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Preliminary Findings from the NSF Survey of Object-Based Scientific Collections: 2008

Pamela Ebert Flattau, Project Leader
Margaret Boeckmann
Paul Lagasse
Nyema Mitchell
Darius Singpurwalla

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INSTITUTE FOR DEFENSE ANALYSES
SCIENCE & TECHNOLOGY POLICY INSTITUTE
1899 Pennsylvania Ave., Suite 520
Washington, DC 20006-3602

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Preface

This document was prepared for the National Science Foundation (NSF) by the Science and Technology Policy Institute (STPI).

The authors would like to thank the NSF staff for their guidance throughout the project, especially Dr. Judith Skog, Director, Division of Biological Infrastructure; Dr. Richard M. McCourt, Program Director, Division of Environmental Biology; and Ms. Jessica Regina Corman, Science Assistant. We would also like to acknowledge the excellent technical support furnished by Abt Associates, Inc. (especially Ms. Allison Ackerman), who hosted the on-line survey that generated the information presented in this technical report.

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Executive Summary

From December 2007 to April 2008, for the National Science Foundation (NSF), the Science and Technology Policy Institute (STPI) and Abt Associates Inc. developed and conducted a survey of current and former recipients of NSF grants awarded to support (1) the creation and/or maintenance of collections of objects used for research and (2) the researchers' institutions. STPI, Abt, and the NSF designed Web-based questionnaires to be completed by the NSF grantees and institutional administrators. These questionnaires allowed respondents to provide information on 18 categories of collections.[1] For the survey, objects were defined as any natural physical entities collected and maintained for research by the grantee and/or other researchers.

Of the 137 institutional administrators who were invited to participate in the survey, 57 (42%) completed their surveys. An additional 13 administrators (9%) submitted incomplete surveys that were considered usable. Of the 339 collection managers who were invited to participate, 222 (65%) completed their surveys. An additional 17 administrators (5%) partially completed their surveys. STPI analyzed the data provided to assess the current status of the collections.

This report is divided into 10 sections corresponding to the sections in the survey:

A. Organizational Information
B. Collection Characteristics
C. Staffing
D. Collections Funding
E. Facilities
F. Ancillary Materials
G. Uses and Users
H. Accessibility of Collections
I. Intellectual Property Rights
J. Analytic Instrumentation.

Responses to each question were summarized in aggregate form using tables, histograms, and basic descriptive charts similar to those used for the Interagency Working Group on Scientific Collections (IWGSC) survey. Key findings or observations are summarized by a "***Headline***" above each **Question Summary**, followed by a chart/table, other **Observations** of interest, and a **Why is this important?** question about the significance of the information. Figure ES-1 shows a sample report page.

[1] These 18 categories were part of five major groups: Biological Collections, Geology and Mineralogy Collections, Living/Cell Organismal Collection, Social Sciences Collections, and Other.

Most collections have not attracted new categories of users in the past 8 years.

Question G-3. Since 2000, has the collection attracted any new categories of users? (Mark just one)

Major Group	Type	No	Yes	Totals
Biological Collections	Botany	50	25	75
	Entomology	32	16	48
	Herpetology	28	12	40
	Ichthyology	28	11	39
	Invertebrate Zoology	31	11	42
	Mammalogy	30	11	41
	Ornithology	27	12	39
Geology and Mineralogy Collections	Geology and Mineralogy	17	5	22
	Invertebrate Paleontology	30	8	38
	Paleobotany	25	13	38
	Vertebrate Paleontology	22	11	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	3	10
	Microbiology	4	2	6
Social Sciences Collections	Anthropology	16	5	21
	Archaeology	25	8	33
	Ethnography	16	7	23
	Physical Anthropology	15	6	21
Other	Other	30	5	35
Totals		*433*	*171*	*604*
Percent (%)		*72*	*18*	*100*

Note: *Data were not provided for 134 collections.*

Observations

- Seventy-two percent of the collections have not attracted any new categories of users in the past 8 years.
- Thirty percent of botany collections have attracted new users—the largest percentage of the collections surveyed.

Why is this important?

The wide range of audiences that use scientific collections is an indicator of the importance of these collections to science. The user communities appear to be stable and predictable, allowing collections to anticipate requirements for use.

Figure ES-1. Sample Report Page

Key survey findings are summarized, as follows:

A. Organizational Information

- This information is not reported here in order to protect the respondents' confidentiality.

B. Collection Characteristics

- Almost all collections are maintained partially or entirely independent of Federal funding.
- The number of collections receiving NSF support has declined 5% in the last 5 years.
- Fully 33% of the collections have a scope that includes areas outside U.S. boundaries.

C. Staffing

- Most collections have one or more permanent full-time and part-time staff.
- Most collections have part-time volunteers or part-time students but no full-time workers in either category (i.e., volunteers/students).
- About 50% of the collections stated that they have staffs capable of meeting operational needs.
- Respondents identified the "retention of qualified staff" as the most important staffing challenge.

D. Collections Funding

- Beyond NSF, collections are funded by many other Federal services.
- Fully 33% of the collections reporting are likely to experience an erosion or decrease of funding over the next 5 years.
- Most collections that receive endowment funding or private gifts and grants expect to receive funding increases.

E. Facilities

- About 33% of the collections have inadequate or barely adequate allocated space.
- Most collections are at least half properly labeled, documented, cataloged, and preserved.

F. Ancillary Materials

- Most ancillary collections have fewer than 1,000 individually cataloged items and occupy 100 linear feet or less of shelf space or 100 cubic feet or less of storage space.
- Thirty-three percent of the ancillary materials collections are stored in systems that have not been installed or upgraded recently, while nearly 50% of these collections are stored in storage systems that are at least partly deteriorating.

G. Uses and Users

- Basic research is the most-cited purpose for the scientific collections included in the survey, followed by education.
- Most collection users are intramural; however, a significant proportion of users are unaffiliated with the institution.

H. Accessibility of Collections

- Most of the collections are at least partially catalogued and on the Web or plan to be in the next 5 years.

I. Intellectual Property Rights

- Twenty percent of the reported collections place no intellectual property restrictions on qualified users.
- Nearly 75% of the reported collections have written Intellectual Property policies for non-commercial uses.

J. Analytic Instrumentation

- Over 50% the collections have or are expected to have digital imaging equipment in the next 5 years.
- Fully 33% of the collections assess user fees or charge for consumable supplies.

Introduction

A. Overview

In 2007, the National Science Foundation (NSF) issued Task Order OSTP-20-0002.28, which authorized the Science and Technology Policy Institute (STPI) to assist the NSF in collecting and analyzing data regarding the size and condition of NSF-funded, object-based scientific collections. STPI and Abt Associates Inc. worked with Dr. Judy Skog, Dr. Richard McCourt, and Ms. Jessica Corman of the NSF to collect survey data from current and former NSF grantees who manage or have managed object-based scientific collections that received Federal support.

The task order called for STPI to

- Develop Web-based versions of two questionnaires: the Institutional Administrators Survey and the Collections Manager Survey
- Develop a database or set of databases to record the survey responses
- Manage and monitor the on-line survey effort.

This report documents the process of developing and conducting the survey and reports on the survey's findings.

B. Background

The NSF is an independent Federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense . . . ." NSF provides approximately 20% of all support for basic research at colleges and universities and is the major source of Federal funds for basic research in mathematics, computer science, social sciences, and other science, medical, and engineering disciplines.

The NSF is a member agency of the Interagency Working Group on Scientific Collections (IWGSC), which was established under the Committee on Science (COS) of the National Science and Technology Council (NSTC). The IWGSC was tasked to develop a thorough, comprehensive report on the current status of Federally owned and supported scientific collections. To accomplish this task, the IWGSC surveyed Federal agencies to collect information on the scope, size, and condition of their object-based scientific collections. Because the NSF funds institutions and does not directly maintain scientific collections, it conducted a separate survey to assess the priorities for and stewardship of such collections at institutions that currently receive its support or have received its support since 1985. The NSF survey is an essential complement

to the IWGSC's efforts to provide a comprehensive assessment of the current status of Federally maintained or funded scientific collections.

The creation, maintenance, and use of object-based scientific collections are essential activities for much of the basic research that NSF supports. Scientific collections are an invaluable resource not only to scientists, but also to society at large. Access to these collections has served to clarify the scientific and public understanding of our world and of humanity's impact upon it and has also served to broaden our appreciation of cultural development.

C. Survey Methodology

This section reviews the methodology employed during the four distinct survey phases:

1. Survey population and instrument development
2. Indentify and contact participants
3. Data collection
4. Analysis and presentation

1. Survey Population and Instrument Development

The target population consisted of researchers who have received NSF grants to support (1) the creation and/or maintenance of collections of objects used for research and (2) the researchers' institutions. The affected institutions included universities, libraries, and other research organizations. The survey respondents were the NSF grantees and the people currently managing the collections. For this survey, the grantee may also have been the collection manager.[2]

The object-based collection was established as the unit of analysis. For this survey, objects are defined as any natural physical entities collected and maintained for research use by the grantee and/or other researchers. Examples of such objects include geological samples, plants, and microscopic organisms. Excluded from the population definition are books, computer files, and other man-made objects.

STPI and the NSF, with technical support from Abt survey methodologists, developed the survey instruments. The questionnaires were designed to collect information similar to that collected in the IWGSC survey of scientific collections. Abt reviewed the draft instruments for content and design and reviewed the survey instruments to ensure that all items were formatted to facilitate self-administration via a Web-based questionnaire. After these reviews, Abt and

[2] For example, the researcher who received the original NSF grant may have since retired, and the collection is currently managed by someone else.

STPI personnel met to discuss revisions. After internal testing, Abt provided STPI draft demonstration versions of the Web-based questionnaires for further review and testing.

As part of this process, the NSF conducted a focus group with members of the scientific collections community in January 2007 to evaluate the NSF Scientific Collections Survey. NSF worked with STPI and Abt to plan and run the focus group. The focus group participants were chosen to provide a reasonable cross section of the scientific collections community—for the size and scope of collections and the type of institution. Eight institutions were represented at the focus group. The main purposes of the focus group were to

- Determine whether the terminology used in the instruments would be understood across the range of disciplines and types of institutions
- Determine whether the information sought would be available and whether the metrics were appropriate
- Determine whether the survey should cover additional aspects of the collections.

Before the meeting, each participant was given a review copy of the Institutional Administrators Letter, the Collections Managers Letter, the Institutional Administrators Survey, and the Collections Managers Survey. Comments and concerns regarding the letters and surveys were integrated into the final version of these documents. Once the STPI review was complete, the final draft instruments were provided to NSF and submitted to the Office of Management and Budget (OMB) for approval. The two OMB-approved instruments—the Collection Managers Survey and the Institutional Administrators Survey—largely overlapped. The main difference between the two surveys is that the Administrators Survey asked about all Federally supported collections housed at the institution and also included additional questions about funding and security. Common questionnaire topics between the two versions were

- Organizational Information
- Collection Characteristics
- Staffing
- Collections Funding
- Facilities
- Ancillary Materials
- Accessibility of Collections
- Intellectual Property Rights
- Analytic Instrumentation.

In addition to the questionnaire, Abt and STPI drafted a set of Frequently Asked Questions (FAQs) based on the IWGSC survey experience, the knowledge of the NSF staff, and the findings of the focus group.

Portable Document Format (PDF) (Adobe Acrobat) versions of the surveys were provided as links in the Web-based surveys. The PDFs were added to allow respondents the option of reviewing questions and collecting necessary information before actually responding to the survey.

2. Indentify and Contact Participants

Using an internal award information database and cross-checking contact information against current sources, the NSF identified 339 collections managers and 137 institutional administrators at 147 institutions that have at least one object-based scientific collection and that have received NSF support since 1985. Beginning in December 2007, the NSF contacted the administrators of these institutions via an e-mail, with a copy to the relevant collections manager(s). These initial e-mails formally introduced the NSF survey to potential respondents. To ensure that only selected respondents could access the survey, the e-mail included the survey Uniform Resource Locator (URL) (World Wide Web address) and a password to enable on-line access to the survey. This approach also allowed Abt to track both who had and who had not completed the survey.

To achieve the highest possible response rate, the NSF supplemented these direct contacts with announcements—before and during the contact phase—at professional scientific meetings and relevant NSF panels and on the e-mail discussion lists of professional societies.

3. Data Collection

In December 2007, Abt sent a survey invitation to a random 10% of the survey population. Abt carefully reviewed incoming data from this sample to ensure that the Web system was performing as intended before inviting the entire population to participate. Data from the entire population were collected from December 2007 through April 2008. To help ensure a high response rate, STPI staggered the survey rollout over several weeks. Abt provided the NSF regular reports of response rates. These reports tracked the number of respondents who had completed the survey, the number of respondents who had accessed the survey but did not complete it, and the number of sample members who had not accessed the survey at all. The characteristics of non-respondents were assessed to ensure that no systematic differences that could bias the survey results existed between them and the respondents.

In addition to creating and maintaining the Web site to host the survey, Abt assisted administrators and collections managers who experienced technical difficulties that could not be addressed by the survey's FAQ page. Respondents were coded to ensure anonymity, and individual responses were held in strict confidence. Results were reported only in the aggregate.

The NSF was responsible for contacting prospective respondents (see Appendix A) and for sending periodic reminders to non-respondents. It emailed two reminders to non-respondents during the 19-week data collection period. The content of the second set of reminder e-mails was tailored to appeal to these different types of non-respondents. Table 1 shows the full data collection schedule.

Table 1. Data Collection Schedule

Date	Correspondence	Sample
12/13/07	Invitations sent to a random 10% subset of the sample	Both managers and administrators
01/15/08	Invitations sent to the remainder of the sample	Both managers and administrators
02/14/08	First reminders sent to non-respondents (including partial completes)	Manager's sample
02/20/08	First reminders sent to non-respondents (including partial completes)	Administrator's sample
04/02/08	Second reminders sent to all non-respondents (including partial completes)	Both managers and administrators
04/25/08	Surveys were closed	Both managers and administrators

Of the 137 institutional administrators who were invited to participate in the survey (see Appendix B), 57 (42%) fully completed their surveys. An additional 13 administrators (9%) submitted partially completed surveys that were considered usable. Of the 339 collection managers invited to participate n the survey, 222 (65%) fully completed their surveys. An additional 17 administrators (5%) submitted partially completed surveys that were considered usable. Table 2 shows these response rates.

Table 2. Response Rates

Survey	Total Population	Complete Surveys	Partial Surveys	Non-Respondents
Administrators	137 (100%)	57 (42%)	13 (9%)	67 (49%)
Managers	339 (100%)	222 (65%)	17 (5%)	100 (30%)

4. Data Analysis and Presentation

Once the Web surveys were closed (April 2008) and all the data had been entered[3] into the database, Abt checked the data for errors and inconsistencies. Variable names and answer category labels were added to aid the data user. Open-end responses were reviewed to ensure

3 Ten collection managers preferred to send the NSF their completed surveys on paper via mail or fax. These respondents downloaded and printed the PDF versions of the surveys rather than complete them on-line. These 10 paper surveys were forwarded to Abt for data entry into the Web-based surveys. Since the surveys were not designed for paper administration, some errors occurred, particularly in the way these respondents reported question B-4, which asks about the size of the collections. Abt attempted to contact all 10 respondents to resolve the matter but was not successful in all cases.

they did not reveal any identifying information. If a respondent used an open-end question to modify a previous question Abt edited the data accordingly. Once the two raw data files were cleaned and thoroughly reviewed, Abt provided them to STPI in SAS format for weighting, estimation, and analysis. Open-end responses were provided in Excel format and a list of frequencies for all the survey variables was provided in Word format.

In addition to this report, STPI will provide its response databases and supporting documentation, including field descriptions and coding.

D. Report Structure

This report is divided into 10 sections corresponding to the sections in the survey:

A. Organizational Information
B. Collection Characteristics
C. Staffing
D. Collections Funding
E. Facilities
F. Ancillary Materials
G. Uses and Users
H. Accessibility of Collections
I. Intellectual Property Rights
J. Analytic Instrumentation.

Responses to each question were summarized in aggregate form using tables, histograms, and basic descriptive charts similar to those used for the Interagency Working Group on Scientific Collections (IWGSC) survey. Key findings or observations are summarized by a "***Headline***" above each **Question Summary**, followed by a chart/table, other **Observations** of interest, and a **Why is this important?** question about the significance of the information.

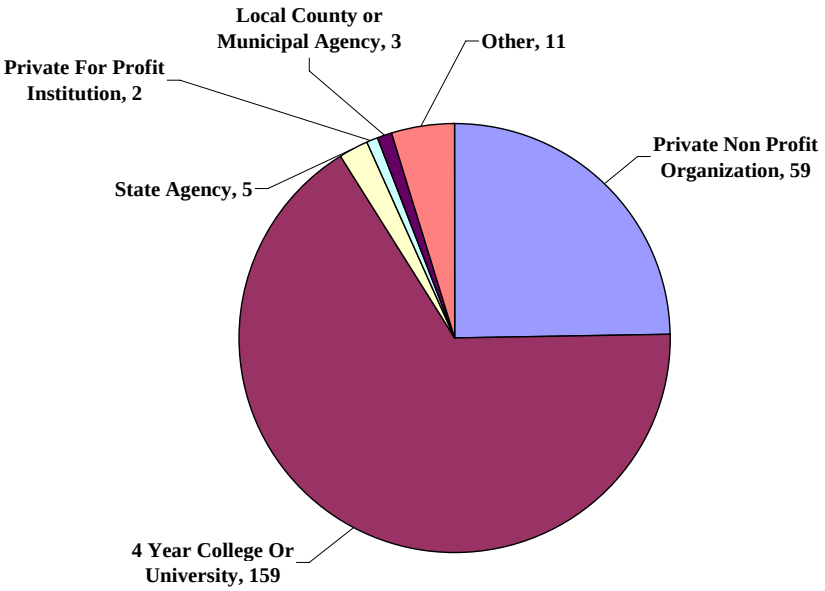
Section A:
Organizational Information

Section A of the questionnaire collected information on the individuals completing the survey and their reporting unit.

Question A-1 asked respondents for specific name and address information. This information is not reported here so that the confidentiality of the respondents is protected.

Most of the NSF grantees surveyed are affiliated with a 4-year college or university.

Question A-2. Which of the following most closely describes your organization's primary governance? (Mark just one)



Observations

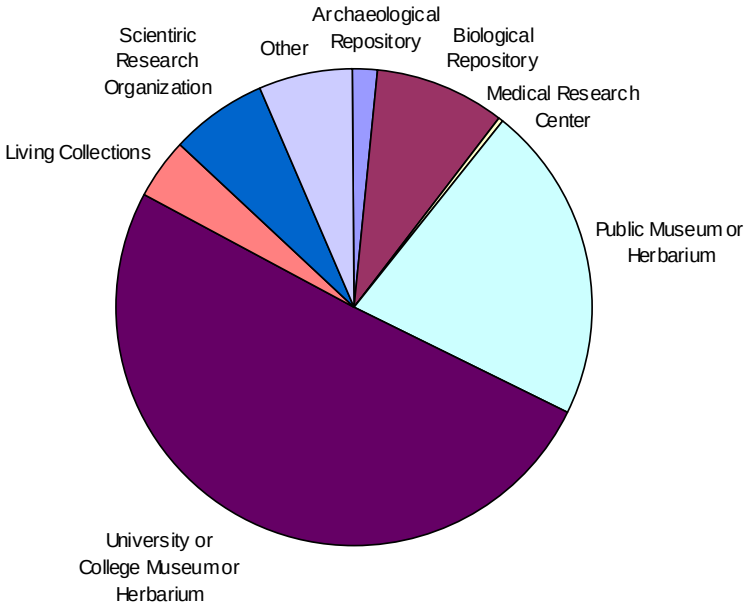
- Of those who responded, 66% are affiliated with a 4-year college or university.

Why is this important?

The reporting unit's affiliation affects a broad range of relevant issues including users, budget, and staffing.

Most of the NSF grantees surveyed are affiliated with a 4-year college or university.

Question A-3. Which of the following most closely describes your organization's primary function or service? (Mark just one)



Note: *Data were not provided for all collections 100%.*

Observations

- Slightly over 50% of all respondents reported that their primary function is as a university or college museum or herbarium.

Why is this important?

The reporting unit's affiliation affects a broad range of relevant issues including users, budget, and staffing.

Section B:
Collection Characteristics

Section B of the questionnaire collected information on the reporting unit's collection types.

Few surveyed collections received Federal funding for their support.

Question B-1a. Using the categories below, indicate the amount of Federal funding you receive to support your collections.

Major Group	Type	None	1–10%	11–20%	21–50%	51–75%	> 75%	100%	Totals
Biological Collections	Botany	30	18	10	9	1	6	3	77
	Entomology	26	12	5	4	–	1	2	50
	Herpetology	21	7	3	5	2	2	–	40
	Ichthyology	16	10	5	5	2	2	–	40
	Invertebrate Zoology	24	10	2	6	1	1	–	44
	Mammalogy	18	10	6	3	2	2	2	43
	Ornithology	17	4	7	5	3	2	2	40
Geology and Mineralogy Collections	Geology and Mineralogy	19	2	–	–	–	–	2	23
	Invertebrate Paleontology	21	9	1	4	1	2	–	38
	Paleobotany	22	8	4	2			–	36
	Vertebrate Paleontology	14	12	3	3	1	1	–	34
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	1	2	2	–	3	2	11
	Microbiology	1	1	–	–	–	2	1	5
Social Sciences Collections	Anthropology	11	5	2	1	–	1	1	21
	Archaeology	13	9	5	4	1	2	–	34
	Ethnography	13	5	1	2	–	1	–	22
	Physical Anthropology	12	9	–	–	–	–	1	22
Other	Other	14	6	2	3	–	1	5	31
Totals		*293*	*138*	*58*	*58*	*14*	*29*	*21*	*611*
Percent (%)		*48*	*23*	*9*	*9*	*2*	*5*	*3*	*100*

Note: *Data were not provided for 127 collections.*

Observations

- NSF grants are limited to improving existing collections.
- Forty percent of the collections receive no support from Federal funds.

- Geology and mineralogy collections have the highest percentage of surveyed collections that receive no Federal funding (65%), followed by paleobotany and invertebrate zoology collections (48% each).
- Living cell/organism collections have the lowest percentage of surveyed collections that receive no Federal funding (8%).

Why is this important?

Adequate funding ensures that scientific collections can be maintained, grown, preserved, and made accessible for users.

Of those respondents who answered this question and reported that their collections received NSF support, the current funding level has declined by 5% in the last 5 years.

Question B-1b. Using the categories below, indicate whether or not you received NSF support for your collections.

Major Group	Type	Past 5 Years	Currently	Totals
Biological Collections	Botany	42	36	78
	Entomology	23	19	42
	Herpetology	21	12	33
	Ichthyology	18	14	32
	Invertebrate Zoology	12	13	25
	Mammalogy	17	17	34
	Ornithology	19	14	33
Geology and Mineralogy Collections	Geology and Mineralogy	2	4	6
	Invertebrate Paleontology	12	13	25
	Paleobotany	9	5	14
	Vertebrate Paleontology	14	10	24
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	9	17
	Microbiology	2	4	6
Social Sciences Collections	Anthropology	3	2	5
	Archaeology	6	5	11
	Ethnography	2	2	4
	Physical Anthropology	3	4	7
Other	Other	13	9	22
Totals		*213*	*183*	*396*
Percent (%)		*54*	*46*	*100*

Note: *Data were not provided for 405 collections.*

Observations

- Fifty-four percent of the respondents have received some form of NSF funding in the past 5 years, while slightly fewer (46%) are currently receiving funding from the NSF.
- Over 50% of the collection managers surveyed were not aware of their current or recent NSF funding status.
- Respondents did not provide data for over 50% of the collections for this question.

Why is this important?

Identifying gaps in collections funded can be important for future planning.

Of those respondents who answered this question, fully 33% of the collections surveyed have a scope outside U.S. boundaries.

Question B-2. What is the geographic scope of the majority of objects in the collections that you manage? (Mark all that apply)

Major Group	Type	Worldwide	Regional (Continental or Oceanic)	U.S.	Regional U.S	Local U.S.	Other
Biological Collections	Botany	61	25	10	19	33	10
	Entomology	44	11	6	11	17	7
	Herpetology	30	15	11	14	20	7
	Ichthyology	28	14	8	11	20	5
	Invertebrate Zoology	40	13	9	13	20	4
	Mammalogy	33	20	11	15	23	6
	Ornithology	31	16	12	13	24	5
Geology and Mineralogy Collections	Geology and Mineralogy	19	6	5	8	14	2
	Invertebrate Paleontology	32	10	8	12	17	6
	Paleobotany	29	9	7	10	19	5
	Vertebrate Paleontology	28	13	10	13	18	6
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	10	1	1	1	1	–
	Microbiology	6	–	–	–	–	–
Social Sciences Collections	Anthropology	18	4	3	1	9	4
	Archaeology	27	10	5	7	18	2
	Ethnography	21	6	4	5	9	2
	Physical Anthropology	17	6	4	5	10	3
Other	Other	29	9	8	8	12	3
Totals		*503*	*188*	*122*	*166*	*284*	*77*
Percent (%)		*25*	*9*	*6*	*8*	*14*	*4*

Note: *Data were not provided for 503 collections.*

Observations

- Of the collections surveyed, the number of collections that have a regional and U.S. scope is greater than the collections that have a worldwide scope.
- The worldwide scope of living/cell organismal lines represents the most concentrated geographic scope of all collections surveyed (25%).
- Respondents did not provide data for one quarter of the collections for this question.

Why is this important?

Geographic scope can indicate the depth and breadth of a collection.

Most collections are at least partly duplicated.

Question B-3a. What percentage of your unit's collections represent "types" not replicated in other repositories?

Major Group	Type	None	1–25%	26–50%	51–75%	76–99%	100%	Do Not Know	Totals
Biological Collections	Botany	6	66	3	3	1	–	4	83
	Entomology	4	43	4	–	2	–	1	54
	Herpetology	6	33	2	–	2	1	1	45
	Ichthyology	7	31	2	–	1	–	2	43
	Invertebrate Zoology	3	40	3	–	1	–	1	48
	Mammalogy	7	35	3	–-	2	–	1	48
	Ornithology	9	32	2	–	1	1	1	46
Geology and Mineralogy Collections	Geology and Mineralogy	4	19	3	–	–	–	2	28
	Invertebrate Paleontology	2	36	4	–	–	–	2	44
	Paleobotany	3	30	3	–	2	–	4	42
	Vertebrate Paleontology	4	29	3	1	1	–	1	39
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	3	1	3	3	–	–	10
	Microbiology	–	1	–	2	2	–	1	6
Social Sciences Collections	Anthropology	3	19	1	–	–	–	4	27
	Archaeology	4	27	2	1	–	–	5	39
	Ethnography	3	21	1	–	–	–	2	27
	Physical Anthropology	2	15	4	–	–	–	4	25
Other	Other	5	23	2	1	3	–	3	37
Totals		*72*	*503*	*43*	*11*	*21*	*2*	*39*	*691*
Percent (%)		*10*	*73*	*6*	*2*	*3*	*0*	*6*	*100*

Note: *Data were not provided for 47 collections.*

Observations

- Seventy-three percent of the respondents have up to 25% of their collections duplicated in another repository, 10 percent of the respondents report possessing unique collections that are not duplicated in other repositories, and 2 collection types are completely replicated in other repositories.
- Living/cell organismal lines and microbiology collections have no reported duplication, while invertebrate zoology and invertebrate paleontology collections have the lowest number of duplicated collections.

