

植物子平台2019年度工作会暨
第四期标本数字化技术培训班
(2018年8月12日-15日, 内蒙古, 呼和浩特)

标本数字化历史、现状及未来 的一些思考

覃海宁

中国科学院植物研究所

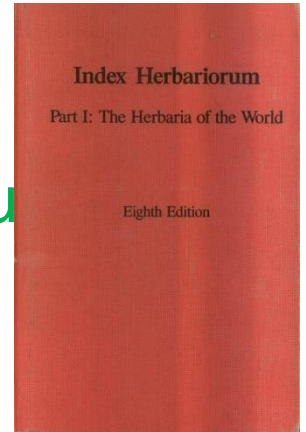
提纲

- 实体标本情况：
我国标本馆现况、存在问题及对策建议
- 数字化情况：起因，现况，我国数字化的瓶颈
- 未来发展的一些想法

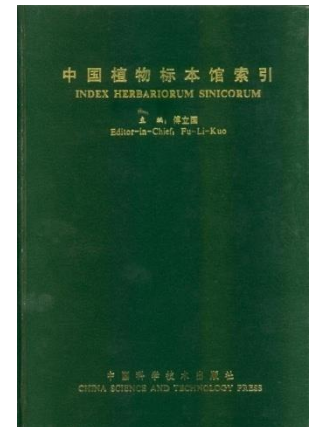


History/Background

- *Index Herbariorum* (IH, 1990, IAPT);
- *Index Herbariorum Sinicorum* (1st IHS, 1993, Fu-Li-Kuo)
 - Follow IH format;
 - Number of herbaria: 318
 - Number of specimen: 16 million
 - Number of Staff: 1820
 - Number of digital specimen: 0



(IH, 1990);



(IHS, 1993)

Targets of 2nd IHS

Records the current status of Chinese herbaria since 1990s:

- How many herbaria are active/exisiting?
- How many new herbaria and staff added since 1993?
- How about digitization?
-

*Index
Herbariorum
Sinicorum*
(Second
Edition)

(2018)

Some Statistics of 2nd IHS

The *comparison* of situation of herbaria between two editions

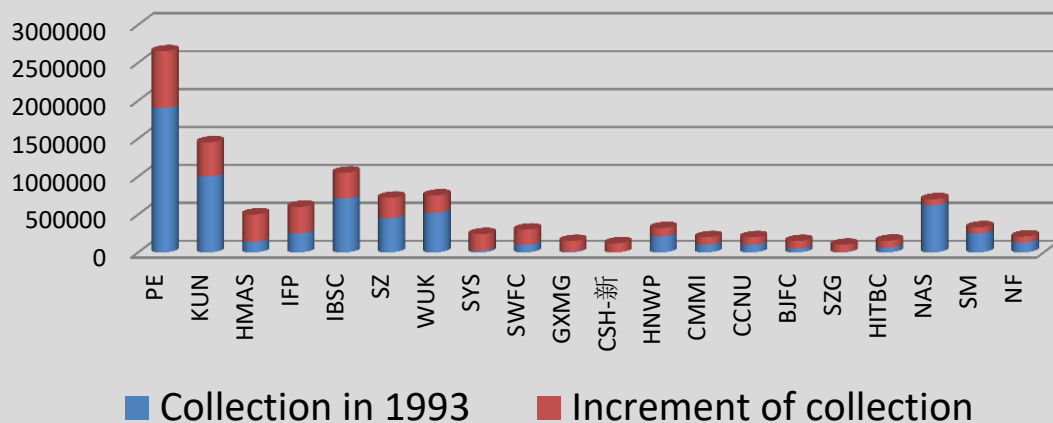
Situation	2 nd IHS	1 st IHS
First time recorded	41	-
Updated and active	224	183
Out of contact and "inactive"	96	96
Transferred to or incorporated into another herbaria	19	19
Destroyed and no longer exist	6	6
Not updated	14	14
Total number of herbaria	359	318

Some Statistics of 2nd IHS

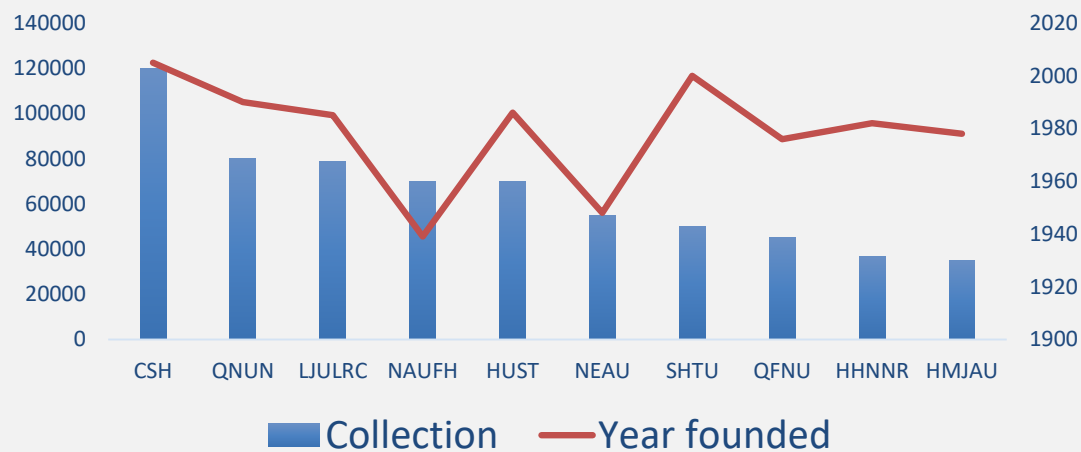
The *comparison* of basic info of herbaria between two editions

Item	2 nd IHS	1 st IHS
Number of Herbaria	359	318
Collection	22 million	16 million
Number of Staff	2206	1820
Digitization	10 million	0
Herbaria's Homepage	214	0
Photos	193	0

Top 20 herbaria with most increment of collection



Top 10 collection of first time recorded herbaria

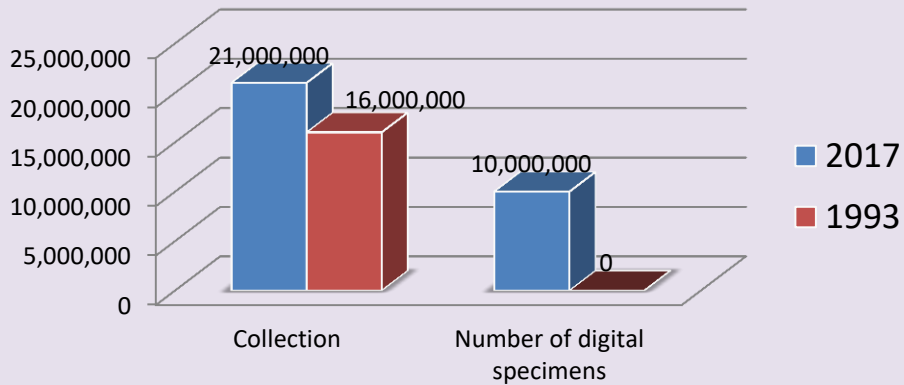


国内主要标本馆

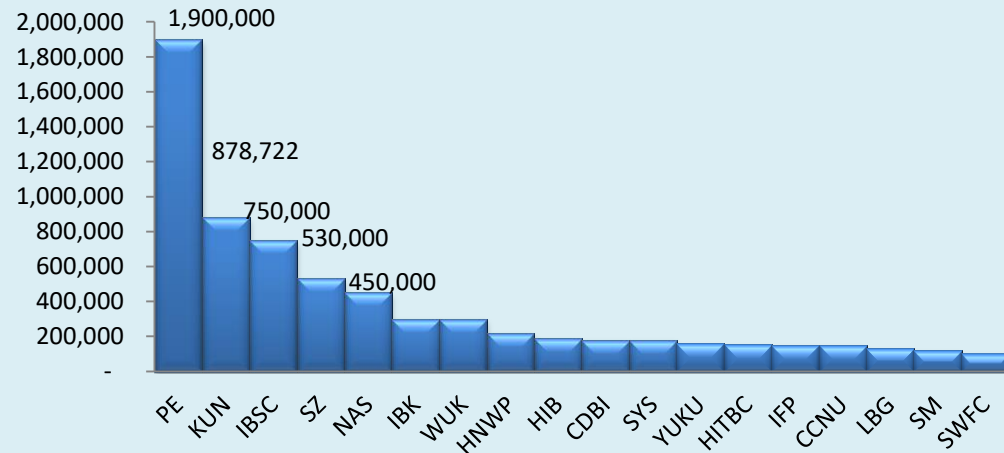


Digital specimens

Collection and Number of digital specimens in 1993 and 2017

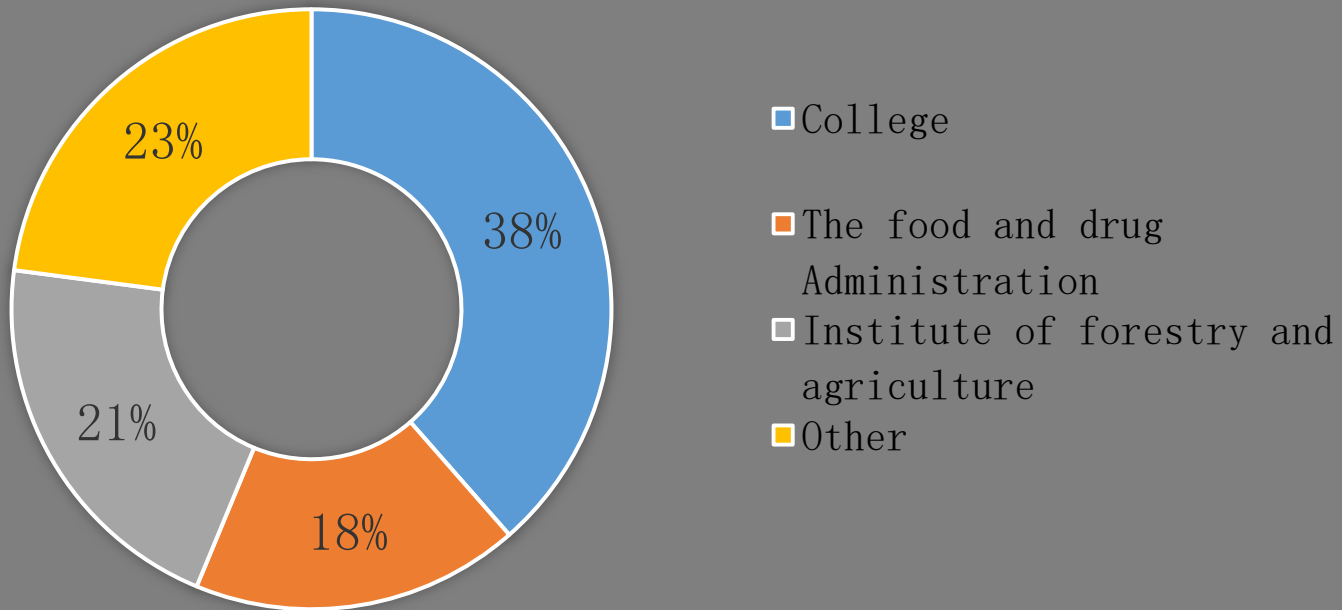


Herbaria with digital specimens more than 100,000



96 inactive herbaria

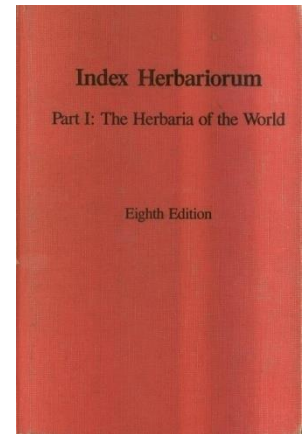
96 herbaria without communication and inactive



Index Herbariorum

The World's Herbaria 2017: A Summary Report Based on Data from *Index Herbariorum*

Issue 2.1, published January 5, 2018 (Geographic arrangement corrected)



Barbara M. Thiers
Editor, *Index Herbariorum*

(IH,1990);



second *Index*
available for
(<http://www.indexherbariorum.org/science/ih/>).

December 2017, there are
107,790 specimens. These
in these herbaria are **12,174**
73 new herbaria with a total
Index Herbariorum, and **35** herbaria were

Index Herbariorum

Index Herbariorum
Part I: The Herbaria of the World

Eighth Edition



1-P_2外景



1-P_3标本库房



1-P_4标本柜



2-NY_1外观



2-NY_2标本库房



2-NY_3标本库房



2-NY_4研究标本



3-LE_1远景



3-LE_2近景



3-LE_3标本馆走廊



3-LE_4标本柜



4-K_1外景



4-K_2近景



4-K_3内景



5-G_1外观



5-G_2标本库房



5-G_3Decando标本室房



6-MO_1外貌



6-MO_2标本库房



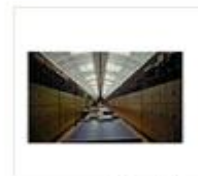
6-MO_3珍稀书库



7-BM_1外观 (远景)



7-BM_2外观 (近景)



7-BM_内部库房



8-Harvard Herbaria_1
外观



8-Harvard Herbaria_4
内景



8-Harvard Herbaria_5
标本柜



9-S_1外观



9-S_2标本馆内工作场
景



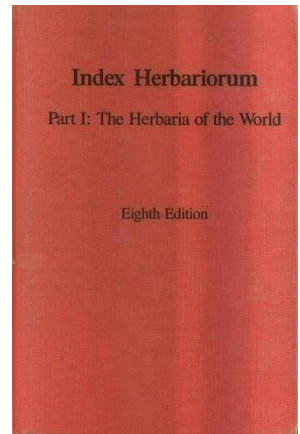
9-S_3化石标本柜



10-US_1外观

(IH,1990);

Index Herbariorum

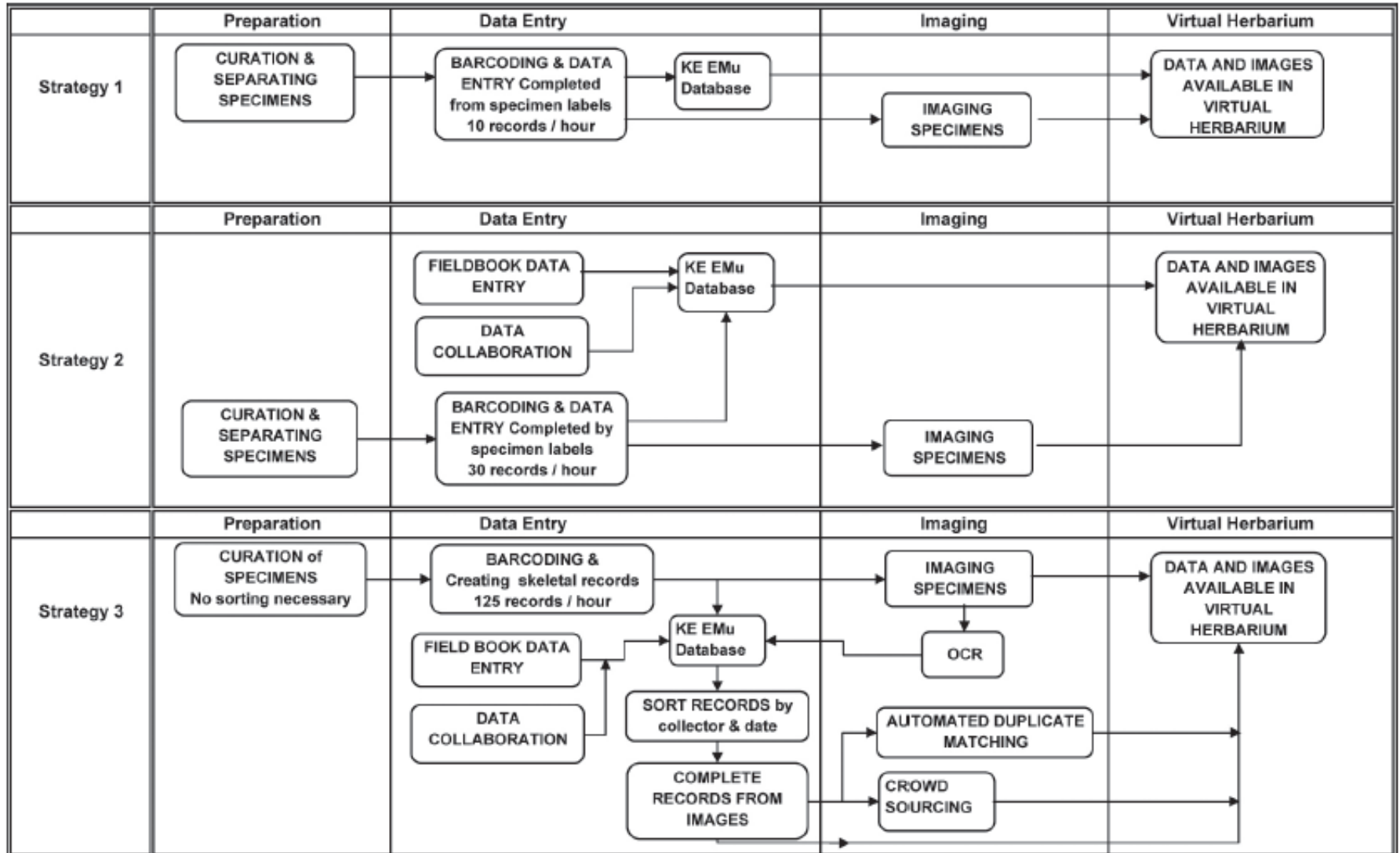


(IH,1990);

Year	# herbaria	Data Source
1964	1850	<i>Index Herbariorum</i> ed. 5
1974	1700	<i>Index Herbariorum</i> ed. 6
1983	1900	<i>Index Herbariorum</i> ed. 7
1990	2639	<i>Index Herbariorum</i> ed. 7
2011	2885	Archived dataset for IBC 2011 presentation
2016	2962	Archived dataset for <i>World's Herbaria 2016</i>
2017	3001	Archived dataset for <i>World's Herbaria 2017</i>

Year	# Specimens	Data Source
1964	149,000,000	<i>Index Herbariorum</i> ed. 5
1983	227,000,000	<i>Index Herbariorum</i> ed. 7
1990	272,000,000	<i>Index Herbariorum</i> ed. 7
2011	360,000,000	Archived dataset for IBC presentation
2016	381,000,000	Archived dataset for <i>World's Herbaria 2016</i>
2017	387,007,790	Archived dataset for <i>World's Herbaria 2017</i>

