn2/>. Please sign in as a guest with your name and affiliation.

To connect to GPDN webinars: Run the Connect Test at http://connect.ksre.ksu.edu/common/help/en/support/meeting_test.htm. All four check marks appear if your system is compatible. Connect does NOT work well with Google Chrome browser, use Firefox, IE, or Safari.

Run audio setup at <http://connect.ksre.ksu.edu/gpdnseminars/>

UPCOMING EVENTS

Meetings

August 5–9, 2017
2017 APS Annual Meeting
San Antonio, Texas

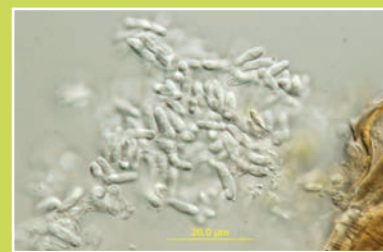
August 12–17, 2017
National Plant Board 2017 Annual Meeting
Savannah, Georgia

November 5–8, 2017
Entomology 2017
Denver, Colorado

March 19–22, 2018
Ninth International Integrated Pest
Management (IPM) Symposium
Baltimore, Maryland

PHOTO OF THE MONTH

Ascochyta fungi
(*Ascochyta* sp.)



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Maine, Bugwood.org

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