Why is this important?

The extent to which collections are not replicated is a measure of their uniqueness, which is an important consideration when assessing care and preservation requirements.

Most of the duplicated collections surveyed predate 1990.

Question B-3b. Do any of these duplicated collection types predate 1990?

Major Group	Type	Yes	No	Totals
Biological Collections	Botany	63	20	83
	Entomology	34	20	54
	Herpetology	34	11	45
	Ichthyology	28	15	43
	Invertebrate Zoology	35	13	48
	Mammalogy	34	14	48
	Ornithology	35	11	46
Geology and Mineralogy Collections	Geology and Mineralogy	19	9	28
	Invertebrate Paleontology	34	10	44
	Paleobotany	30	12	42
	Vertebrate Paleontology	31	8	39
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	9	10
	Microbiology	1	5	6
Social Sciences Collections	Anthropology	17	9	26
	Archaeology	26	12	38
	Ethnography	20	6	26
	Physical Anthropology	17	8	25
Other	Other	21	15	36
Totals		*480*	*207*	*687*
Percent (%)		*70*	*30*	*100*

Note: *Data were not provided for 51 collections.*

Observations

- Seventy percent of the respondents have duplicated collection types that predate 1990.
- Almost 75% of the botany and vertebrate paleontology collections surveyed predate 1990.
- Living/cell organismal lines have the smallest percentage of collections surveyed that predate 1990.

Why is this important?

Age of duplicates can indicate the breadth of exchange between collections over time. Molecular samples require more duplicates since they are used in replicated studies. Furthermore, policies on providing duplicates to country of origin change over time.

Most of the duplicated collections surveyed document taxonomic diversity.

Question B-3c. Do any of these duplicated collection types document taxonomic diversity?

Major Group	Type	Yes	No	Totals
Biological Collections	Botany	81	2	83
	Entomology	54	–	54
	Herpetology	44	1	45
	Ichthyology	43	–	43
	Invertebrate Zoology	47	1	48
	Mammalogy	47	1	48
	Ornithology	45	1	46
Geology and Mineralogy Collections	Geology and Mineralogy	25	3	28
	Invertebrate Paleontology	43	1	44
	Paleobotany	40	2	42
	Vertebrate Paleontology	38	1	39
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	2	10
	Microbiology	5	1	6
Social Sciences Collections	Anthropology	20	7	27
	Archaeology	29	10	39
	Ethnography	19	8	27
	Physical Anthropology	17	8	25
Other	Other	34	2	36
Totals		639	51	*690*
Percent (%)		93	7	*100*

Note: *Data were not provided for 48 collections.*

Observations

- Among the major groups, the biological sciences group has the highest percentage of collections that have taxonomic diversity.
- Of the collections surveyed, the entomology and botany categories have the largest number of collections that reflect taxonomic diversity.

Why is this important?

Taxonomic diversity provides researchers useful benchmarks (e.g., species migration, predator/prey relationships, diet and habitat, and climate change) for tracking variables over time.

Over 75% the duplicated collections surveyed document a unique aspect of geography.

Question B-3d. Do any of these duplicated collection types document unique geography?

Major Group	Type	Yes	No	Totals
Biological Collections	Botany	75	8	83
	Entomology	52	2	54
	Herpetology	40	5	45
	Ichthyology	36	7	43
	Invertebrate Zoology	45	3	48
	Mammalogy	39	8	47
	Ornithology	38	8	46
Geology and Mineralogy Collections	Geology and Mineralogy	23	5	28
	Invertebrate Paleontology	40	4	44
	Paleobotany	38	4	42
	Vertebrate Paleontology	35	4	39
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	2	10
	Microbiology	5	1	6
Social Sciences Collections	Anthropology	19	8	27
	Archaeology	28	11	39
	Ethnography	19	8	27
	Physical Anthropology	17	8	25
Other	Other	29	6	35
Totals		*586*	*192*	*688*
Percent (%)		*85*	*15*	*100*

Note: *Data were not provided for 50 collections.*

Observations

- Entomology collections have the highest percentage (93%) that document unique geography.
- Archaeology collections have the lowest percentage (26%) that document unique geography.
- Collections in the biological group have the highest percentage (83.7%) that document unique geography, while the social sciences group has the lowest percentage (62.7%).

Why is this important?

Many organisms or specimens are endemic to one area. The breadth of a collection can indicate how much the collection is used.

Question B-4. Please estimate the size of the collections residing in your unit, using the categories provided below using the appropriate unit of measurement.

See separate appendix for sizes of collections in absolute values. (This appendix is included as a compact disc (CD) at the end of the hardcopy version of this report and as an Excel file on the CD version of this report.))

Of those respondents who answered this question, over 50% have either established collections of deoxyribonucleic acid (DNA) extracts or experienced a significant growth of these materials in existing collections

Question B-5a. Please identify any new types of objects or new types of object preservation that either have been introduced into your unit's collections or have experienced growth: *DNA extracts.*

Major Group	Type	Newly Introduced	Significant Growth	Totals
Biological Collections	Botany	17	13	30
	Entomology	13	10	23
	Herpetology	8	10	18
	Ichthyology	8	7	15
	Invertebrate Zoology	11	13	24
	Mammalogy	9	11	20
	Ornithology	9	9	18
Geology and Mineralogy Collections	Geology and Mineralogy	5	3	8
	Invertebrate Paleontology	7	7	14
	Paleobotany	7	3	10
	Vertebrate Paleontology	6	4	10
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	4	7
	Microbiology	2	3	5
Social Sciences Collections	Anthropology	5	1	6
	Archaeology	8	3	11
	Ethnography	7	1	8
	Physical Anthropology	4	2	6
Other	Other	6	8	14
Totals		*135*	*112*	*247*
Percent (%)		*55*	*45*	*100*

Note: *Data were not provided for 491 collections.*

Observations

- Fifty-five percent of the collections have had DNA extracts newly introduced.
- Respondents did not provide data for over 66 ⅔% of the collections for this question.

Why is this important?

New technologies place increasing demands for storage and staff on collections.

Nearly 50% of those collections that responded have established DNA libraries (samples of genes or sets of genes) or have experienced a significant increase of these materials in existing collections.

Question B-5b. Please identify any new types of objects or new types of object preservation that either have been introduced into your unit's collections or have experienced growth: ***DNA libraries.***

Major Group	Type	Newly Introduced	Significant Growth	Totals
Biological Collections	Botany	5	5	10
	Entomology	5	6	11
	Herpetology	3	3	6
	Ichthyology	3	4	7
	Invertebrate Zoology	4	7	11
	Mammalogy	5	5	10
	Ornithology	4	6	10
Geology and Mineralogy Collections	Geology and Mineralogy	1	2	3
	Invertebrate Paleontology	3	4	7
	Paleobotany	2	3	5
	Vertebrate Paleontology	2	2	4
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	2	3
	Microbiology	–	2	2
Social Sciences Collections	Anthropology	1	1	2
	Archaeology	2	3	5
	Ethnography	2	1	3
	Physical Anthropology	1	1	2
Other	Other	4	4	8
Totals		*48*	*61*	*109*
Percent (%)		*44*	*56*	*100*

Note: *Data were not provided for 629 collections.*

Observations

- Respondents did not provide data for 85% of the collections for this question.

Why is this important?

New technologies often require special handling and oversight that not all collections can handle.

Three-quarters of those collections that responded have established new collections of frozen or lyophilized specimens, while the remaining one-quarter have experienced a significant growth of these materials in existing collections.

Question B-5c. Please identify any new types of objects or new types of object preservation that either have been introduced into your unit's collections or have experienced growth: ***Frozen/dried lyophilized specimens.***

Major Group	Type	Newly Introduced	Significant Growth	Totals
Biological Collections	Botany	16	11	27
	Entomology	16	11	27
	Herpetology	17	4	21
	Ichthyology	12	6	18
	Invertebrate Zoology	15	8	23
	Mammalogy	18	3	21
	Ornithology	16	2	18
Geology and Mineralogy Collections	Geology and Mineralogy	7	–	7
	Invertebrate Paleontology	9	5	14
	Paleobotany	7	4	11
	Vertebrate Paleontology	9	3	12
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	1	5
	Microbiology	3	–	3
Social Sciences Collections	Anthropology	3	–	3
	Archaeology	6	1	7
	Ethnography	5	1	6
	Physical Anthropology	2	2	4
Other	Other	12	4	16
Totals		*177*	*66*	*243*
Percent (%)		*73*	*27*	*100*

Note: *Data were not provided for 495 collections.*

Observations

- Seventy-three percent of the collections responding (33% of total surveyed) have had frozen/dried lyophilized specimens newly introduced.
- Respondents did not provide data for over 66 ⅔% of the collections for this question.

Why is this important?

Freezers require increased monitoring and power supplies, both of which can negatively impact collection budgets.

About 50% of the collections that responded have established new collections of various types not listed in previous categories or have experienced a growth of those materials in existing collections.

Question B-5d. Please identify any new types of objects or new types of object preservation that either have been introduced into your unit's collections or have experienced growth: *Other.*

Major Group	Type	Newly Introduced	Significant Growth	Totals
Biological Collections	Botany	9	9	18
	Entomology	2	6	8
	Herpetology	3	8	11
	Ichthyology	4	6	10
	Invertebrate Zoology	3	5	8
	Mammalogy	4	5	9
	Ornithology	4	4	8
Geology and Mineralogy Collections	Geology and Mineralogy	4	3	7
	Invertebrate Paleontology	6	5	11
	Paleobotany	6	5	11
	Vertebrate Paleontology	5	3	8
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	–	1
	Microbiology	2	–	2
Social Sciences Collections	Anthropology	1	3	4
	Archaeology	1	5	6
	Ethnography	2	4	6
	Physical Anthropology	1	3	4
Other	Other	5	6	11
Totals		*63*	*80*	*143*
Percent (%)		*44*	*56*	*100*

Note: *Data were not provided for 595 collections.*

Observations

- Respondents did not provide data for over 75% of the collections for this question.

Why is this important?

Specialized objects may require special storage, monitoring, or handling, which, in turn, increase curation costs.

Nearly 75% of the collections surveyed have experienced an expansion through acquisitioning of specimens.

Question B-6. Since 2000, has the size of the unit's collections changed through acquisitioning and/or deaccessioning specimens? (Mark only one)

Major Group	Type	No Change	Rapid Expansion	Moderate Expansion	Steady State	Moderate Reduction	Rapid Reduction	Totals
Biological Collections	Botany	1	23	46	8	–	–	78
	Entomology	–	15	30	5	–	–	50
	Herpetology	–	9	29	4	–	–	42
	Ichthyology	–	9	29	2	–	–	40
	Invertebrate Zoology	–	9	30	5	–	–	44
	Mammalogy	1	10	24	9	–	–	44
	Ornithology	–	10	24	8	–	–	42
Geology and Mineralogy Collections	Geology and Mineralogy	–	7	14	3	–	–	24
	Invertebrate Paleontology	–	13	24	2	2	–	41
	Paleobotany	–	12	24	3	–	–	39
	Vertebrate Paleontology	–	9	23	4	–	–	36
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	4	5	1	–	–	10
	Microbiology	–	–	5	–	–	–	5
Social Sciences Collections	Anthropology	–	5	10	6	2	1	24
	Archaeology	–	7	19	7	2	–	35
	Ethnography	–	4	14	6	1	–	25
	Physical Anthropology	–	3	12	7	2	1	25
Other	Other	1	7	20	6	–	–	34
Totals		*3*	*156*	*382*	*86*	*9*	*2*	*638*
Percent (%)		*0*	*24*	*60*	*13*	*1*	*0*	*100*

Note: *Data were not provided for 100 collections.*

Observations

- More that 50% of the collections surveyed experienced a moderate level of expansion due to the acquisitioning and/or deaccessioning of specimens.
- Only 1% of the collections experienced a moderate or rapid reduction.
- One collection each in the botany, mammalogy, and other categories experienced no change in size through acquisition or deaccession.

Why is this important?

As collections increase or decrease in size, the demands on agency resources required to maintain them may also fluctuate.

Collections made by research staff and students are responsible for most of the recent changes in collections, while a significant number of acquisitions are orphaned collections.

Question B-7. Which of the following processes were responsible for the recent changes in your reporting unit's collections? (Mark all that apply)

See table on next page

Observations

- Collectively, changes resulting from collections made by research staff and students at the home institution and at other organizations account for 40% of the responsible processes.
- Donation of collections, including orphans, is the second most-reported process, at 25%.

Why is this important?

Increasing numbers of orphaned collections suggest a loss of support for these collections at their original institutions.

Question B-7. Which of the following processes were responsible for the recent changes in your reporting unit's collections? (Mark all that apply)

Major Group	Type	Collections Made by Research Staff and Students	Collections Made by Research Staff at Other Organizations	Changes in Funding Level	Changes in Staffing Level	Changes in Species Allocation	Changes in the Structure of the Institution	Changes in Leadership	Changes in Mission	Changes in Organi-zational Policy	Donations, Including Orphaned Colledtions	None of the Above	Totals
Biological Collections	Botany	69	35	20	18	12	3	13	3	4	54	–	231
	Entomology	41	26	11	17	15	–	10	2	2	41	–	168
	Herpetology	36	23	13	10	11	3	8	2	2	34	–	142
	Ichthyology	36	21	12	10	10	4	4	2	1	32	–	132
	Invertebrate Zoology	41	20	11	12	10	2	8	2	–	37	–	143
	Mammalogy	37	23	12	14	15	4	8	1	2	34	–	150
	Ornithology	38	20	13	15	13	3	8	2	2	32	–	146
Geology and Mineralogy Collections	Geology and Mineralogy	18	12	7	7	5	1	6	2	–	19	–	77
	Invertebrate Paleontology	33	19	10	10	12	2	5	2	1	36	–	130
	Paleobotany	30	17	8	9	10	1	6	2	3	34	–	120
	Vertebrate Paleontology	29	19	7	8	9	1	5	2	1	28	–	109
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	5	3	–	1	–	–	–	–	–	9	–	18
	Microbiology	2	2	1	1	–	–	–	–	–	4	–	10
Social Sciences Collections	Anthropology	14	15	3	7	5	2	6	2	1	17	–	72
	Archaeology	21	8	5	6	9	2	7	2	3	30	–	93
	Ethnography	15	18	5	7	5	1	6	2	1	21	–	81
	Physical Anthropology	12	12	2	6	6	2	3	1	3	19	–	66
Other	Other	24	9	8	4	4	–	5	1	–	23	–	78
Totals		*501*	*302*	*148*	*162*	*151*	*34*	*108*	*30*	*26*	*504*	–	*1,966*
Percent (%)		*25*	*15*	*8*	*8*	*8*	*2*	*6*	*2*	*1*	*25*	–	*100*

Most respondents report that increases or decreases in the sizes of their collections are expected to continue at current rates.

Question B-8. What are the projections for future changes in size of the institutions' collections? (Mark only one)

Major Group	Type	Present Rate Will Speed Up Over the Next 5 Years	Present Rate Will Continue Over the Next 5 Years	Present Rate Will Slow Down Over the Next 5 Years	Totals
Biological Collections	Botany	14	54	10	78
	Entomology	12	35	3	50
	Herpetology	9	29	4	42
	Ichthyology	3	32	5	40
	Invertebrate Zoology	9	33	2	44
	Mammalogy	9	32	3	44
	Ornithology	9	30	3	42
Geology and Mineralogy Collections	Geology and Mineralogy	6	17	1	24
	Invertebrate Paleontology	9	26	6	41
	Paleobotany	7	27	5	39
	Vertebrate Paleontology	8	26	2	36
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	6	1	10
	Microbiology	3	2	1	6
Social Sciences Collections	Anthropology	2	17	4	23
	Archaeology	3	28	4	35
	Ethnography	4	18	3	25
	Physical Anthropology	2	18	4	24
Other	Other	4	30	2	36
Totals		*116*	*460*	*63*	*639*
Percent (%)		*18*	*72*	*10*	*100*

Note: *Data were not provided for 99 collections.*

Observations

- Most of the collections (72%) predict that their present rate of change (increase or decrease) will remain steady over the next 5 years.

Why is this important?

Knowing the rate-size that the collections will change allows collection managers to predict better what future resources will need to be allocated to the collection.

Forty percent of the collections surveyed include orphaned collections.

Question B-9. Has your unit received or given away any "orphaned" collections, that is, no longer wanted by another organization since 2000? Orphaned collections are those of significant size or scope that have been deaccessioned by your institution or another institution. (Mark all that apply and indicate whether or not they were Federally owned)

Major Group	Type	Incorporated an Orphan	Backlog of Orphans	No Orphan	Gave-Away Orphans	Incorporated a Fed-Owned Orphan	Backlog of Fed-Owned Orphans
Biological Collections	Botany	35	27	33	3	2	2
	Entomology	26	21	20	–	1	1
	Herpetology	20	20	17	1	1	–
	Ichthyology	20	20	16	1	3	1
	Invertebrate Zoology	29	24	11	–	8	3
	Mammalogy	25	20	17	1	4	2
	Ornithology	22	19	17	1	3	1
Geology and Mineralogy Collections	Geology and Mineralogy	12	10	9	1	2	–
	Invertebrate Paleontology	24	20	14	2	4	3
	Paleobotany	25	21	10	–	5	3
	Vertebrate Paleontology	17	16	16	–	3	2
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	6	1	–	–	–
	Microbiology	4	3	1	1	–	–
Other	Other	16	18	10	1	3	2
Social Sciences Collections	Anthropology	12	8	11	2	2	–
	Archaeology	22	15	12	2	5	1
	Ethnography	16	10	9	1	3	–
	Physical Anthropology	15	10	9	2	5	2
Totals		*348*	*288*	*233*	*19*	*54*	*23*
Percent (%)		*22*	*18*	*14*	*1*	*70*	*30*

Observations

- Twenty-two percent of the collections have incorporated an orphaned collection since 2000.
- Of those incorporated collections, 70% of them were Federally owned.
- Only 1% of the respondents gave away an orphaned collection.

Why is this important?

Decreasing Federal support for collections places a higher demand on non-Federally supported collections for cost. Orphaned collections represent increased cost for others.

Thirty-six percent of the respondents' administrative units had not received any loans of significant size or scope in 2007.

Question B-10. Has your unit received or made any long-term loans of significant size or scope since 2007? (Mark all that apply and indicate whether or not they were Federally owned)

Major Group	Type	Long-Term Loan Incorporated	Long-Term Loan in Backlog	No Loans Received	Made a Loan	Incorporated a Fed-Owned Loan	Backlog of Fed-Owned Loans
Biological Collections	Botany	13	8	58	10	2	2
	Entomology	6	4	38	7	1	1
	Herpetology	7	2	35	5	1	–
	Ichthyology	7	2	32	7	3	1
	Invertebrate Zoology	7	2	33	8	8	3
	Mammalogy	8	2	34	7	4	2
	Ornithology	7	2	33	6	3	1
Geology and Mineralogy Collections	Geology and Mineralogy	4	2	19	3	2	–
	Invertebrate Paleontology	7	3	32	5	4	3
	Paleobotany	8	3	31	4	5	3
	Vertebrate Paleontology	8	2	27	3	3	2
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	10	–	–	–
	Microbiology	–	–	6	–	–	–
Social Sciences Collections	Anthropology	2	2	17	4	2	–
	Archaeology	10	3	22	7	5	1
	Ethnography	5	3	17	4	3	–
	Physical Anthropology	5	1	17	6	5	2
Other	Other	2	1	32	2	3	2
Totals		*106*	*42*	*493*	*88*	*54*	*23*
Percent (%)		*8*	*3*	*36*	*6*	*70*	*30*

Observations

- Only 6% of the collections have made a loan since 2007.

Why is this important?

The long-term loan of a collection is an indicator of the collection's relevance to researchers in different fields, agencies, or locations and could be an indicator of the relevance of the collection to the missions of the lending and receiving agencies. Long-term loans reduce costs of curation for the loaner and increase those costs for the borrower.

Section C:
Staffing

Section C of the questionnaire collected information regarding the staff responsible for collections within the reporting unit. These people would include curators, collections managers, technicians, and other support staff with responsibilities for collections.

Most collections have between one and five permanent full-time staff.

Question C-1a. What is the current staffing associated with collections in your unit: *Permanent full-time staff?*

Major Group	Type	0	1	1–2	3–5	6–10	11–20	21–30	> 30	Totals
Biological Collections	Botany	18	3	25	14	4	3	3	5	75
	Entomology	4	4	19	11	2	1	2	6	49
	Herpetology	4	1	16	8	3	1	–	7	40
	Ichthyology	5	–	18	9	–	1	–	6	39
	Invertebrate Zoology	2	1	16	12	3	1	2	5	42
	Mammalogy	3	–	19	6	3	1	3	7	42
	Ornithology	4	–	18	6	2	1	2	7	40
Geology and Mineralogy Collections	Geology and Mineralogy	5	1	7	5	–	1	2	2	23
	Invertebrate Paleontology	3	–	15	10	4	1	2	4	39
	Paleobotany	7	1	12	8	3	2	2	4	39
	Vertebrate Paleontology	3	–	8	11	4	2	3	4	35
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	4	3	–	–	–	1	10
	Microbiology	4	–	1	1	–	–	–	–	6
Social Sciences Collections	Anthropology	2	1	4	10	1	1	3	1	23
	Archaeology	2	2	8	13	2	1	3	4	35
	Ethnography	2	1	6	8	1	1	3	3	25
	Physical Anthropology	1	1	5	10	2	1	2	2	24
Other	Other	10	1	11	3	5	1	2	2	35
Totals		*81*	*17*	*212*	*148*	*39*	*20*	*34*	*70*	*621*
Percent (%)		*13*	*3*	*34*	*24*	*6*	*3*	*5*	*11*	*100*

Note: *Data were not provided for 117 collections.*

Observations

- Just over 10% of the all collections have no permanent full-time staff.
- About 20% of the botany collections have no full-time paid staff.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections also have one or more permanent part-time staff.

Question C-1b. What is the current staffing associated with collections in your unit: *Permanent part-time staff?*

Major Group	Type	0	1	1–2	3–5	6–10	11–20	21–30	> 30	Totals
Biological Collections	Botany	38	21	4	1	2	7	–	–	73
	Entomology	25	12	2	1	1	5	1	–	47
	Herpetology	20	8	3	1	1	3	2	–	38
	Ichthyology	18	11	2	1	–	3	2	–	37
	Invertebrate Zoology	23	8	3	1	1	3	1	–	40
	Mammalogy	18	11	4	1	1	3	2	–	40
	Ornithology	17	11	2	1	1	4	2	–	38
Geology and Mineralogy Collections	Geology and Mineralogy	12	5	1	1	1	1	–	–	21
	Invertebrate Paleontology	18	14	1	1	1	1	–	–	36
	Paleobotany	20	11	2	1	1	2	–	–	37
	Vertebrate Paleontology	17	10	2	1	1	1	-	–	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	1	–	1	–	–	–	–	10
	Microbiology	4	2	–	–	–	–	–	–	6
Social Sciences Collections	Anthropology	8	7	3	1	–	–	–	–	19
	Archaeology	13	13	4	1	1	–	–	–	32
	Ethnography	9	8	3	1	1	–	–	–	22
	Physical Anthropology	9	7	3	1	–	–	–	–	20
Other	Other	24	3	1	–	1	4	1	–	34
Totals		*301*	*163*	*40*	*16*	*14*	*37*	*11*	–	*582*
Percent (%)		*52*	*28*	*7*	*3*	*2*	*6*	*2*	–	*100*

Note: *Data were not provided for 151 collections.*

Observations

- Most non-zero staffed collections (about 49%) have between 1 and 5 part-time staff.
- Fifty-two percent of the collections have no permanent part-time staff.
- Botany and entomology collections have the highest percentages of collections that have no permanent part-time staff.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Over 33% of collections surveyed have no temporary full-time paid staff.

Question C-1c. What is the current staffing associated with collections in your unit: ***Temporary full-time paid staff (i.e., paid on grants or hired for fixed terms)?***

Major Group	Type	0	1	1–2	3–5	6–10	11–20	21–30	> 30	Totals
Biological Collections	Botany	44	10	7	6	2	5	–	–	74
	Entomology	20	15	7	4	1	1	–	–	48
	Herpetology	14	10	6	4	2	1	–	–	37
	Ichthyology	15	12	5	3	2	–	–	–	37
	Invertebrate Zoology	15	11	8	3	1	2	–	–	40
	Mammalogy	17	9	8	5	2	–	–	–	41
	Ornithology	16	8	7	5	2	1	–	–	39
Geology and Mineralogy Collections	Geology and Mineralogy	10	5	4	2	–	1	–	–	22
	Invertebrate Paleontology	14	11	7	3	1	1	–	–	37
	Paleobotany	17	7	6	4	1	2	–	–	37
	Vertebrate Paleontology	11	9	8	3	1	–	–	–	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	–	2	1	1	–	–	–	10
	Microbiology	5	–	1	–	–	–	–	–	6
Social Sciences Collections	Anthropology	7	6	2	4	1	–	–	–	20
	Archaeology	13	8	6	5	1	–	–	–	33
	Ethnography	11	5	3	5	–	–	–	–	24
	Physical Anthropology	8	6	2	4	–	–	–	–	20
Other	Other	17	4	3	3	1	4	1	–	33
Totals		*260*	*136*	*92*	*64*	*19*	*18*	*1*	*–*	*590*
Percent (%)		*44*	*23*	*16*	*11*	*3*	*3*	*0*	*–*	*100*

Note: *Data were not provided for 148 collections.*

Observations

- Approximately 40% of the collections have between 1 and 10 temporary full-time staff.
- Botany and living/cell organismal line collections have the highest percentage of collections that have no associated temporary full-time staff.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections have associated temporary part-time paid staff.