欧美标本馆及标本数字化



Characteristics of SERNEC Herbaria

A Preliminary Snapshot

April 20, 2007

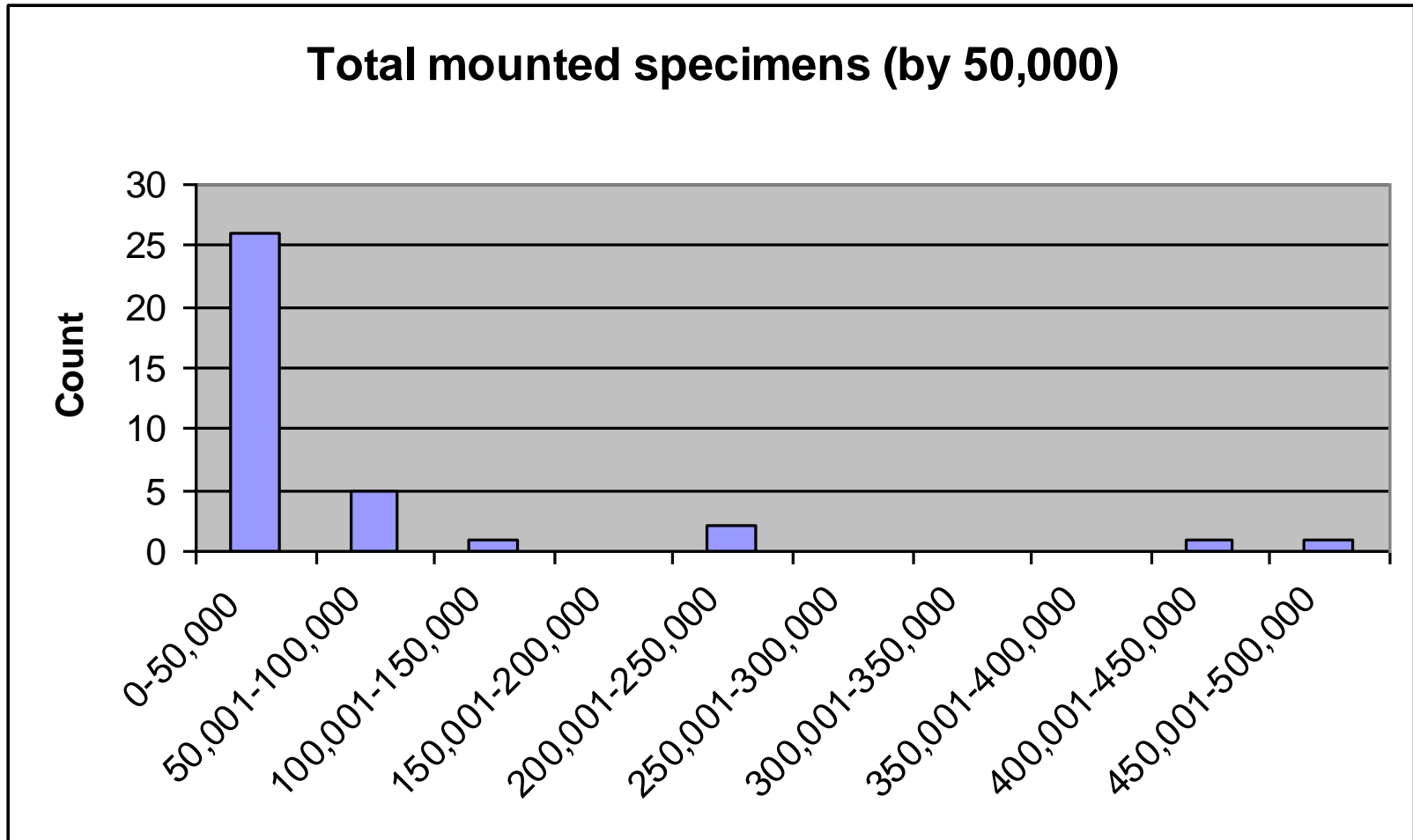
Overview

- Question categories
 - Academic affiliation: host institution profile
 - 75% are affiliated with university / college
 - Herbarium profile
 - **Collection information**
 - **Staff information**
 - Herbarium size / **budget**
 - Mission
 - **Nomenclature**
 - Curator expertise / teaching

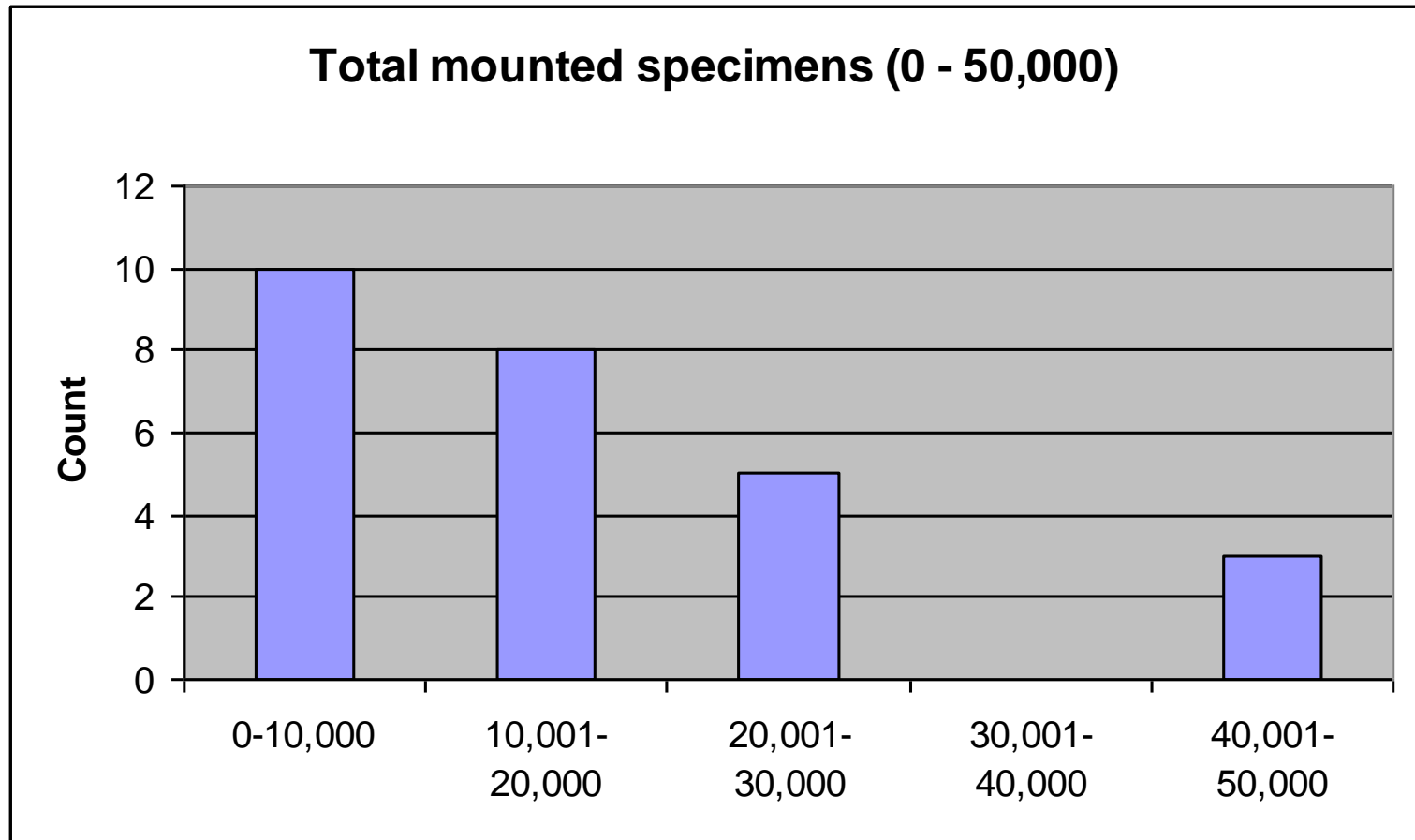
Overview

- Question categories (cont.)
 - **Database status**
 - Percentages
 - Database profile
 - Metadata
 - **Web accessibility**
 - Technical support
 - **SERNEC objectives**
 - **Overlooked herbaria**
 - **Other helpful comments**
 - Contact information

