In the forty years since Stanford and Yale undertook the first large-scale preservation assessments of library collections, American libraries and the understanding of their responsibilities to patrons and collections have grown, even as funding has failed to keep pace with that growth. Evaluating the condition and preservation needs of collections is essential for preserving their materials for current and future users, and it enables librarians to direct their limited time and resources to more impactful actions. This chapter will examine the four primary types of preservation assessments undertaken in libraries and archives: preservation needs assessments, collection condition surveys, collection assessments, and item-level condition reports. Each of these assessment formats offers different insights into the condition of library collections and serves distinct purposes in developing preservation priorities.

A preservation needs assessment is a broad, holistic evaluation of how an organization cares for and preserves its collections. Any institution can benefit from a needs assessment, since it examines both the strategic and practical...
aspects of caring for collections in a preventive fashion. A collection condition survey can be undertaken by any organization with consistent collections (such as books) in order to provide data on the risks and damage to collection materials. Basic statistical sampling allows organizations to extrapolate trends in their collections to allow for strategic planning and resource allocation in order to better meet collection needs and reduce risks. Collection assessments are an intensive method of assessment that is more suited to diverse or unique collections such as special collections or archival holdings. This structured evaluation of individual collections allows for improved project planning for housing and reformatting interventions. Item-level condition reports are vital for documenting the condition of high-value or high-risk items, such as items on exhibition loan. However, the time-intensive nature of the condition reports should limit their use across collections.

Preservation assessments are tools to assist libraries in better understanding and caring for their collections. While existing preservation knowledge and experience can facilitate speedier or more in-depth data collection, at least some specialized knowledge is required to conduct basic assessments and surveys to strengthen collections. Outside funding and specialists are also available to conduct assessments of collections and institutions that may need the additional support.

PRESERVATION NEEDS ASSESSMENTS

A preservation needs assessment (also known as a general preservation planning survey) is a comprehensive evaluation of an organization’s ability to care for and preserve its collection materials. The goal of the preservation needs assessment is to describe the impact of the existing conditions and policies on the collections, and provide corresponding short-, medium-, and long-term steps that an organization can take to benefit the materials under its care. The scope and recommendations of this kind of assessment should be tailored to fit the realities of a given institution, its staffing levels, and budget constraints. Aspirational goals can be included, but the report should be clear that perfect is the enemy of good.

The needs assessment is a truly holistic look at an organization in order to understand how everything from the building structure to staff food policies can impact the condition of materials over the life span of the collections. The categories of assessment used are descriptive and qualitative, and a given assessor
or institution may categorize specific aspects differently without impacting the overall value of the report. It is also important to consider that, due to the interrelated nature of the risks to collections, the different categories assessed interact with each other. For example, temperature and relative humidity (RH) are the primary factors in the aging of collections, but high temperatures and high RH increase the risk of mold growth and pest infestations, while low temperatures and low RH can temporarily increase the brittleness of some materials, leading to handling issues and impact accessibility. These interactions need to be understood in the context of a given institution and its mission in order to provide meaningful guidance that can be implemented successfully.

The starting point for any organization considering a preservation needs assessment is to determine whether internal staff or an outside consultant should conduct the assessment. While staff members should be expected to have insights into the recurring and long-term preservation issues of their collections, outside consultants bring fresh eyes, a neutral perspective, and a significant amount of preservation experience.¹ In reality, few organizations have staff members with the time or background to conduct the assessment internally. For these organizations, state libraries or the American Institute for Conservation's “Find a Conservator” tool are key starting places for locating a preservation specialist to conduct an assessment.²

**Expected Areas of Assessment**

In her analysis of thirty years of needs assessments, Karen E. K. Brown identifies six primary areas for assessment. Regardless of who is conducting the assessment, an organization should expect that the following areas and topics will be reviewed:

- Administration (mission, collecting policies, intellectual control, staffing/ training needs, budgets)
- Building and facilities
- Environmental factors (monitoring and control of temperature, relative humidity, light, pollutants)
- Protection against loss (pest management, emergency preparedness and prevention, security)
- Condition, storage, and handling of collections in various formats (including exhibition)
- Remedial treatment (reformatting, repair and conservation, library binding)³

Conducting the Needs Assessment

Since the needs assessment is a qualitative assessment, there is no formal instrument to design, although assessors may have prepared checklists or interview forms. Rather, the needs assessment takes place in three distinct phases: (1) pre-site background information collection, (2) stakeholder interviews, and (3) site inspection. Needs assessments do require a commitment of staff time, whether conducted by the staff or by consultants. Brown’s 2005 analysis of needs assessments shows that 73 percent of assessments required less than 40 hours of staff time, and 86 percent of consultant site visits took fewer than two days to complete.4

Pre-Site Background Information

The pre-site background information collection is intended to provide the assessor with all of the relevant documents to understand the organization, its mission and structure, the scale and scope of the collections, previous grant applications, environmental data, blueprints or design drawings, processing manuals, and other formal or informal documents that an organization may have for the collections. These documents help the assessor understand the organization and prepare the assessor to formulate the scope of their interviews and on-site inspection. The absence of documentation may indicate that informal policies could benefit from formalization or initial development. Formal documentation is especially important for organizations that rely on volunteer labor or have high turnover, since informal best practices may not survive staffing transitions.

Stakeholder Interviews

Following the collection of written documents, the stakeholder interviews provide the assessor with firsthand input and institutional knowledge from the staff. The assessor should interview staff or volunteers with executive, curatorial, preservation, and patron responsibilities. In a smaller institution, these responsibilities may all reside in a single person. The staff can provide a wealth of information and insight that would otherwise be difficult to glean from limited site visits. It is important for the assessor to try to establish trust at the beginning of the interview process, since the unvarnished truth from the staff will provide the greatest opportunity for understanding the needs of the organization. The assessor is not there to pass moral judgment on the
functioning of the staff or the organization, only to assist in addressing needs and evaluating areas for improvement.