Question C-1d. What is the current staffing associated with collections in your unit: *Temporary part-time paid staff?*

Major Group	Type	0	1	1–2	3–5	6–10	11–20	21–30	> 30	Totals
Biological Collections	Botany	21	6	17	21	7	1	–	1	74
	Entomology	15	2	12	10	5	3	–	1	48
	Herpetology	10	3	10	8	5	1	–	2	39
	Ichthyology	11	3	11	9	2	–	–	2	38
	Invertebrate Zoology	10	2	15	9	3	1	–	–	40
	Mammalogy	10	2	11	7	7	2	–	2	41
	Ornithology	9	3	10	8	5	2	–	2	39
Geology and Mineralogy Collections	Geology and Mineralogy	6	2	7	3	3	1	–	–	22
	Invertebrate Paleontology	13	1	12	5	3	2	–	1	37
	Paleobotany	12	1	12	7	3	1	–	1	37
	Vertebrate Paleontology	11	–	11	5	3	1	–	1	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	5	1	1	1	1	1	–	–	10
	Microbiology	2	2	2	–	–	–	–	–	6
Social Sciences Collections	Anthropology	5	2	4	4	4	2			21
	Archaeology	6	3	8	8	6	2	–	1	34
	Ethnography	3	3	6	5	4	2	–	1	24
	Physical Anthropology	4	3	3	6	3	1	–	1	21
Other	Other	9	5	5	6	5	2	–	1	33
Totals		*162*	*44*	*157*	*122*	*69*	*25*	*–*	*17*	*596*
Percent (%)		*27*	*7*	*26*	*20*	*12*	*4*	*–*	*3*	*100*

Note: *Data were not provided for 142 collections.*

Observations

- Most collections (73%) have at least 1 temporary part-time staff member.
- Two percent of the collections have more than 30 temporary part-time staff members.
- Living cells/organismal line collections have the highest percentage of collections that have no associated part-time temporary staff.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections do not have full-time volunteers.

Question C-1e. What is the current staffing associated with collections in your unit: *Full-time volunteers?*

Major Group	Type	0	1	1–2	3–5	6–10	Totals
Biological Collections	Botany	62	2	4	4	–	72
	Entomology	38	2	2	2	–	44
	Herpetology	28	1	3	2	1	35
	Ichthyology	30	1	2	1	1	35
	Invertebrate Zoology	33	2	1	1	–	37
	Mammalogy	30	3	2	3	1	39
	Ornithology	29	3	2	2	1	37
Geology and Mineralogy Collections	Geology and Mineralogy	18	–	1	1	–	20
	Invertebrate Paleontology	27	1	2	3	–	33
	Paleobotany	28	1	2	3	–	34
	Vertebrate Paleontology	22	–	3	4	–	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	1	1	–	–	10
	Microbiology	6	–	–	–	–	6
Social Sciences Collections	Anthropology	15	–	1	–	–	16
	Archaeology	25	1	1	2	–	29
	Ethnography	16	–	2	2	–	20
	Physical Anthropology	14	–	1	2	–	17
Other	Other	27	1	1	1	1	31
Totals		*456*	*19*	*31*	*33*	*5*	*544*
Percent (%)		*84*	*3*	*6*	*6*	*1*	*100*

Note: *Data were not provided for 194 collections.*

Observations

- Over 60% of the collections have no full-time volunteer staff.
- Respondents did not provide data for just over 25% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections have one or more associated part-time volunteers.

Question C-1f. What is the current staffing associated with collections in your unit: *Part-time volunteers?*

Major Group	Type	0	1	1–2	3–5	6–10	11–20	21–30	> 30	Totals
Biological Collections	Botany	15	7	20	8	5	3	4	12	74
	Entomology	11	4	10	8	4	2	1	7	47
	Herpetology	6	3	11	4	2	2	2	7	37
	Ichthyology	7	2	12	6	2	2	1	5	37
	Invertebrate Zoology	5	4	8	8	7	1	1	6	40
	Mammalogy	4	2	14	3	3	2	3	9	40
	Ornithology	4	3	10	4	3	2	2	10	38
Geology and Mineralogy Collections	Geology and Mineralogy	2	1	5	3	2	1	1	6	21
	Invertebrate Paleontology	7	2	5	5	7	1	1	7	35
	Paleobotany	4	3	7	9	4	1	1	7	36
	Vertebrate Paleontology	1	2	5	6	4	4	3	7	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	1	–	–	–	–	1	10
	Microbiology	3	–	2	–	–	1	–	–	6
Social Sciences Collections	Anthropology	–	–	5	2	4	4	1	4	20
	Archaeology	3	1	6	3	6	4	1	8	32
	Ethnography	1	–	4	1	4	3	1	8	22
	Physical Anthropology	2	1	6	1	3	4	2	2	21
Other	Other	12	3	8	2	1	3	1	4	34
Totals		*95*	*38*	*139*	*73*	*61*	*40*	*26*	*110*	*582*
Percent (%)		*16*	*7*	*24*	*13*	*10*	*7*	*4*	*19*	*100*

Note: *Data were not provided for 156 collections.*

Observations

- Almost 85% of the collections have part-time volunteer staff.
- Living/cell organismal line collections have the highest percentage of collections that have no associated part-time volunteer staff.
- Microbiology collections are the only type that have no reported collections with 31 or more associated volunteer staff, and 15% of all other collection types have at least 1 such collection.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections have no permanent full-time paid students.

Question C-1a (Students). What is the current staffing associated with collections in your unit: *Permanent full-time paid students?*

Major Group	Type	0	1–5	6–10	> 10	Totals
Biological Collections	Botany	56	5	1	1	63
	Entomology	37	3	2	1	43
	Herpetology	33	1	1	–	35
	Ichthyology	35	–	1	–	36
	Invertebrate Zoology	32	4	–	1	37
	Mammalogy	35	3	1	1	40
	Ornithology	33	2	1	1	37
Geology and Mineralogy Collections	Geology and Mineralogy	15	2	–	1	18
	Invertebrate Paleontology	30	3	1	1	35
	Paleobotany	28	3	1	1	33
	Vertebrate Paleontology	25	4	1	1	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	9	–	–	–	9
	Microbiology	5	–	–	–	5
Social Sciences Collections	Anthropology	10	1	1	1	13
	Archaeology	18	2	2	1	23
	Ethnography	11	2	2	1	16
	Physical Anthropology	11	1	2	–	14
Other	Other	25	2	–	1	28
Totals		*448*	*38*	*17*	*13*	*516*
Percent (%)		*87*	*7*	*3*	*3*	*100*

Note: *Data were not provided for 222 collections.*

Observations

- Approximately 85% of all collections have no permanent staff.
- Respondents did not provide data for nearly 33% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Approximately 50% of the collections have no permanent part-time paid students.

Question C-1b (Students). What is the current staffing associated with collections in your unit: *Permanent part-time paid students?*

Major Group	Type	0	1–5	6–10	Totals
Biological Collections	Botany	53	6	–	59
	Entomology	34	4	–	38
	Herpetology	29	2	–	31
	Ichthyology	30	3	–	33
	Invertebrate Zoology	28	3	1	32
	Mammalogy	34	2	–	36
	Ornithology	31	2	–	33
Geology and Mineralogy Collections	Geology and Mineralogy	15	2	–	17
	Invertebrate Paleontology	25	4	1	30
	Paleobotany	25	4	–	29
	Vertebrate Paleontology	22	3	–	25
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	–	8
	Microbiology	6	–	–	6
Social Sciences Collections	Anthropology	10	2	–	12
	Archaeology	17	5	–	22
	Ethnography	11	4	–	15
	Physical Anthropology	11	3	–	14
Other	Other	22	2	–	24
Totals		*411*	*51*	*2*	*464*
Percent (%)		*89*	*11*	*0*	*100*

Note: *Data were not provided for 274 collections.*

Observations

- Approximately 11% of all the collections are staffed by 1 to 5 part-time students.
- Just over 50% of the collections have no part-time permanent students.
- Respondents did not provide data for over 33% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Approximately 50% of the collections also have no permanent part-time paid students.

Question C-1c (Students). What is the current staffing associated with collections in your unit: ***Temporary full-time paid students?***

Major Group	Type	0	1–5	6–10	11–15	Totals
Biological Collections	Botany	51	8	1	1	61
	Entomology	30	9	1	1	41
	Herpetology	25	5	2	1	33
	Ichthyology	28	6	–	1	35
	Invertebrate Zoology	26	6	–	1	33
	Mammalogy	31	5	2	1	39
	Ornithology	28	5	2	1	36
Geology and Mineralogy Collections	Geology and Mineralogy	15	3	–	–	18
	Invertebrate Paleontology	19	10	–	1	30
	Paleobotany	24	5	–	1	30
	Vertebrate Paleontology	22	4	–	1	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	2	–	–	9
	Microbiology	4	–	–	–	4
Social Sciences Collections	Anthropology	10	2	–	1	13
	Archaeology	16	5	–	1	22
	Ethnography	13	3	–		16
	Physical Anthropology	11	2	–	–	13
Other	Other	20	4	1	–	25
Totals		*380*	*84*	*9*	*12*	*485*
Percent (%)		*78*	*17*	*2*	*2*	*100*

Note: *Data were not provided for 253 collections.*

Observations

- Most of the collections (78%) have no temporary full-time students.
- Seventeen percent of the collections have between 1 and 10 temporary full-time students.
- Respondents did not provide data for just over 33% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections have up to five temporary part-time paid students.

Question C-1d (Students). What is the current staffing associated with collections in your unit: ***Temporary part-time paid students?***

Major Group	Type	0	1–5	6–10	11–15	20	60	Totals
Biological Collections	Botany	18	38	4	2	1	1	64
	Entomology	12	21	5	4	1	1	44
	Herpetology	9	18	4	1	2	1	35
	Ichthyology	9	22	2	–	2	1	36
	Invertebrate Zoology	9	22	4	1	–	1	37
	Mammalogy	9	19	6	2	2	1	39
	Ornithology	8	18	4	3	2	1	36
Geology and Mineralogy Collections	Geology and Mineralogy	4	13	1	1	–	–	19
	Invertebrate Paleontology	11	15	3	2	1	1	33
	Paleobotany	8	19	2	1	1	1	32
	Vertebrate Paleontology	10	14	1	1	1	1	28
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	2	1	1	–	–	10
	Microbiology	4	2	–	–	–	–	6
Social Sciences Collections	Anthropology	5	8	4	1	–	–	18
	Archaeology	7	14	5	1	1	1	29
	Ethnography	3	12	3	1	1	–	20
	Physical Anthropology	5	9	2	–	1	–	17
Other	Other	8	14	5	1	1	–	29
Totals		*145*	*280*	*56*	*23*	*12*	*11*	*532*
Percent (%)		*27*	*53*	*11*	*4*	*3*	*2*	*100*

Note: *Data were not provided for 205 collections.*

Observations

- Sixty-four percent of the collections have between 1 and 10 temporary full-time students.
- Only 2% of the collections have at least 60 temporary full-time students.
- Respondents did not provide data for over 25% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections do not have full-time student volunteers.

Question C-1e (Students). What is the current staffing associated with collections in your unit: ***Full-time student volunteers?***

Major Group	Type	0	1–5	Totals
Biological Collections	Botany	57	2	59
	Entomology	36	2	38
	Herpetology	29	2	31
	Ichthyology	32	1	33
	Invertebrate Zoology	30	2	32
	Mammalogy	34	2	36
	Ornithology	32	2	34
Geology and Mineralogy Collections	Geology and Mineralogy	14	2	16
	Invertebrate Paleontology	26	2	28
	Paleobotany	26	2	28
	Vertebrate Paleontology	23	2	25
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	8
	Microbiology	5	–	5
Social Sciences Collections	Anthropology	10	1	11
	Archaeology	18	2	20
	Ethnography	12	2	14
	Physical Anthropology	12	1	13
Other	Other	22	2	24
Totals		*426*	*29*	*455*
Percent (%)		*94*	*6*	*100*

Note: *Data were not provided for 283 collections.*

Observations

- Ninety-four percent of the collections have no full-time student volunteers.
- Six percent of the collections have two full-time volunteer students.
- Respondents did not provide data for nearly 40% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Most collections have up to five part-time student volunteers.

Question C-1f (Students). What is the current staffing associated with collections in your unit: ***Part-time student volunteers?***

Major Group	Type	0	1–5	6–10	11–15	16–20	21–25	> 25	Totals
Biological Collections	Botany	34	18	7	1	–	2	1	63
	Entomology	19	12	5	1	1	1	1	40
	Herpetology	11	10	4	1	2	1	2	31
	Ichthyology	12	13	4	1	2	–	1	33
	Invertebrate Zoology	11	15	5	1	1	1	–	34
	Mammalogy	7	17	4	3	2	2	2	37
	Ornithology	9	14	4	2	2	2	2	35
Geology and Mineralogy Collections	Geology and Mineralogy	6	5	4	1	–	1	–	17
	Invertebrate Paleontology	11	11	5	1	–	1	1	30
	Paleobotany	9	14	4	1	–	1	1	30
	Vertebrate Paleontology	7	12	4	2	–	1	1	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	1	1	–	–	–	–	8
	Microbiology	2	2	–	1	–	–	–	5
Social Sciences Collections	Anthropology	2	7	4	3	–	1	–	17
	Archaeology	4	13	5	3	–	1	1	27
	Ethnography	3	6	5	2	–	1	1	19
	Physical Anthropology	2	7	4	3	–	–	1	17
Other	Other	12	9	1	2	1	1	1	27
Totals		*167*	*186*	*70*	*30*	*11*	*17*	*16*	*497*
Percent (%)		*34*	*37*	*14*	*6*	*2*	*3*	*3*	*100*

Note: *Data were not provided for 241 collections.*

Observations

- Sixty-four percent of the collections have one or more part-time volunteers.
- Fewer than 25% of the collections have no associated part-time volunteers.
- Respondents did not provide data for 33% of the collections for this question.

Why is this important?

Collectively, Questions C-1a through C-1f can be used to assess whether staffing levels are sufficient to maintain collections according to professional standards, to monitor collections regularly, and to provide access to and prudent oversight of users.

Overall, the number of collections that have staff who are and are not able to meet operational needs are nearly equal.

Question C-2. In general, is the current collections staff able to meet the operational needs of the unit? (Mark just one)

Major Group	Type	Yes	No	Do Not Know	Totals
Biological Collections	Botany	41	32	2	75
	Entomology	25	22	1	48
	Herpetology	18	22	–	40
	Ichthyology	20	19	–	39
	Invertebrate Zoology	23	18	–	41
	Mammalogy	21	21	–	42
	Ornithology	19	21	–	40
Geology and Mineralogy Collections	Geology and Mineralogy	9	14	–	23
	Invertebrate Paleontology	18	21	–	39
	Paleobotany	18	20	1	39
	Vertebrate Paleontology	15	19	1	35
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	2	–	10
	Microbiology	4	2	–	6
Social Sciences Collections	Anthropology	8	15	–	23
	Archaeology	15	20	–	35
	Ethnography	10	15	–	25
	Physical Anthropology	12	11	1	24
Other	Other	17	19	–	36
Totals		*301*	*313*	*6*	*620*
Percent (%)		*49*	*50*	*1*	*100*

Note: *Data were not provided for 118 collections.*

Observations

- The difference in the number of collections that have staff who are and are not able to meet the operational needs of the unit is about 1%.
- Forty-nine percent of the collections have staff who are able to meet the operational needs of the unit.
- Fifty percent of the geology, mineralogy, and anthropology collections do not have staff who are able to meet the operational needs of the unit.

Why is this important?

The ability to meet the operational needs of the collections is another key element for ensuring that collections are maintained according to professional standards, monitored regularly, and provide access to and oversight of users.

Most collections have experienced stable staffing over the past 5 years. About 33% experienced staff reductions.

Question C-3. How would you characterize the size of your unit's collections staff over the past 5 years? (Mark just one)

Major Group	Type	Staff Size Increasing	Staff Size Stable	Staff Declining Due to Attrition	Staff Has Been Reduced	Do Not Know	Totals
Biological Collections	Botany	16	31	20	5	2	74
	Entomology	10	17	16	5	–	48
	Herpetology	6	16	11	7	–	40
	Ichthyology	4	20	10	5	–	39
	Invertebrate Zoology	5	22	10	5	–	42
	Mammalogy	9	18	9	6	–	42
	Ornithology	7	15	12	6	–	40
Geology and Mineralogy Collections	Geology and Mineralogy	3	10	5	5	–	23
	Invertebrate Paleontology	5	18	9	7	–	39
	Paleobotany	7	18	7	6	1	39
	Vertebrate Paleontology	4	17	8	6	–	35
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	5	2	–	–	10
	Microbiology		5	1	–	–	5
Social Sciences Collections	Anthropology	4	12	5	2	–	23
	Archaeology	7	16	9	3	–	35
	Ethnography	5	10	7	3	–	25
	Physical Anthropology	5	13	4	2	–	24
Other	Other	5	14	8	5	3	35
Totals		*105*	*277*	*153*	*78*	*6*	*619*
Percent (%)		*17*	*45*	*25*	*13*	*1*	*100*

Note: *Data were not provided for 119 collections.*

Observations

- Forty-five percent of the collections have had stable staffing over the past 5 years; however, over 33% of collections have experienced staff reductions.
- None of the living/cell organismal line or microbiology collections have experienced a decrease in staff over the past 5 years.

Why is this important?

The collection's size is an indicator of the resource demands on the reporting unit that maintains it.

Most collections are expected to either fill vacancies or add positions over the next 5 years.

Question C-4. How do you view the outlook for collection staffing levels over the next 5 years? (Mark just one)

Major Group	Type	Add Staff Positions	Fill Vacancies	Lose Position	Lay Off Staff	Totals
Biological Collections	Botany	8	47	16	4	75
	Entomology	6	28	10	4	48
	Herpetology	5	26	6	2	39
	Ichthyology	4	30	2	2	38
	Invertebrate Zoology	7	28	3	3	41
	Mammalogy	8	25	6	2	41
	Ornithology	6	25	5	3	39
Geology and Mineralogy Collections	Geology and Mineralogy	4	14	1	3	22
	Invertebrate Paleontology	7	25	5	2	39
	Paleobotany	8	24	3	3	38
	Vertebrate Paleontology	8	20	5	1	34
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	5	–	1	10
	Microbiology	2	3	1	–	6
Social Sciences Collections	Anthropology	9	9	2	2	22
	Archaeology	8	18	4	4	34
	Ethnography	6	12	4	2	24
	Physical Anthropology	7	12	3	2	24
Other	Other	4	17	11	4	36
Totals		*111*	*368*	*87*	*44*	*610*
Percent (%)		*18*	*60*	*14*	*7*	*100*

Note: *Data were not provided for 119 collections.*

Observations

- Sixty percent of the collections will require staff vacancies to be filled over the next 5 years.
- Eighteen percent of the collections anticipate additional staff positions.

Why is this important?

Stable and even increasing staffing are essential for ensuring the continuity of operations at an adequate level, maintaining institutional memory, and providing adequate user services. It is also a benchmark against which to measure support over time.

The respondents who answered this question identified the retention of qualified staff as the most important staffing challenge they face.

Question C-5. Which of the following are the most important challenges related to current and future staffing? (Mark all that apply)

Major Group	Type	Finding Qualified Staff	Retaining Qualified Staff	Providing Training	Attracting Expert Staff	Totals
Biological Collections	Botany	31	43	13	39	126
	Entomology	19	32	13	21	85
	Herpetology	18	32	11	16	77
	Ichthyology	19	31	12	16	78
	Invertebrate Zoology	20	30	8	19	77
	Mammalogy	18	27	11	18	74
	Ornithology	17	26	12	18	73
Geology and Mineralogy Collections	Geology and Mineralogy	10	15	9	7	41
	Invertebrate Paleontology	21	26	9	16	72
	Paleobotany	17	25	12	13	67
	Vertebrate Paleontology	19	24	9	13	65
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	4	2	2	15
	Microbiology	4	2	3	2	11
Social Sciences Collections	Anthropology	8	15	5	7	35
	Archaeology	11	20	10	13	54
	Ethnography	8	15	7	11	41
	Physical Anthropology	9	15	6	8	38
Other	Other	14	21	6	15	56
Totals		*270*	*403*	*158*	*254*	*1,085*
Percent (%)		*25*	*37*	*15*	*23*	*100*

Note: *Data were not provided for 270 collections.*

Observations

- Twenty-five percent of the respondents identified finding qualified staff and attracting expert staff as the most important challenges to current and future staffing issues.
- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

Stable and even increasing staffing is essential for ensuring continuity of operations at an adequate level, maintaining institutional memory, and providing adequate user services. It is also a benchmark against which to measure support over time.

Section D:
Collections Funding

Section D of the questionnaire collected information regarding collections funding.

The NSF was the single largest provider of Federal funding support for collections improvement.

Question D-1. If you received Federal support for collection operations, maintenance and/or improvement, please indicate which of the following Federal agencies provided such support since 2000. (Mark all that apply)

Major Group	Type	NSF	NIH	DOA	USGS	NPS	DOI	NOAA	NASA	DOE	DoD	IMLS	NEA	NEH	None	Totals
Biological Collections	Botany	61	2	13	4	18	9	–	1	1	3	16	–	5	7	140
	Entomology	39	1	11	5	7	4	2	–	1	5	11	–	4	4	94
	Herpetology	34	–	5	4	8	5	2	1	–	6	10	–	5	3	83
	Ichthyology	31	–	4	5	7	7	3	–	–	5	10	–	5	5	82
	Invertebrate Zoology	32	1	6	2	6	3	5	–	–	6	11	–	4	5	81
	Mammalogy	36	2	7	4	12	5	5	–	–	8	11	–	5	1	96
	Ornithology	35	1	7	4	10	5	3	–	–	7	12	–	5	1	90
Geology and Mineralogy Collections	Geology and Mineralogy	15	–	3	1	5	2	–	–	–	1	8	–	4	4	43
	Invertebrate Paleontology	31	1	5	3	5	3	1	–	–	2	9	–	4	4	68
	Paleobotany	29	–	6	3	6	3	–	1	–	2	11	–	5	4	70
	Vertebrate Paleontology	27	–	5	3	6	3	–	1	–	3	9	–	4	4	65
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	9	4	–	–	–	–	1	–	–	–	1	–	–	1	16
	Microbiology	5	1	–	–	–	–	1	–	–	–	–	–	–	1	8
Social Sciences Collections	Anthropology	12	1	2	1	7	6	–	–	–	4	8	3	7	2	53
	Archaeology	18	2	5	3	11	9	–	–	–	8	12	3	10	2	83
	Ethnography	13	–	3	2	9	6	–	–	–	5	9	3	8	2	60
	Physical Anthropology	12	1	2	2	8	8	–	–	–	4	7	3	8	2	57
Other	Other	26	2	4	–	5	3	–	1	–	1	3	1	2	6	54
Total		*465*	*19*	*88*	*46*	*130*	*81*	*23*	*5*	*2*	*70*	*158*	*13*	*85*	*58*	1,243
Percent (%)		*37*	*2*	*7*	*4*	*10*	*7*	*2*	*0*	*0*	*6*	*13*	*1*	*7*	*5*	*100*

Observations

- Collectively, the NSF, the United States Geological Survey (USGS), and the Institute for Museum and Library Services (IMLS) provide 60% of the funding for the operations, maintenance, and/or improvement of the collections surveyed.
- The National Aeronautics and Space Administration (NASA) and the Department of Energy (DOE) provide less than 1% of the funding for the collections surveyed.

Why is this important?

This measure indicates the vital importance of Federal funding for operating, maintaining, and/or improving hundreds of object-based scientific collections.

Thirty-three percent of the collections surveyed expect to experience an erosion or decrease of funding over the next 5 years.

Question D-2. Considering all sources of funding, how do you view the outlook for support of your collections in the next 5 years? (Mark just one)

Major Group	Type	Expect Significant Increases in Funding	Expect Steady Growth Above Inflation	Expect Steady Growth Covering Inflation	Expect Funding To Erode or Decrease	Expect Significant Funding Cuts	Do Not Know	Totals
Biological Collections	Botany	3	4	25	27	9	7	75
	Entomology	1	7	13	19	1	8	49
	Herpetology	1	3	10	19	3	4	40
	Ichthyology	–	4	11	19	2	3	39
	Invertebrate Zoology	1	7	14	15	2	3	42
	Mammalogy	1	6	9	20	3	3	42
	Ornithology	1	5	9	18	3	4	40
Geology and Mineralogy Collections	Geology and Mineralogy	1	4	4	10	–	4	23
	Invertebrate Paleontology	1	5	11	18	1	3	39
	Paleobotany	1	5	12	13	3	5	39
	Vertebrate Paleontology	1	3	13	13	1	4	35
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	1	2	5	1	1	10
	Microbiology	–	1	1	2	1	1	6
Social Sciences Collections	Anthropology	2	3	7	7	1	3	23
	Archaeology	2	4	8	14	4	3	35
	Ethnography	1	4	5	10	2	3	25
	Physical Anthropology	1	2	7	8	3	3	24
Other	Other	1	–	6	16	9	3	35
Totals		*19*	*68*	*167*	*253*	*49*	*65*	*621*
Percent (%)		*3*	*11*	*27*	*41*	*8*	*10*	*100*

Note: *Data were not provided for 117 collections.*

Observations

- Forty-one percent of the collections expect funds to erode or decrease, while 23% of the collections expect funds to grow steadily to cover inflation.
- Only 3% of the collections expect funding to increase significantly.

Why is this important?

Stable or even increased funding is an indicator that the organization is fulfilling its curatorial obligations to preserve scientific collection for future research use.

Most collections that receive endowment funding expect funding from that source to increase.

Question D-3a. Are you planning any significant increases or decreases in funding from any of the following sources: *Endowment?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	31	9	29	69
	Entomology	26	10	11	47
	Herpetology	19	6	11	36
	Ichthyology	18	4	12	34
	Invertebrate Zoology	26	2	10	38
	Mammalogy	23	6	8	37
	Ornithology	21	6	10	37
Geology and Mineralogy Collections	Geology and Mineralogy	12	3	6	21
	Invertebrate Paleontology	18	6	11	35
	Paleobotany	18	3	14	35
	Vertebrate Paleontology	17	4	8	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	7	9
	Microbiology	–	–	6	6
Social Sciences Collections	Anthropology	13	2	5	20
	Archaeology	19	3	10	32
	Ethnography	14	2	7	23
	Physical Anthropology	10	3	8	21
Other	Other	9	–	22	31
Totals		*296*	*69*	*195*	*560*
Percent (%)		*53*	*12*	*35*	*100*

Note: *Data were not provided for 178 collections.*

Observations

- Over 50% of the collections expect an increase in funding from endowment, while 12% of the collections expect a decrease in funding from endowment.
- Thirty-five percent of the collections do not have endowment-funded collections.
- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

Nearly 33% of collections that receive funding from Federal grants and contracts expect a funding increase.