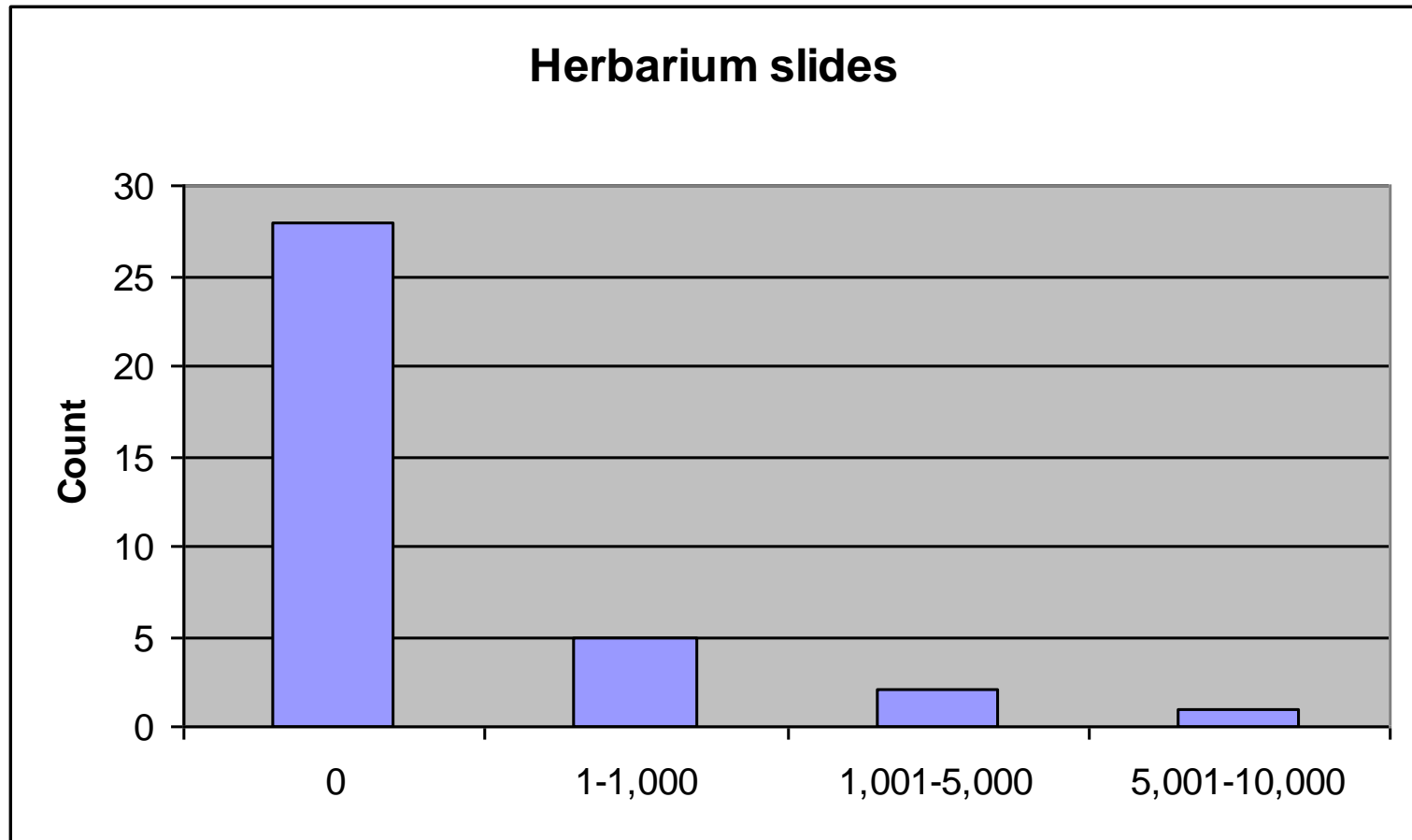
Collection Information



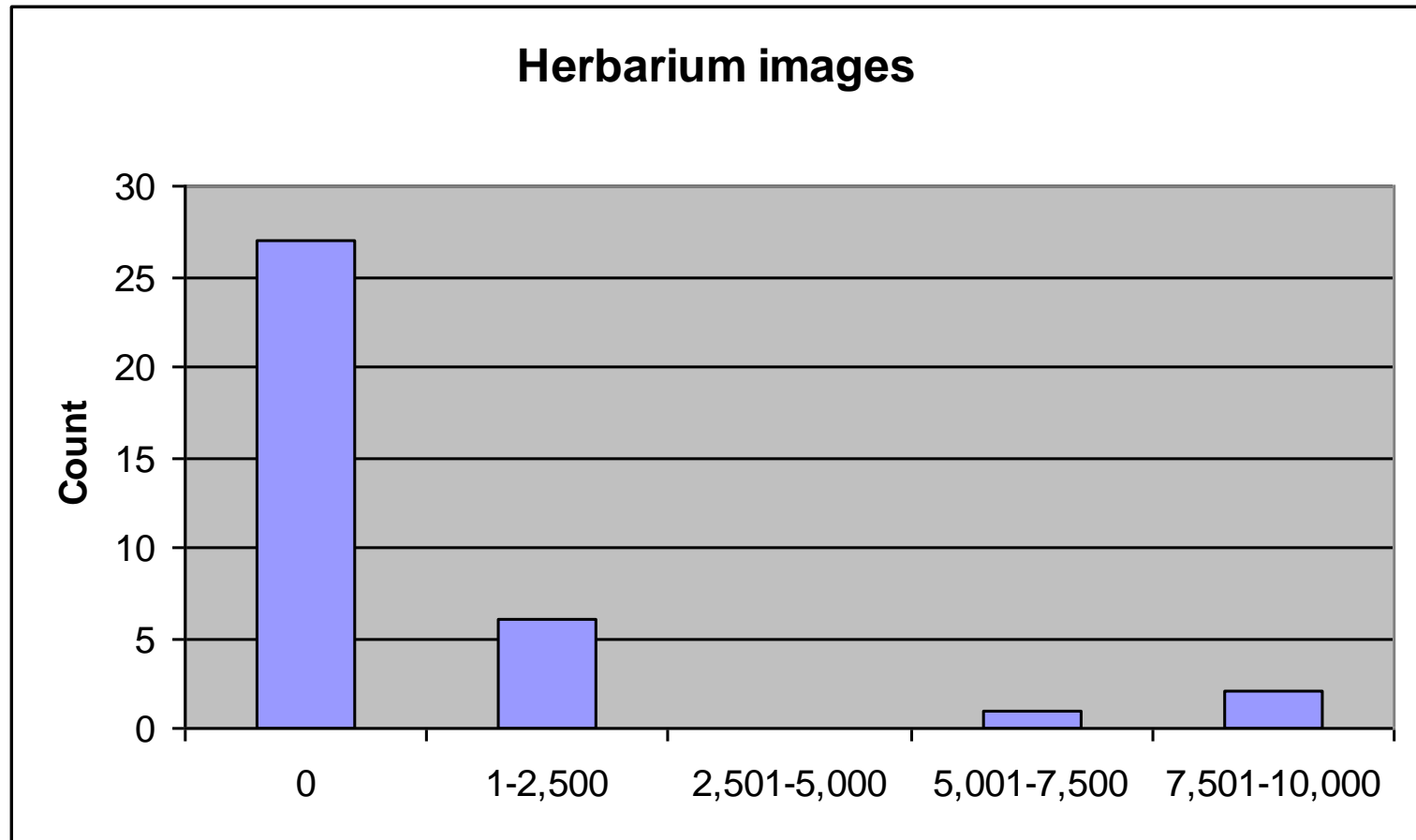
Collection Information



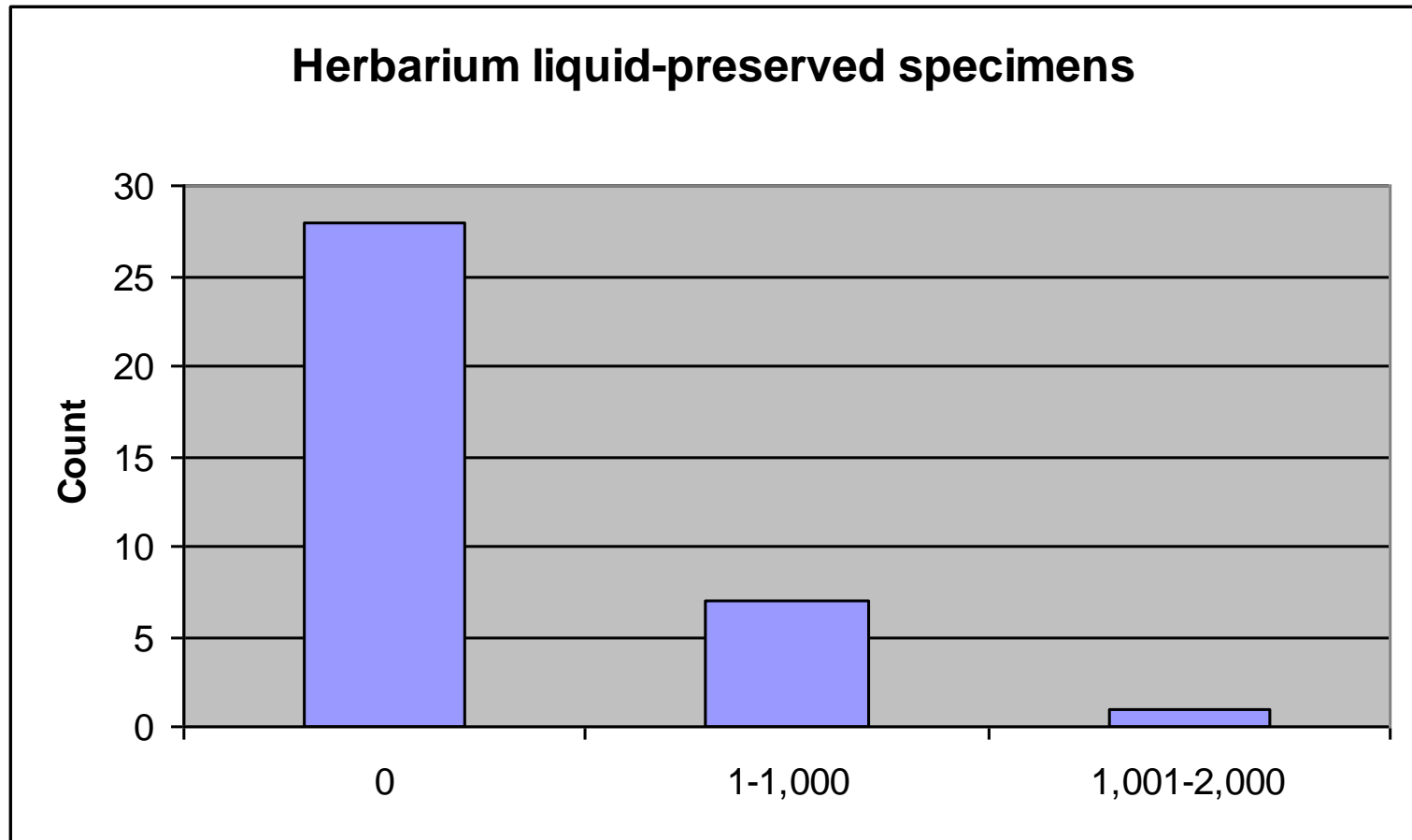
Collection Information



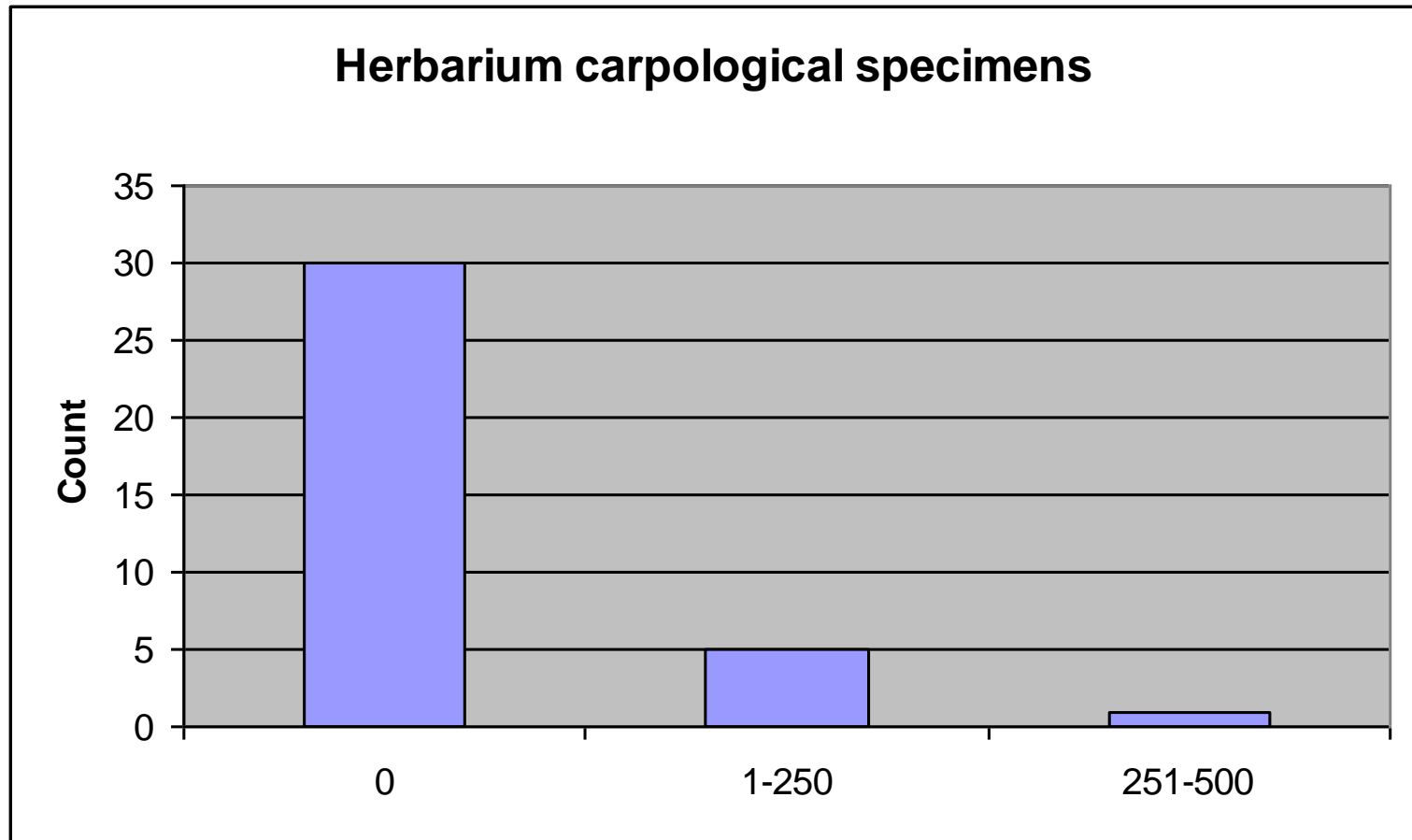
Collection Information



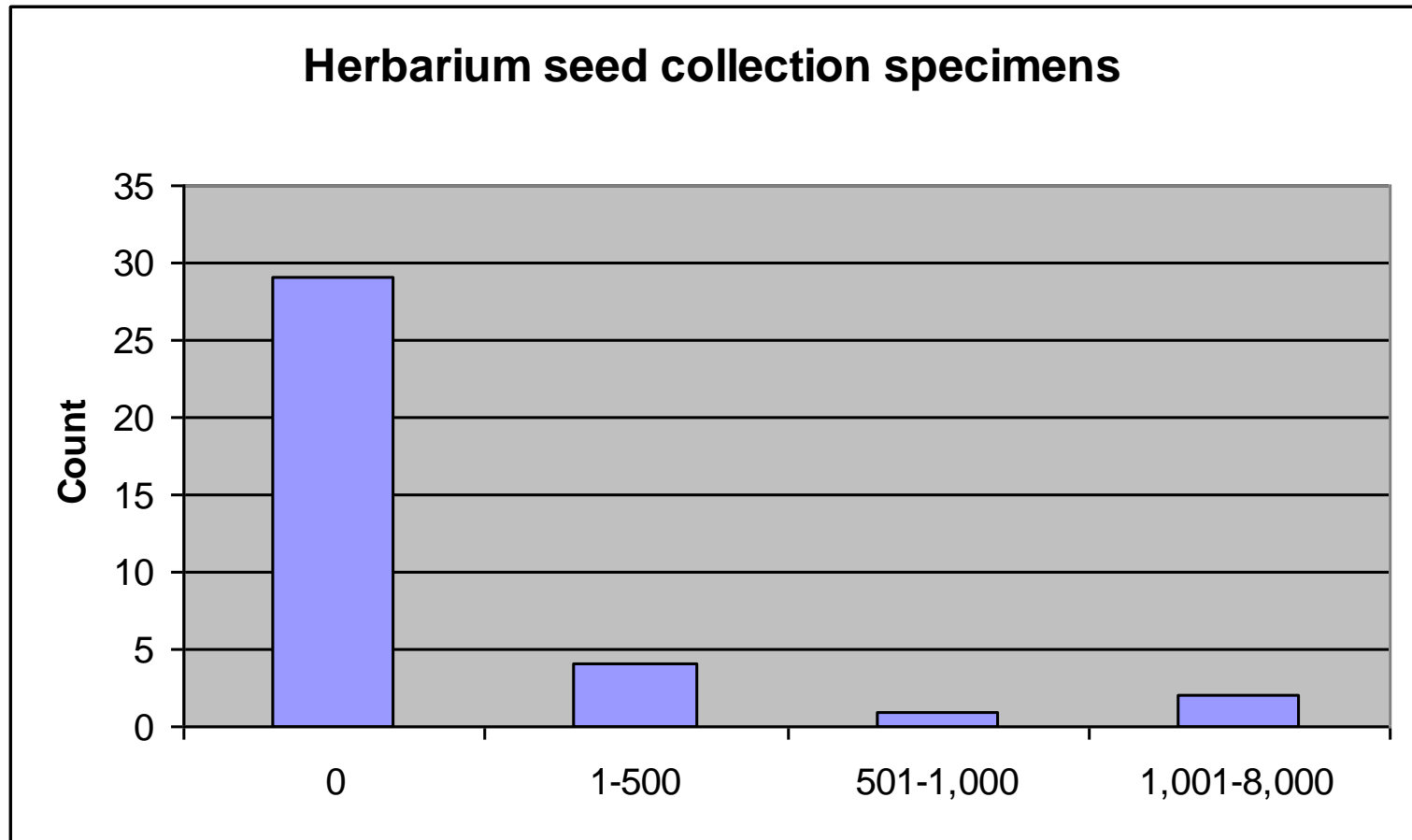
Collection Information



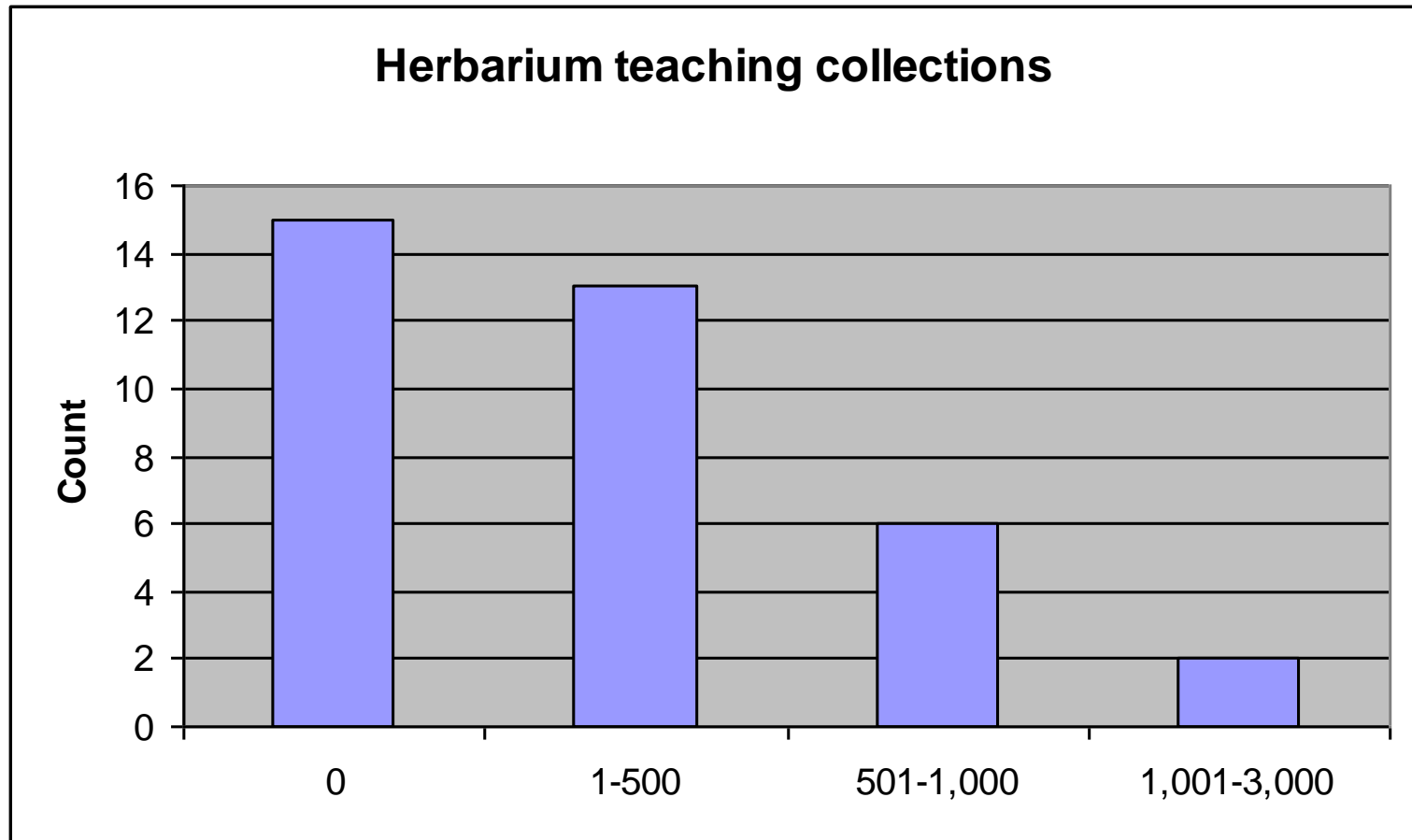
Collection Information



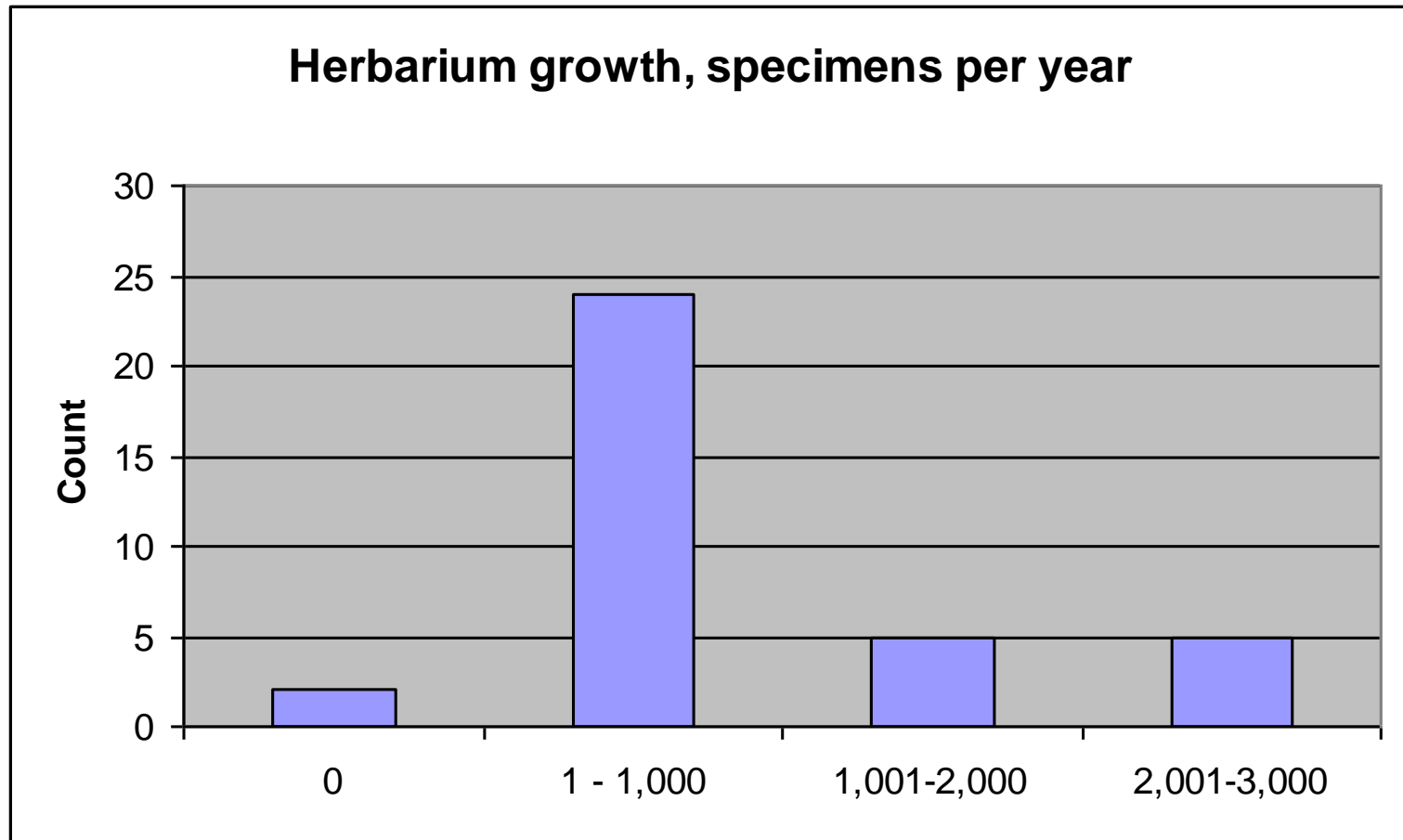
Collection Information



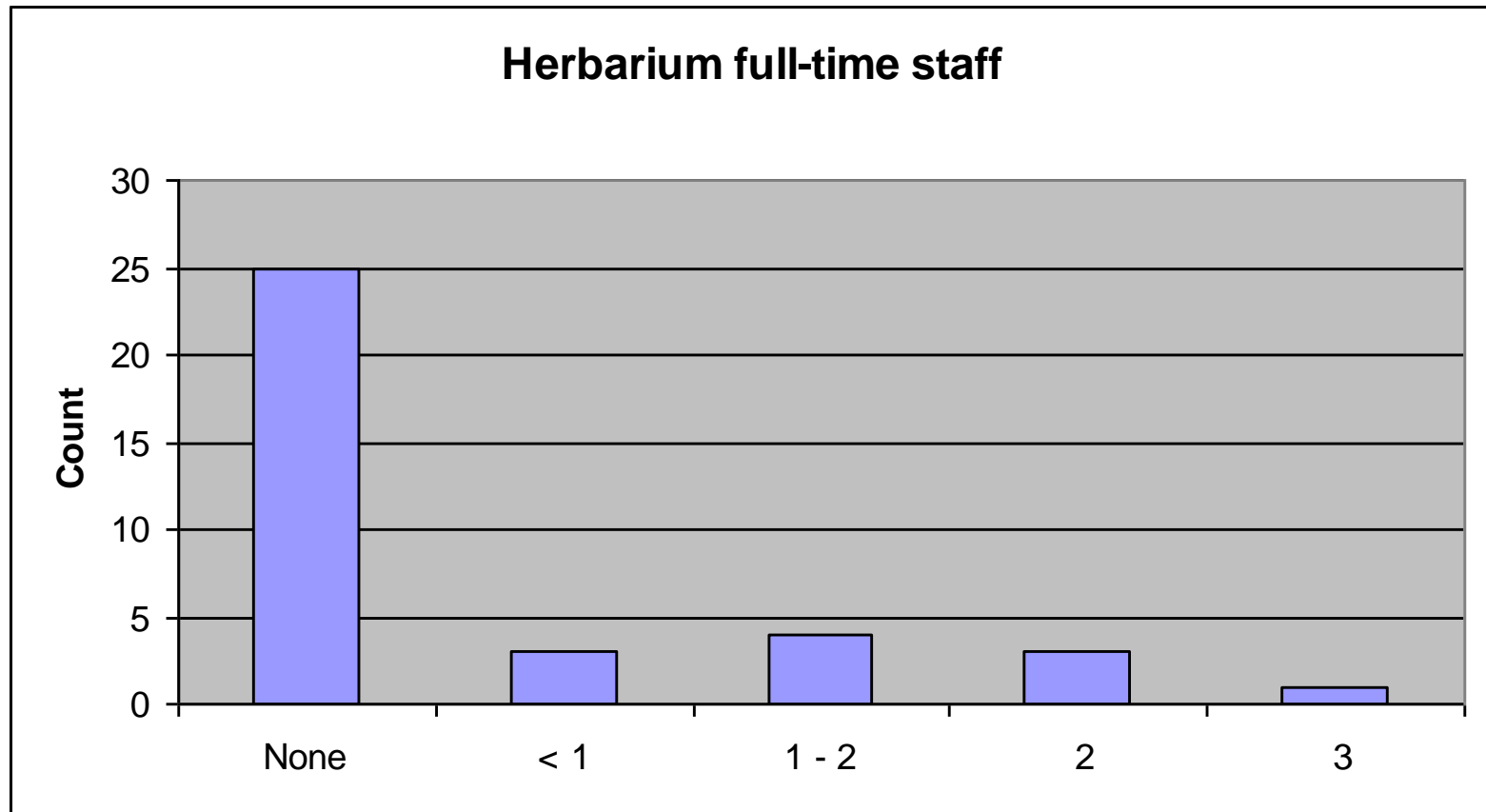
Collection Information



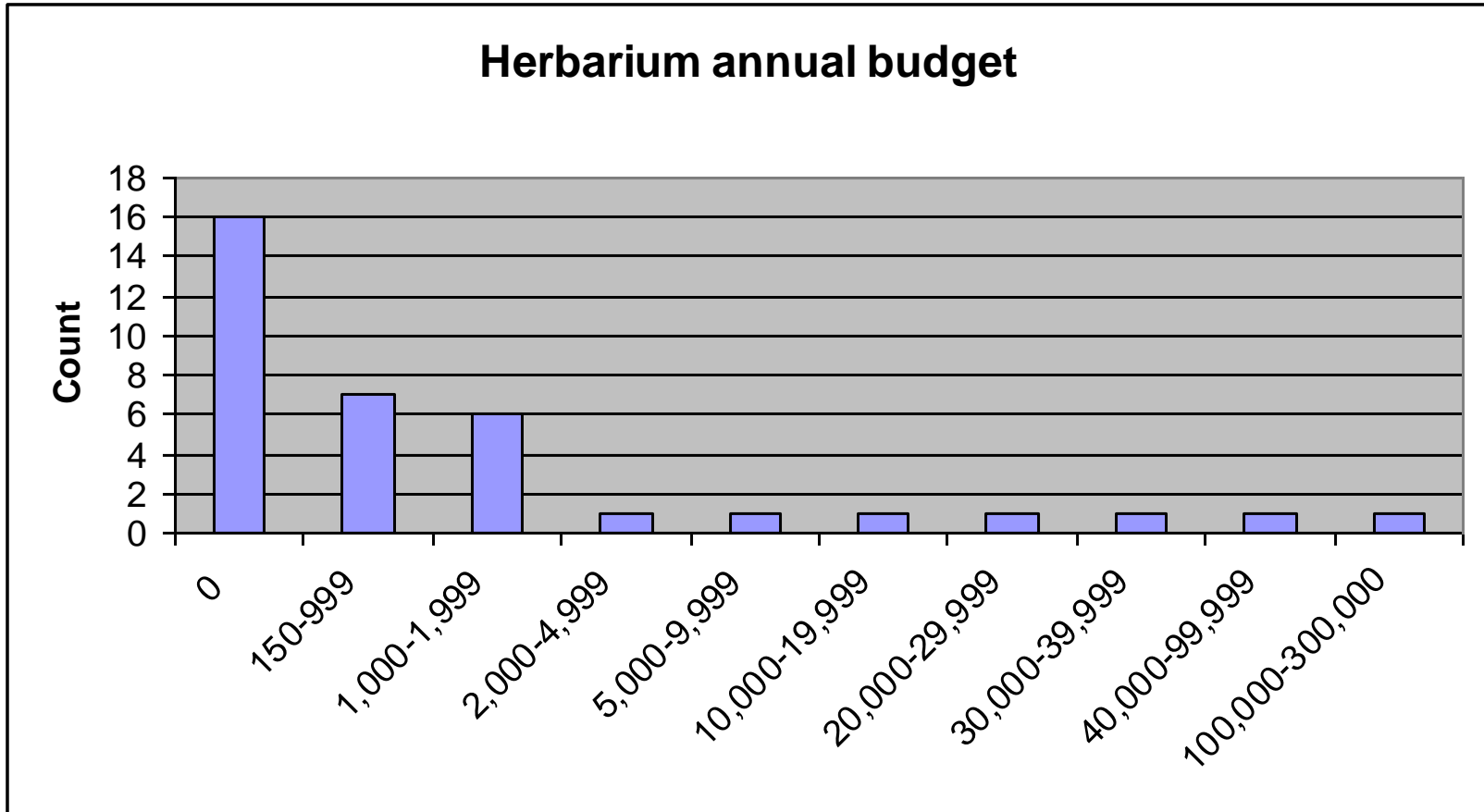
Collection Information



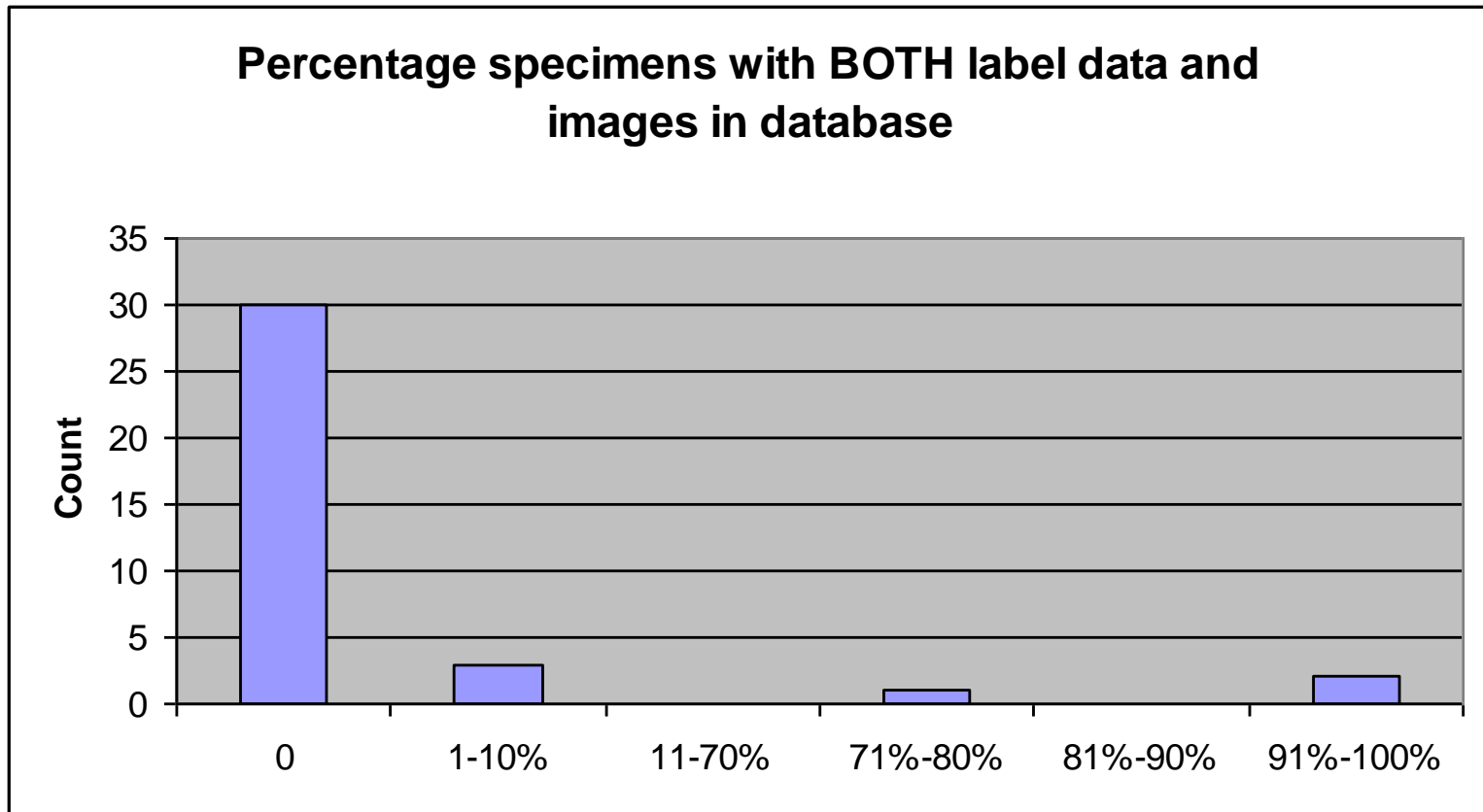
Staff Information



Herbarium Budget



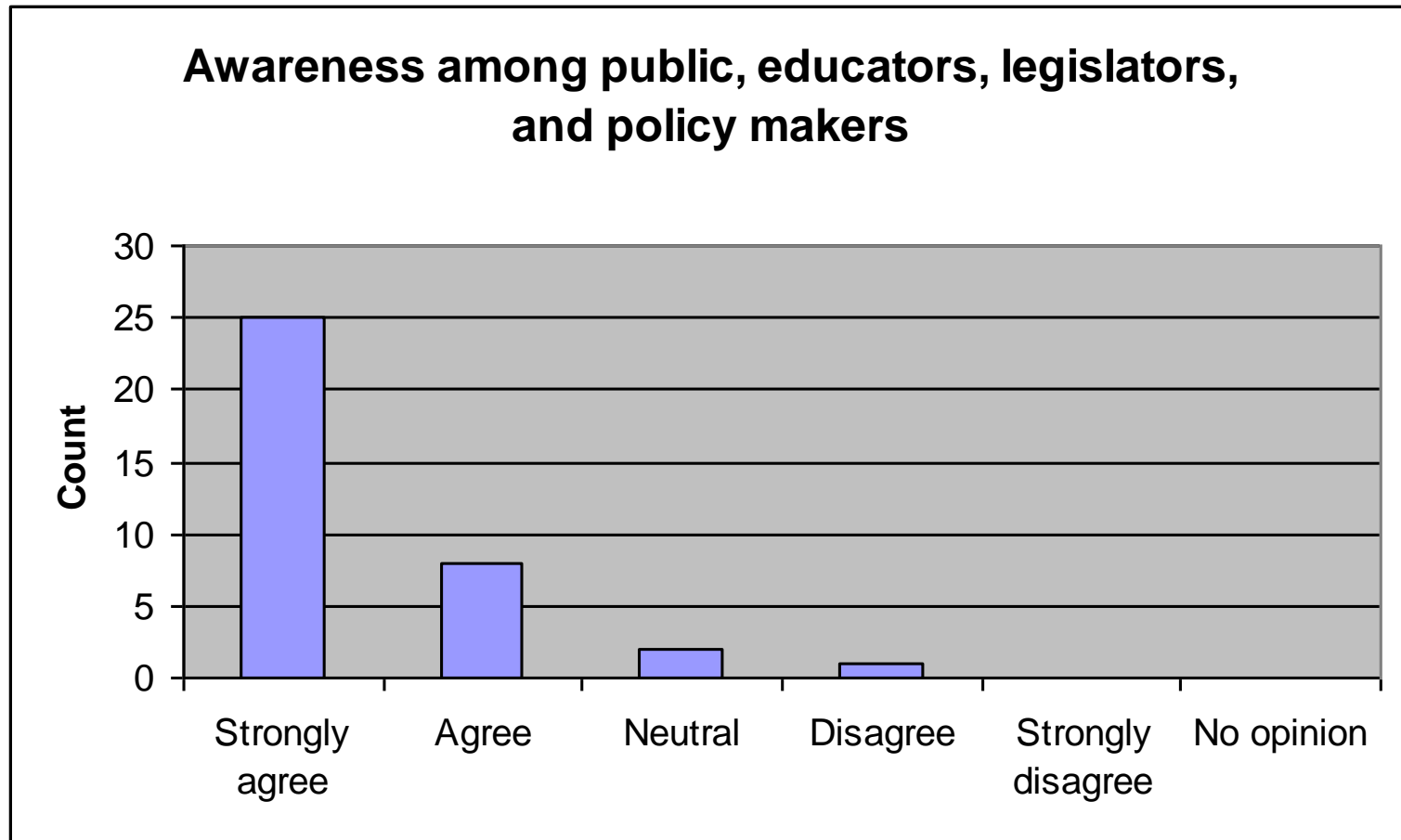
Database Status: Percentages



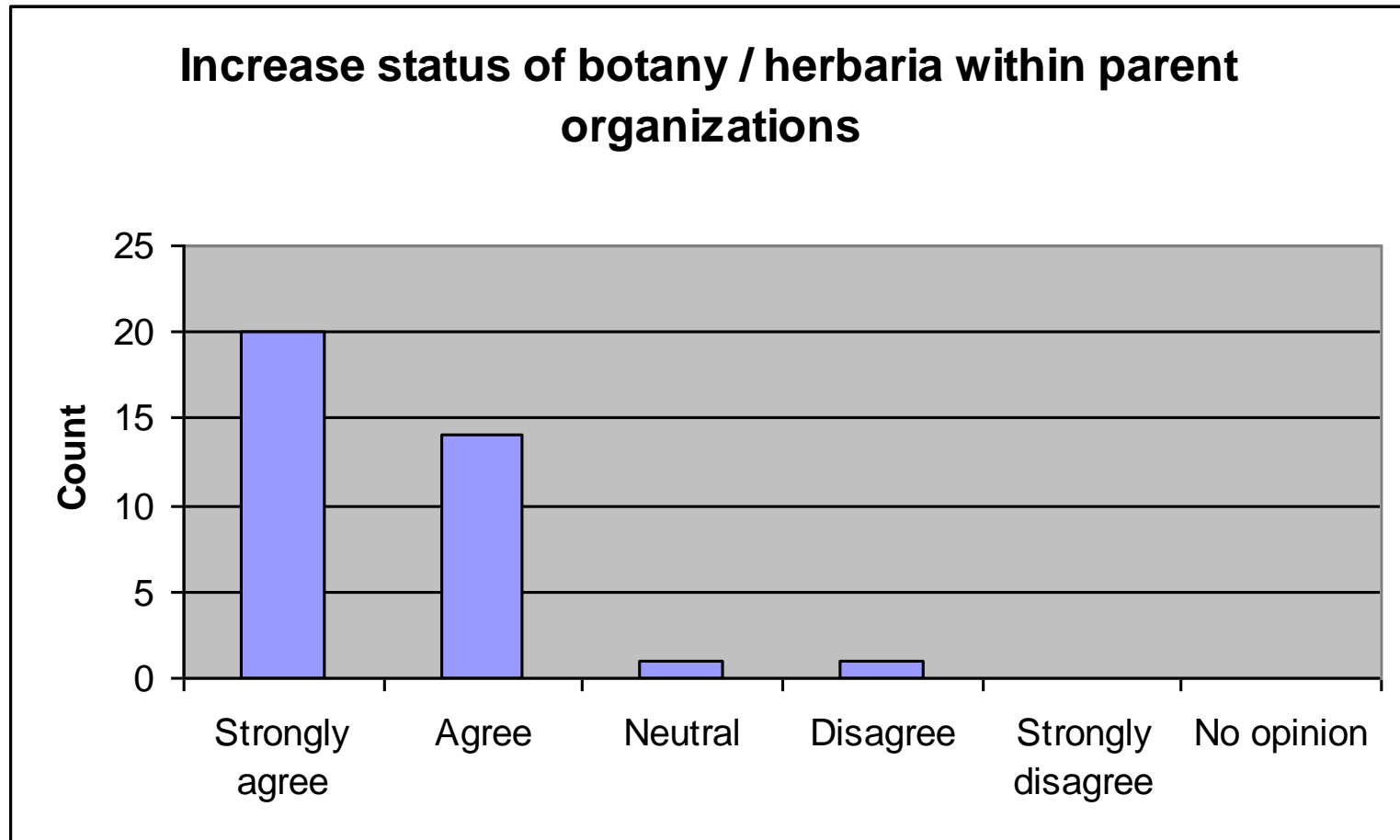
Database Status

- **Web accessibility**
 - **33% (12 of 36) are available on the Web**

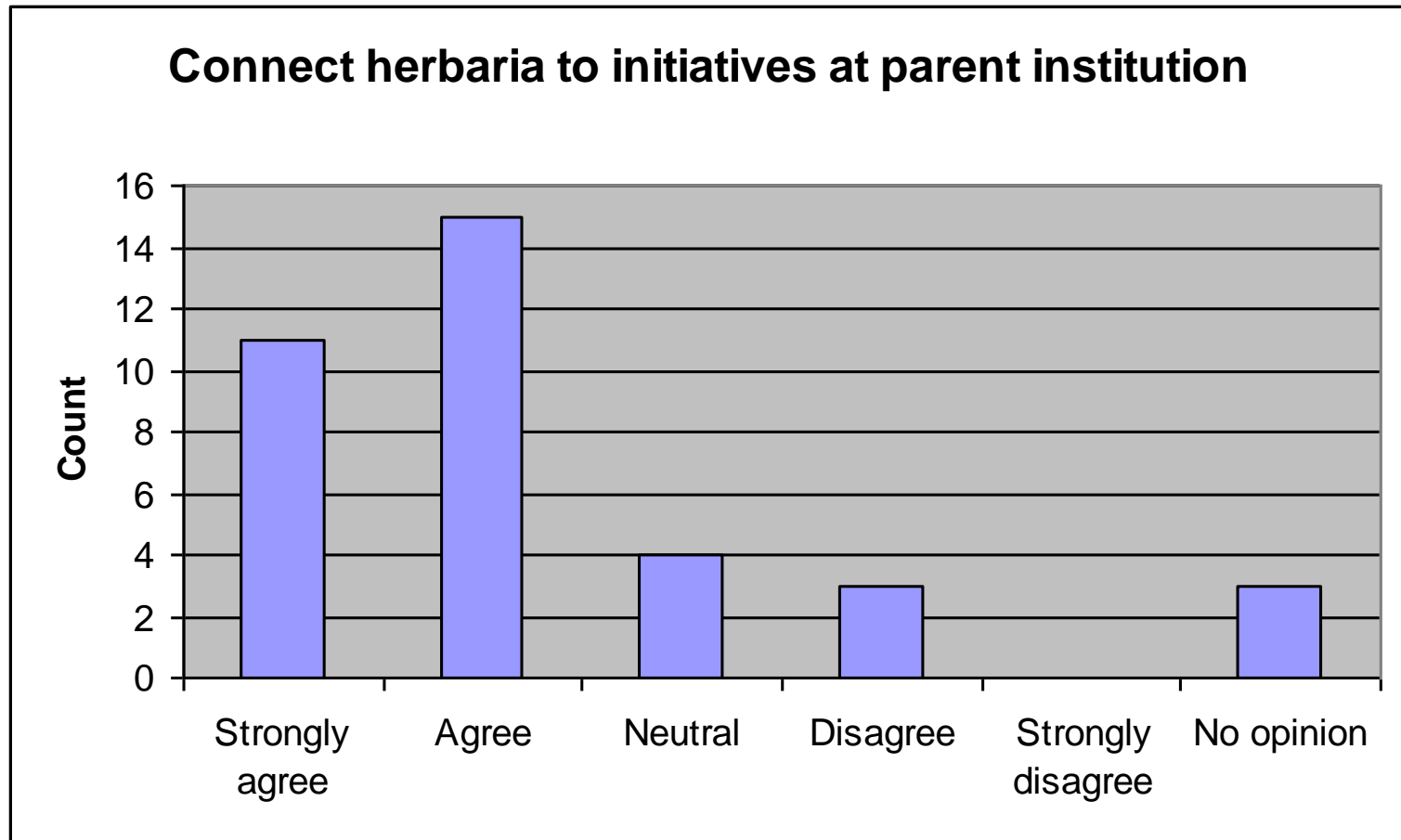
Objectives: General Awareness



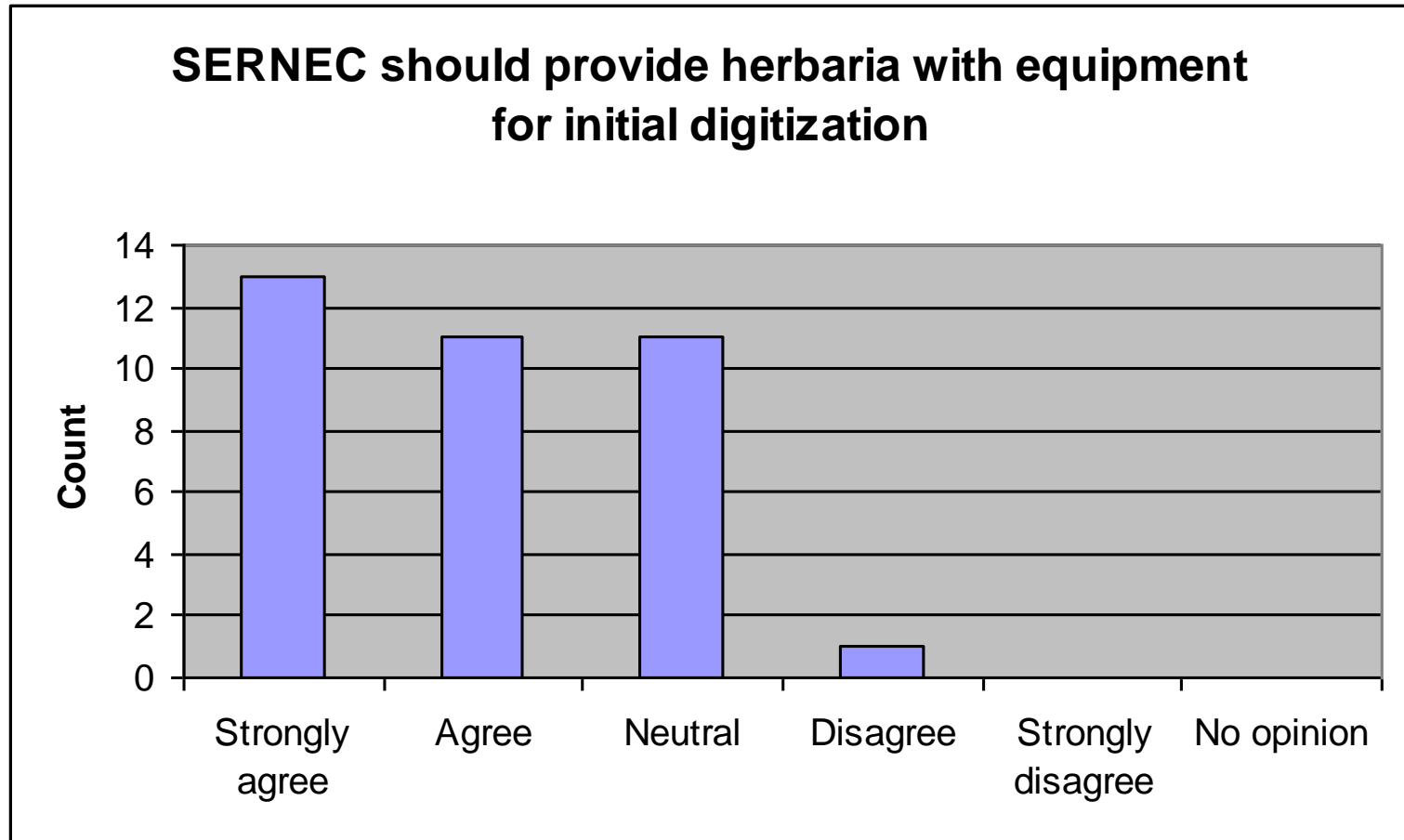
Objectives: Increasing Status



Objectives: Parent Org. Initiatives



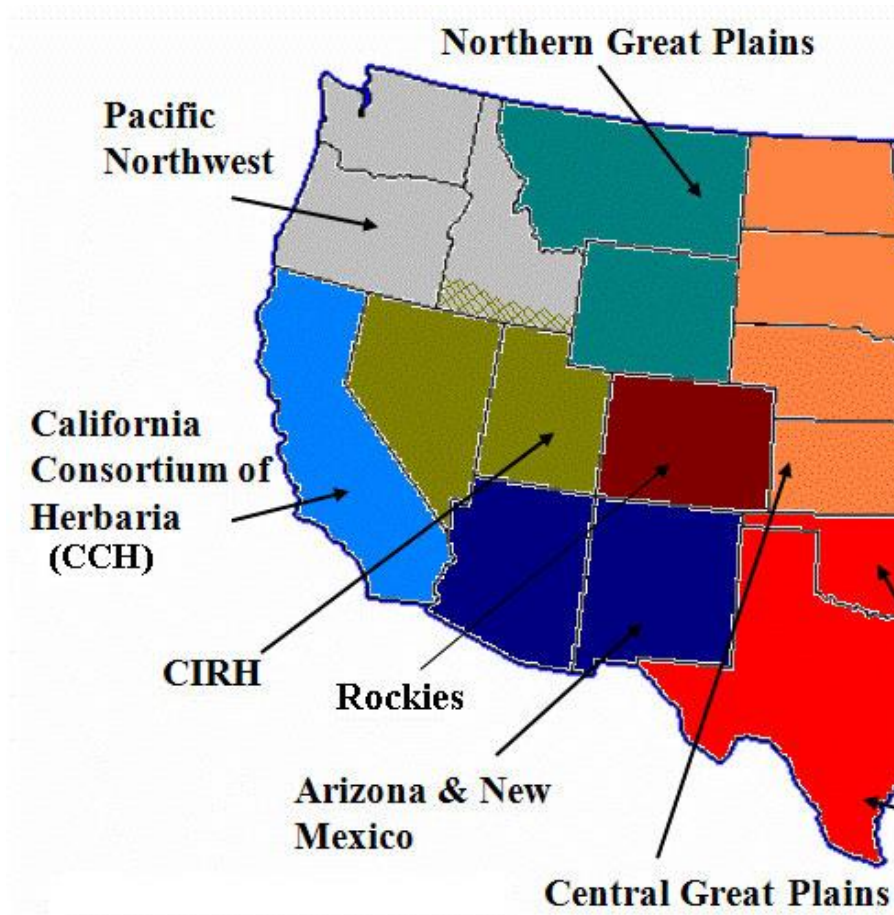
Objectives: Initial Digitization



欧美标本馆及标本数字化

- 衰落时期：二十世纪八、九十年代： 法国巴黎，哈佛大学等；
- “重生”时期：二十世纪初保护生物学及生物多样性信息学兴起；
- 案例：
 - ✓个别馆：HUH, NY, US,
 - ✓国家：澳大利亚AVH-ALA；
 - ✓美国（SERNEC）：SEINet(Southwest Environmental Information Network); Pacific NW Herbaria Digit Project; New England, iDigBio, JASTOR
 - ✓欧洲：GPI

欧美标本馆及标本数字化



2010 Collaborative NSF Grant



Collaborative grant between four Pacific Northwest herbaria:

- 1) University of Washington Herbarium (PI: Dick Olmstead, Co-PI's: David Giblin and Joe Ammirati)
- 2) Oregon State University Herbarium (Co-PI: Aaron Liston)
- 3) University of Idaho, Stillinger Herbarium (Co-PI: Dave Tank)
- 4) Montana State University Herbarium (Co-PI: Matt Lavin)

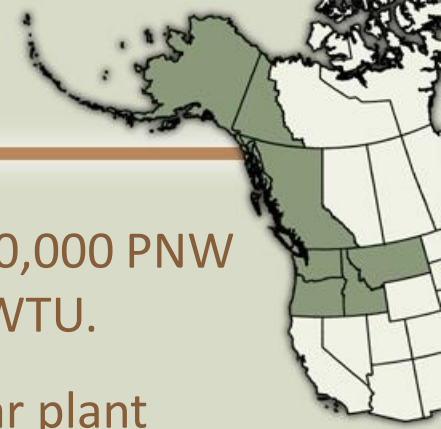
Submitted to NSF in July, 2009; awarded this spring; funds arrived in June.

Combined grant funds: \$1,340,879

Grant covers imaging and digitization of herbarium specimens from multiple PNW herbaria.



What we proposed to do



1. Expand the taxonomic breadth of the portal by databasing 200,000 PNW non-vascular plant, fungal, and lichen specimens at OSC and WTU.
2. Image, database and provide online access to 185,000 vascular plant specimens from the region's remaining large herbaria (ID, MONT).