Question D-3b. Are you planning any significant increases or decreases in funding from any of the following sources: *Federal grants and contracts?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	24	32	13	69
	Entomology	18	18	11	47
	Herpetology	12	18	7	37
	Ichthyology	11	17	8	36
	Invertebrate Zoology	23	11	6	40
	Mammalogy	17	14	8	39
	Ornithology	14	14	10	38
Geology and Mineralogy Collections	Geology and Mineralogy	8	6	8	22
	Invertebrate Paleontology	16	14	8	38
	Paleobotany	16	12	10	38
	Vertebrate Paleontology	18	9	6	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	5	2	9
	Microbiology	2	2	2	6
Social Sciences Collections	Anthropology	10	7	4	21
	Archaeology	12	13	7	32
	Ethnography	9	8	6	23
	Physical Anthropology	10	8	5	23
Other	Other	11	10	11	32
Totals		*233*	*218*	*132*	*583*
Percent (%)		*40*	*37*	*23*	*100*

Note: *Data were not provided for 155 collections.*

Observations

- The difference in the number of collections that are expecting an increase in funding due to Federal grants and contracts and those that expect a decrease is about 6%.
- Thirty-seven percent of botany collections expect a decrease of Federal grants and contracts.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

Most collections that receive funding from State government grants or contracts expect a funding decrease.

Question D-3c. Are you planning any significant increases or decreases in funding from any of the following sources: *State government grants and contracts?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	6	18	43	67
	Entomology	6	15	24	45
	Herpetology	7	12	18	37
	Ichthyology	7	11	17	35
	Invertebrate Zoology	6	10	23	39
	Mammalogy	7	9	23	39
	Ornithology	7	9	22	38
Geology and Mineralogy Collections	Geology and Mineralogy	2	5	14	21
	Invertebrate Paleontology	4	9	24	37
	Paleobotany	5	9	22	36
	Vertebrate Paleontology	5	8	18	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	1	8	9
	Microbiology	–	–	6	6
Social Sciences Collections	Anthropology	2	5	11	18
	Archaeology	3	11	16	30
	Ethnography	1	6	15	22
	Physical Anthropology	2	6	12	20
Other	Other	7	4	21	32
Totals		*77*	*148*	*337*	*562*
Percent (%)		*14*	*26*	*60*	*100*

Note: *Data were not provided for 176 collections.*

Observations

- Only 14% of collections expect an increase in funding from State government grants and contracts.
- Collections for which decreases are expected outnumber increases are expected by 2 to 1.
- Over 60% of the collections do not receive any funding from State government grants and contracts.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

The few collections that receive funding from county or municipal grants or contracts expect a decrease in funding.

Question D-3d. Are you planning any significant increases or decreases in funding from any of the following sources: *County or municipal grants and contracts?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	3	3	62	68
	Entomology	1	4	41	46
	Herpetology	2	5	29	36
	Ichthyology	2	5	27	34
	Invertebrate Zoology	2	4	31	37
	Mammalogy	3	4	32	39
	Ornithology	3	4	31	38
Geology and Mineralogy Collections	Geology and Mineralogy	2	3	16	21
	Invertebrate Paleontology	2	5	28	35
	Paleobotany	3	4	27	34
	Vertebrate Paleontology	2	4	23	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	10	10
	Microbiology	1	–	5	6
Social Sciences Collections	Anthropology	3	4	11	18
	Archaeology	5	5	20	30
	Ethnography	2	4	16	22
	Physical Anthropology	2	5	12	19
Other	Other	1	–	29	30
Totals		*39*	*63*	*450*	*552*
Percent (%)		*7*	*11*	*82*	*100*

Note: *Data were not provided for 186 collections.*

Observations

- Only 7% of the collections expect an increase in funding from county or municipal grants and contracts.
- Most of the collections do not receive funding from county or municipal grants and contracts.
- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

Most of the collections that receive funding from industrial grants and contracts anticipate a funding decrease.

Question D-3e. Are you planning any significant increases or decreases in funding from any of the following sources: *Industrial grants and contracts?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	2	66	1	69
	Entomology	3	42	2	47
	Herpetology	4	32	1	37
	Ichthyology	4	31	–	35
	Invertebrate Zoology	2	35	1	38
	Mammalogy	4	36	–	40
	Ornithology	4	35	–	39
Geology and Mineralogy Collections	Geology and Mineralogy	4	17	1	22
	Invertebrate Paleontology	2	32	2	36
	Paleobotany	3	31	1	35
	Vertebrate Paleontology	2	28	–	30
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	8	–	10
	Microbiology	2	4	–	6
Social Sciences Collections	Anthropology	3	16	–	19
	Archaeology	4	27	–	31
	Ethnography	3	20	–	23
	Physical Anthropology	2	18	–	20
Other	Other	2	28	–	30
Totals		*52*	*506*	*9*	*567*
Percent (%)		*9*	*89*	*2*	*100*

Note: *Data were not provided for 171 collections.*

Observations

- Nearly 90% of the collections that receive funding from industrial grants and contracts anticipate a funding decrease. (All but 2% of surveyed collections receive funding of this type.)
- Respondents did not provide data for nearly 25% of the collections for this question.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

Most collections that receive funding from private gifts and grants expect to receive funding increases.

Question D-3f. Are you planning any significant increases or decreases in funding from any of the following sources: *Private gifts and grants?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	30	9	29	68
	Entomology	28	4	14	46
	Herpetology	21	6	8	35
	Ichthyology	18	5	10	33
	Invertebrate Zoology	28	2	9	39
	Mammalogy	25	5	7	37
	Ornithology	22	4	10	36
Geology and Mineralogy Collections	Geology and Mineralogy	13	2	6	21
	Invertebrate Paleontology	22	3	13	37
	Paleobotany	22	4	11	37
	Vertebrate Paleontology	22	8	2	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	–	5	9
	Microbiology	1	–	5	6
Social Sciences Collections	Anthropology	13	2	5	20
	Archaeology	19	4	8	31
	Ethnography	15	2	6	23
	Physical Anthropology	13	3	6	22
Other	Other	11	2	19	32
Totals		*327*	*59*	*178*	*564*
Percent (%)		*58*	*10*	*32*	*100*

Note: *Data were not provided for 174 collections.*

Observations

- Only 10% of collections that receive funding from private gifts and grants expect a decrease in funding.
- Fifty-six percent vertebrate paleontology and 52% of vertebrate paleontology expect increases private gifts and grants.
- Nearly 33% of the collections surveyed do not receive funding of this type.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

Most collections that receive funding from individual donors also expect to receive funding increases.

Question D-3g. Are you planning any significant increases or decreases in funding from any of the following sources: *Individual donors?* (Mark all that apply)

Major Group	Type	Expect increase	Expect Decrease	Not Applicable	Totals
Biological Collections	Botany	33	6	29	68
	Entomology	29	3	14	46
	Herpetology	23	3	10	36
	Ichthyology	19	2	13	34
	Invertebrate Zoology	29	2	8	39
	Mammalogy	26	3	8	37
	Ornithology	24	1	11	36
Geology and Mineralogy Collections	Geology and Mineralogy	13	2	6	21
	Invertebrate Paleontology	23	2	12	37
	Paleobotany	22	2	13	37
	Vertebrate Paleontology	23	1	7	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	–	6	9
	Microbiology	1	–	5	6
Social Sciences Collections	Anthropology	12	2	5	19
	Archaeology	19	4	8	31
	Ethnography	15	2	6	32
	Physical Anthropology	12	3	6	21
Other	Other	14	1	18	33
Totals		*340*	*39*	*185*	*564*
Percent (%)		*60*	*7*	*33*	*100*

Note: *Data were not provided for 174 collections.*

Observations

- Sixty percent of the collections that receive funding from individual donors expect an increase in funding.
- Seven percent of the collections that receive funding from individual donors expect a decrease in funding.
- Fully 25% of the collections surveyed do not receive funding of this type.

Why is this important?

Collectively, questions D-3a through D-3g provide a useful baseline of stable funding sources from which curators can draw to ensure that collections can be maintained, grown, and preserved and made accessible for users.

No respondents reported receiving funding from sources other than those specified in previous questions.

Question D-3h. Are you planning any significant increases or decreases in funding from any of the following sources: *Other sources?* (Mark all that apply)

There were no responses to this question. Note: *Data were not provided for 738 (100%) of the collections.*

Section E:
Facilities

Section E of the questionnaire collected information on the building(s) in which collections are stored and on the associated building systems.

Just over 33% of the collections have sufficient space for their projected growth over the next 5 years.

Question E-1. Please select the most appropriate description of the amount of space allocated to your collections from the list below. (Mark just one)

Major Group	Type	Provides for 5 Years of Expected Growth	Adequate for the Next 5 years	Barely Adequate	Inadequate	Totals
Biological Collections	Botany	40	14	12	10	76
	Entomology	22	9	9	9	49
	Herpetology	19	5	9	7	40
	Ichthyology	21	5	6	7	39
	Invertebrate Zoology	23	6	10	3	42
	Mammalogy	17	8	11	6	42
	Ornithology	21	4	8	6	39
Geology and Mineralogy Collections	Geology and Mineralogy	9	1	6	6	22
	Invertebrate Paleontology	13	5	14	6	38
	Paleobotany	16	4	12	6	38
	Vertebrate Paleontology	10	6	12	6	34
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	4	2	1	10
	Microbiology	1	1	3	1	6
Social Sciences Collections	Anthropology	7	3	7	5	22
	Archaeology	12	4	11	7	34
	Ethnography	7	3	6	8	24
	Physical Anthropology	8	4	7	4	23
Other	Other	14	8	8	6	36
Totals		*263*	*94*	*153*	*104*	*614*
Percent (%)		*43*	*15*	*35*	*17*	*100*

Note: *Data were not provided for 124 collections.*

Observations

- Twenty-five percent of the collections have barely adequate/adequate space.
- Botany collections have the greatest reported percentage (nearly 47%) of collections that have space sufficient to handle projected growth.
- Of individual collection types, invertebrate zoology collections have the lowest reported percentage (6%) of collections that have inadequate space, while ethnography collections have the highest reported percentage (26%) of collections that have inadequate space.
- Of the major groups, living/cell organismal and microbiology collections have the lowest reported percentage (11%) of collections that have inadequate space, while social sciences collections have the highest reported percentage (18%) of collections that have inadequate space.

Why is this important?

Storage space is a major driver for collection growth and health over time, and it has an effect on a variety of other important factors, including collection security and accessibility.

On-site storage and facilities are the most identified major needs.

Question E-2. For those collections with inadequate space allocations, indicate areas of major needs. (Mark all that apply)

Major Group	Type	Renovate On-Site Facilities	Install Higher Density On-Site Storage	Construct Additional On-Site Storage	Renovate Current On-Site Storage	Install Higher Density Off-Site Storage	Construct Additional Off-Site Storage	Other	Totals
Biological Collections	Botany	16	16	14	1	–	4	2	53
	Entomology	13	13	12	–	–	2	2	42
	Herpetology	11	11	12	1	–	4	2	41
	Ichthyology	8	8	11	1	–	3	1	32
	Invertebrate Zoology	10	10	9	2	–	4	–	35
	Mammalogy	12	12	14	1	2	3	1	45
	Ornithology	10	10	13	–	–	2	1	36
Geology and Mineralogy Collections	Geology and Mineralogy	10	10	10	1	1	3	–	35
	Invertebrate Paleontology	14	14	14	5	1	5	–	53
	Paleobotany	12	12	13	3	–	6	1	47
	Vertebrate Paleontology	12	12	13	3	–	6	–	46
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	1	–	–	–	2	3
	Microbiology	1	1	2	–	–	–	3	7
Social Sciences Collections	Anthropology	9	9	11	3	3	1	–	36
	Archaeology	13	13	15	5	4	4	1	55
	Ethnography	11	11	13	3	2	5	3	48
	Physical Anthropology	8	8	9	4	3	3	1	36
Other	Other	6	6	9	3	1	5	1	31
Totals		*176*	*176*	*195*	*36*	*17*	*60*	*21*	*681*
Percent (%)		*26*	*26*	*29*	*5*	*2*	*9*	*3*	*100*

Note: *Data were not provided for 483 collections.*

Observations

- Off-site storage improvements collectively account for less than 10% of the major needs identified for collections.
- None of the living/cell organismal and microbiology collections identified any off-site storage needs.
- Respondents did not provide data for 41% of the collections for this question.

Why is this important?

By identifying the greatest on- and off-site storage space needs for collection preservation, organizations can begin to allocate resources that will ensure that collections are preserved, secure, and accessible.

Eleven percent of respondents report that none of their collection areas and/or building systems meet best practices.

Question E-3a. Please indicate the proportion of your collection areas and/or building systems that fall into each category: *Best practices.*

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	13	5	1	6	13	19	15	72
	Entomology	7	2	3	3	7	13	12	47
	Herpetology	5	2	1	1	8	13	9	39
	Ichthyology	5	3	1	1	7	12	9	38
	Invertebrate Zoology	5	1	3	1	8	16	6	40
	Mammalogy	5	3	2	2	6	14	9	41
	Ornithology	7	2	1	1	7	11	9	38
Geology and Mineralogy Collections	Geology and Mineralogy	3	1	3	–	6	5	3	21
	Invertebrate Paleontology	4	1	2	1	9	13	8	38
	Paleobotany	4	2	2	1	8	13	7	37
	Vertebrate Paleontology	4	3	2	1	7	11	5	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	–	1	2	1	4	10
	Microbiology	1	–	–	–	1	1	3	6
Social Sciences Collections	Anthropology	4	3	–	1	2	7	3	20
	Archaeology	5	3	–	3	5	11	4	31
	Ethnography	3	2	–	3	5	7	3	23
	Physical Anthropology	3	3	1	2	4	6	3	22
Other	Other	4	1	1	4	5	11	9	35
Totals		*84*	*37*	*23*	*32*	*110*	*184*	*121*	*591*
Percent (%)		*14*	*6*	*4*	*5*	*19*	*31*	*20*	*100*

Note: *Data were not provided for 147 collections.*

Observations

- Twenty percent of the respondents reported that all their collection areas and/or building systems meet best practices.

Why is this important?

Taken together, questions E-3a through E-3c provide a comprehensive overview of collection storage conditions by collection type and condition. This information can assist collection personnel in assessing needs and priorities.

Thirteen percent of respondents report that all their collection areas and/or building systems need improvement.

Question E-3b. Please indicate the proportion of your collection areas and/or building systems that fall into each category: ***Needs improvement.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	16	2	6	11	9	17	12	73
	Entomology	9	1	5	10	6	10	7	48
	Herpetology	5	–	5	5	8	6	8	37
	Ichthyology	7	1	4	4	5	7	9	37
	Invertebrate Zoology	6	4	3	7	6	6	7	39
	Mammalogy	7	1	3	6	8	8	8	41
	Ornithology	7	–	3	6	8	6	8	38
Geology and Mineralogy Collections	Geology and Mineralogy	2	1	2	4	5	4	3	21
	Invertebrate Paleontology	7	4	3	5	8	5	3	35
	Paleobotany	8	2	2	5	8	6	4	35
	Vertebrate Paleontology	2	2	3	5	7	7	4	30
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	–	–	2	2	1	1	10
	Microbiology	3	–	–	–	–	2	1	6
Social Sciences Collections	Anthropology	–	3	–	3	4	4	5	19
	Archaeology	3	4	2	4	7	6	5	31
	Ethnography	2	3	1	3	7	3	4	23
	Physical Anthropology	1	2	1	3	5	4	3	19
Other	Other	9	–	1	4	8	6	5	33
Totals		*98*	*30*	*44*	*87*	*111*	*108*	*97*	*575*
Percent (%)		*17*	*5*	*8*	*15*	*19*	*19*	*17*	*100*

Note: *Data were not provided for 163 collections.*

Observations

- Only 17% of the collections are entirely in need of improvement.
- Of the major groups that have no collections that need improvement in the adequacy of their storage facilities, living/cell organismal and microbiology collections had the highest percentage (about 38%) and social sciences collections had the lowest percentage (about 4%).

Why is this important?

Taken together, questions E-3a through E-3c provide a comprehensive overview of collection storage conditions by collection type and condition. This information can assist collection personnel in assessing needs and priorities.

Over 33% of respondents report that none of their collection areas and/or building systems are in unsatisfactory condition.

Question E-3c. Please indicate the proportion of your collection areas and/or building systems that fall into each category: *Unsatisfactory*.

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	40	5	5	9	5	2	5	71
	Entomology	21	3	4	11	2	4	1	46
	Herpetology	19	3	3	9	–	1	2	37
	Ichthyology	20	3	2	8	–	1	3	37
	Invertebrate Zoology	20	1	5	6	3	3	1	39
	Mammalogy	21	2	4	8	1	1	3	40
	Ornithology	17	2	3	10	1	1	3	37
Geology and Mineralogy Collections	Geology and Mineralogy	6	1	4	4	1	3	1	20
	Invertebrate Paleontology	16	2	4	6	3	3	2	36
	Paleobotany	15	2	3	7	4	4	1	36
	Vertebrate Paleontology	8	3	6	8	3	2	1	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	5	–	2	–	2	–	1	10
	Microbiology	4	1	–	–	–	–	1	6
Social Sciences Collections	Anthropology	6	–	1	4	4	2	1	18
	Archaeology	12	–	3	6	4	3	2	30
	Ethnography	8	–	2	4	4	2	2	22
	Physical Anthropology	8	–	2	4	4	2	–	20
Other	Other	19	–	3	3	7	3	1	36
Totals		*265*	*28*	*56*	*107*	*48*	*37*	*31*	*572*
Percent (%)		*46*	*5*	*10*	*19*	*8*	*6*	*5*	*100*

Note: *Data were not provided for 166 collections.*

Observations

- Botany and microbiology collections have the highest percentage of collections that do not have any inadequate storage facilities.

Why is this important?

Taken together, questions E-3a through E-3c provide a comprehensive overview of collection storage conditions by collection type and condition. This information can assist collection personnel in assessing needs and priorities.

Renovations and humidity controls are the most identified needs for collections stored under inadequate or unacceptable conditions.

Question E-4. For those collections housed in areas with inadequate or unacceptable conditions, indicate areas of major needs. (Mark all that apply)

Major Group	Type	Renovation of Buildings	H&V	AC	Humidity Controls	Lighting Issues	Fire Safety	None	Totals
Biological Collections	Botany	33	21	26	28	12	11	25	157
	Entomology	20	21	18	22	16	10	14	121
	Herpetology	19	18	17	20	12	8	9	103
	Ichthyology	19	19	18	19	12	10	10	107
	Invertebrate Zoology	19	17	16	18	13	11	8	102
	Mammalogy	22	20	18	21	12	12	9	114
	Ornithology	17	19	18	21	12	11	9	107
Geology and Mineralogy Collections	Geology and Mineralogy	13	13	15	12	9	6	4	72
	Invertebrate Paleontology	22	17	18	19	10	8	9	103
	Paleobotany	20	17	17	18	9	7	9	97
	Vertebrate Paleontology	24	18	18	17	11	8	6	102
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	3	3	3	1	3	3	19
	Microbiology	2	1	1	–	1	1	3	9
Social Sciences Collections	Anthropology	14	12	13	13	10	8	4	74
	Archaeology	21	20	19	21	14	12	5	112
	Ethnography	16	14	15	15	9	8	4	81
	Physical Anthropology	13	15	13	14	9	9	3	76
Other	Other	17	11	11	15	5	9	11	79
Totals		*314*	*276*	*274*	*296*	*178*	*152*	*145*	*1,635*
Percent (%)		*19*	*17*	*17*	*18*	*11*	*9*	*9*	*100*

Note 1: *Data were not provided for 133 collections.*

Note 2: *H&V = Heating and Ventilation; AC = Air Conditioning.*

Observations

- Nine percent of collections identify improved fire safety equipment as a major need.
- Collectively, collections citing heating, ventilation, and air conditioning (HVAC) represent nearly 33% of the total.
- Botany collections have the widest distribution across the major needs.

Why is this important?

By identifying the adequacy-of-storage-condition areas of greatest need for collection preservation, organizations can allocate resources to ensure that collections are preserved, secure, and accessible.

Twenty-one percent of respondents report that all their accessible collection areas and/or building systems represent best practices.

Question E-5a. Please indicate the proportion of your accessible collection areas and/or building systems that fall into each category: ***Represent best practices.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	11	5	1	6	12	17	21	73
	Entomology	7	2	2	4	8	9	16	48
	Herpetology	5	2	1	1	6	12	12	39
	Ichthyology	5	3	1	1	6	12	10	38
	Invertebrate Zoology	6	1	2	3	7	12	10	41
	Mammalogy	5	3	1	3	4	11	13	40
	Ornithology	7	2	1	2	5	9	12	38
Geology and Mineralogy Collections	Geology and Mineralogy	3	1	3	1	4	6	3	21
	Invertebrate Paleontology	4	2	2	2	7	13	8	38
	Paleobotany	4	2	2	2	7	12	8	37
	Vertebrate Paleontology	5	2	1	2	6	11	5	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	–	–	1	1	1	4	10
	Microbiology	1	–	–	–	–	2	3	6
Social Sciences Collections	Anthropology	–	5	2	2	2	5	4	20
	Archaeology	–	6	2	4	5	10	5	32
	Ethnography	4	1	–	4	4	6	4	23
	Physical Anthropology	4	2	–	2	4	6	3	21
Other	Other	3	1	1	3	1	12	14	35
Totals		*77*	*40*	*22*	*43*	*89*	*166*	*155*	*592*
Percent (%)		*13*	*7*	*4*	*7*	*15*	*28*	*26*	*100*

Note: *Data were not provided for 146 collections.*

Observations

- Microbiology collections have the highest proportion of collections that entirely have accessible areas or systems that comply with best practices.
- Living cell/organismal line collections have the highest proportion of collections that do not have any collections stored in areas that comply with best practices.

Why is this important?

Taken together, questions E-5a through E-5f provide information about building systems that organizations can use to address shortcomings that could put collection safety and accessibility at risk and that can perhaps be extrapolated out for use by other organizations and disciplines.

Sixteen percent of respondents report that none of their accessible collection areas and/or building systems need improvement.

Question E-5b. Please indicate the proportion of your accessible collection areas and/or building systems that fall into each category: ***Needs improvement.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	50	1	2	–	–	5	11	69
	Entomology	25	2	2	1	2	4	10	46
	Herpetology	26	–	1	–	–	4	7	38
	Ichthyology	27	–	–	–	–	3	7	37
	Invertebrate Zoology	21	1	3	1	–	5	6	37
	Mammalogy	25	–	2	–	–	3	7	37
	Ornithology	23	2	–	–	–	4	8	37
Geology and Mineralogy Collections	Geology and Mineralogy	13	1	3	–	–	1	2	20
	Invertebrate Paleontology	20	1	3	–	–	3	5	32
	Paleobotany	23	1	3	–	–	2	5	34
	Vertebrate Paleontology	20	1	3	–	–	2	2	28
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	–	–	1	–	1	4	10
	Microbiology	2	–	–	–	–	–	4	6
Social Sciences Collections	Anthropology	10	1	1	1	–	1	2	16
	Archaeology	16	1	2	2	–	2	4	27
	Ethnography	12	–	2	1	1	1	2	19
	Physical Anthropology	11	1	–	1	–	2	2	17
Other	Other	17	–	2	–	–	4	5	28
Totals		*345*	*13*	*29*	*8*	*3*	*47*	*93*	*538*
Percent (%)		*64*	*2*	*5*	*1*	*1*	*9*	*17*	*100*

Note: *Data were not provided for 180 collections.*

Observations

- Seventeen percent of respondents report that all their accessible collection areas and/or building systems need improvement.

Why is this important?

Taken together, questions E-5a through E-5f provide information about building systems that organizations can use to address shortcomings that could put collection safety and accessibility at risk and that can perhaps be extrapolated out for use by other organizations and disciplines.

Over 33% of respondents report that none of their accessible collection areas and/or building systems are in unsatisfactory condition.

Question E-5c. Please indicate the proportion of your accessible collection areas and/or building systems that fall into each category: *Unsatisfactory.*

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	42	5	6	6	4	4	6	73
	Entomology	22	5	4	9	1	4	1	46
	Herpetology	19	4	5	6	–	1	2	37
	Ichthyology	20	3	4	6	–	1	3	39
	Invertebrate Zoology	22	2	3	5	3	3	1	39
	Mammalogy	21	3	4	6	–	2	3	39
	Ornithology	17	3	5	7	–	2	3	37
Geology and Mineralogy Collections	Geology and Mineralogy	6	1	4	4	–	3	2	20
	Invertebrate Paleontology	16	2	6	5	2	3	3	37
	Paleobotany	15	2	4	6	4	3	2	36
	Vertebrate Paleontology	7	5	4	6	2	2	3	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	–	–	1	1	–	3	10
	Microbiology	4	1	–	–	–	–	1	6
Social Sciences Collections	Anthropology	5	1	–	4	4	3	1	18
	Archaeology	12	1	2	5	4	2	2	28
	Ethnography	7	1	2	4	3	3	2	22
	Physical Anthropology	8	1	–	3	5	2	–	19
Other	Other	21	3	2	–	5	4	1	36
Totals		*270*	*43*	*55*	*83*	*38*	*42*	*38*	*569*
Percent (%)		*47*	*8*	*10*	*15*	*7*	*7*	*7*	*100*

Note: *Data were not provided for 169 collections.*

Observations

- Only 7% of respondents report that all their accessible collection areas and/or building systems are in unsatisfactory condition.
- Living cell/organismal line collections have the highest proportion of accessible collections for which accessible areas or systems are entirely in unsatisfactory condition.

Why is this important?

Taken together, questions E-5a through E-5f provide information about building systems that organizations can use to address shortcomings that could put collection safety and accessibility at risk and that can perhaps be extrapolated out for use by other organizations and disciplines.

Most of the respondents who answered this question reported that none of the inaccessible collection areas and/or building systems represent best practices.

Question E-5d. Please indicate the proportion of your inaccessible collection areas and/or building systems that fall into each category listed: ***Represents best practices.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	50	1	2	–	–	5	11	69
	Entomology	25	2	2	1	1	4	10	46
	Herpetology	26	–	1	–	–	4	7	38
	Ichthyology	27	–	–	–	–	3	7	37
	Invertebrate Zoology	21	1	3	1	–	5	6	37
	Mammalogy	25	–	2	–	–	3	7	37
	Ornithology	23	2	–	–	–	4	8	37
Geology and Mineralogy Collections	Geology and Mineralogy	13	1	3	–	–	1	2	20
	Invertebrate Paleontology	20	1	3	–	–	3	5	32
	Paleobotany	23	1	3	–	–	2	5	34
	Vertebrate Paleontology	20	1	3	–	–	2	2	28
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	–	–	1	–	1	4	10
	Microbiology	2	–	–	–	–	–	4	6
Social Sciences Collections	Anthropology	10	1	1	1	–	1	2	16
	Archaeology	16	1	2	2	–	2	4	27
	Ethnography	12	–	2	1	1	1	2	19
	Physical Anthropology	11	1	–	1	–	2	2	17
Other	Other	17	–	2	–	–	4	5	28
Totals		*345*	*13*	*29*	*8*	*3*	*47*	*93*	*538*
Percent (%)		*64*	*2*	*5*	*1*	*1*	*9*	*17*	*100*

Note: *Data were not provided for 200 collections.*

Observations

- Sixty-four percent of respondents reported that none of their inaccessible collection areas and/or building systems represent best practices.
- Of the major groups that have inaccessible areas/systems that represent best practices at least 50% or more, living organisms/microbiology collections had the highest percentage (about 49.5%) and social sciences collections had the lowest percentage (about 12%).
- Respondents did not provide data for over 25% of the collections for this question.

Why is this important?

Taken together, questions E-5a through E-5f provide information about building systems that organizations can use to address shortcomings that could put collection safety and accessibility at risk and that can perhaps be extrapolated out for use by other organizations and disciplines.

Most of the respondents who answered this question reported that none of their inaccessible collection areas and/or building systems need improvement.

Question E-5e. Please indicate the proportion of your inaccessible collection areas and/or building systems that fall into each category listed: ***Needs improvement.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	50	3	2	1	2	3	8	69
	Entomology	31	3	1	–	4	6	1	46
	Herpetology	26	2	1	–	3	3	2	37
	Ichthyology	26	4	–	–	1	2	4	37
	Invertebrate Zoology	22	4	1	2	3	3	2	37
	Mammalogy	24	3	1	–	2	4	3	37
	Ornithology	24	4	1	–	2	3	3	37
Geology and Mineralogy Collections	Geology and Mineralogy	13	2	–	–	2	2	1	20
	Invertebrate Paleontology	20	2	–	1	3	4	2	32
	Paleobotany	24	1	–	2	2	4	1	34
	Vertebrate Paleontology	14	2	1	1	2	5	2	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	–	–	1	1	–	1	10
	Microbiology	5	–	–	–	–	–	1	6
Social Sciences Collections	Anthropology	6	2	–	–	1	4	2	15
	Archaeology	16	2	1	–	1	6	2	28
	Ethnography	11	2	–	–	2	3	1	19
	Physical Anthropology	9	2	–	2	1	2	1	17
Other	Other	20	1	2	1	–	3	1	28
Totals		*348*	*39*	*11*	*11*	*32*	*57*	*38*	*536*
Percent (%)		*65*	*7*	*2*	*2*	*6*	*11*	*7*	*100*

Note: *Data were not provided for 202 collections.*

Observations

- Only 7% of respondents report that all their inaccessible collection areas and/or building systems need improvement.
- All collection types had at least one collection that was entirely in an inaccessible area or a building system that need improvement.
- Respondents did not provide data for over 25% of the collections for this question.

Why is this important?

Taken together, questions E-5a through E-5f provide information about building systems that organizations can use to address shortcomings that could put collection safety and accessibility at risk and that can perhaps be extrapolated out for use by other organizations and disciplines.

Most of the respondents who answered this question reported that none of their inaccessible collection areas and/or building systems are considered unsatisfactory.

Question E-5f. Please indicate the proportion of your inaccessible collection areas and/or building systems that fall into each category listed: *Unsatisfactory*.

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	52	5	–	–	2	2	8	69
	Entomology	30	5	–	1	2	3	3	44
	Herpetology	25	3	–	2	–	1	4	35
	Ichthyology	29	2	–	–	1	1	3	36
	Invertebrate Zoology	24	3	1	1	3	3	3	38
	Mammalogy	24	3	–	–	–	3	4	35
	Ornithology	24	4	1	–	–	2	4	35
Geology and Mineralogy Collections	Geology and Mineralogy	10	–	–	–	1	4	4	19
	Invertebrate Paleontology	19	2	1	–	3	4	4	33
	Paleobotany	22	1	1	–	3	4	4	35
	Vertebrate Paleontology	12	2	2	–	4	3	5	28
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	–	–	1	–	1	10
	Microbiology	5	–	–	–	–	–	1	6
Social Sciences Collections	Anthropology	7	1	1	–	1	2	2	14
	Archaeology	17	1	1	–	2	3	2	26
	Ethnography	11	–	1	–	1	2	3	18
	Physical Anthropology	11	1	–	–	2	1	1	16
Other	Other	23	1	–	–	3	2	2	31
Totals		*353*	*34*	*9*	*4*	*30*	*40*	*58*	*528*
Percent (%)		*67*	*6*	*2*	*1*	*6*	*8*	*11*	*100*

Note: *Data were not provided for 210 collections.*

Observations

- Over 50% of the collections have no inaccessible areas or building systems that are unsatisfactory.
- Respondents did not provide data for over 25% of the collections for this question.

Why is this important?

Taken together, questions E-5a through E-5f provide information about building systems that organizations can use to address shortcomings that could put collection safety and accessibility at risk and that can perhaps be extrapolated out for use by other organizations and disciplines.

Nine percent of collections are properly labeled, documented, cataloged, and preserved appropriately in their entirety.

Question E-6a. These collections are properly labeled, documented and cataloged, and they are preserved with appropriate materials (acid-free trays, topped-up fluid jars with good seals).

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	–	–	2	5	7	50	10	74
	Entomology	–	–	1	5	2	36	5	49
	Herpetology	–	–	1	3	1	27	7	39
	Ichthyology	–	–	1	3	1	28	6	39
	Invertebrate Zoology	–	2	–	5	2	30	3	42
	Mammalogy	–	1	–	3	2	30	5	41
	Ornithology	–		1	3	1	29	5	39
Geology and Mineralogy Collections	Geology and Mineralogy	–	–	1	6	1	11	3	22
	Invertebrate Paleontology	–	1	3	7	3	22	2	38
	Paleobotany	–	1	2	6	5	20	4	38
	Vertebrate Paleontology	–	1	3	3	3	20	3	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	–	–	–	8	2	10
	Microbiology	–	–	–	–	–	2	4	6
Social Sciences Collections	Anthropology	–	–	2	3	3	11	3	21
	Archaeology	–	–	2	5	4	21	1	33
	Ethnography	–	–	–	4	4	15	1	24
	Physical Anthropology	–	–	2	4	2	12	1	21
Other	Other	1	–	1	4	3	20	6	35
Totals		*1*	*6*	*22*	*69*	*44*	*392*	*70*	*604*
Percent (%)		*0*	*1*	*4*	*11*	*7*	*65*	*12*	*100*

Note: *Data were not provided for 134 collections.*

Observations

- Microbiology collections have the highest proportion of collections stored entirely with proper labeling, documentation, cataloging, and appropriate preservation. Only one collection is reported to be stored entirely without proper labeling, documentation, cataloging, and adequate preservation.
- With the exception of collections for which data are missing, all living/cell organismal collections have at least a 50% proportion or greater of collections stored entirely with proper labeling, documentation, cataloging, and appropriate preservation.

Why is this important?

Proper curation—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring not only a collection's survival and use, but also its chain of custody, security, and other important factors.

Of those respondents who answered this question and whose collections are cataloged but not optimally labeled or preserved, 50% are accessible and their scientific value has not been diminished.

Question E-6b. These collection areas are cataloged but their labeling and preservation materials are not optimal. They are accessible, but their scientific value is diminished by their level of curation/preservation.

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	18	14	16	11	8	4	–	71
	Entomology	5	10	11	11	5	4	–	46
	Herpetology	5	12	5	7	4	2	–	35
	Ichthyology	7	9	7	7	4	2	–	36
	Invertebrate Zoology	3	9	7	12	7	1	–	39
	Mammalogy	4	11	5	10	5	2	–	37
	Ornithology	4	11	7	8	4	2	–	36
Geology and Mineralogy Collections	Geology and Mineralogy	1	3	2	6	5	2	–	19
	Invertebrate Paleontology	1	7	7	12	3	5	–	35
	Paleobotany	5	6	4	10	6	4	–	35
	Vertebrate Paleontology	1	6	5	10	3	4	–	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	2	3	4	–	–	–	10
	Microbiology	3	3	–	–	–	–	–	6
Social Sciences Collections	Anthropology	1	3	1	7	2	3	–	17
	Archaeology	1	6	4	9	5	4	–	29
	Ethnography	1	5	3	7	4	1	–	21
	Physical Anthropology	1	2	3	5	3	4	–	18
Other	Other	7	10	4	7	5	2	–	35
Totals		*69*	*129*	*94*	*143*	*73*	*46*	–	*554*
Percent (%)		*12*	*23*	*17*	*26*	*13*	*8*	–	*100*

Note: *Data were not provided for 184 collections.*

Observations

- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

Proper curation—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring not only a collection's survival and use, but also its chain of custody, security, and other important factors.

Nearly 400 collections are reported to have at least some damage or to lack important specimen data.

Question E-6c. These collections have been cataloged but their labeling and preservation materials are unacceptable. They lack important specimen data (locality, taxonomic name) and they are preserved with substandard materials that are causing damage to them.

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	26	23	11	6	3	2	–	71
	Entomology	15	14	10	5	1	1	–	46
	Herpetology	14	19	7	2	2	–	–	34
	Ichthyology	12	11	8	2	2	–	–	35
	Invertebrate Zoology	10	15	8	5	1	–	–	39
	Mammalogy	11	13	7	4	2	–	–	37
	Ornithology	13	11	7	3	2	–	–	36
Geology and Mineralogy Collections	Geology and Mineralogy	3	3	7	4	2	–	–	19
	Invertebrate Paleontology	6	12	8	6	1	2	–	35
	Paleobotany	8	13	4	7	2	1	–	35
	Vertebrate Paleontology	6	10	8	4	1	–	–	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	3	–	1	–	–	–	10
	Microbiology	4	2	–	–	–	–	–	6
Social Sciences Collections	Anthropology	1	5	1	9	–	1	–	17
	Archaeology	4	8	5	10	1	1	–	29
	Ethnography	1	7	3	8	1	1	–	18
	Physical Anthropology	2	5	1	8	1	1	–	18
Other	Other	15	12	2	5	1	–	–	35
Totals		*157*	*176*	*97*	*89*	*23*	*10*	–	*552*
Percent (%)		*28*	*32*	*18*	*16*	*4*	*2*	–	*100*

Note: *Data were not provided for 186 collections.*

Observations

- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

Proper curation—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring not only a collection's survival and use, but also its chain of custody, security, and other important factors.

Fifty percent of the respondents reported that some portion of their collections have not been unpacked and/or cataloged and are therefore inaccessible.

Question E-6d. These collections have not been unpacked and/or cataloged, and they are therefore inaccessible due to lack of curation.

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	22	30	12	7	1	–	–	72
	Entomology	15	15	10	4	3	1	–	48
	Herpetology	13	12	8	1	2	1	–	37
	Ichthyology	11	15	8	1	2	1	–	38
	Invertebrate Zoology	14	8	9	7	2	1	–	41
	Mammalogy	14	13	8	1	2	1	–	39
	Ornithology	12	13	9	1	2	1	–	38
Geology and Mineralogy Collections	Geology and Mineralogy	6	5	5	3	1	1	–	21
	Invertebrate Paleontology	10	12	6	6	2	1	–	37
	Paleobotany	11	10	4	8	2	1	–	36
	Vertebrate Paleontology	6	9	7	5	2	2	–	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	3	–	–	–	–	–	10
	Microbiology	–	6	–	–	–	–	–	6
Social Sciences Collections	Anthropology	5	8	2	2	1	1	–	19
	Archaeology	9	12	4	4	1	1	–	31
	Ethnography	8	9	2	2	1	1	–	23
	Physical Anthropology	7	7	1	3	1	1	–	20
Other	Other	13	11	6	4	1	1	–	36
Totals		*189*	*192*	*101*	*59*	*26*	*16*	–	*583*
Percent (%)		*32*	*33*	*17*	*10*	*4*	*3*	–	*100*

Note: *Data were not provided for 155 collections.*

Observations

- Respondents did not provide data for 21% of the collections for this question.

Why is this important?

Proper curation—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring not only a collection's survival and use, but also its chain of custody, security, and other important factors.

Section F:
Ancillary Materials

Section F of the questionnaire collects information on the ancillary materials associated with main collections.

Of the 28% of respondents who answered this question, most ancillary collections have fewer than 1,000 individually cataloged items.

Question F-1a. Estimate the size of your ancillary materials collections using one or more of the following measures: *Individually cataloged items (e.g., recordings).*

Major Group	Type	0–1,000	1,001–5,000	5,001–10,000	10,001–50,000	50,001–100,000	> 100,001	Totals
Biological Collections	Botany	20	3	1	7	–	1	32
	Entomology	14	2	2	2	–	3	23
	Herpetology	9	1	–	4	1	2	17
	Ichthyology	7	1	1	4	–	2	15
	Invertebrate Zoology	3	2	1	2	–	3	11
	Mammalogy	8	–	–	2	2	1	13
	Ornithology	9	–	–	2	1	2	14
Geology and Mineralogy Collections	Geology and Mineralogy	3	1	–	–	–	1	5
	Invertebrate Paleontology	6	2	–	1	–	2	11
	Paleobotany	4	1	1	3	1	1	11
	Vertebrate Paleontology	3	1	–	1	–	1	6
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	2	–	–	–	1	6
	Microbiology	1	2	–	–	–	–	3
Social Sciences Collections	Anthropology	2	2	–	1	–	–	5
	Archaeology	4	2	–	3	–	1	10
	Ethnography	3	2	–	–	–	1	6
	Physical Anthropology	1	1	–	3	–	1	5
Other	Other	7	2	1	3	2	–	15
Totals		*107*	*27*	*7*	*37*	*7*	*23*	*208*
Percent (%)		*51*	*13*	*3*	*18*	*3*	*11*	*100*

Note: *Data were not provided for 530 collections.*

Observations

- The total percentage of ancillary materials collections that have over 1,000 individually cataloged items equals the percentage of those that have 1,000 individually cataloged items or less.
- Respondents did not provide data for nearly 75% of the collections for this question.

Why is this important?

Questions F-1a through F-1c indicate the physical extent of the supporting materials from which researchers and collections managers can draw to document the history, provenance, and characteristics of the collection.

Most ancillary materials collections occupy 100 linear feet or less of shelf space.

Question F-1b. Estimate the size of your ancillary materials collections using one or more of the following measures: *Linear feet of shelf space.*

Major Group	Type	0–100	101–1,000	1,001–2,500	2,501–5,000	> 5,001	Totals
Biological Collections	Botany	26	9	3	1	2	41
	Entomology	18	8	2	1	1	30
	Herpetology	13	3	2	1	1	20
	Ichthyology	13	3	2	1	1	20
	Invertebrate Zoology	10	10	2	1	1	24
	Mammalogy	13	5	2	1	1	22
	Ornithology	15	4	2	1	1	23
Geology and Mineralogy Collections	Geology and Mineralogy	5	3	2	1	1	12
	Invertebrate Paleontology	10	8	2	1	1	22
	Paleobotany	9	5	3	1	1	19
	Vertebrate Paleontology	7	6	2	1	1	17
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	–	–	1	9
	Microbiology	4	–	–	–	–	4
Social Sciences Collections	Anthropology	3	4	–	2	1	10
	Archaeology	6	7	2	2	1	18
	Ethnography	4	4	2	1	1	12
	Physical Anthropology	3	6	1	2	1	13
Other	Other	13	5	4	1	–	23
Totals		*180*	*90*	*33*	*19*	*17*	*339*
Percent (%)		*53*	*27*	*10*	*6*	*5*	*100*

Note: *Data were not provided for 399 collections.*

Observations

- No ancillary materials collections for microbiology collections occupy over 100 linear feet of shelf space.
- Only one ancillary material collection for living/cell organismal lines collections occupies over 100 linear feet of shelf space.
- Respondents did not provide data for over 50% of the collections for this question.

Why is this important?

Questions F-1a through F-1c indicate the physical extent of the supporting materials from which researchers and collections managers can draw to document the history, provenance, and characteristics of the collection.

Most ancillary materials collections occupy 100 cubic feet or less of storage space.

Question F-1c. Estimate the size of your ancillary materials collections using one or more of the following measures: *Cubic feet of storage area.*

Major Group	Type	0–100	101–1,000	1,001–2,000	2,001–3,000	3,001–4,000	> 4,001	Totals
Biological Collections	Botany	18	6	–	–	1	2	27
	Entomology	9	2	–	–	–	2	13
	Herpetology	8	3	–	–	1	1	13
	Ichthyology	7	5	–	–	1	2	15
	Invertebrate Zoology	3	4	–	–	1	2	10
	Mammalogy	9	2	–	–	1	2	14
	Ornithology	10	2	–	–	1	2	15
Geology and Mineralogy Collections	Geology and Mineralogy	2	2	–	–	–	1	5
	Invertebrate Paleontology	5	3	1	–	–	1	10
	Paleobotany	3	4	–	–	–	1	8
	Vertebrate Paleontology	5	2	–	–	1	2	10
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	1	1	–	–	–	3
	Microbiology	1	–	1	–	–	–	2
Social Sciences Collections	Anthropology	1	3	–	1	–	2	7
	Archaeology	4	4	–	1	–	2	11
	Ethnography	3	3	–	1	–	2	9
	Physical Anthropology	2	4	–	1	–	1	8
Other	Other	7	4	–	1	–	1	13
Totals		*98*	*54*	*3*	*5*	*7*	*26*	*193*
Percent (%)		*51*	*28*	*2*	*3*	*4*	*13*	*100*

Note: *Data were not provided for 545 collections.*

Observations

- The total percentage of ancillary materials collections that occupy over 100 cubic feet of storage space equals the percentage of those that occupy 100 cubic feet or less.
- The living/cell organismal and microbiology group has no ancillary materials collections that exceed 4,000 cubic feet in size. Of the major groups that do, the social sciences group has the largest percentage (about 5.75%).
- Respondents did not provide data for nearly 75% of the collections for this question.

Why is this important?

Questions F-1a through F-1c indicate the physical extent of the supporting materials on which researchers and collections managers can draw to document the history, provenance, and characteristics of the collection.

Thirty-three percent of the ancillary materials collections are stored in systems that have not been recently installed or upgraded.

Question F-2a. Indicate the quality of the storage systems for ancillary materials: ***Installed or upgraded within the past 5 years.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	34	2	3	3	6	7	13	68
	Entomology	18	5	4	4	5	3	5	44
	Herpetology	15	3	3	1	1	6	4	33
	Ichthyology	16	3	2	1	1	5	6	34
	Invertebrate Zoology	17	4	4	3	2	5	3	38
	Mammalogy	21	3	3	2	1	4	3	37
	Ornithology	17	4	3	2	1	4	4	35
Geology and Mineralogy Collections	Geology and Mineralogy	7	2	3	1	1	2	3	19
	Invertebrate Paleontology	13	2	3	3	1	7	4	33
	Paleobotany	9	3	4	2	2	8	6	34
	Vertebrate Paleontology	8	3	2	3	2	6	4	28
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	–	–	–	1	2	1	10
	Microbiology	4	–	–	–	–	1	1	6
Social Sciences Collections	Anthropology	8	–	–	1	2	3	3	17
	Archaeology	13	2	3	2	2	4	2	28
	Ethnography	9	1	1	2	1	4	3	21
	Physical Anthropology	9	1	1	1	1	4	2	19
Other	Other	16	1	2	–	2	6	6	33
Totals		*240*	*39*	*41*	*31*	*32*	*81*	*73*	*537*
Percent (%)		*45*	*7*	*8*	*6*	*6*	*15*	*14*	*100*

Note: *Data were not provided for 201 collections.*

Observations

- Twenty-nine percent of the ancillary materials collections are stored in a system that has been mostly or entirely (i.e., 51–100%) installed or upgraded within the last 5 years.
- Microbiology ancillary materials collections have the widest disparity between collection storage conditions (i.e., collections are either stored in systems that have mostly/entirely been installed/upgraded within the past 5 years or in systems that have not been recently installed/upgraded at all).
- Respondents did not provide data for just over 25% of the collections for this question.

Why is this important?

The quality of storage conditions for ancillary collections is as important as the quality of storage conditions for scientific collections. Loss of ancillary materials collections because of inadequate storage could imperil the access to or security of the collections they document.

Just over 33% of the ancillary materials collections are stored mostly or entirely in satisfactory storage systems.

Question F-2b. Indicate the quality of the storage systems for ancillary materials: ***These ancillary materials are housed in satisfactory storage systems. The objects in these collections are fully accessible and are being preserved according to community standards.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	17	1	4	4	10	17	16	69
	Entomology	11	1	2	2	6	16	6	44
	Herpetology	7	1	1	3	6	12	4	34
	Ichthyology	9	–	1	3	6	11	6	36
	Invertebrate Zoology	4	1	3	5	4	13	9	39
	Mammalogy	6	–	2	2	6	12	10	38
	Ornithology	8	–	3	2	6	11	6	36
Geology and Mineralogy Collections	Geology and Mineralogy	3	–	3	2	3	6	3	20
	Invertebrate Paleontology	7	1	4	5	5	8	5	35
	Paleobotany	6	1	4	5	5	8	6	35
	Vertebrate Paleontology	3	2	3	5	5	10	1	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	–	–	2	1	1	3	10
	Microbiology	3	–	–	–	1	–	2	6
Social Sciences Collections	Anthropology	1	–	1	4	3	6	2	17
	Archaeology	2	–	4	5	4	9	6	30
	Ethnography	1	1	3	3	4	8	2	22
	Physical Anthropology	1	–	1	5	3	6	3	19
Other	Other	9	–	–	3	6	7	8	33
Totals		*101*	*9*	*39*	*60*	*84*	*161*	*98*	*552*
Percent (%)		*18*	*2*	*7*	*11*	*15*	*29*	*18*	*100*

Note: *Data were not provided for 186 collections.*

Observations

- Of the major groups, the living/cell organismal and microbiology group has the highest percentage (about 27%) of ancillary materials collections that are stored entirely in satisfactory storage systems.
- Microbiology ancillary materials collections have the highest percentage (about 43%) of collections that are entirely not stored in satisfactory storage systems.
- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

The quality of storage conditions for ancillary collections is as important as the quality of storage conditions for scientific collections. Loss of ancillary materials collections because of inadequate storage could imperil the access to or security of the collections they document.

Of the 738 collections surveyed, 334 are partially or entirely deteriorating because of outdated or poorly maintained storage systems.

Question F-2c. Indicate the quality of the storage systems for ancillary materials: ***Accessible but deteriorating due to outdated or poorly maintained storage systems.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	37	7	7	3	7	3	3	67
	Entomology	21	5	5	4	5	1	3	44
	Herpetology	10	7	7	3	4	2	–	33
	Ichthyology	14	6	6	2	4	3	–	35
	Invertebrate Zoology	16	4	6	6	3	3	1	39
	Mammalogy	13	5	7	3	6	2	1	37
	Ornithology	12	5	6	3	5	3	1	35
Geology and Mineralogy Collections	Geology and Mineralogy	6	2	3	2	4	1	1	19
	Invertebrate Paleontology	12	3	4	5	6	2	2	34
	Paleobotany	15	3	4	4	3	3	1	33
	Vertebrate Paleontology	5	4	6	5	3	3	1	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	–	–	1	–	1	1	10
	Microbiology	5	–	–	–	–	–	1	6
Social Sciences Collections	Anthropology	2	4	–	3	2	4	1	16
	Archaeology	5	6	3	3	3	6	2	28
	Ethnography	2	6	2	2	3	5	1	21
	Physical Anthropology	2	6	1	4	1	3	1	18
Other	Other	17	6	2	2	1	3	2	33
Totals		*201*	*79*	*69*	*55*	*60*	*48*	*23*	*535*
Percent (%)		*38*	*15*	*13*	*10*	*11*	*9*	*4*	*100*

Note: *Data were not provided for 203 collections.*

Observations

- Just over 33% of the ancillary materials collections are entirely not stored in deteriorating systems.
- Respondents did not provide data for 28% of the collections for this question.

Why is this important?

The quality of storage conditions for ancillary collections is as important as the quality of storage conditions for scientific collections. Loss of ancillary materials collections because of inadequate storage could imperil the access to and security of the collections they document.

Few ancillary materials collections are stored in inaccessible or deteriorating storage systems.

Question F-2d. Indicate the quality of the storage systems for ancillary materials: ***These ancillary materials are inaccessible and are deteriorating due to unacceptable storage systems.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	57	4	2	–	2	2	–	67
	Entomology	32	5	2	1	1	1	1	43
	Herpetology	23	3	2	–	3	1	–	32
	Ichthyology	26	2	2	–	3	1	–	34
	Invertebrate Zoology	26	3	3	–	2	1	–	35
	Mammalogy	28	3	3	–	2	1	–	37
	Ornithology	26	3	3	–	2	1	–	35
Geology and Mineralogy Collections	Geology and Mineralogy	11	3	2	–	2	1	–	19
	Invertebrate Paleontology	21	4	3	–	2	1	–	31
	Paleobotany	23	3	2	–	2	1	–	31
	Vertebrate Paleontology	15	4	3	1	1	1	–	25
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	9	–	1	–	–	–	–	10
	Microbiology	6	–	–	–	–	–	–	6
Social Sciences Collections	Anthropology	9	1	3	2	–	–	–	15
	Archaeology	19	2	3	2	–	1	–	27
	Ethnography	12	2	3	1	–	2	–	20
	Physical Anthropology	12	1	1	2	–	–	–	16
Other	Other	25	2	–	–	4	–	1	32
Totals		*380*	*45*	*38*	*9*	*26*	*15*	*2*	*515*
Percent (%)		*74*	*9*	*7*	*2*	*5*	*3*	*0*	*100*

Note: *Data were not provided for 223 collections.*

Observations

- Fewer than 75% of the ancillary materials collections are entirely not stored in inaccessible or deteriorating storage systems.
- Only one ancillary materials collection each in the biological and loving/cell organismal and microbiology major groups are entirely stored in unacceptable or deteriorating storage systems.
- Respondents did not provide data for nearly 33% of the collections for this question.

Why is this important?

The quality of storage conditions for ancillary collections is as important as the quality of storage conditions for scientific collections. Loss of ancillary materials collections because of inadequate storage could imperil the access to and security of the collections they document.

Ten percent of ancillary materials collections completely lack proper labeling, documentation, cataloging, or appropriate preservation.

Question F-3a. Please describe the curation and preservations practices associated with your ancillary materials: ***Ancillary materials are properly labeled, documented, cataloged, and they are preserved with appropriate materials.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	18	1	3	5	8	21	12	68
	Entomology	8	3	–	5	9	14	6	45
	Herpetology	4	2	1	3	3	13	9	35
	Ichthyology	4	2	2	3	2	13	10	36
	Invertebrate Zoology	1	3	–	6	7	17	6	40
	Mammalogy	3	1	1	4	5	15	9	38
	Ornithology	5	1	1	4	5	10	10	36
Geology and Mineralogy Collections	Geology and Mineralogy	3	2	–	3	5	3	4	20
	Invertebrate Paleontology	4	4	1	5	4	14	3	35
	Paleobotany	6	1	2	4	5	12	5	35
	Vertebrate Paleontology	1	1	3	4	5	12	4	30
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	–	1	–	4	2	9
	Microbiology	2	–	–	–	–	1	2	5
Social Sciences Collections	Anthropology	1	–	2	4	2	6	3	18
	Archaeology	1	2	3	4	4	12	4	30
	Ethnography	1	2	2	3	3	9	2	22
	Physical Anthropology	1	–	3	3	1	9	3	20
Other	Other	8	2	2	3	4	7	7	33
Totals		*73*	*27*	*26*	*64*	*72*	*192*	*101*	*555*
Percent (%)		*13*	*5*	*5*	*12*	*13*	*35*	*18*	*100*

Note: *Data were not provided for 183 collections.*

Observations

- Eighteen percent of ancillary collections are completely properly labeled, documented, cataloged, and appropriately preserved.
- Respondents did not provide data for 25% of the collections for this question.