3. Image, database, and provide online access to the PNW vascular plant specimens from small herbaria in Idaho, Oregon, and Washington.
4. Create connections to the Portal for other PNW herbaria with existing specimen databases (WS, UBC, MONTU, SOU, SRP, CIC). Also, improve existing connections (WTU, OSC, ALA).
5. Provide Portal data to GBIF, USVH, and other data aggregators for those collections that lack their own data access points.
6. Develop portal-based web applications and expand the PNW Herbaria web site.



Grant Budget



1. Collaborative grant between four institutions in Washington (WTU), Oregon (OSC), Idaho (ID), and Montana (MONT).
2. Each institution receives a portion of the funds.

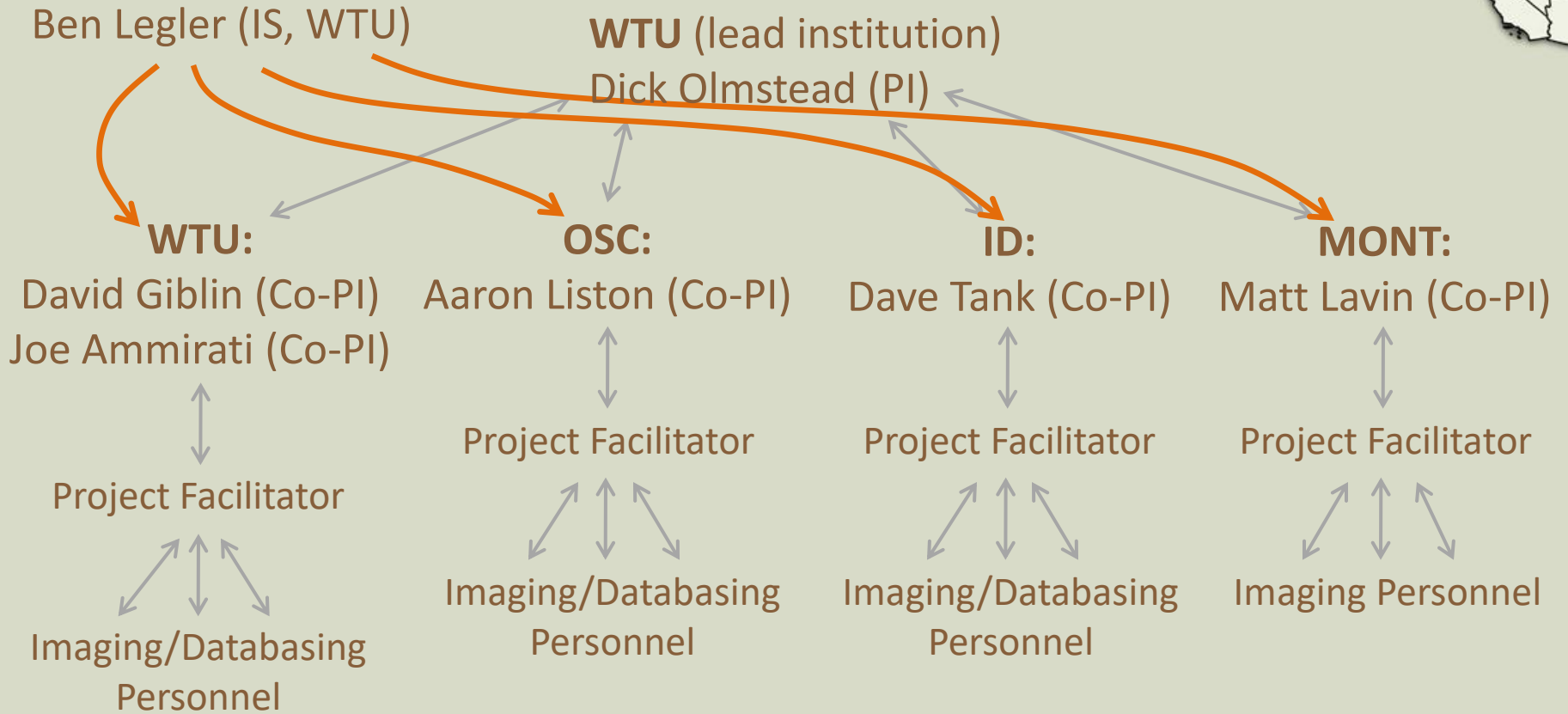
Institution	Funds
University of WA (WTU)	\$642,611
Oregon State U. (OSC)	\$325,141
U. of Idaho (ID)	\$301,351
Montana State U. (MONT)	\$71,776
TOTAL	\$1,340,879

WTU Funds (\$)

Informatics Specialist:	184,202
Databasing coordinator:	41,357
Imaging/databasing:	162,512
Equipment/Supplies:	17,815
Travel:	6,000
2010 PNW Herbaria meeting:	3,250
Indirect costs:	227,475



Organization and Administration



3. Smaller Herbaria



Image and database smaller herbaria in Idaho, Oregon, and Washington.

Washington:

Western WA University: 26,000

Whitman College: 17,000

Central WA University: 25,000

Eastern WA University: 7,000

Pacific Lutheran University: 5,000+

TOTAL: 78,000?

Oregon:

Reed College: 10,000

Portland State University: 11,000

Linfield College: 2,000

Southern Oregon University: 14,000

TOTAL: 37,000

Idaho:

Lewis & Clark State College: 10,000

Northern Idaho College: 10,000

Forest Service Herbaria: 5,000

TOTAL: 25,000

Montana:

(none)

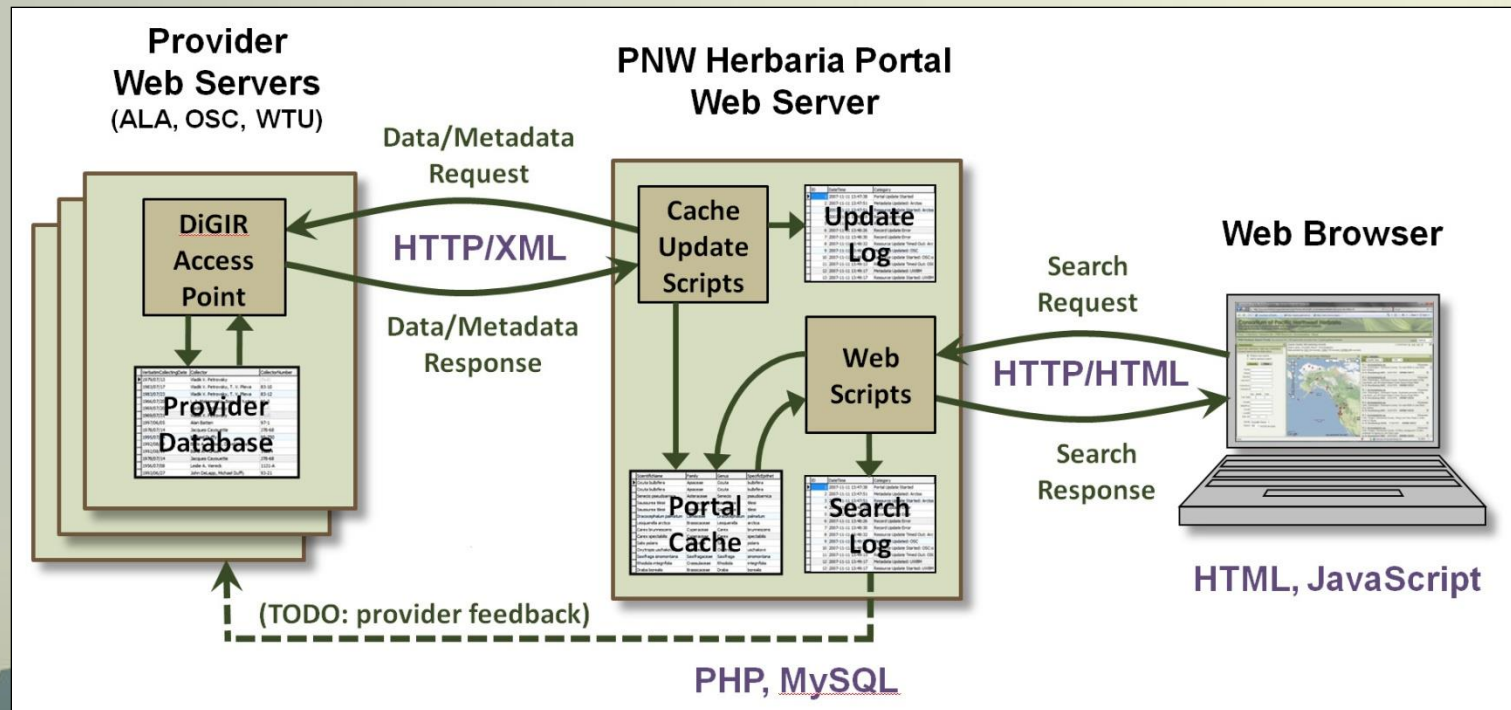
GRAND TOTAL: 142,000+

4. Portal Connections



Improving Portal connections:

- Currently using DiGIR and Darwin Core data schemas.
- Should switch to TAPIR or IPT, and use current data schemas.
- I will investigate ways to bypass these options to create custom connections allowing faster data transfer and richer data structures.



5. Provide data to GBIF & Others



Provide Portal data to GBIF, USVH, and other data aggregators for those collections that lack their own data access points.

GLOBAL BIODIVERSITY INFORMATION FACILITY

SPECIES COUNTRIES DATASETS OCCURRENCES SETTINGS ABOUT