Why is this important?

Proper curation of ancillary materials—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring that they can perform their intended support roles.

Twenty-one percent of the cataloged ancillary materials collections have non-optimal labeling and/or preservation materials, thereby diminishing their scientific value.

Question F-3b. Please describe the curation and preservations practices associated with your ancillary materials: ***Ancillary materials are catalogued but their labeling and preservation materials are not optimal. They are accessible but their scientific value is diminished by level of curation/preservation.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	30	8	5	5	10	4	5	67
	Entomology	12	1	6	9	9	2	3	42
	Herpetology	13	1	4	5	5	3	–	31
	Ichthyology	14	4	2	5	4	4	–	33
	Invertebrate Zoology	8	1	4	10	11	2	–	36
	Mammalogy	13	1	4	7	9	2	–	36
	Ornithology	14	–	3	6	8	3	–	34
Geology and Mineralogy Collections	Geology and Mineralogy	4	1	–	5	5	2	1	18
	Invertebrate Paleontology	5	–	4	9	9	4	2	33
	Paleobotany	9	1	3	7	8	4	1	33
	Vertebrate Paleontology	2	1	5	7	10	1	1	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	–	–	3	1	1	1	9
	Microbiology	3	–	–	–	1	–	1	5
Social Sciences Collections	Anthropology	1	1	2	7	2	2	–	15
	Archaeology	4	2	4	12	2	3	–	27
	Ethnography	2	4	2	8	2	2	–	20
	Physical Anthropology	2	2	2	8	1	3	–	18
Other	Other	14	1	2	2	6	5	3	33
Totals		*153*	*29*	*52*	*115*	*103*	*47*	*18*	*517*
Percent (%)		*30*	*6*	*10*	*22*	*20*	*9*	*3*	*100*

Note: *Data were not provided for 221 collections.*

Observations

- No cataloged ancillary materials collections in the social sciences have non-optimal labeling and/or preservation materials.
- Botany and entomology are the only biology ancillary materials collections that are completely cataloged and also suffering from non-optimal labeling and/or preservation materials.
- Respondents did not provide data for nearly 33% of the collections for this question.

Why is this important?

Proper curation of ancillary materials—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring that they can perform their intended support roles.

Only one cataloged ancillary materials collection has unacceptable labeling and/or preservation materials, is lacking important data, or is preserved in a substandard way.

Question F-3c. Please describe the curation and preservations practices associated with your ancillary materials: ***Ancillary materials have been catalogued but their labeling and preservation materials are unacceptable. They lack important data (provenance, dates) and they are preserved with substandard materials that are causing damage to them.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	48	8	3	3	2	3	–	67
	Entomology	24	6	3	5	–	4	–	42
	Herpetology	17	3	5	2	1	3	–	31
	Ichthyology	17	6	3	3	1	3	–	33
	Invertebrate Zoology	17	6	4	5	1	3	–	36
	Mammalogy	21	4	5	2	1	3	–	36
	Ornithology	18	5	5	2	1	3	–	34
Geology and Mineralogy Collections	Geology and Mineralogy	6	4	2	4	–	2	–	18
	Invertebrate Paleontology	13	5	4	6	1	3	–	32
	Paleobotany	15	4	3	5	–	6	–	33
	Vertebrate Paleontology	8	7	4	5	–	3	–	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	–	1	–	–	–	9
	Microbiology	5	–	–	–	–	–	–	5
Social Sciences Collections	Anthropology	5	3	2	4	1	–	–	15
	Archaeology	9	5	6	4	2	1	–	27
	Ethnography	6	5	4	3	1	1	–	20
	Physical Anthropology	6	3	3	5	1	–	–	18
Other	Other	21	1	4	4	2	–	1	33
Totals		*264*	*75*	*60*	*63*	*15*	*38*	*1*	*516*
Percent (%)		*51*	*15*	*12*	*12*	*3*	*7*	*0*	*100*

Note: *Data were not provided for 222 collections.*

Observations

- Over 50% of the cataloged ancillary materials collections are entirely labeled and preserved.
- Only one cataloged living/cell organismal and microbiology ancillary materials collection is even partly stored with unacceptable labeling and/or preservation.
- Respondents did not provide data for nearly 33% of the collections for this question.

Why is this important?

Proper curation of ancillary materials—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring that they can perform their intended support roles.

Forty-four percent of the ancillary materials collections have not been unpacked and cataloged, and, therefore, are not even minimally accessible.

Question F-3d. Please describe the curation and preservations practices associated with your ancillary materials: ***Ancillary materials have not been unpacked or catalogued, therefore inaccessible due to lack of curation. Their current state of preservations could be causing them damage.***

Major Group	Type	None	< 5%	5–10%	11–25%	26–50%	> 50%	100%	Totals
Biological Collections	Botany	47	6	1	5	2	4	2	67
	Entomology	21	8	3	4	3	2	2	43
	Herpetology	18	1	4	4	2	1	2	32
	Ichthyology	22	1	2	4	2	1	2	34
	Invertebrate Zoology	19	6	2	6	3	1	1	38
	Mammalogy	22	3	4	3	2	1	1	36
	Ornithology	20	2	4	5	2	1	2	34
Geology and Mineralogy Collections	Geology and Mineralogy	7	5	1	3	1	1	–	18
	Invertebrate Paleontology	16	8	1	3	2	2	–	32
	Paleobotany	18	6	1	3	2	2	1	33
	Vertebrate Paleontology	11	5	2	3	4	2	–	27
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	–	–	1	–	–	–	9
	Microbiology	5	–	–	–	–	–	–	5
Social Sciences Collections	Anthropology	5	2	3	4	–	–	–	14
	Archaeology	12	6	3	4	1	–	–	26
	Ethnography	8	4	3	3	1	–	–	19
	Physical Anthropology	8	3	2	4	–	–	–	17
Other	Other	21	3	4	1	1	3	1	34
Totals		*288*	*69*	*40*	*58*	*28*	*21*	*14*	*518*
Percent (%)		*56*	*13*	*8*	*11*	*5*	*4*	*3*	*100*

Note: *Data were not provided for 220 collections.*

Observations

- Only one geology and mineralogy collection is even partly packed or uncatalogued.
- Only one living/cell organismal and microbiology ancillary materials collection is inaccessible because it has not been unpacked or catalogued.
- Respondents did not provide data for nearly 33% of the collections for this question.

Why is this important?

Proper curation of ancillary materials—including labeling, documentation, cataloging, and appropriate preservation—is vital for ensuring that they can perform their intended support roles.

Section G:
Uses and Users

Section G of the questionnaire collected information on professionals who made visits to collecting institutions and borrowed materials for various purposes.

Basic research, followed by education and conservation, is the most-cited purpose for the scientific collections included in the survey.

Question G-1. What is the primary purpose of the collection? Mark all that apply.

See table on next page

Observations

- Twenty-five percent of the collections surveyed are used for basic research.
- Nineteen percent of collections are used for education.
- Only 1% of the collections are used for trade/economic development or homeland security purposes.

Why is this important?

In addition to basic research, scientific collections have wide applicability to public policy and the maintenance of a strong scientific infrastructure.

Question G-1. What is the primary purpose of the collection? Mark all that apply.

Major Group	Type	Basic Research	Biomedical Research	Agriculture and Food Safety	Public Health	Public Safety	Education	Conservation	Trade/ Economic Development	Homeland Security	Environmental Monitoring	Applied Research	Other	Totals
Biological Collections	Botany	74	6	13	7	5	58	56	1	3	39	25	6	293
	Entomology	48	7	15	13	3	34	34	1	3	25	17	5	205
	Herpetology	39	8	5	8	4	31	28	1	1	26	16	7	174
	Ichthyology	38	5	5	6	3	31	24	1	–	25	13	6	157
	Invertebrate Zoology	41	5	9	13	3	35	25	2	5	21	19	5	183
	Mammalogy	40	9	5	11	6	32	25	2	2	24	17	8	181
	Ornithology	37	8	5	10	5	29	25	2	2	23	18	8	172
Geology and Mineralogy Collections	Geology and Mineralogy	21	1	1	4	2	16	12	2	1	10	6	5	81
	Invertebrate Paleontology	38	3	4	6	2	28	15	1	2	15	12	4	130
	Paleobotany	37	2	3	5	2	29	15	–	1	14	12	6	126
	Vertebrate Paleontology	32	2	3	5	2	26	14	–	1	12	9	3	109
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	10	8	4	5	–	8	4	1	2	3	5	1	51
	Microbiology	6	3	4	2	–	3	1	1	2	1	3	1	27
Social Sciences Collections	Anthropology	21	2	–	3	2	15	11	–	–	6	6	4	70
	Archaeology	33	4	3	6	2	26	18	1	2	10	12	6	123
	Ethnography	23	2	2	4	2	19	14	–	1	7	9	5	88
	Physical Anthropology	22	3	1	2	1	18	11	–	–	5	8	5	76
Other	Other	35	8	6	7	1	22	15	–	2	14	13	3	126
Totals		*595*	*86*	*88*	*117*	*45*	*460*	*347*	*16*	*30*	*280*	*220*	*88*	*2,372*
Percent (%)		*25*	*4*	*4*	*5*	*2*	*19*	*15*	*1*	*1*	*12*	*9*	*4*	*100*

Most collection users are research staff and students.

Question G-2. Who are the primary users of the collection? (Mark all that apply)

See table on next page

Observations

- Reporting unit staff include intramural and intermural staff.
- Students of all categories represent just over 33% of collection users.
- Representatives of government agencies of all categories represent just over 25% of collection users.
- International researchers and students represent nearly 25% of collection users.

Why is this important?

The wide range of audiences that use Federal scientific collections is an indicator of the importance of these collections to science.

Question G-2. Who are the primary users of the collection? (Mark all that apply)

Major Group	Type	Intramural Research Staff	Intramural Research Students	Research Staff From Other Organizations	Students From Other U.S. Organizations	Researchers and/or Students From Non-U.S. Organizations	Federal Agency Researcher	State/Local Agency Researcher	Non-Profit Organizations	Regulatory Agencies	Government Policy Administrators	Commercial Facilities	General Public	Other	Totals
Biological Collections	Botany	70	62	71	66	59	54	58	54	23	13	25	3	3	561
	Entomology	45	43	45	46	43	34	39	33	20	14	14	4	4	384
	Herpetology	38	35	37	39	34	28	35	30	15	9	13	6	6	325
	Ichthyology	37	34	37	37	33	30	35	25	15	7	10	4	4	308
	Invertebrate Zoology	41	38	40	40	38	32	35	32	17	12	13	3	3	344
	Mammalogy	39	36	37	39	36	30	35	30	17	11	13	7	7	337
	Ornithology	36	34	35	37	33	25	31	27	14	11	13	7	7	310
Geology and Mineralogy Collections	Geology and Mineralogy	21	18	19	19	15	13	17	16	6	6	6	2	2	160
	Invertebrate Paleontology	36	33	36	36	35	25	27	23	11	10	11	2	2	287
	Paleobotany	34	31	36	36	32	22	27	23	13	7	13	4	4	282
	Vertebrate Paleontology	32	29	31	30	30	21	23	21	9	8	9	4	4	251
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	7	10	10	10	9	4	10	4	1	6	1	1	80
	Microbiology	2	2	6	5	6	6	2	4	1	–	4	–	–	38
Social Sciences Collections	Anthropology	20	18	19	18	18	15	16	17	8	5	6	5	5	170
	Archaeology	32	29	30	29	26	24	28	25	14	8	11	6	6	268
	Ethnography	21	21	21	21	20	17	19	20	10	6	8	6	6	196
	Physical Anthropology	20	18	19	18	16	16	16	17	10	3	7	5	5	170
Other	Other	31	27	32	31	26	23	21	20	11	6	10	3	3	244
Totals		*562*	*515*	*561*	*557*	*510*	*424*	*468*	*427*	*218*	*137*	*192*	*72*	*72*	*4,715*
Percent (%)		*12*	*11*	*12*	*12*	*11*	*9*	*10*	*9*	*5*	*3*	*4*	*2*	*2*	*100*

Most collections have not attracted new categories of users in the past 8 years.

Question G-3. Since 2000, has the collection attracted any new categories of users? (Mark just one)

Major Group	Type	No	Yes	Totals
Biological Collections	Botany	50	25	75
	Entomology	32	16	48
	Herpetology	28	12	40
	Ichthyology	28	11	39
	Invertebrate Zoology	31	11	42
	Mammalogy	30	11	41
	Ornithology	27	12	39
Geology and Mineralogy Collections	Geology and Mineralogy	17	5	22
	Invertebrate Paleontology	30	8	38
	Paleobotany	25	13	38
	Vertebrate Paleontology	22	11	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	3	10
	Microbiology	4	2	6
Social Sciences Collections	Anthropology	16	5	21
	Archaeology	25	8	33
	Ethnography	16	7	23
	Physical Anthropology	15	6	21
Other	Other	30	5	35
Totals		*433*	*171*	*604*
Percent (%)		*72*	*28*	*100*

Note: *Data were not provided for 134 collections.*

Observations

- Seventy-two percent of the collections have not attracted any new categories of users in the past 8 years.
- Thirty percent of botany collections have attracted new users—the largest percentage of the collections surveyed.

Why is this important?

The wide range of audiences that use scientific collections is an indicator of the importance of these collections to science. The user communities appear to be stable and predictable, allowing collections to anticipate requirements for use.

Section H:
Accessibility of the Collection

Section H of the questionnaire collected information on the availability of collections, their related data, and their ancillary collections.

Most collections reported in the survey are accessible to professional visitors.

Question H-1. Please estimate the proportion of your collections that are physically accessible to professional visitors, as opposed to collections that are in unprocessed backlogs or are in inaccessible storage areas. (Mark just one)

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	30	4	5	6	3	1	22	2	73
	Entomology	9	7	4	5	3	4	12	3	47
	Herpetology	2	–	3	3	1	7	18	6	40
	Ichthyology	2	–	3	1	1	9	16	6	38
	Invertebrate Zoology	3	5	5	2	3	4	14	5	41
	Mammalogy	2	1	4	3	1	4	19	7	41
	Ornithology	1	–	2	3	2	4	7	2	22
Geology and Mineralogy Collections	Geology and Mineralogy	1	–	2	3	2	4	7	3	22
	Invertebrate Paleontology	2	3	3	6	4	5	12	3	38
	Paleobotany	3	2	3	6	3	4	13	3	37
	Vertebrate Paleontology	1	1	3	2	4	3	16	3	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	1	1	–	–	3	3	10
	Microbiology	2	–	–	–	–	–	1	3	6
Social Sciences Collections	Anthropology	1	–	1	–	1	3	12	3	21
	Archaeology	2	–	1	2	2	4	20	2	33
	Ethnography	1	–	1	1	2	2	15	2	24
	Physical Anthropology	1	–	1	–	3	3	12	1	21
Other	Other	6	–	–	5	2	2	11	8	34
Totals		*72*	*23*	*43*	*50*	*36*	*64*	*240*	*70*	*598*
Percent (%)		*12*	*4*	*7*	*8*	*6*	*11*	*40*	*12*	*100*

Note: *Data were not provided for 140 collections.*

Observations

- Most of the collections are over 50% accessible to professional visitors.

Why is this important?

Accessibility is an important indicator of a collection's ability to fulfill its agency function and contribute to scientific research.

Additional staff to process is the greatest need for collections considered inaccessible.

Question H-2. For those collections that are physically inaccessible, indicate the areas of major need. (Mark all that apply)

See table on next page

Observations

- Forty percent of respondents believe that additional staff for processing backlogs is a major need for inaccessible collections.

Why is this important?

By identifying the most important needs for inaccessible collections, steps can be taken to improve collection access—potentially increasing researcher use of the collections.

Question H-2. For those collections that are physically inaccessible, indicate the areas of major need. (Mark all that apply)

Major Group	Type	Additional On-Site Storage	Renovation of On-Site Storage	Additional On-Site Storage Systems	Additional Off-Site Storage Systems	Renovation of Off-Site Storage	Additional Off-Site Storage Areas	Improvement of Environmental Controls	Additional Staff To Process	Totals
Biological Collections	Botany	13	9	12	1	1	2	11	53	102
	Entomology	15	11	17	4	1	2	10	36	96
	Herpetology	8	8	10	1	–	1	5	28	61
	Ichthyology	7	8	10	1	–	2	4	30	62
	Invertebrate Zoology	12	9	13	5	–	2	9	32	82
	Mammalogy	10	10	12	1	1	3	6	30	73
	Ornithology	8	8	12	1	–	2	6	30	67
Geology and Mineralogy Collections	Geology and Mineralogy	6	4	9	1	–	–	5	15	40
	Invertebrate Paleontology	12	7	10	4	2	4	9	28	76
	Paleobotany	10	6	11	5	2	3	9	26	72
	Vertebrate Paleontology	13	9	12	5	2	4	9	25	79
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	1	1	–	–	–	2	4	10
	Microbiology	1	1	–	–	–	–	1	2	5
Social Sciences Collections	Anthropology	6	5	6	1	1	1	5	14	39
	Archaeology	8	7	9	3	3	3	8	23	64
	Ethnography	7	5	10	2	1	2	5	16	48
	Physical Anthropology	5	5	6	3	1	2	6	13	41
Other	Other	7	3	6	2	1	1	6	21	47
Totals		*150*	*116*	*166*	*40*	*16*	*34*	*116*	*426*	*1,064*
Percent (%)		*14*	*11*	*16*	*4*	*2*	*3*	*11*	*40*	*100*

For most respondents, the percentage of accessible ancillary materials is higher than the percentage of those materials that are in unprocessed backlog or in inaccessible storage areas.

Question H-3. Please estimate the proportion of your ancillary materials collections that are physically accessible to professional visitors, as opposed to collections that are in unprocessed backlogs or are in inaccessible storage areas.

Major Group	Type	None	< 5%	6–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	7	1	1	4	3	28	27	71
	Entomology	1	2	2	2	3	21	17	48
	Herpetology	1	2	–	3	5	13	14	38
	Ichthyology	1	1	–	2	4	15	15	38
	Invertebrate Zoology	1	1	1	4	3	17	14	41
	Mammalogy	1	1	–	2	5	15	16	40
	Ornithology	1	1	–	3	5	13	15	38
Geology and Mineralogy Collections	Geology and Mineralogy	–	1	1	1	1	8	9	21
	Invertebrate Paleontology	–	1	1	3	4	16	12	37
	Paleobotany	–	1	1	2	1	17	15	37
	Vertebrate Paleontology	–	2	–	2	3	18	7	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	1	–	–	–	3	4	9
	Microbiology	2	1	–	–	–	–	3	6
Social Sciences Collections	Anthropology	–	–	2	1	2	9	7	21
	Archaeology	–	1	2	1	2	16	11	33
	Ethnography	–	2	1	1	1	11	7	23
	Physical Anthropology	–	–	1	–	2	10	8	21
Other	Other	5	1	1	1	6	7	14	35
Totals		*21*	*20*	*14*	*32*	*50*	*237*	*215*	*589*
Percent (%)		*4*	*3*	*2*	*5*	*8*	*40*	*37*	*100*

Note: *Data were not provided for 149 collections.*

Observations

- Seventy-seven percent of the collection aggregates are at least 75% accessible to professional visitors.

Why is this important?

For a specific collection, the more accessible its ancillary materials, the more likely that it can be readily used for scientific research.

Most collections that are cataloged on paper are cataloged and/or available on-line.

Question H-4a. Please estimate the proportion of your collections that are cataloged and/or available on-line: *Catalogued on paper.*

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	30	4	5	6	3	1	22	2	73
	Entomology	9	7	4	5	3	4	12	3	47
	Herpetology	2	–	3	3	1	7	18	6	40
	Ichthyology	2	–	3	1	1	9	16	6	38
	Invertebrate Zoology	3	5	5	2	3	4	14	5	41
	Mammalogy	2	1	4	3	1	4	19	7	41
	Ornithology	2	–	3	4	1	5	17	7	39
Geology and Mineralogy Collections	Geology and Mineralogy	1	–	2	3	2	4	7	3	22
	Invertebrate Paleontology	2	3	3	6	4	5	12	3	38
	Paleobotany	3	2	3	6	3	4	13	3	37
	Vertebrate Paleontology	1	1	3	2	4	3	16	3	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	1	1	–	–	3	3	10
	Microbiology	2	–	–	–	–	–	1	3	6
Social Sciences Collections	Anthropology	1	–	1	–	1	3	12	3	21
	Archaeology	2	–	1	2	2	4	20	2	33
	Ethnography	1	–	1	1	2	2	15	2	24
	Physical Anthropology	1	–	1	–	3	3	12	1	21
Other	Other	6	–	–	5	2	2	11	8	34
Totals		*72*	*23*	*43*	*50*	*36*	*64*	*240*	*70*	*598*
Percent (%)		*12*	*4*	*7*	*8*	*6*	*11*	*40*	*12*	*100*

Note: *Data were not provided for 140 collections.*

Observations

- Only 12% of the respondents have collections that are 100% cataloged on-line and on paper.
- Most of the collections were at least partially catalogued on-line. Only 10% were entirely uncataloged and/or unavailable on-line.

Why is this important?

On-line catalogs are an effective way to make information about a collection available to a wide range of remote researchers, thereby increasing knowledge about and use of the collection. On-line catalogs are also important for repatriating information about collections to their countries of origin.

Most collections have some cataloging using a database that is not on the Web.

Question H-4b. Please estimate the proportion of your collections that are cataloged and/or available on-line: ***Computerized database, not accessible on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	2	6	7	12	14	17	9	8	75
	Entomology	–	7	10	7	7	7	7	4	49
	Herpetology	–	–	2	5	3	8	15	7	40
	Ichthyology	–	–	1	4	3	11	16	4	39
	Invertebrate Zoology	2	2	5	6	5	9	8	3	40
	Mammalogy	–	–	2	4	4	9	13	9	41
	Ornithology	–	–	2	4	3	9	13	8	39
Geology and Mineralogy Collections	Geology and Mineralogy	1	–	2	4	3	6	3	8	22
	Invertebrate Paleontology	1	4	5	6	4	6	6	3	36
	Paleobotany	1	3	3	5	6	6	9	3	36
	Vertebrate Paleontology	1	4	2	2	5	6	9	2	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	–	–	2	–	4	4	10
	Microbiology	–	–	–	–	–	–	2	4	6
Social Sciences Collections	Anthropology	–	–	1	1	7	8	3	1	21
	Archaeology	–	–	6	1	10	10	5	1	33
	Ethnography	–	1	4	1	5	9	3	1	24
	Physical Anthropology	–	–	3	1	8	7	1	–	20
Other	Other	3	2	2	2	2	4	11	7	33
Totals		*11*	*29*	*57*	*65*	*92*	*132*	*137*	*72*	*595*
Percent (%)		*2*	*5*	*10*	*11*	*15*	*22*	*23*	*12*	*100*

Note: *Data were not provided for 143 collections.*

Observations

- Almost all collections (98%) are partially catalogued on a computerized database.
- Only 2% of all collections have no computerized cataloging.

Why is this important?

The World Wide Web is an increasingly popular method of seeking and obtaining information about Federal research resources and is also a powerful research tool for scientists in all sectors. Collections that have catalogs that are not available on-line are largely unavailable to off-site researchers.

Almost 75% of the collections surveyed are at least partly available on the Web through a computer database.

Question H-4c. Please estimate the proportion of your collections that are cataloged and/or available on-line: ***Computerized database is accessible on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	13	5	7	13	11	10	12	4	75
	Entomology	10	9	5	8	4	3	8	2	49
	Herpetology	8	1	2	5	1	6	11	6	40
	Ichthyology	7	–	3	3	1	7	13	5	39
	Invertebrate Zoology	9	6	1	5	4	6	10	1	42
	Mammalogy	6	1	2	5	2	6	14	5	41
	Ornithology	7	1	2	6	1	6	12	4	39
Geology and Mineralogy Collections	Geology and Mineralogy	8	3	2	2	1	1	3	2	22
	Invertebrate Paleontology	8	5	5	4	3	4	7	2	38
	Paleobotany	7	7	3	3	3	4	9	2	38
	Vertebrate Paleontology	8	5	2	4	1	4	7	2	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	–	–	2	1	3	4	10
	Microbiology	–	–	–	–	1	–	1	4	6
Social Sciences Collections	Anthropology	9	2	–	2	1	2	4	–	20
	Archaeology	16	4	1	2	1	3	5	–	32
	Ethnography	10	4	1	1	1	2	4	–	23
	Physical Anthropology	10	3	1	1	1	3	1	–	20
Other	Other	9	1	1	5	2	4	7	5	34
Totals		*145*	*57*	*38*	*69*	*41*	*72*	*131*	*48*	*601*
Percent (%)		*24*	*9*	*6*	*11*	*7*	*12*	*22*	*8*	*100*

Note: *Data were not provided for 137 collections.*

Observations

- Twenty-five percent of the collections contents are not captured by a computerized database on the Web.
- Only 7% of all collections are completely electronically catalogued and available on-line.
- Only a small percentage of collections are represented by digital images on the Web.

Why is this important?

On-line computerized catalogues provide a greater reach to interested parties who are concerned about the holdings of the collection.

Few collections have digital images on the Web.

Question H-4d. Please estimate the proportion of your collections that are cataloged and/or available on-line: ***Represented by digital images on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	27	32	4	5	2	2	1	1	74
	Entomology	23	20	4	1	–	–	1	–	49
	Herpetology	18	15	5	1	–	–	1	–	40
	Ichthyology	21	14	2	1	–	–	1	–	39
	Invertebrate Zoology	16	20	1	4	–	–	1	–	42
	Mammalogy	17	16	6	1	–	–	1	–	41
	Ornithology	18	5	4	1	–	–	1	–	39
Geology and Mineralogy Collections	Geology and Mineralogy	9	10	2	1	–	–	–	–	22
	Invertebrate Paleontology	13	18	2	5	–	–	–	–	38
	Paleobotany	10	19	2	4	2	–	1	–	38
	Vertebrate Paleontology	10	17	3	3	–	–	–	–	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	4	3	–	1	1	1	–	–	10
	Microbiology	3	–	–	1	1	1	–	–	6
Social Sciences Collections	Anthropology	9	10	2	–	–	–	–	–	21
	Archaeology	14	15	3	1	–	–	–	–	33
	Ethnography	9	12	2	–	1	–	–	–	24
	Physical Anthropology	8	9	3	1	–	–	–	–	21
Other	Other	17	11	1	2	–	1	–	2	34
Totals		*246*	*256*	*46*	*33*	*7*	*5*	*8*	*3*	*604*
Percent (%)		*41*	*42*	*8*	*5*	*1*	*1*	*1*	*0*	*100*

Note: *Data were not provided for 134 collections.*

Observations

- Of these collections, few have digital images on the Web.
- Only three collections have a complete set of digital images posted on-line.

Why is this important?

For researchers interested in the collection, digital images on the Web provide additional visual information that supplement basic descriptions.

Few collections have scientific data in addition to catalog data on the Web.

Question H-4e. Please estimate the proportion of your collections that are cataloged and/or available on-line: ***Represented by scientific data in addition to catalog data on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	44	20	2	1	1	3	2	1	74
	Entomology	31	9	5	–	–	1	2	1	49
	Herpetology	18	11	4	1	2	2	2	–	40
	Ichthyology	17	12	2	1	2	2	3	–	39
	Invertebrate Zoology	20	12	2	1	2	1	1	1	40
	Mammalogy	16	9	3	1	3	1	5	3	41
	Ornithology	15	9	3	2	3	2	3	2	39
Geology and Mineralogy Collections	Geology and Mineralogy	13	6	2	–	–	1	–	–	22
	Invertebrate Paleontology	18	11	3	–	1	2	–	1	36
	Paleobotany	21	8	2	1	–	2	2	–	36
	Vertebrate Paleontology	20	8	2	–	–	1	–	–	31
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	2	–	2	1	1	1	2	10
	Microbiology	1	–	–	2	1	1	–	1	6
Social Sciences Collections	Anthropology	12	5	1	2	1	–	–	–	21
	Archaeology	18	8	2	2	1	1	–	1	33
	Ethnography	13	7	2	1	1	–	–	–	24
	Physical Anthropology	12	4	2	1	1	–	–	–	20
Other	Other	16	6	1	2	2	2	1	2	32
Totals		*306*	*147*	*38*	*20*	*22*	*23*	*22*	*15*	*593*
Percent (%)		*52*	*25*	*6*	*3*	*4*	*4*	*4*	*3*	*100*

Note: *Data were not provided for 145 collections.*

Observations

- Fifty-two percent of the collections have no scientific information available on-line.
- Only 15 collections have complete scientific data available on-line.
- Over 25% of collections will be made at least partially cataloged and/or available on-line in the next 5 years.

Why is this important?

Scientific data, such as measurements or chemical composition, provide useful additional data to researchers interested in the collection.

Nineteen percent of collections surveyed will be cataloged and/or available on-line in the next 5 years

Question H-5a. Please estimate the proportion of your collections that will be cataloged and/or available on-line in the next 5 years: *Catalogued on paper.*

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	35	7	2	2	1	1	15	7	70
	Entomology	16	7	3	3	2	1	8	6	46
	Herpetology	8	3	2	1	–	1	14	10	39
	Ichthyology	6	2	1	1	1	3	14	10	38
	Invertebrate Zoology	7	5	3	1	–	3	12	8	39
	Mammalogy	6	3	3	1	–	1	14	11	39
	Ornithology	6	3	2	1	–	1	14	11	38
Geology and Mineralogy Collections	Geology and Mineralogy	1	1	2	3	–	2	7	5	21
	Invertebrate Paleontology	7	1	3	3	2	2	10	7	35
	Paleobotany	6	2	2	3	1	2	10	8	34
	Vertebrate Paleontology	3	3	2	1	1	1	12	7	30
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	2	–	–	–	–	3	3	10
	Microbiology	2	–	–	–	–	–	1	3	6
Social Sciences Collections	Anthropology	2	2	1	1	–	–	5	9	20
	Archaeology	3	2	2	1	–	–	13	11	32
	Ethnography	2	2	2	–	–	–	10	7	23
	Physical Anthropology	2	2	1	1	–	–	8	6	20
Other	Other	11	1	1	1	1	1	3	12	31
Totals		*125*	*48*	*32*	*24*	*9*	*19*	*173*	*141*	*571*
Percent (%)		*22*	*8*	*6*	*4*	*2*	*3*	*30*	*25*	*100*

Note: *Data were not provided for 167 collections.*

Observations

- Fifty-eight percent of collections catalogs will be at least 75% available on-line in 5 years.
- Twenty-two percent of collections will have no portion cataloged and/or available on-line in 5 years.

Why is this important?

On-line catalogs are an effective means of making information about a collection available to a wide range of remote researchers, thereby increasing knowledge about and use of the collection.

Most of the collections will be cataloged and/or available on-line in the next 5 years.

Question H-5b. Please estimate the proportion of your collections that will be cataloged and/or available on-line in the next 5 years: *Computerized database, not accessible on the Web.*

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	3	3	8	8	10	12	15	13	72
	Entomology	2	4	6	7	8	7	6	8	48
	Herpetology	1	1	2	1	3	5	10	16	39
	Ichthyology	–	1	1	1	3	6	13	13	38
	Invertebrate Zoology	1	3	4	3	5	6	10	8	40
	Mammalogy	1	1	2	1	3	6	12	14	40
	Ornithology	–	1	2	1	3	6	10	15	38
Geology and Mineralogy Collections	Geology and Mineralogy	–	1	2	1	4	4	6	3	21
	Invertebrate Paleontology	1	2	4	3	7	7	5	6	35
	Paleobotany	–	3	5	2	3	7	7	8	35
	Vertebrate Paleontology	–	3	4	1	4	5	7	6	30
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	–	–	1	1	4	4	10
	Microbiology	–	–	–	–	1	–	2	3	6
Social Sciences Collections	Anthropology	1	1	1	–	4	3	5	5	20
	Archaeology	1	1	3	2	3	6	9	7	32
	Ethnography	1	1	3	2	1	4	7	4	23
	Physical Anthropology	1	1	2	1	4	4	5	2	20
Other	Other	4	3	2	1	2	2	5	13	32
Totals		*17*	*30*	*51*	*35*	*69*	*91*	*138*	*148*	*579*
Percent (%)		*3*	*5*	*9*	*6*	*12*	*16*	*24*	*26*	*100*

Note: *Data were not provided for 159 collections.*

Observations

- Twenty-six percent of the collections will be made completely available on-line in the next 5 years.
- Around 17% of the collections will have 10% or less of their contents available on-line in the next 5 years.

Why is this important?

The World Wide Web is an increasingly popular method of seeking and obtaining information about Federal research resources and is also a powerful research tool for scientists in all sectors. Collection catalogs that are not available on-line have a reduced reach to researchers.

Nearly 50% of all collections will be mostly cataloged and/or available on-line in a computerized database in the next 5 years.

Question H-5c. Please estimate the proportion of your collections that will be cataloged and/or available on-line in the next 5 years: ***Computerized database is accessible on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	4	3	11	8	9	11	12	14	72
	Entomology	3	6	7	5	9	5	5	8	48
	Herpetology	2	1	3	3	3	3	8	16	39
	Ichthyology	1	1	2	2	3	4	10	15	38
	Invertebrate Zoology	1	3	7	1	6	5	10	9	42
	Mammalogy	2	1	3	2	3	5	10	14	40
	Ornithology	2	1	3	2	3	5	10	12	38
Geology and Mineralogy Collections	Geology and Mineralogy	1	2	2	1	3	3	5	4	21
	Invertebrate Paleontology	2	3	4	4	6	6	6	6	37
	Paleobotany	1	4	5	3	2	5	9	8	37
	Vertebrate Paleontology	2	4	4	2	3	5	6	6	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	–	–	1	1	4	4	10
	Microbiology	–	–	–	–	–	–	2	4	6
Social Sciences Collections	Anthropology	3	1	1	1	3	3	4	4	20
	Archaeology	5	3	2	2	4	4	7	5	32
	Ethnography	3	2	3	2	2	3	5	3	23
	Physical Anthropology	5	2	1	2	3	1	6	1	21
Other	Other	6	1	1	1	2	2	9	11	33
Totals		*43*	*38*	*59*	*41*	*65*	*71*	*128*	*144*	*589*
Percent (%)		*7*	*6*	*10*	*7*	*11*	*12*	*22*	*24*	*100*

Note: *Data were not provided for 149 collections.*

Observations

- Twenty-four percent of the collections are predicted to be cataloged and/or available in a computerized database on the Web in 5 years.
- Only 7% of collections are not planned for cataloging and/or being made available through a computerized database on the Web.

Why is this important?

The World Wide Web is an increasingly popular method of seeking and obtaining information about Federal research resources and is also a powerful research tool for scientists in all sectors. Collection catalogs that are not available on-line have a reduced reach to researchers.

Most of the collections will not be cataloged and/or made available in the form of digital images on the Web in the next 5 years.

Question H-5d. Please estimate the proportion of your collections that will be cataloged and/or available on-line in the next 5 years: ***Represented by digital images on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	9	22	10	14	7	3	2	5	72
	Entomology	10	18	6	6	3	2	–	3	48
	Herpetology	8	10	6	5	2	2	2	3	38
	Ichthyology	7	10	7	5	1	3	1	3	37
	Invertebrate Zoology	4	17	7	7	2	1	1	3	42
	Mammalogy	9	11	3	7	2	3	2	3	40
	Ornithology	11	7	4	7	2	2	2	3	38
Geology and Mineralogy Collections	Geology and Mineralogy	3	4	2	6	3	–	2	1	21
	Invertebrate Paleontology	5	10	4	9	6	2	–	1	37
	Paleobotany	3	10	3	9	4	3	3	2	37
	Vertebrate Paleontology	4	8	7	6	4	1	–	2	32
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	1	–	2	–	3	–	1	10
	Microbiology	1	–	1	1	1	2	–	–	6
Social Sciences Collections	Anthropology	3	5	1	4	2	2	1	2	20
	Archaeology	5	10	3	5	2	3	2	2	32
	Ethnography	2	7	3	4	2	2	2	1	23
	Physical Anthropology	4	7	1	5	1	1	2	–	21
Other	Other	10	7	2	8	1	2	2	1	33
Totals		*101*	*164*	*70*	*110*	*45*	*37*	*24*	*36*	*587*
Percent (%)		*17*	*28*	*12*	*19*	*8*	*6*	*4*	*6*	*100*

Note: *Data were not provided for 151 collections.*

Observations

- Most of the collections (about 60%) have only a small portion of digital images that will be made available in the next 5 years.

Why is this important?

For researchers interested in the collection, digital images on the Web provide additional visual information that supplement basic descriptions.

Most of the collections plan to have some scientific data available with their catalogs and/or on-line within the next 5 years.

Question H-5e. Please estimate the proportion of your collections that will be cataloged and/or available on-line in the next 5 years: ***Represented by scientific data in addition to catalog data on the Web.***

Major Group	Type	None	1–5%	6–10%	11–25%	26–50%	51–75%	76–99%	100%	Totals
Biological Collections	Botany	34	20	4	5	1	1	2	5	72
	Entomology	21	13	2	5	1	1	–	5	48
	Herpetology	8	10	5	6	2	3	1	3	38
	Ichthyology	8	10	4	4	2	5	1	3	37
	Invertebrate Zoology	11	15	2	3	2	1	1	5	40
	Mammalogy	7	9	3	3	2	4	5	7	40
	Ornithology	6	9	3	4	4	3	3	6	38
Geology and Mineralogy Collections	Geology and Mineralogy	2	12	1	3	–	–	–	2	21
	Invertebrate Paleontology	8	14	2	5	2	1	–	3	35
	Paleobotany	8	14	1	4	2	1	1	4	35
	Vertebrate Paleontology	9	11	1	4	2	–	–	3	30
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	1	1	–	1	2	–	2	3	10
	Microbiology	–	–	2	–	1	1	1	1	6
Social Sciences Collections	Anthropology	4	5	1	3	1	1	2	3	20
	Archaeology	7	10	2	4	2	1	2	4	32
	Ethnography	5	7	2	3	1	1	2	2	23
	Physical Anthropology	7	5	1	4	1	–	2	–	20
Other	Other	12	6	1	1	3	2	3	3	31
Totals		*158*	*171*	*38*	*62*	*31*	*26*	*28*	*62*	*576*
Percent (%)		*27*	*30*	*7*	*11*	*5*	*5*	*5*	*11*	*100*

Note: *Data were not provided for 162 collections.*

Observations

- Only 11% of all collections have plans to add complete scientific data in the next 5 years.
- Thirty-seven percent of collections will have only a small fraction available on-line in the next 5 years.

Why is this important?

Scientific data, such as measurements or chemical composition, provide useful additional data to researchers interested in the collection.

Section I:
Intellectual Property Rights

Section I of the questionnaire collected information about unit policies and practices relative to intellectual property rights.

Twenty percent of the collections place no intellectual property restrictions on qualified users.

Question I-1. To what degree does your unit assert its ownership of intellectual property rights associated with objects in the collection? (Mark all that apply)

Major Group	Type	All Qualified Are Free To Publish W/o Restriction	User Must Provide Copies of All Published Material	Users of Collection Must be Acknowledged	Material Derived From Borrowed Specimens May Not Be Lent to a Third Party	Other Restrictions Apply to the Use of Intellectual Property	Other	Totals
Biological Collections	Botany	56	52	59	25	13	12	217
	Entomology	33	43	40	23	14	5	158
	Herpetology	27	35	35	28	12	6	143
	Ichthyology	28	35	33	28	13	6	143
	Invertebrate Zoology	32	38	36	25	11	7	149
	Mammalogy	29	36	36	29	16	7	153
	Ornithology	26	36	34	28	16	7	147
Geology and Mineralogy Collections	Geology and Mineralogy	15	19	19	14	8	4	79
	Invertebrate Paleontology	29	35	34	23	11	5	137
	Paleobotany	27	32	33	19	14	5	130
	Vertebrate Paleontology	25	30	28	21	13	5	122
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	8	4	4	3	3	4	26
	Microbiology	5	2	3	1	1	1	13
Social Sciences Collections	Anthropology	11	17	18	15	13	3	77
	Archaeology	17	29	29	20	19	6	120
	Ethnography	13	21	21	15	14	6	90
	Physical Anthropology	11	17	18	14	13	5	78
Other	Other	23	20	26	17	12	5	103
Totals		*415*	*501*	*506*	*348*	*216*	*99*	*2,085*
Percent (%)		*20*	*24*	*24*	*17*	*10*	*5*	*100*

Note: *Data were not provided for 415 collections.*

Observations

- Restriction-free use is the second most common approach to intellectual property rights enforcement, behind the provision of a copy of the final published product and acknowledgment of the use of the collection (each 24%).

Why is this important?

Assertion of intellectual property rights over scientific collections enables an organization to benefit from any financial return on its investment in the collection as a result of commercial use.

Just over 25% of collections lack written intellectual property policies for non-commercial uses.

Question I-2. Does your unit have a written policy regarding intellectual property rights for non commercial uses? (Mark just one)

Major Group	Type	No	Yes	Totals
Biological Collections	Botany	40	35	75
	Entomology	19	28	47
	Herpetology	11	29	40
	Ichthyology	14	25	39
	Invertebrate Zoology	9	33	42
	Mammalogy	9	32	41
	Ornithology	9	30	39
Geology and Mineralogy Collections	Geology and Mineralogy	6	16	22
	Invertebrate Paleontology	10	28	38
	Paleobotany	12	26	38
	Vertebrate Paleontology	10	23	33
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	7	3	10
	Microbiology	5	1	6
Social Sciences Collections	Anthropology	4	18	22
	Archaeology	7	27	34
	Ethnography	3	21	24
	Physical Anthropology	5	17	22
Other	Other	15	19	34
Totals		*195*	*411*	*606*
Percent (%)		*32*	*68*	*100*

Note: *Data were not provided for 132 collections. No data were provided on the date of most recent update.*

Observations

- Over 50% the collections have written policies in place for non-commercial use.
- The living/cell organismal and microbiology collection has the highest percentage of any major group of collections that do not have written non-commercial intellectual property policies and the largest ratio of collections without policies to those with policies.

Why is this important?

Good intellectual property policies are increasingly important as data are posted on-line.

Section J:
Analytic Instrumentation

Section J of the questionnaire collected information about analytical instruments and capabilities directly associated with collections.

Over 50% the collections surveyed have or are expected to have associated digital imaging equipment.

Question J-1a. Please identify any specialized analytical instruments associated with your institution's collections that you have or plan on acquiring in the next 5 years: *Digital imaging equipment.*

Major Group	Type	Currently Have	Plan on Acquiring	Totals
Biological Collections	Botany	47	10	57
	Entomology	34	7	41
	Herpetology	25	5	30
	Ichthyology	25	4	29
	Invertebrate Zoology	28	7	35
	Mammalogy	27	5	32
	Ornithology	23	4	27
Geology and Mineralogy Collections	Geology and Mineralogy	15	2	17
	Invertebrate Paleontology	27	4	31
	Paleobotany	26	6	32
	Vertebrate Paleontology	23	6	29
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	6	–	6
	Microbiology	6	–	6
Social Sciences Collections	Anthropology	18	1	19
	Archaeology	27	2	29
	Ethnography	17	2	19
	Physical Anthropology	17	1	18
Other	Other	21	4	25
Totals		*412*	*70*	*482*
Percent (%)		*85*	*15*	*100*

Note: *Data were not provided for 256 collections.*

Observations

- Eighty-five percent of the reporting institutions currently have digital imaging equipment.
- Only 8% of the social sciences collections plan on acquiring digital imaging equipment in the next 5 years.
- Respondents did not provide data for over 33% of the collections for this question.

Why is this important?

Questions J-1a through J-1d consider the cost-benefit factors of purchasing and maintaining specialized research equipment against the costs of outsourcing research work, when such research is required, to organizations that have such equipment.

Thirty-three percent of the collections have specialized microscopes.

Question J-1b. Please identify any specialized analytical instruments associated with your institution's collections that you have or plan on acquiring in the next 5 years: *Specialized microscopes.*

Major Group	Type	Currently Have	Plan on Acquiring	Totals
Biological Collections	Botany	32	8	40
	Entomology	23	5	28
	Herpetology	17	6	23
	Ichthyology	14	4	18
	Invertebrate Zoology	17	7	24
	Mammalogy	17	6	23
	Ornithology	15	6	21
Geology and Mineralogy Collections	Geology and Mineralogy	7	6	13
	Invertebrate Paleontology	18	4	22
	Paleobotany	16	6	22
	Vertebrate Paleontology	13	6	19
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	3	–	3
	Microbiology	2	–	2
Social Sciences Collections	Anthropology	9	4	13
	Archaeology	11	6	17
	Ethnography	10	5	15
	Physical Anthropology	11	2	13
Other	Other	15	2	17
Totals		*250*	*83*	*333*
Percent (%)		*75*	*25*	*100*

Note: *Data were not provided for 405 collections.*

Observations

- Seventy-five percent of the reporting institutions currently have specialized microscopes.
- While 35% of biological collections have specialized microscopes, only 11% plan on acquiring one in the next 5 years.

Why is this important?

Questions J-1a through J-1d consider the cost-benefit factors of purchasing and maintaining specialized research equipment against the costs of outsourcing research work, when such research is required, to organizations that have such equipment.

Few collections have or plan to acquire a DNA sequencer.

Question J-1c. Please identify any specialized analytical instruments associated with your institution's collections that you have or plan on acquiring in the next 5 years: *DNA sequencers.*

Major Group	Type	Currently Have	Plan on Acquiring	Totals
Biological Collections	Botany	29	1	30
	Entomology	23	1	24
	Herpetology	18	1	19
	Ichthyology	15	1	16
	Invertebrate Zoology	19	1	20
	Mammalogy	19	1	20
	Ornithology	18	1	19
Geology and Mineralogy Collections	Geology and Mineralogy	7	1	8
	Invertebrate Paleontology	14	1	15
	Paleobotany	12	1	13
	Vertebrate Paleontology	11	1	12
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	2	–	2
	Microbiology	1	–	1
Social Sciences Collections	Anthropology	5	–	5
	Archaeology	8	1	9
	Ethnography	6	1	7
	Physical Anthropology	3	–	3
Other	Other	11	–	11
Totals		*221*	*13*	*234*
Percent (%)		*94*	*6*	*100*

Note: *Data were not provided for 504 collections.*

Observations

- While 94% of the reporting institutions currently have DNA sequencers, only 6% plan on acquiring one in the next 5 years.
- Entomology has the greatest percentage (41%) of collections that currently have DNA sequencers.
- Respondents did not provide data for over 66 ⅔% of the collections for this question.

Why is this important?

Questions J-1a through J-1d consider the cost-benefit factors of purchasing and maintaining specialized research equipment against the costs of outsourcing research work, when such research is required, to organizations that have such equipment.

Few collections have or plan to acquire an X-ray machine.

Question J-1d. Please identify any specialized analytical instruments associated with your institution's collections that you have or plan on acquiring in the next 5 years: *X-Ray machines.*

Major Group	Type	Currently Have	Plan on Acquiring	Totals
Biological Collections	Botany	5	1	6
	Entomology	7	–	7
	Herpetology	11	2	13
	Ichthyology	11	3	14
	Invertebrate Zoology	6	3	9
	Mammalogy	7	1	8
	Ornithology	7	1	8
Geology and Mineralogy Collections	Geology and Mineralogy	4	–	4
	Invertebrate Paleontology	9	–	9
	Paleobotany	6	–	6
	Vertebrate Paleontology	5	1	6
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	–	–	0
	Microbiology	1	–	1
Social Sciences Collections	Anthropology	3	–	3
	Archaeology	3	–	3
	Ethnography	2	–	2
	Physical Anthropology	3	–	3
Other	Other	6	–	6
Totals		*96*	*12*	*108*
Percent (%)		*89*	*11*	*100*

Note: *Data were not provided for 630 collections.*

Observations

- Only 15% of the reporting institutions have or plan on acquiring an X-ray machine in the next 5 years.
- Respondents did not provide data for 85% of the collections for this question.

Why is this important?

Questions J-1a through J-1d consider the cost-benefit factors of purchasing and maintaining specialized research equipment against the costs of outsourcing research work, when such research is required, to organizations that have such equipment.

No collections have or plan to acquire any other types of specialized analytical instruments.

Question J-1e. Please identify any specialized analytical instruments associated with your institution's collections that you have or plan on acquiring in the next 5 years: *Other.*

There were no responses to this question. **Note:** *Data were not provided for 738 collections (100%).*

Fully 33% of collections do not assess user fees or charge for consumable supplies.

Question J-2. Please indicate who may use your institution's specialized analytical instruments. (Mark all that apply)

Major Group	Type	Research Staff	Visitors Without Charge	Visitors With Charge for Consummable Supplies	Visitors With User Fee and Consumable Charge	Totals
Biological Collections	Botany	30	33	15	9	87
	Entomology	25	25	16	1	67
	Herpetology	19	14	17	1	51
	Ichthyology	20	15	15	5	55
	Invertebrate Zoology	17	19	17	4	57
	Mammalogy	18	15	17	1	51
	Ornithology	17	10	17	1	45
Geology and Mineralogy Collections	Geology and Mineralogy	9	7	6	1	23
	Invertebrate Paleontology	16	17	11	4	48
	Paleobotany	14	19	8	5	46
	Vertebrate Paleontology	15	14	8	3	40
Living/Cell Organismal and Microbiology Collections	Living/Cell Organismal Lines	5	4	1	2	12
	Microbiology	3	3	2	2	10
Social Sciences Collections	Anthropology	11	9	4	1	25
	Archaeology	19	13	9	2	43
	Ethnography	12	11	6	–	29
	Physical Anthropology	10	10	5	1	26
Other	Other	10	10	13	2	35
Totals		*270*	*248*	*187*	*45*	*750*
Percent (%)		*36*	*33*	*25*	*6*	*100*

Note: *Data were not provided for 270 collections.*

Observations

- Thirty-six percent of the collections' users of specialized analytical instruments are research staff.
- Only 6% of visitor users are charged user fee and a consumable charge.
- Respondents did not provide data for over 33% of the collections for this question.

Why is this important?

User fees are a source of revenue that can be used to sustain collections and provide necessary consumables. These fees can also offset shortfalls in other sources of funding.

Glossary

CD	compact disc
COS	Committee on Science
DNA	deoxyribonucleic acid
DOA	Department of Agriculture
DoD	Department of Defense
DOE	Department of Energy
DOI	Department of the Interior
FAQ	Frequently Asked Question
FTE	full-time employee
HVAC	heating, ventilation, and air conditioning
IMLS	Institute for Museum and Library Services
IWGSC	Interagency Working Group on Scientific Collections
NASA	National Aeronautics and Space Administration
NEA	National Education Association
NEH	National Endowment for the Humanities
NIH	National Institutes of Health
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NSF	National Science Foundation
NSTC	National Science and Technology Council
OMB	Office of Management and Budget
OSTP	Office of Science and Technology Policy
PDF	Portable Document Format
SEM	Scanning Electron Microscope
STPI	Science and Technology Policy Institute
TEM	Transmission Electron Microscope
URL	Uniform Resource Locator
USGS	United States Geological Survey

Appendix A:
Transmittal Letter

NATIONAL SCIENCE FOUNDATION
4201 WILSON BOULEVARD
ARLINGTON, VIRGINIA 22230

OFFICE OF THE
DIRECTOR

Dear Colleague:

The National Science Foundation invites you to participate in an important project concerning the nation's research infrastructure.

In 2005, the White House Office of Science and Technology Policy identified "object-based scientific collections" as vital resources for research (OSTP Memorandum). As a result, the National Science Foundation (NSF) is undertaking a systematic documentation of the condition of object-based scientific collections supported by the Foundation. The NSF Survey of Object-Based Scientific Collections includes all organizations that have at some time received NSF funding to construct or maintain such collections. This NSF survey complements a separate survey of federal agencies that maintain such collections. Reports are planned summarizing the results of both surveys.

Your institution is one of nearly 150 that we are asking to participate in the survey. While your participation is voluntary, because each institution's collections are a unique contribution to this scientific resource, your participation is extremely important to the success of this project. There are no penalties for not participating in the study now or in the future, and a decision to not participate will not affect current or future funding from NSF. Please be assured that responses will be kept confidential to the extent provided by law, and results will only be reported in the aggregate in any analyses. The information that you provide will be invaluable to the National Science Foundation and to the White House as we work together to establish priorities for strengthening this important resource.

Abt Associates, Inc. is administering the survey on-line. The Science and Technology Policy Institute (STPI) will analyze the survey data. Only these organizations and NSF staff for this particular project will have access to your data.

Further information and instructions for completing this web-based survey will be sent to you shortly by Dr. Judith Skog, Director, Division of Biological Infrastructure (BIO/DBI).

We thank you in advance for taking the time to support this project for the benefit of the research community.

If you have any questions now or when you receive the email, please don't hesitate to contact Dr. Richard McCourt at collsurv@nsf.gov.