```
<?xml version="1.0" encoding="UTF-8"
  <response xmlns="http://rs.tdwg.org/t
  <header>
  <source accesspoint="http://145.18.162
  <software name="TapirLink" version="0.2(re
```

... free and open access to biodiversity data

Search
species/country/dataset

Search

Welcome to the GBIF Data Portal
Access millions of data records shared via the GBIF network.
To learn how to use this site, please see [About](#).
To tune this site for smaller displays, see [Settings](#).
Version 1.3 - [click here](#) to see what is new!

Explore Species
Find data for a species or other group of organisms.
Species
Information on species and other groups of plants, animals, fungi and

Explore Countries
Find data on the species recorded in a particular country.
Countries
Information on the species recorded in each country, including

Explore Datasets
Find data from a data publisher, dataset or data network.
Datasets
Information on the data publishers, datasets and data networks that

6. Portal Applications



Develop portal-based web apps and expand the Portal web site.

Public interface:

1. Search interface improvements: browse taxonomy, image viewer, search by polygon, search by shapefile, search by a list of values, return results as a checklist, etc.
2. Specimen-based, synonymized regional checklists for each organismal group.
3. Atlas pages with dot maps for each taxon for the region, including print-quality maps.
4. Specimen-based, dynamically generated, county level checklists for the region.
5. Dot map of the entire region showing all collection sites, with color coding.
6. A version of the search pages targeted for mobile devices.
7. Static datasets that can be downloaded and copied to mobile devices for field use.

Back-end & administrative:

Any more ideas?

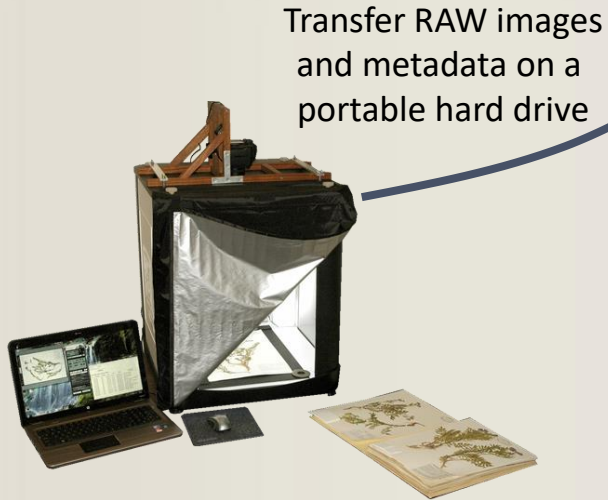
1. Improve Portal's data harvesting processes.
2. Use the Portal to host ALL Pacific Northwest herbaria to GBIF?
3. Add data quality controls such as synonymy checks, flagging records with inconsistencies, and reporting data problems back to the originating herbarium.
4. Create mechanism for automated dispatch of loan requests to participating herbaria.
5. Improve data usage tracking, and mechanisms to report statistics back to herbaria.
6. Create a GIS Web Service providing access to georeferenced specimen data.

Imaging & Databasing

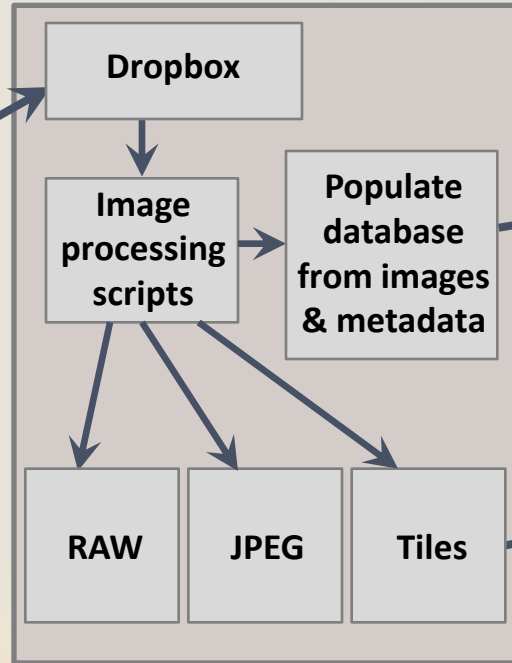


Overview of the imaging & databasing workflow

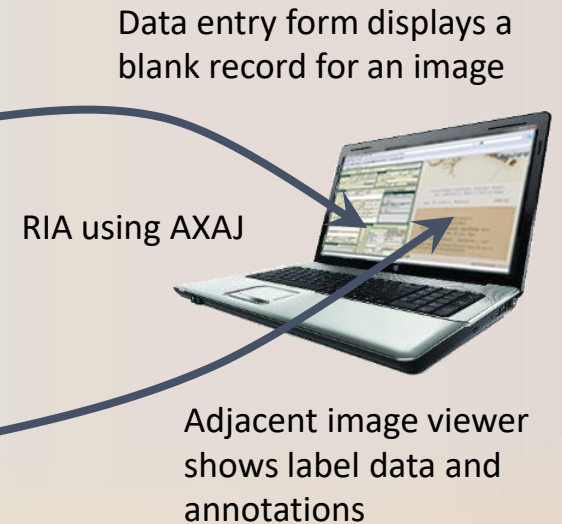
Imaging Workstation:



Portal Server:



Data Entry:

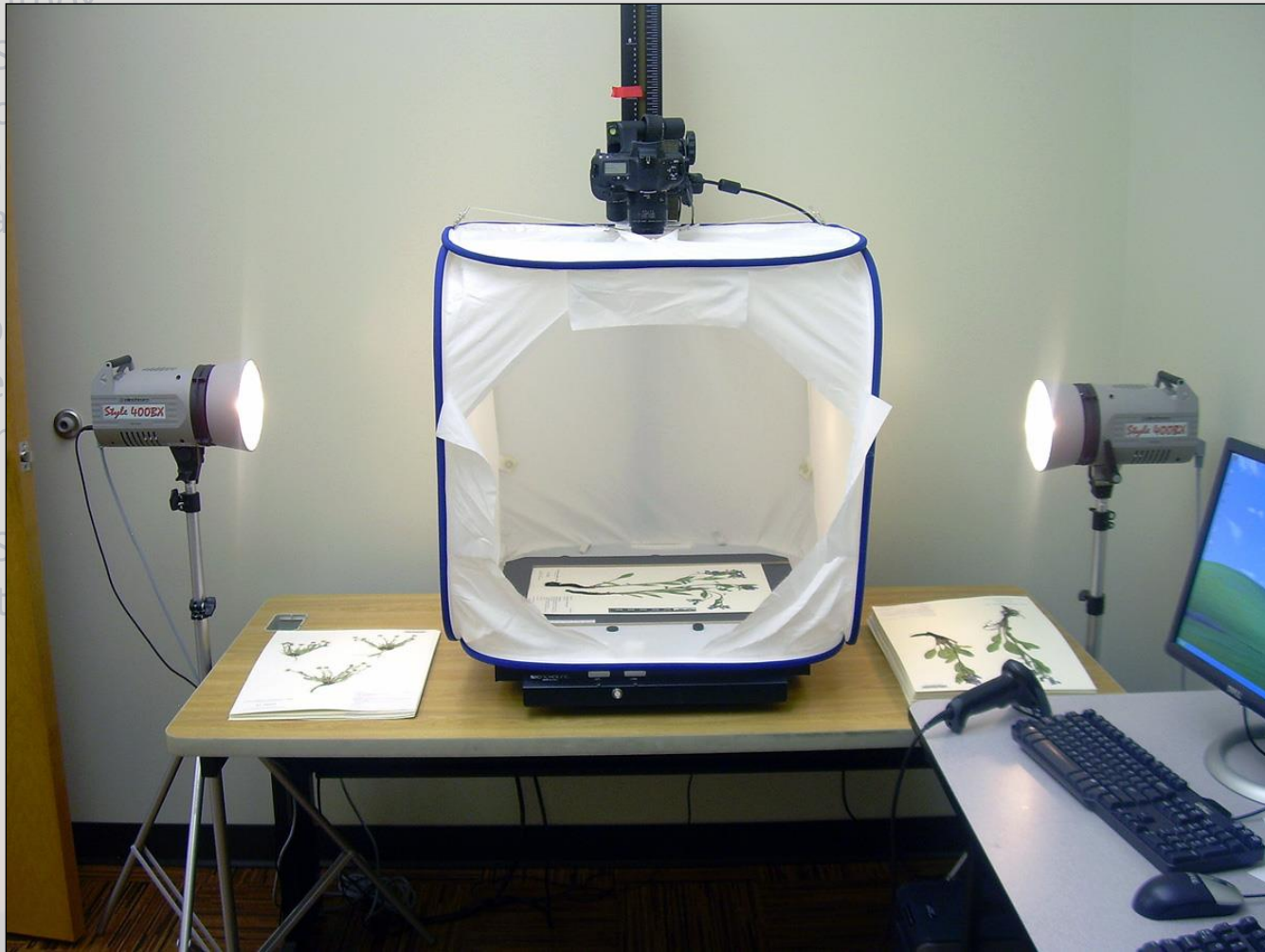


Imaging and Databasing



Imaging equipment.

- Ortery Lightbox
- Canon EOS
- 16-32 GB d
- AC adapto
- 50 mm ma
- Custom ca
- Custom sp
- 6 inch rule
- Laptop cor
- USB cable
- Canon EOS
- Image met



Imaging and Databasing



Imaging equipment.

Custom mount on top of box to hold camera



Imaging and Databasing



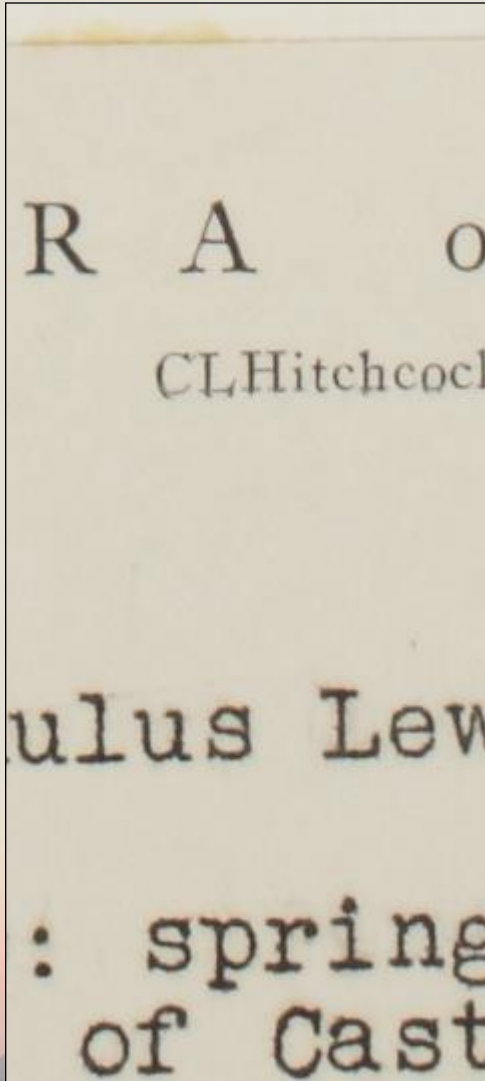
Imaging equipment.



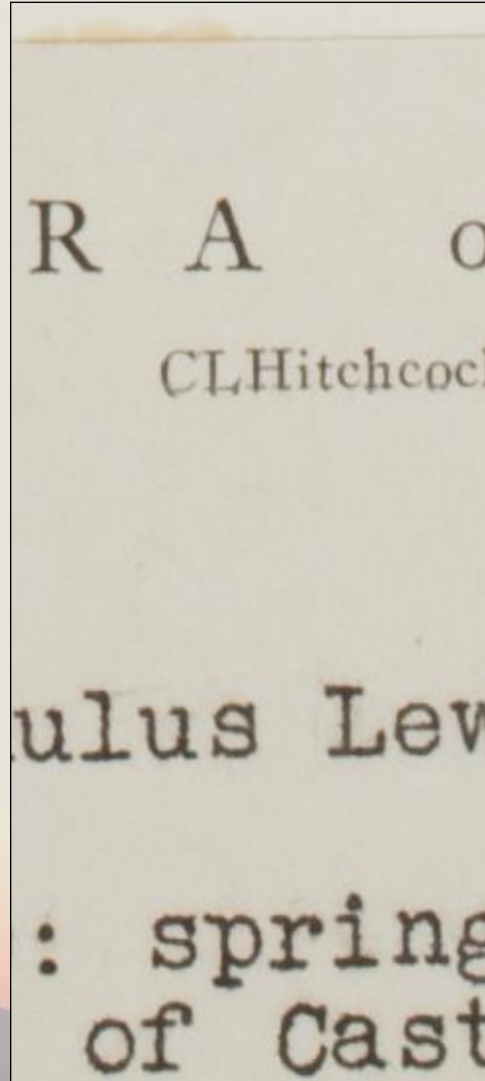
Imaging and Databasing



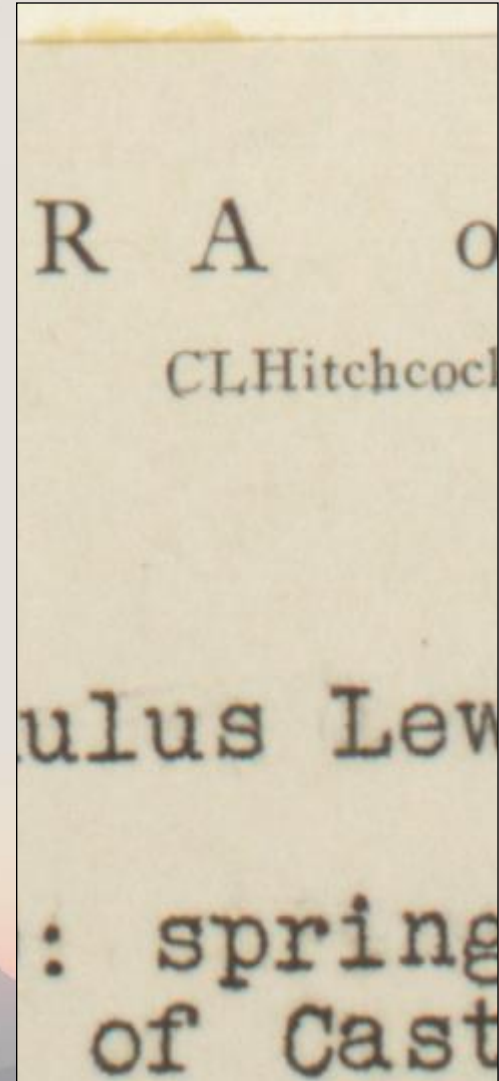
Canon:



Photoshop:



dcraw:



Imaging and Databasing



Canon:



Photoshop:



dcraw:

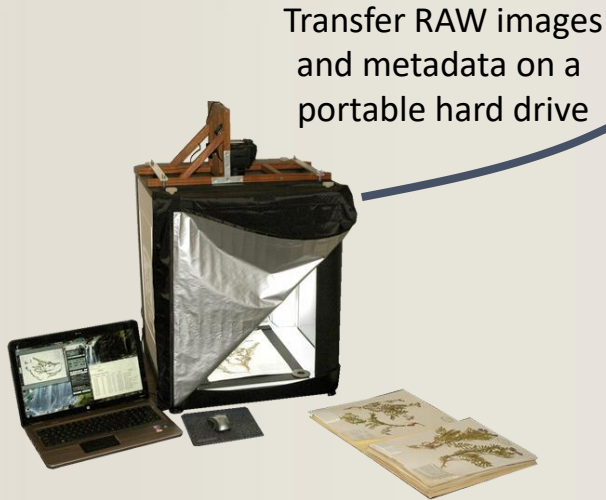


Imaging & Databasing

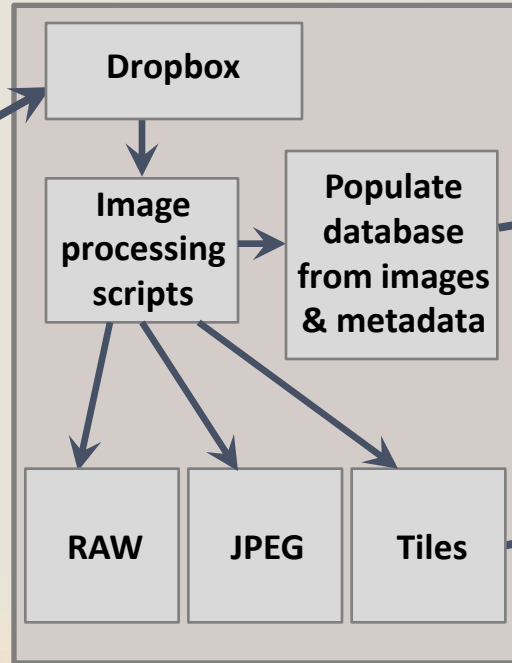


Overview of the imaging & databasing workflow

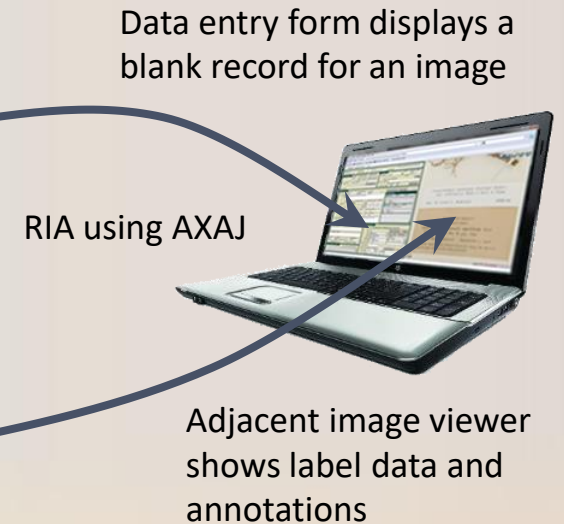
Imaging Workstation:



Portal Server:



Data Entry:



Imaging and Databasing

WTU000223 - Consortium of Pacific Northwest Herbaria - Mozilla Firefox

http://localhost/pnwherbaria/portal/gmapviewer.php?Image=WTU000223

Created by HVC Modified by Project Record verified against specimen?

Created on 9/8/2006 Modified on 9/8/2006 NSF Grant 0346624 Comments

Sheet Details

Record ID: 152939 Storage Type: Standard sheet Data Source: Specimen Label

Herbarium: WTU Accession: 86571 Other Accessions:

Label Title:

Collectors

Collector: A. A. Heller Prefix: 12636 Number: 12636 Suffix:

(Assoc. Coll. Chooser): Add

Assoc. Collectors:

Collection Date: 1 Sep 1916 New Person...

Collection Site

Country: USA State/Province: Oregon County: Jackson

Political Region: USA State/Province: Oregon County: Jackson

Locality: South slope of the Siskiyou Mountains.

Elevation: Feet Upper: Meters Upper: Tshp. Rng. Sec. Quarter:

2nd TRS: TRS:

Latitude: Deg. Min. Sec. Datum: Acc. (m): Source:

Longitude:

Zone Easting: Northing: Datum: Acc. (m): Source:

UTM:

Site Description: Along the highway grade in open places in the yellow pine belt.

Specimen Details

Specimen Details:

Miscellaneous Notes:

Origin: Culture: Phenology:

Native: Wild: native/naturalized: Fertile:

Photographed Live?: # of Specimen Images:

Type Specimen Details... Is this a type specimen?

Determinations...

Full Name: **Chrysothamnus nauseosus ssp. albicaulis**

Det. # 2 Print Annotation... Delete

Family: Asteraceae <- Prev. Name New Name...

Genus: Chrysothamnus Authors: (Pall.) Britt.

Species: nauseosus (Nutt.) Hall & Clements

Trinomial: ssp. albicaulis

Quadrinomial:

ID Qualifier:

Determiner: Loran C. Anderson New Person... Det. !

Det. Date: 1980 Fide:

Det. Notes: Determination date: 1980-1981.

Existing Sites:

Select USA Oregon Jackson

North slope of the Siskiyou Mountains along the highway.

Elev.: Lat/Long: " ", " " TRS: . UTM: , E, N

Select USA Oregon Jackson

South slope of the Siskiyou Mountains.

Elev.: Lat/Long: " ", " " TRS: . UTM: , E, N

Chrysothamnus nauseosus (Pallas) Britt.
ssp. albicaulis (Nutt.) Hall & Clem.

Det. by Loran C. Anderson 1980-81

PLANTS OF OREGON
Jackson County

12636 Chrysothamnus speciosus Nutt.
Trans. Am. Phil. Soc. 7: 323. 1840.

A. A. Heller, collector September 1, 1916

South slope of the Siskiyou mountains along the highway
grade in open places in the yellow pine belt.

POWERED BY Google

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Data entry personnel simply click a button to pull up a blank record, database from the image, and repeat.
I may add OCR-assist to the data entry interface.

6. Portal Applications



Develop portal-based web apps and expand the Portal web site.