Sincerely,

Kathie L. Olsen

Kathie L. Olsen
Deputy Director

cc: NSF grantee at the institution

Appendix B:
Collections Manager's Survey

National Science Foundation
Collections Manager's Survey

A. Organizational Information

In this section, we ask that you provide identifying and background information about your reporting unit.

A-1. Name of the reporting unit: _____

Street Address: _____

City, State, Zip: _____

Name of parent institution, if applicable: _____

Name, of the individual completing this survey: _____

Title: _____

Address: _____

Contact information for the individual completing this survey:

E-mail: _____

Telephone: _____

A-2. Which of the following most closely describes your organization's governance? *(Mark just one)*

- ❑1 Private for-profit organization
- ❑2 Private non-profit organization
- ❑3 4-year college or university
- ❑4 State agency
- ❑5 Local (county or municipal) agency
- ❑6 Other, Please specify: _____

A-3. Which of the following most closely describes your organization's primary function or service? *(Mark just one)*

- ❑1 Archaeological repository
- ❑2 Biological repository
- ❑3 Environmental repository
- ❑4 Medical research center
- ❑5 Public museum or herbarium
- ❑6 University or college museum or herbarium
- ❑7 Living collection *(e.g., Nature center, zoo, aquarium, botanical garden)*
- ❑8 Regulatory agency
- ❑9 Scientific research organization
- ❑10 Other, Please specify: _____

B. Collection Characteristics

In this section, we ask that you provide identifying and background information for the organization's collections.

B-1. Using the table that follows, please indicate those categories in which you currently hold collections and whether Federal funding fully or partially supports any collections in those categories. *(Mark all that apply)*

Collection Category	Yes, we have collection(s) in this area	IF YES: Proportion of Collections in Each Category Having Federal Support							Any with NSF support? (Mark all that apply)	
		None	1–10%	11–20%	21–50%	51–75%	> 75%	100%	Currently	Past 5 years
1. Anthropology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. Archaeology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3. Botany	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
4. Entomology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
5. Ethnography	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
6. Geology and Mineralogy	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
7. Herpetology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
8. Ichthyology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
9. Invertebrate Paleontology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
10. Invertebrate Zoology (Apart from Entomology)	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
11. Living Cell/Organismal Lines	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
12. Mammalogy	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
13. Microbiology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
14. Ornithology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
15. Paleobotany	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
16. Physical Anthropology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
17. Vertebrate Paleontology	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
18. Other, please specify:	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

B-2. What is the geographic scope of the objects in the institution's collections? *(Mark all that apply)*

- ❑1 Worldwide
- ❑2 Regional (continental or oceanic)
- ❑3 National level in some non-U.S. regions
- ❑4 United States
- ❑5 Regional within the U.S.
- ❑6 Local within the U.S.
- ❑7 Other, Please specify: _____

B-3a. What percentage of the institution's collections represent "types" not replicated in other repositories? *(Mark just one)*

- ❑1 None
- ❑2 1–25%
- ❑3 26–50%
- ❑4 51–75%
- ❑5 76–99%
- ❑6 100%
- ❑7 Do not know

B-3b. Do any of these collections predate 1900?

- ❑1 Yes
- ❑2 No

B-3c. Do any of these collections document taxonomic diversity?

- ❑1 Yes
- ❑2 No

B-3d. Do any of these collections document unique geography?

- ❑1 Yes
- ❑2 No

B-4. Please estimate the size of the collections residing in your unit, using the categories provided below and *using the appropriate unit of measurement**.

Answer for each type of collection held (additional tables are included):

Collection Type A: _____

Living Question Set

Living Specimens (Bulk Material)		Living Specimens (Individually Catalogued)		Living Specimens: Ancillary Collections (Bulk Material)		Living Specimens: Ancillary Collections (Individually Catalogued)	
# of Units	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***

Table key: **Unit Type choices are cubic feet, items, linear feet.*

Non-Living Question Set:

Non-Living Specimens (Bulk Material)		Non-Living Specimens (Individually Catalogued)		Non-Living Specimens: Ancillary Collections (Bulk Material)		Non-Living Specimens: Ancillary Collections (Individually Catalogued)	
# of Units	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***

Table key: **Unit Type choices are cubic feet, items, linear feet.*

Collection Type B: _____

Living Question Set

Living Specimens (Bulk Material)		Living Specimens (Individually Catalogued)		Living Specimens: Ancillary Collections (Bulk Material)		Living Specimens: Ancillary Collections (Individually Catalogued)	
# of Units	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***

Table key: **Unit Type choices are cubic feet, items, linear feet.*

Non-Living Question Set:

Non-Living Specimens (Bulk Material)		Non-Living Specimens (Individually Catalogued)		Non-Living Specimens: Ancillary Collections (Bulk Material)		Non-Living Specimens: Ancillary Collections (Individually Catalogued)	
# of Units	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***

Table key: **Unit Type choices are cubic feet, items, linear feet.*

Collection Type C: _____

Living Question Set

Living Specimens (Bulk Material)		Living Specimens (Individually Catalogued)		Living Specimens: Ancillary Collections (Bulk Material)		Living Specimens: Ancillary Collections (Individually Catalogued)	
# of Units	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***

Table key: **Unit Type choices are cubic feet, items, linear feet.*

Non-Living Question Set:

Non-Living Specimens (Bulk Material)		Non-Living Specimens (Individually Catalogued)		Non-Living Specimens: Ancillary Collections (Bulk Material)		Non-Living Specimens: Ancillary Collections (Individually Catalogued)	
# of Units	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***	**# of Units**	**Unit Type***

Table key: **Unit Type choices are cubic feet, items, linear feet.*

B-5. Please identify any new types of objects or new types of object preservation that either have been introduced into the institution's collections or have experienced significant growth since 2000. *(Mark all that apply)*

Objects/ Object Preservation	Newly Introduced	Significant Growth
DNA total extracts	❑	❑
DNA libraries	❑	❑
Frozen/dried/lyophilized specimens	❑	❑
Other, please specify _____	❑	❑
None of the above	❑	❑

B-6. Since 2000, has the size of the institution's collections changed through acquisitioning and/or deaccessioning specimens? *(Mark only one)*

❑$_0$ No Change (**SKIP TO B-8)**
❑$_1$ Rapid expansion: more than 5% per year of net growth
❑$_2$ Moderate expansion: from 1–5% per year of net growth
❑$_3$ Steady-state: less than 1% increase or decrease per year
❑$_4$ Moderate reduction: from 1–5% per year of net shrinkage
❑$_5$ Rapid reduction: more than 5% per year of net shrinkage

B-7. Which of the following processes were responsible for the recent changes in the institution's collections? *(Mark all that apply)*

❑$_1$ Collections made by research staff students
❑$_2$ Collections made by research staff at other organizations
❑$_3$ Changes in funding level
❑$_4$ Changes in staffing level
❑$_5$ Changes in space allocation
❑$_6$ Changes in the structure of the institution
❑$_7$ Changes in the leadership of and institution
❑$_8$ Changes in the mission of the institution
❑$_9$ Changes in organizational policies, regulations or laws
❑$_{10}$ Donations, including orphaned collections
❑$_{11}$ None of the above

B-8. What are the projections for future changes in size of the institution's collections? *(Mark only one)*

❑$_1$ The present rate of increase (or decrease) will speed up over the next 5 years.
❑$_2$ The present rate of increase (or decrease) will continue.
❑$_3$ The present rate of increase (or decrease) will slow down over the next 5 years.

B-9. Has your institution received or given away any "orphaned" collections (i.e., no longer wanted by another organization) since 2000? Orphaned collections are those of significant size or scope that have been deaccessioned by your institution or another institution. *(Mark all that apply and please indicate whether any were Federally owned.)*

	Mark all that apply	**Check here if any were Federally owned**
We have received an orphaned collection which is now incorporated as part of our other collections.	❑	❑
We have received an orphaned collection but it remains in our backlog and/or remains to be incorporated into our other collections.	❑	❑
No, we have not received any orphaned collections since 2000.	❑	–
We have given away an orphaned collection since 2000.	❑	❑

B-10. Has your institution received or made any long-term loans of significant size or scope since 2000*? (Mark all that apply and please indicate whether any were Federally owned.)*

	Mark all that apply	**Check here if any were Federally owned**
We have received a long-term loan that has been incorporated into our collection.	❑	❑
We have received a long-term loan since 2000 that is part of our backlog.	❑	❑
No, we have not received any long-term loans since 2000.	❑	–
We have made a long-term loan since 2000.	❑	❑

C. Staffing

In this section, we ask that you provide information regarding the staff responsible for collections at your institution. This would include curators, collections managers, technicians, and other support staff with responsibilities for collections.

C-1. What is the current staffing associated with all scientific collections at your institution? *(Please provide an answer for each row and select "zero" when applicable).*

	Number of Staff (in FTEs)								Please estimate the total number of students in each category in 2007.
	0	**< 1**	**1–2**	**3–5**	**6–10**	**11–20**	**21–30**	**> 30**	
1. Number of permanent full-time paid staff	☐	☐	☐	☐	☐	☐	☐	☐	___
2. Number of permanent part-time paid staff	☐	☐	☐	☐	☐	☐	☐	☐	___
3. Number of temporary full-time paid staff (i.e., paid on grants or hired for fixed terms)	☐	☐	☐	☐	☐	☐	☐	☐	___
4. Number of temporary part-time paid staff	☐	☐	☐	☐	☐	☐	☐	☐	___
5. Number of full-time volunteers	☐	☐	☐	☐	☐	☐	☐	☐	___
6. Number of part-time volunteers	☐	☐	☐	☐	☐	☐	☐	☐	___

C-2. In general, is the current collections staff able to meet the operational needs of the organization? *(Mark just one)*

- ❑1 Yes, the current staff can handle routine activities and maintenance of the collections
- ❑2 No, the current staff cannot handle routine activities and maintenance of the collections
- ❑3 Do not know

C-3. How would you characterize the size of your scientific collections staff over the past 5 years? *(Mark just one)*

- ❑$_1$ Staff size is increasing and new hires have been added
- ❑$_2$ Staffing is stable and vacancies are filled routinely
- ❑$_3$ Staffing is declining due to attrition and elimination of positions
- ❑$_4$ Staffing has been reduced through layoffs and elimination of positions
- ❑$_5$ Don't know

C-4. How do you view the outlook for collection staffing levels over the next 5 years? *(Mark just one)*

- ❑$_1$ We expect to add new staff positions.
- ❑$_2$ We expect to be able to fill vacancies as they arise.
- ❑$_3$ We expect to lose positions as people move or retire.
- ❑$_4$ We expect to lay off staff and eliminate positions.

C-5. Which of the following are the most important challenges related to current and future staffing? *(Mark all that apply)*

- ❑$_1$ Finding qualified applicants for staff positions
- ❑$_2$ Retaining qualified staff members
- ❑$_3$ Providing staff training in essential collection care
- ❑$_4$ Attracting staff with expertise in collection informatics

D. Collections Funding

In this section, we ask that you provide information regarding collections funding.

D-1. If you received Federal support for collection operations, maintenance and/or improvement, please indicate which of the following Federal agencies provided such support since 2000: *(Check all that apply)*

- ❑ National Science Foundation
- ❑ National Institutes of Health
- ❑ Other agencies in the Department of Health and Human Services
- ❑ U.S. Department of Agriculture
- ❑ U.S. Geological Survey
- ❑ National Park Service
- ❑ Other agencies of the Department of the Interior
- ❑ National Oceanic and Atmospheric Administration
- ❑ National Institute of Standards and Technology
- ❑ Other agencies of the Department of Commerce
- ❑ National Aeronautics and Space Administration
- ❑ Department of Energy
- ❑ Department of Defense
- ❑ Department of Homeland Security
- ❑ Institute of Museum and Library Services
- ❑ National Endowment for the Arts
- ❑ National Endowment for the Humanities
- ❑ None of the above

D-2. Considering all sources of funding, how do you view the outlook for support of your collections in the next 5 years? *(Mark just one)*

- ❑$_1$ We expect significant increases in funding.
- ❑$_2$ We expect steady growth in funding, above inflationary increases.
- ❑$_3$ We expect stable funding that will cover inflationary increases.
- ❑$_4$ We expect our funding to erode from inflation or decrease slightly in real terms.
- ❑$_5$ We expect significant funding cuts.
- ❑$_6$ Don't know.

D-3. Do you expect significant increases or decreases in funding from any of the following sources? *(Mark all that apply)*

	Expect Increase	**Expect Decrease**	**Not Applicable**
1. Endowment	❑	❑	❑
2. Federal grants and contracts	❑	❑	❑
3. State government grants and contracts	❑	❑	❑
4. County or municipal grants and contracts	❑	❑	❑
5. Industrial grants and contracts	❑	❑	❑
6. Private gifts and grants	❑	❑	❑
7. Individual donors	❑	❑	❑
8. Other sources, Please specify: _____	❑	❑	❑

E. Facilities

In this section, we ask that you provide information on the collection area(s) and/or building systems in which your collections are stored and the associated building systems.

E-1. Please select the most appropriate description of the amount of space allocated to your collections from the list below. *(Mark just one)*

- ❑1 Our current space allocation provides for at least 5 years of projected growth.
- ❑2 Our current space allocation is adequate for the collections current size.
- ❑3 Our current space allocation is barely adequate. We will need additional space and/or renovations to increase capacity as soon as possible.
- ❑4 Our current space allocation is inadequate. We have needed additional capacity for years.

E-2. For those collections with **inadequate** space allocations, indicate areas of MAJOR needs: *(Mark all that apply)*

- ❑1 Renovation of current on-site storage facilities to increase capacity
- ❑2 Installation of higher-density on-site storage systems
- ❑3 Construction of additional on-site storage facilities
- ❑4 Renovation of current off-site storage facilities to increase capacity
- ❑5 Installation of higher-density off-site storage systems
- ❑6 Construction of additional off-site storage facilities
- ❑7 Other, Please specify: _____

E-3. Please indicate the proportion of your collection areas and/or building systems that fall into each category listed in table below: *(Mark all that apply)*

	Proportion of Collections						
	None	**< 5%**	**5–10%**	**11–25%**	**26–50%**	**> 50%**	**100%**
These collection areas and/or building systems represent best practices	❑	❑	❑	❑	❑	❑	❑
These collection areas and/or building systems need improvement	❑	❑	❑	❑	❑	❑	❑
These collection areas and/or building systems are unsatisfactory	❑	❑	❑	❑	❑	❑	❑

E-4. For those collections housed in areas with **inadequate or unacceptable** conditions, indicate areas of MAJOR needs: *(Mark all that apply)*

- ❑1 Renovation or replacement of collection areas and/or buildings systems
- ❑2 Replacement or upgrading of heating and ventilation systems
- ❑3 Installation, replacement or upgrading of air conditioning
- ❑4 Installation, replacement or upgrading of humidity controls
- ❑5 Correction of lighting problems
- ❑6 Fire safety
- ❑7 Not applicable (None inadequate or unacceptable)

E-5a. Please indicate the proportion of your **accessible** collection areas and/or building systems that fall into each category listed in table below: *(Mark all that apply)*

	Proportion of Collections						
	None	**< 5%**	**5–10%**	**11–25%**	**26–50%**	**> 50%**	**100%**
These collection areas and/or building systems are accessible and represent best practices	☐	☐	☐	☐	☐	☐	☐
These collection areas and/or building systems are accessible but need improvement	☐	☐	☐	☐	☐	☐	☐
These collection areas and/or building systems are accessible but unsatisfactory	☐	☐	☐	☐	☐	☐	☐

E-5b. Please indicate the proportion of your **inaccessible** collection areas and/or building systems that fall into each category listed in table below: *(Mark all that apply)*

	Proportion of Collections						
	None	**< 5%**	**5–10%**	**11–25%**	**26–50%**	**> 50%**	**100%**
These collection areas and/or building systems are accessible and represent best practices	☐	☐	☐	☐	☐	☐	☐
These collection areas and/or building systems are accessible but need improvement	☐	☐	☐	☐	☐	☐	☐
These collection areas and/or building systems are accessible but unsatisfactory	☐	☐	☐	☐	☐	☐	☐

E-6. Please describe the curation and preservation practices associated with your collections using the table below. *(Mark all that apply)*

	Proportion of Collections						
	None	**< 5%**	**5–10%**	**11–25%**	**26–50%**	**> 50%**	**100%**
These collections are properly labeled, documented and cataloged, and they are preserved with appropriate materials (acid-free trays, topped-up fluid jars with good seals).	☐	☐	☐	☐	☐	☐	☐
These collection areas are cataloged but their labeling and preservation materials are not optimal. They are accessible but their scientific value is diminished by their level of curation/preservation.	☐	☐	☐	☐	☐	☐	☐
These collections have been cataloged but their labeling and preservation materials are unacceptable. They lack important specimen data (locality, taxonomic name) and they are preserved with substandard materials that are causing damage to them.	☐	☐	☐	☐	☐	☐	☐
These collections have not been unpacked and/or cataloged, and they are therefore inaccessible due to lack of curation.	☐	☐	☐	☐	☐	☐	☐

F. Ancillary Materials

In this section, we ask you to provide information on the ancillary materials associated with your main collection (e.g., catalogs, archival information, images, maps, recordings).

F-1. Please estimate the size of your ancillary materials collections using one or more of the following measures:

- Individually cataloged items (e.g., recordings): _____
- Linear feet of shelf space: _____
- Cubic feet of storage areas: _____

F-2. Please indicate the quality of the storage systems for ancillary materials using the table below. *(Mark all that apply)*

	Proportion of Collections						
	None	**< 5%**	**5–10%**	**11–25%**	**26–50%**	**> 50%**	**100%**
These ancillary materials are housed in storage systems that were installed or upgraded within the past 5 years.	☐	☐	☐	☐	☐	☐	☐
These ancillary materials are housed in satisfactory storage systems. The objects in these collections are fully accessible and are being preserved according to community standards.	☐	☐	☐	☐	☐	☐	☐
The ancillary materials areas are accessible but they are deteriorating due to outdated and/or poorly maintained storage systems.	☐	☐	☐	☐	☐	☐	☐
The ancillary materials areas are inaccessible and are deteriorating due to unacceptable storage systems.	☐	☐	☐	☐	☐	☐	☐

F-3. Please describe the curation and preservation practices associated with your ancillary materials using the table below. *(Mark all that apply)*

	Proportion of Collections						
	None	**< 5%**	**5–10%**	**11–25%**	**26–50%**	**> 50%**	**100%**
Ancillary materials are properly labeled, documented and cataloged, and they are preserved with appropriate materials.	☐	☐	☐	☐	☐	☐	☐
Ancillary materials areas are cataloged but their labeling and preservation materials are not optimal. They are accessible but their scientific value is diminished by their level of curation/preservation.	☐	☐	☐	☐	☐	☐	☐
Ancillary materials have been cataloged but their labeling and preservation materials are unacceptable. They lack important data (provenance, dates) and they are preserved with substandard materials that are causing damage to them.	☐	☐	☐	☐	☐	☐	☐
Ancillary materials have not been unpacked and/or cataloged, and they are therefore inaccessible due to lack of curation. Their current state of preservation could be causing them damage.	☐	☐	☐	☐	☐	☐	☐

G. Uses and Users

In this section, we ask that you provide information on professionals who make visits to your institution and borrow materials for various purposes. In your responses, do not include visitors to exhibit areas or educational departments.

G-1. What is the primary purpose of the collection? *(Mark all that apply)*

- ❑ Basic research
- ❑ Biomedical research
- ❑ Agriculture and food safety
- ❑ Public health
- ❑ Public safety
- ❑ Education
- ❑ Conservation
- ❑ Trade and/or economic development
- ❑ Homeland security
- ❑ Environmental monitoring
- ❑ Applied research in other disciplines
- ❑ Other, please specify: _____

G-2. Who are the primary users of the collection? *(Mark all that apply)*

- ❑ Intramural research staff
- ❑ Intramural students
- ❑ Research staff from other U.S. organizations
- ❑ Students from other U.S. organizations
- ❑ Researchers and/or students from non-U.S. organizations
- ❑ Researchers from Federal agencies
- ❑ Researchers from State/local agencies
- ❑ Researchers Non-profit organizations
- ❑ Regulatory agencies
- ❑ Government/policy administrators
- ❑ Commercial entities
- ❑ General public
- ❑ Other, please specify: _____

G-3. Since 2000, has the collection attracted any new categories of users? *(Mark just one)*

- ❑$_1$ No
- ❑$_2$ Yes Please explain: _____

H. Accessibility of Collections

In this section, we ask that you provide information on the availability of your collections, their related data, and their ancillary collections.

H-1. Please estimate the proportion of your collections that are physically accessible to professional visitors, as opposed to collections that are in unprocessed backlogs or are in inaccessible storage areas: *(Mark just one)*

- ❑1 None of our collections are physically accessible
- ❑2 Less than 5% of our collections
- ❑3 6 to 25% of our collections
- ❑4 26 to 50% of our collections
- ❑5 51 to 75% of our collections
- ❑6 76 to 99% of our collections
- ❑7 100% of our collections

H-2. For those collections that are physically inaccessible, indicate the areas of MAJOR need. *(Mark all that apply)*

- ❑1 Additional on-site storage area
- ❑2 Renovation of on-site storage systems
- ❑3 Additional on-site storage systems
- ❑4 Additional off-site storage area
- ❑5 Renovation of on-site storage systems
- ❑6 Additional off-site storage systems
- ❑7 Improvement of environmental controls for temperature, humidity, light
- ❑8 Additional staff to process backlog

H-3. Please estimate the proportion of your ancillary materials collections that are physically accessible to professional visitors, as opposed to collections that are in unprocessed backlogs or are in inaccessible storage areas:

- ❑1 None of our ancillary materials are physically accessible
- ❑2 Less than 5% of our ancillary materials
- ❑3 6 to 25% of our ancillary materials
- ❑4 26 to 50% of our ancillary materials
- ❑5 51 to 75% of our ancillary materials
- ❑6 76 to 99% of our ancillary materials
- ❑7 100% of our ancillary materials

H-4. Using the table that follows, please estimate the proportion of your collections that are cataloged and/or available on-line: *(Mark all that apply)*

	Proportion of Collections Catalogued/On-line							
	None	**1–5%**	**6–10%**	**11–25%**	**26–50%**	**51–75%**	**76–99%**	**100%**
Cataloged on paper	☐	☐	☐	☐	☐	☐	☐	☐
Cataloged in a computerized database	☐	☐	☐	☐	☐	☐	☐	☐
Computerized database is accessible on the Web	☐	☐	☐	☐	☐	☐	☐	☐
Represented by digital images on the Web	☐	☐	☐	☐	☐	☐	☐	☐
Represented by scientific data in addition to catalog data on the Web (e.g., measurements, chemical composition, other properties)	☐	☐	☐	☐	☐	☐	☐	☐

H-5. Using the table below, please estimate the proportion of your collections that will be cataloged and/or made available on-line in the next 5 years: *(Mark all that apply)*

	Proportion of Collections Catalogued/On-line							
	None	**1–5%**	**6–10%**	**11–25%**	**26–50%**	**51–75%**	**76–99%**	**100%**
Cataloged on paper	☐	☐	☐	☐	☐	☐	☐	☐
Cataloged in a computerized database	☐	☐	☐	☐	☐	☐	☐	☐
Computerized database is accessible on the Web	☐	☐	☐	☐	☐	☐	☐	☐
Represented by digital images on the Web	☐	☐	☐	☐	☐	☐	☐	☐
Represented by scientific data in addition to catalog data on the Web (e.g., measurements, chemical composition, other properties)	☐	☐	☐	☐	☐	☐	☐	☐

I. Intellectual Property Rights

In this section, we ask that you provide information about your institution's policies and practices relative to intellectual property rights.

I-1. To what degree does your collection assert its ownership of intellectual property rights associated with objects in the collection? *(Mark all that apply)*

- ❑$_1$ All qualified visiting researchers, students, and borrowers of material are free to publish their observations, analyses, images, and to use other derived benefits of the collection without restriction or repayment.
- ❑$_2$ Users/borrowers of specimens must provide copies of all published material related to the collection.
- ❑$_3$ All uses of the collection must be acknowledged in publication.
- ❑$_4$ Material derived from borrowed specimens (e.g., DNA extracts) may not be lent to a third party.
- ❑$_5$ Other restrictions apply to the use of intellectual property associated with the collection's specimens
- ❑$_6$ Other, Please specify: _____

I-2. Does your institution have a written policy regarding intellectual property rights for non-commercial uses? *(Mark just one)*

- ❑$_1$ No
- ❑$_2$ Yes When was it updated? _____

J. Analytic Instrumentation

In this section, we ask that you provide information about analytical instruments and capabilities directly associated with the institution's collections. Your responses to the following questions should reflect only those instrument capabilities that are collocated with the collections, belong to the organization, and are available to professional visitors and students to the collection.

J-1. Please identify any specialized analytical instruments associated with your institution's collections that you have or plan on acquiring in the next 5 years: *(Mark all that apply)*

	Currently Have	**or**	**Plan on Acquiring**		**Dedicated to Collections Activities**	**or**	**Part of a Multi-User Facility**
Digital imaging equipment	☐		☐		☐		☐
Specialized microscopes (SEM, TEM, optical)	☐		☐		☐		☐
DNA sequencers	☐		☐		☐		☐
X-ray machines	☐		☐		☐		☐
Other, please specify: _____	☐		☐		☐		☐
☐ None							

J-2. Please indicate who may use your institution's specialized analytical instruments: *(Mark all that apply)*

- ❑1 The instruments are used only by the research staff of the reporting organization.
- ❑2 The instrument(s) are available to qualified visitors, including students, without charge.
- ❑3 The instrument(s) are available to qualified visitors, including students, and we charge only for consumable supplies that they use.
- ❑4 The instrument(s) are available to qualified visitors, including students, and we charge them a users fee (e.g., hourly, daily) and we charge them a user's fee (e.g., hourly, daily) and for consumable supplies that they use.

This completes the survey. Thank you for participating!

REPORT DOCUMENTATION PAGE

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13. SUPPLEMENTARY NOTES

14. ABSTRACT

From December 2007 to April 2008, the Science and Technology Policy Institute (STPI) and Abt Associates Inc. developed and conducted a survey for the National Science Foundation (NSF) of current and former recipients of NSF grants to support creating and/or maintaining collections of objects used for research, and the researchers' institutions. STPI, Abt, and NSF designed Web-based questionnaires to be completed by the NSF grantees and institutional administrators. Questionnaires allowed respondents to provide information on up to 18 categories of collections. For the purpose of the survey, objects are defined as any natural physical entities collected and maintained for research use by the grantee and/or other researchers. Of the 137 institutional administrators who were invited to participate in the survey, 57 (42%) completed their surveys. An additional 13 administrators (9%) submitted incomplete surveys that were considered usable. Of the 339 collection managers were invited to participate 222 (65%) completed their surveys while an additional 17 (5%) partially completed their surveys. STPI analyzed the data provided to assess the current status of the collections.

15. SUBJECT TERMS

object-based scientific collections, survey, national science foundation, grantees

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