Public interface:

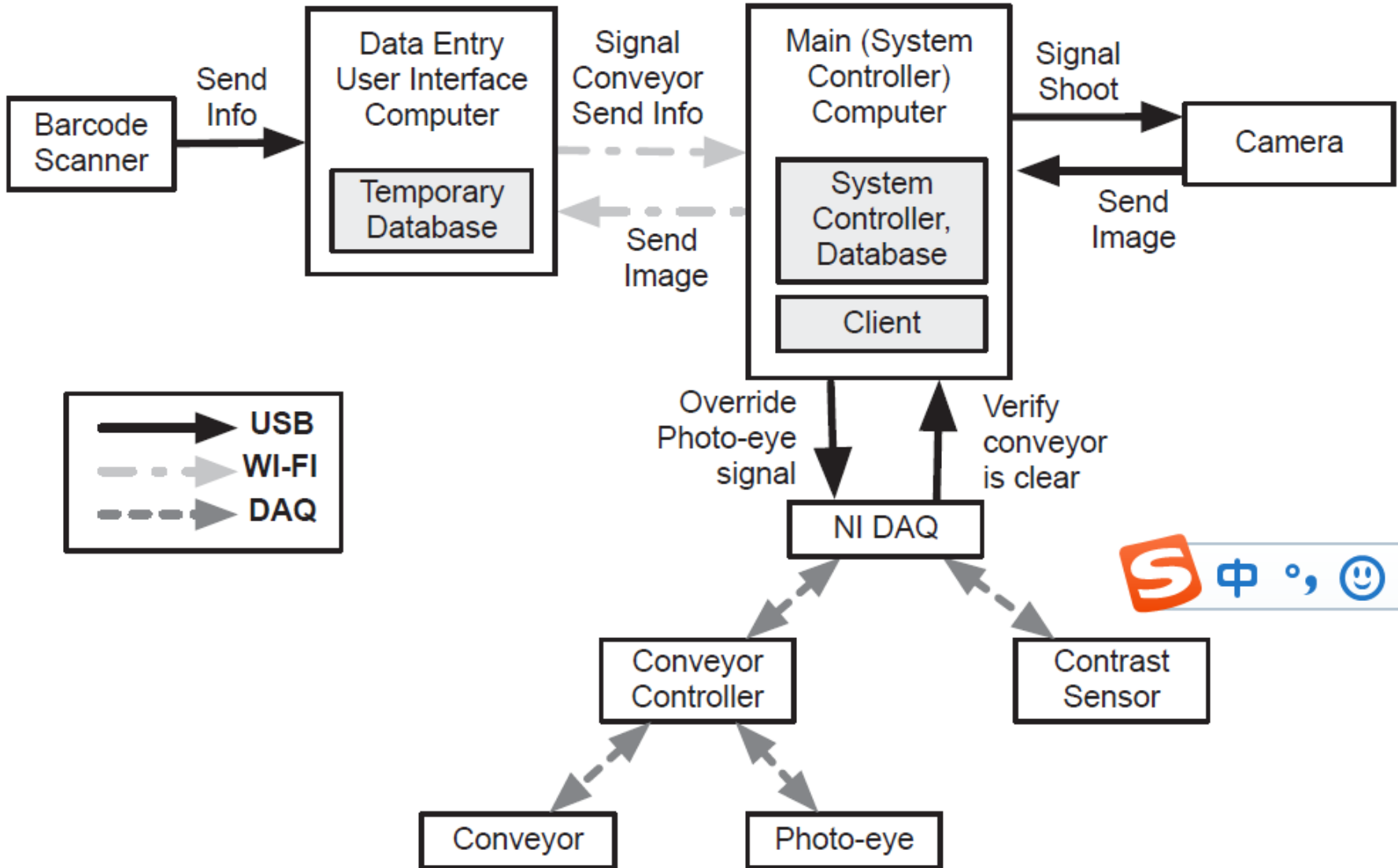
1. Search interface improvements: image viewer, search by polygon, search by shapefile, search by a list of values, return results as a checklist, etc.
2. Specimen-based, synonymized regional checklists for each organismal group.
3. Atlas pages with dot maps for each taxon for the region, including print-quality maps.
4. Specimen-based, dynamically generated, county level checklists for the region.
5. Dot map of the entire region showing all collection sites, with color coding.
6. A version of the search pages targeted for mobile devices.
7. Static datasets that can be downloaded and copied to mobile devices for field use.

Back-end & administrative:

Any more ideas?

1. Improve Portal's data harvesting processes.
2. Use the Portal to host ALL Pacific Northwest herbaria to GBIF?
3. Add data quality controls such as synonymy checks, flagging records with inconsistencies, and reporting data problems back to the originating herbarium.
4. Create mechanism for automated dispatch of loan requests to participating herbaria.
5. Improve data usage tracking, and mechanisms to report statistics back to herbaria.
6. Create a GIS Web Service providing access to georeferenced specimen data.

New England(HUH, YALE)



南非及巴西实体标本馆：同是生多大国

Megadiverse countries

Australia
Congo
Madagascar
S. Africa
China
India
Indonesia
Malaysia
Papua, New Guinea
Philippines
Brazil
Colombia
Ecuador
Mexico
Peru
USA
Venezuela

17



First, analysis of primates (4 countries, Brazil, Madagascar, Indonesia, Congo have 2/3 of all species), then of mammals, birds, reptiles, amphibia, plants and selected insects

In these 17 countries, >2/3 of all forms of life are represented. Also, they contain most tropical forests, coral reefs and other priority systems.

For instance, Australia has 600.000-700.000 species (84% of plant, 83% of mammal, 45% of bird species are endemic in the continent

SA: 植物多样性及分类资源

TABLE 3. Number of herbarium specimens in the 10 largest herbaria in South Africa.

Herbarium	Acronym	Number of specimens
National Herbarium, SANBI	PRE	1 200 000
Compton Herbarium (incorporating SAM & STE), SANBI	NBG	500 000
Bolus Herbarium, University of Cape Town	BOL	300 000
Selmar Schönland Herbarium, Albany Museum	GRA	200 000
Bews Herbarium, University of KwaZulu-Natal	NU	120 000
H.G.W.J. Schweickerdt Herbarium, University of Pretoria	PRU	110 000
Charles E. Moss herbarium, University of the Witwatersrand	J	100 000
KwaZulu-Natal Herbarium, SANBI	NH	100 000
Kimberley Herbarium, McGregor Museum	KMG	32 600
Bloemfontein Herbarium, National Museum	NMB	25 000

TABLE 2. Taxonomic researchers employed at SANBI (as at December 2014). W=White; B=Black; F=Female; M=Male.

Herbarium	Researchers		Ph.D.s	
	Number	Population group	Number	Population group
Compton Herbarium (NBG)	3	1 WF; 2 WM	3	1 WF; 2 WM
National Herbarium (PRE)	15	4 WM; 5 WF; 6 BF	4	2 WF; 1 WM
KwaZulu-Natal Herbarium (NH)	1	1 BF	0	



SA: 植物分类在线资源（由SANBI主导）

部门： Biosystematics Research and Collections;

董事会： Biodiversity Information Management(BIM)
Directorate;

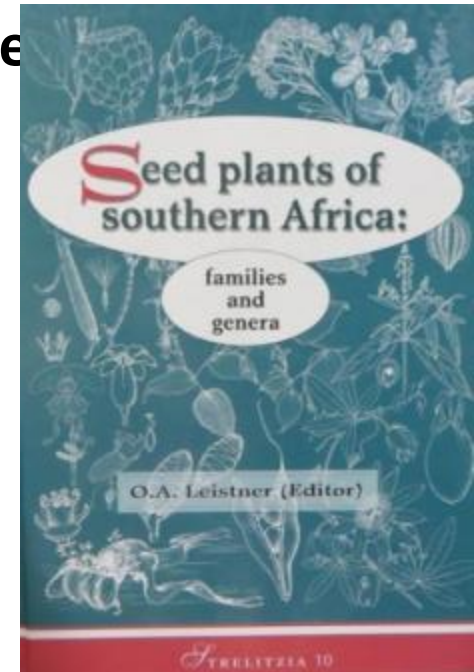
原有系统： Pretoria Computerised Information
System,

（PRECIS), 主要是1.2百万数字标本， 和名录网站：

<http://posa.sanbi.org/searchspp.php>;

现用系统： Botanical Research And Herbarium
Management System（BRAHMS），
并由此导出生成e-Flora SA。

SANBI website: www.sanbi.org



SA:e-Flora 目标-团队及工作流程（方法）

Established a TEAM

e-Flora coordinator

Checklist coordinator

Technical team

- Two technical staff members
- Two interns
- Two proofreaders
- One volunteer

Scientific team

- 30 taxonomists

Soon to be appointed

- Data content manager
- e-Flora coordinator assistant
- Checklist coordinator assistant

Disa uniflora P.J.Bergius

Kingdom: Plantae
Plant group: Monocotyledones
Order: Asparagales
Family: Orchidaceae



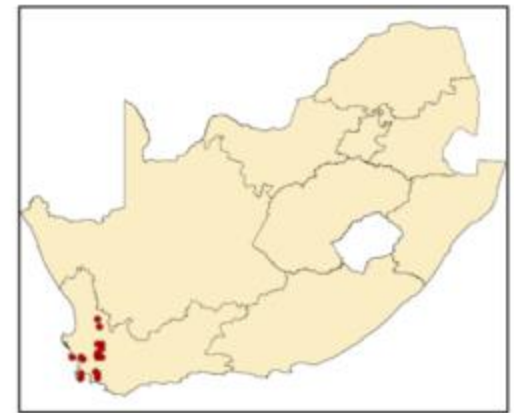
©SANBI, M. Koekemoer



©SANBI, Ellavson



©SANBI



Synonyms: *Disa grandiflora* L.f.

Disa grandiflora (L.f.) Thunb.

Common names: Bakkiesblom (Afr.), Disa (Afr.), pride of Table Mountain (Eng.), red disa (Eng.)

Description: Plants flexuose to erect, 150-600 mm tall, spreading by stolons; leaves spreading, lorate to narrowly lanceolate, up to 250 mm long, upper leaves reduced to sheaths and grading into the floral bracts. Inflorescences with 1 (-3), very rarely 10 flowers; bracts green, slightly longer than the ovaries, enclosing the ovary and spur apex. Flowers with the lateral sepals and lip carmine, galea orange inside with carmine veins, petals pale carmine basally, blade yellow with red spots. Median sepal erect, acute, 20-60 mm tall, galea 15-20 mm wide x c. 15 mm deep, lower front margins incurved; spur semi-pendent, parallel to the ovary, conical, acute, laterally flattened, 10-15 mm long; lateral sepals patent, apex often reflexed, narrowly ovate, flat, 35-65 mm long. Petals flanking the anther, apex curved over it, obliquely narrowly obovate rhomboid, acute, basal margin fused to the rostellum, 20-25 mm long. Lip patent, reflexed apically, linear, 20-25 mm long. Anther almost horizontal; stigma sessile, equally tripulvinate; lateral rostellum lobes horn-like, canaliculate, c. 5 mm tall, central lobe reflexed. [1]

Habitat: Along perennial streams and in perennially wet seepages over cliffs, in half to full shade or full sunlight. [1]

Distribution: Common in the Western Cape. [1]

IUCN Red list status: Least Concern

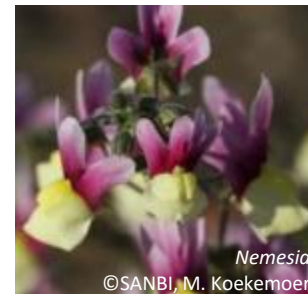
- References:**
- [1] Kurzweil, H, Linder, HP. 1999. Orchids of southern Africa. Rotterdam: AA Balkema.
 - [2] Phillips, EP, Smith, CA, Van Hoepen, E . 1966. Common Names of South African Plants. Memoirs of the Botanical Survey of South Africa 35.
 - [3] Steyn, HM, Van Rooyen, G. 1999. Cedarberg: Clanwilliam & Biedouw Valley. SA Wildflower Guide 10.
 - [4] Von Staden, L. 2007. *Disa uniflora* P.J.Bergius. National Assessment: Red List of South African Plants version 2015.1.

Links:



SA:e-Flora future work

- To maintain the SA National Checklist
 - To update the e-Flora accordingly (dynamic system)
 - To enhance and supplement existing data with more comprehensive descriptions from other floristic or taxonomic publications and images
- ✓ **Contribute e-Flora SA to the WFO project in 2020**



巴西：物种信息资源及三大项目



e-Herbaria & bibliography

The image shows a detailed digital herbarium record table. The table has multiple columns, including specimen ID, date, location, collector, and other details. The records are listed in a grid format.

herbário virtual A. de Saint-Hilaire

Site em desenvolvimento, com atualizações periódicas e verbos de informação.

o projeto história obras herbário virtual

Flaviana Engel

O Herbário Virtual A. de Saint-Hilaire tem por objetivo disponibilizar para bibliotecas e instituições a coleção botânica de Augusto de Saint-Hilaire, incluindo as plantas de Brasil coletadas durante suas viagens de exploração de 1818 a 1822. O site é constituído para correspondência entre o material botânico, notas de campo, mapas, ilustrações e imagens em alta resolução das espécimes depositadas no Herbarário Nacional (Jussieu) Herbarium de Paris e Clermont-Ferrand, França.

herbário virtual A. de Saint-Hilaire

Site under development, with regular updates and verbs of information.

herbário virtual A. de Saint-Hilaire

The beginning

- Started in 2009 as a “Programme”, funded by CNPq, Natura and Vale.
- Objective: *“Build a Virtual Herbarium of public access, including the samples collected in Brazil, in the 18th, 19th and 20th centuries, deposited in the herbaria of the Royal Botanic Gardens, Kew (K), Muséum National d'Histoire Naturelle in Paris (P) and Rio de Janeiro Botanical Garden (RB)”*



Kew
ROYAL BOTANIC GARDENS



Muséum
national
d'Histoire
naturelle

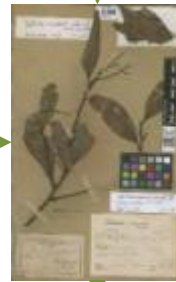
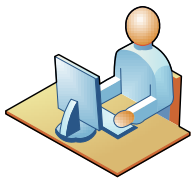


Image
Capture



Data
transcription



Access



Collaboration



Data transcription at JBRJ



Data transcription tool

← Voltar
+ Seleccionar Imagem (874)
🏠 Salvar
🔍 Buscar

Código
Barras

Dado mínimo

Determinação + Adicionar

cf.
 aff.
 (!)

ANNONACEAE *Anaxagorea phaeocarpa* Mart.


Determinado por	Dia	Mes	Ano	Natureza de Typus
<input style="width: 100%;" type="text" value="@"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 30px;" type="text"/>	<input style="width: 100%;" type="text" value="Selecione a c"/> ▼

Notas sobre a determinação

Dados da coleta

Coletor principal	Número da coleta
<input style="width: 100%;" type="text" value="M.N. Silva"/>	<input style="width: 100%;" type="text" value="377"/>
Outros coletores	
<input style="width: 100%; height: 30px;" type="text"/>	

Dia **Mês** **Ano Coleta**





Public Search of Virtual Herbarium

Query mode Only undetermined specimens Specimen per page Show Duplicates Determination History Type only

Basic Search

Advanced Search and Search on Map

Search

Clear

Home

Virtual Herbarium

The mission to build a virtual herbarium to display the images of Brazilian plants that are housed in foreign herbaria was presented by the **Brazilian Research Council (CNPq)** to the **Rio de Janeiro Botanical Garden (JBRJ)** in December 2010. The objective was to provide capacity to store and display high quality data regarding Brazil's Flora within a public institution. The initial partners of this initiative are the herbaria **K (Royal Botanic Gardens, Kew)** and **P/PC (Muséum national d'histoire naturelle, Paris)**, whose images are currently added to the ones from the RB (JBRJ) herbarium. Other European and American herbaria were included in this initiative from 2014 onwards, with the support of **SIBBr** (Sistema de Informação sobre a Biodiversidade Brasileira), namely **Missouri Botanical Garden (MO)**, **The New York Botanical Garden (NY)**, **Naturhistorisches Museum Wien (W)** and **Naturhistoriska Riksmuseet (S)**. In addition to European and American herbaria, Brazilian herbaria have also begun the publication of their images and data in the Reflora Virtual Herbarium in 2014. With the support of **IFN** (National Forest Inventory), **SIBBr** and the **Reflora Programme**, numerous herbaria are receiving equipment and training to digitise their plant specimens. The Brazilian herbaria included to date are: **Herbário Alexandre Leal Costa (ALCB)**, **Herbário da Universidade Federal de Sergipe (ASE)**, **Herbário da Embrapa Recursos Genéticos e Biotecnologia (CEN)**, **Herbário do Centro de Pesquisas do Cacau (CEPEC)**, **Herbário Prisco Bezerra (EAC)**, **Herbário da Escola Superior de Agricultura Luiz de Queiroz (ESA)**, **Herbário do Departamento de Botânica da Universidade Federal de Santa Catarina (FLOR)**, **Herbário Dr. Roberto Miguel Klein (FURB)**, **Herbário Barbosa Rodrigues (HBR)**, **Herbário do Departamento de Ciências Florestais da Universidade de Santa Maria (HDCF)**, **Herbarium Uberlandense (HUFU)**, **Herbário do Museu Botânico Municipal (MBM)**, **Museu Paraense Emílio Goeldi (MG)**, **Herbário Rondoniense (RON)**, **Herbário da Universidade de São Paulo (SPF)**, **Herbário da Universidade Federal do Rio Grande do Norte (UFRN)**, **Herbário do Departamento de Botânica da Universidade Federal do Paraná (UPCB)**, **Herbário Central da Universidade Federal do Espírito Santo (VIES)**.

The **Reflora Virtual Herbarium** is designed to allow taxonomists to perform similar procedures to those they are accustomed to undertaking with respect to the physical collections. In this site they will access, rather than physical herbarium specimens, high quality images that can be consulted, re-determined and annotated with nomenclatural status, amongst other functionalities. In due course, the curators of the partner institutes will receive periodic and on-demand system reports and will be able to update data in their own collections.

This innovative system was launched in 2013 with images available for study and update by a group of over 500 taxonomists that are actively participating in the **List of Species of the Brazilian Flora**. The number of samples available in the **Reflora Virtual Herbarium** will grow weekly and by the end of 2015 we expect to have over a million images online to be accessed by the botanical community and also by the general public. Future partnerships are currently being forged with other national and international institutions so that as many as possible of the Brazilian specimens deposited overseas can have their images and data repatriated, while participating Brazilian herbaria can use the facility to display their data online.

To date, **1390218** images of plant specimens are available at the **Reflora Virtual Herbarium**, from which **128673** are nomenclatural types and **273141** are georeferenced.

If you are a trained taxonomist and would like to collaborate in the **Reflora Virtual Herbarium**, send us an e-mail request. If you are a curator and would like to have the images and data from your herbarium available in the Reflora Virtual Herbarium, please contact us. It will be a pleasure to make your initiative possible.

Contact

reflora@jbrj.gov.br

Launched in
Set 2013

数字标本REFLORA界面

Query Virtual Herbarium

Query Mode [?] Specimen per page Show Duplicates [?] Determination History [?] Only undetermined specimens Only Specimens Georeferenced Type only [?]

By list

Basic Search

Advanced Search and Search on Map

Barcode

Tags [?]
User has no personal tags

Determination

Family [?] Genus [?] Species [?] Infra species [?]

Author of Taxon [?]

Determiner [?] Determination Date [?] Herbarium of Origin Origin Image

From: To:

Collection data

Collector [?] Collection Number Locality [?]

Collection date [?] Elevation/Depth:

From: To: Minimum: Maximum:

Latitude

Minimum ° ' "

Maximum ° ' "

Plant description [?]

Query Virtual Herbarium=By list, Origin Image=ALCB

Duplicates records found: 0 Herbarium specimen with geographic coordinates records found: 5801 Herbarium specimen records found: 5862 Total determinations: 5780 Images records found: 6371

Insert Tags

Link duplicates

Create Report

Determination Report

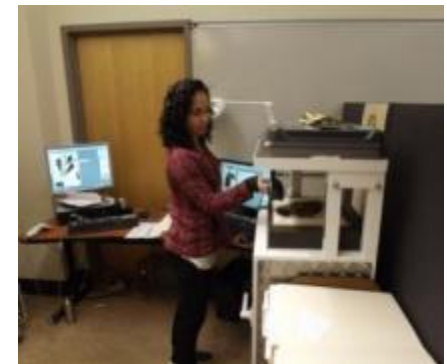
Create DWC

Anterior 1 2 3 4 5 6 7 8 9 10 Próximo Last page.

Photo	Barcode	Determination Data	Origin	Collector	Collection Date
	ALCB000748	ACANTHACEAE <i>Anisacanthus brasiliensis</i> Determiner: Guedes, ML in 00/06/2015	Brasil, Bahia, Ipuipara.	Guedes, M.L., Alunos de Botânica BIO C05, 23530	12/06/2015
	ALCB003195	ACANTHACEAE <i>Ruellia asperula</i> Determiner: Guedes, ML; Casais, M in 00/07/2015	Brasil, Bahia, Sobradinho. Baixo Médio São Francisco	Guedes, ML, Alunos de Botânica Econômica, 23825	19/06/2015
	ALCB000003	ACHARIACEAE <i>Kuhlmanniodendron macrocarpum</i> Determiner: Groppo Jr., M in 00/03/2013 Typus: Category not informed by specialist	Brasil, Bahia, Itacaré. Litoral Sul	Guedes, M.L., et al.	20/06/2008
	ALCB000004	ACHARIACEAE <i>Kuhlmanniodendron macrocarpum</i> Determiner: Groppo Jr., M in 00/03/2013 Typus: Category not informed by specialist	Brasil, Bahia, Itagibá. Litoral Sul	Ramos, C.H. de A., Guedes, M.L. & Alves, L. de J., 104	22/03/2008
	ALCB000005	ACHARIACEAE <i>Kuhlmanniodendron macrocarpum</i> Determiner: Groppo Jr., M in 00/03/2013	Brasil, Bahia, Itagibá. Litoral Sul	Ramos, C.H. de A., Alves, L. de J., 194	29/05/2008

2014

- “SiBBR” and IFN start to support REFLORA
- New model to work with foreign herbaria
 - 13 graduate students selected to capture images of collections
 - 10 new students (2016)
- included in the initiative - MO, NY, S, and W (US - 2016)



2014

- 45 Brazilian herbaria receive equipment, personnel and training to capture data and images of collections
 - ACAM, ALCB, ASE, BRBA, CEN, CEPEC, CGMS, COR, EAC, ECT, ESA, FLOR, FURB, HBR, HDCF, HEPH, HSTM, HTO, HUCP, HUEFS, HUEMG, HUENF, HUFU, HUNEB, IAN, IBGE, ICN, MBM, MBML, MG, MUFAL, PEL, PMSP, RBR, RFA, RFFP, RON, SJRP, SPF, UB, UFRN, UNIP, UPCB, VIES



- 1,412,411 images
 - 717,902 foreign herbaria
 - 374,793 Brazilian herbaria
- 109,895 Types
- 1,009,032 Georeferenced
 - 273,141 original
 - 735,891 inferred by the system
- 220 associated duplicates
- 2,706 new determinations



The Brazilian Plant List 2010 and update

2010

	species total	endemics	%
Fungi	3608	523	14,5
Algae	3496	52	1,5
Bryophyte	1521	275	18,1
Ferns and Lycophytes	1176	450	38,3
Gymnosperms	26	2	7,7
Angiosperms	31162	17630	56,6
Total	40989	18932	46,2

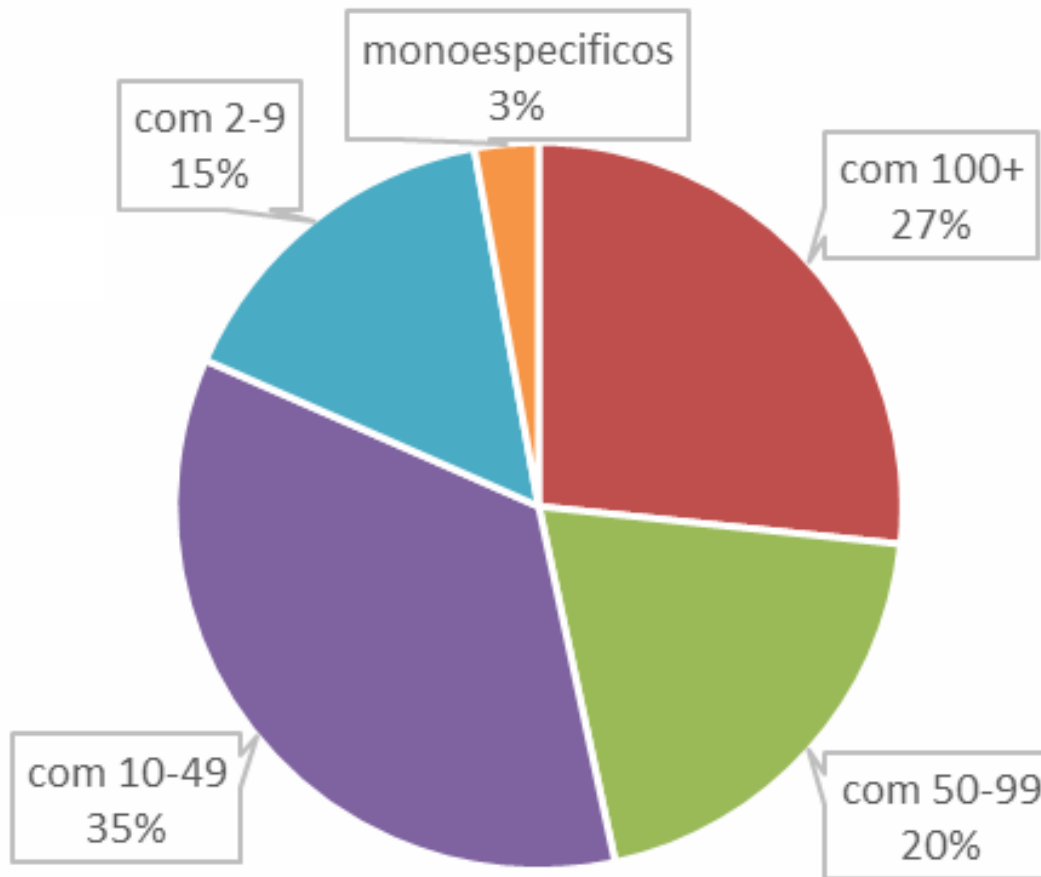
2015

	species total	endemics	%
Fungi	5652	124	2,2
Algae	4677	197	4,2
Bryophyte	1526	292	19,1
Ferns and Lycophytes	1239	464	37,4
Gymnosperms	30	2	6,7
Angiosperms	32694	18365	56,2
Total	45818	19444	42,4

New system

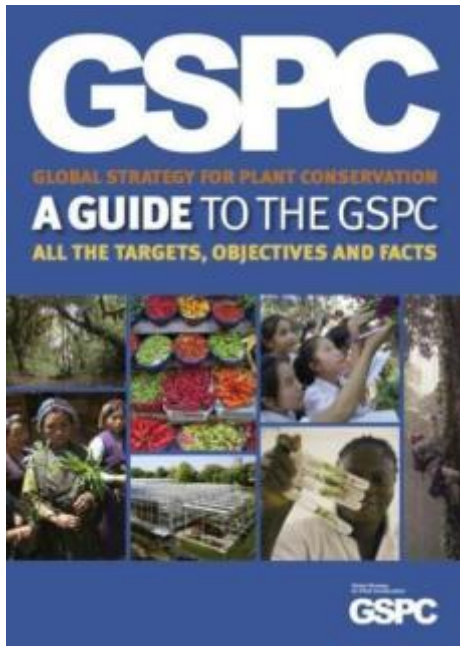
- the new system was developed using the platform of the Brazilian List
- Complex changes were needed to move from the list into the flora
- the platform was modified to include descriptions in the species and genus pages with a new 'section'
- controlled field system based on a glossary to ensure direct generation of descriptions from characters chosen by the specialist

Species distributed by genus



The current balance of genera in terms of species numbers was obtained from the Brazilian List

CNCFlora: Main targets of the Global Strategy for Plant Conservation – GSPC pursued by CNCFlora



Target 1: Online list of the Brazilian flora.

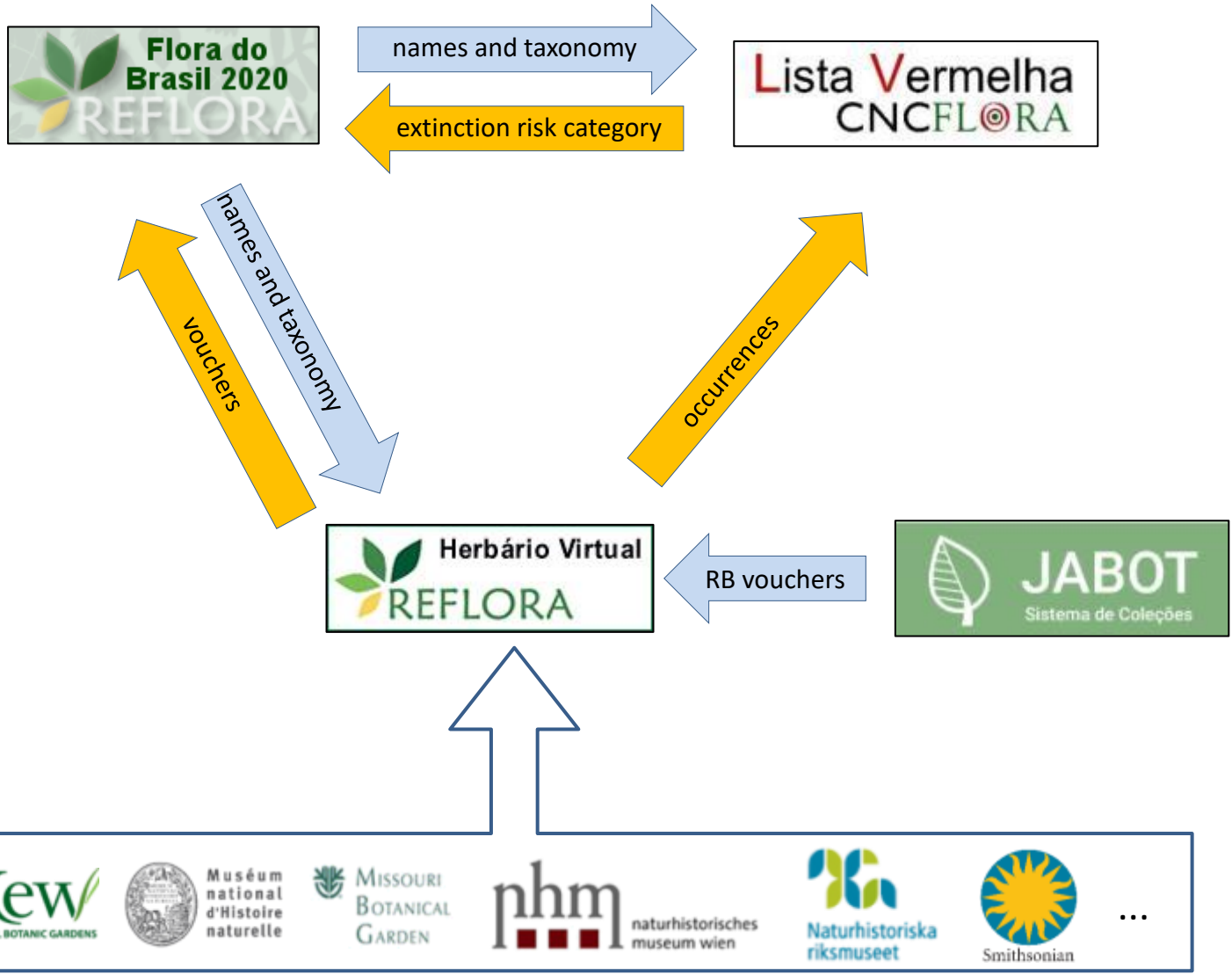
Target 2: Assessment of the extinction risk of the known Brazilian flora.

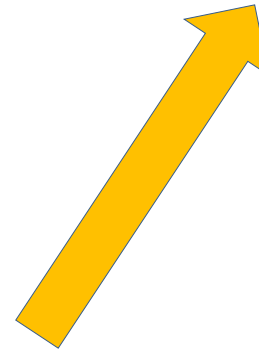
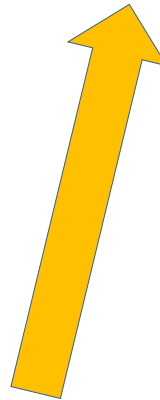
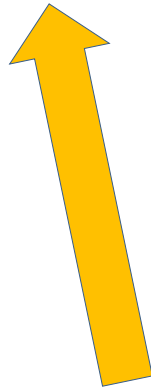
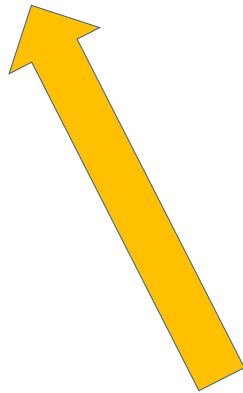
Target 7: *In situ* conservation of 75% of the threatened species.

Target 8: *Ex situ* conservation of 75% of the threatened species.

Target 15: Capacity building for plant conservation.

Target 16: A broad network established to accomplish the Strategy objectives.







WFO Council Meeting

4th Council Meeting of the World Flora Online met at the Instituto de Pesquisas Jardim Botânico do Rio de Janeiro, Brazil, in October, 2015



借鉴南非巴西生多信息系统经验

- 地位及建制：政府指定，单位共识、集中建设，数字标本、在线志书及濒危评估三位一体，并由一家单位主导建设；
- 技术框架及机制：基于广泛征求意见确定建设架构；一旦敲定，不轻易改变；
- 数据上互融共通，系统及成效上共通维护，相互支持；
- 选题上有所为有所不为，集中突破；
- 数据应用上与资源使用、研究及保护管理单方密切联系，发挥作用。

差异化分析：经费及投入，
机制，文化背景、心态等



中国标本数字化

●兴起：

✓先驱时期：二十世纪8、90年代：江苏所，中大，川大

✓发展时期：二十世纪九十年代：中科院标本数字化；

✓兴盛时期：二十世纪初：科技资源共享平台NSII-CVH，
教学字平台，自然保护区子平台；

●纵深发展：标本量到质的变化、研发应用软件（昆植、
辰山）、区域化（省级数字标本馆）、关注实体标本馆

●瓶颈及问题：

特征不清、数据清理

系统关联性不强；

数字化一边倒、忽视实体标本；

实体标本馆现状堪忧

What is a virtual herbarium?

- Specimen data and images
- Public web interface
- Searchable
- Focus on federal specimens
- Integrated with non-federal data



标本馆目前普遍存在问题

- 标本流失、保藏条件差：无稳定场所，保藏条件恶劣；
- 没有保藏经费；
- 没有管理人员；
- 体制变更：药检系统改制、大学合并潮、博物馆潮流；
- 发展受限：
 - 新标本数据不全：“贻误后人”（瑞江报告）
 - 缺乏浸泡，木材、大果等多彩标本；
 - 标本价值及潜力没有发挥

对策及建议

●制度上：

- ✓ 确立标本资源为国有资源并配以实施条例；
- ✓ 制定经费投入机制/建议 &
- ✓ 标本馆准入门槛及评价机制（制定中）；

●发挥个人积极性：增强责任心和使命感，提供专业水平；

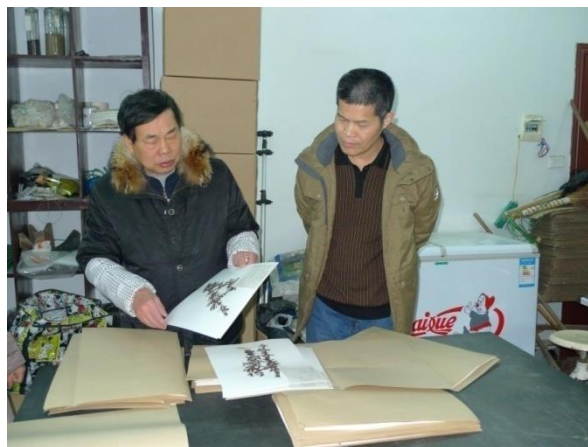
●发挥平台集体力量（“抱团”、众筹）：

- ✓ 继续参与完善平台建设；
- ✓ 研制信息化系统，应用小软件；
- ✓ 扩大数字化标本影响：编写中小學生多教材。

2015年调研活动1：昆明



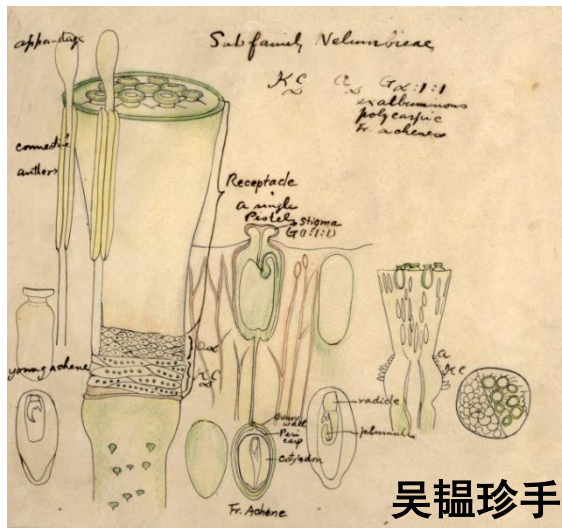
2015年调研活动2：成都和重庆



2015年调研活动3：广州



2015年调研活动4：北京



吴韞珍手绘图



北大生科院（老标本）



北师大（刘全儒）新标本



北大药学院展示厅



北京自然博物馆

2015年调研活动5：太原



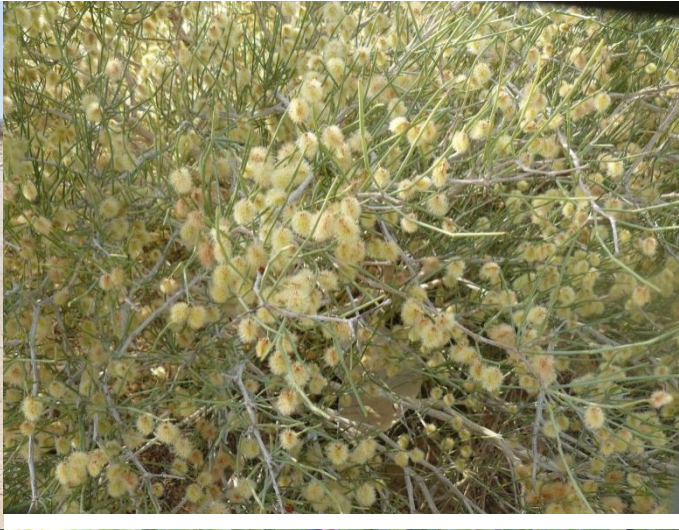
2015年调研活动6： 南宁



广西中医药研究所标本馆（及工作室）



广西药用植物园标本馆



Thank You