In particular, long-term staff are a valuable source of information about the functions and problems within a collection. They may recall collection disasters that have impacted materials, or explain procedures or unusual storage choices that the assessor may encounter. Long-term staff are likely to have opinions about the functioning of certain aspects of the organization, such as the service desk operations, stacks security, or space rentals, that are not reflected elsewhere. Newer staff may offer a different type of perspective, highlighting operations and functions that “have just always been done this way.” New staff also tend to notice minor issues, such as water stains or seasonal pest sightings, that longer-tenured staff have come to accept.

The assessor should focus the staff interviews on risks and issues that are either historic or procedural in nature. Examples of historic risks could be events that happened in the past that may not be immediately apparent to the assessor when they are on-site, whether it is a disaster from which an organization has already recovered or the acquisition of a collection that caused difficulties and forced workflow adjustments. Procedural issues are the recurring problems that might arise when helping patrons, such as lack of coverage in the reading room exposing a security risk, or event rentals leaving food behind after parties. The interviews should help establish what the staff understand to be their immediate needs and should convey priorities and risks that could otherwise be missed. Additionally, the interviews should begin to frame the types of risks that a collection faces and its preservation priorities.

Site Inspection

The site inspection is the final step of data collection. The inspection primarily focuses on the areas of collection storage, display, and use, but it needs to consider all areas of the facilities. Preservation issues frequently arise when the staff store collections at their desks or convert closets into unlabeled storage areas. Security and environmental issues can also arise when collections are stored in areas that are not intended for collections use.

The site inspection collects as much qualitative data as possible about the current state of the collections and about potential risks. The information collected from background documents and stakeholder interviews guides the assessor, but the assessor must also use their experience to identify risks and issues that staff may overlook or be unaware of. The assessor should document
the range of risks or damage that they observes, whether those risks are vulnerable formats, poor storage conditions, or structural risks. Frequently staff no longer “see” those boxes in the corner or the rolled posters that are stored atop shelving units. Because of the broad scope of the needs assessment, the assessor typically does not focus on item-level issues in a collection (“Book X has detached boards”), but should identify repetitive risks that are apparent across the collection (“Significant numbers of volumes in Special Collections have detached boards, which threaten the usability of the collection for researchers”).

After the site inspection, follow-up interviews with select stakeholders may be needed to provide added information or clarification of the assessor’s findings.

Analysis and Reporting

Once the data collection is completed, it is the role of the assessor to analyze the findings and compile them into a concise and understandable report. The report should describe the organization’s mission, structure, and collections, as well as identifying both the strengths and the areas of improvement for caring for the collections. Differing institutions and assessors may structure reports differently, but the heart of the report should be a list of the major issues identified during the assessment, including an accessible explanation of the risks that each issue poses to the collections. The assessment report should provide a list of actions and/or potential solutions to the identified risks, as well as a sense of the relative importance of each action to the well-being of the collection.

Many organizations that receive preservation needs assessments may not have any staff members with backgrounds in preservation. The report must be written clearly and concisely to provide these organizations with the information they need to care for their collections. Suggestions for improved housings should include contact information for reputable vendors; updating or creating a disaster plan should include links to online and print resources; and conservation treatment needs should include listings of local conservators or point to the American Institution for Conservation’s “Find a Conservator” tool. A successful report should lead to both immediate and long-term actions by the organization. The nature of those actions will vary greatly based upon local needs, but an organization should expect that guidance on improving housing
and storage conditions, the care and handling of materials by staff and users, facility recommendations, disaster planning and response, and security issues may be addressed.

**COLLECTION CONDITION SURVEYS**

A collection condition survey, or condition survey, is a survey of a statistically significant, representative, random sample of collections that is undertaken to provide data on the physical condition and needs of the collection. The collection condition survey is a particularly effective tool for analyzing library collections that typically hold large numbers of similar materials (books) in similar conditions, with similar patterns of use and similar rates of damage. The data should provide insights into the issues facing the collections that may provide strategic direction for the library’s preservation and conservation programs. The survey may also identify types of damage that are better mediated by user education and outreach, such as damage from handling, misshelving, or poorly designed book drops.

Condition surveys can be a valuable tool for both general, circulating collections and special collections. The collection of data from a random sample of holdings, if done on a scale large enough to be considered statistically significant, can accurately depict the issues in a collection to within +/-5 percent. Considering the scale of many library holdings, evaluating every volume is impractical, and condition surveys are an effective way to gather a snapshot of vital data.

The condition survey should reflect the local needs, issues, and capabilities of the library. While we might expect the rate of damage found in research libraries and public libraries to vary, the survey tool to collect the data may look very similar for all of them, since the primary preservation problems that are found in books are fairly universal across collections. The survey tool may also reflect the level of institutional commitment to preservation: the greater the expected investment in preservation, the greater the level of detail of the data collected in the survey. While more data to track preservation issues is always a welcome thing, the cost-benefit ratio for the institution needs to be clear, and collecting more data points will require both a better-trained staff to identify specific damage and more time to record that additional information.
Designing and Implementing the Survey

A wide variety of data may be collected during a condition survey. Organizations with greater capacity can include more data points, but any organization should benefit from collecting the following key points:

- Volume size
- Format
- Date of imprint
- Location (or region) of imprint
- Binding style
- Condition of the binding
- Leaf attachment method
- Condition of the text block
- Paper type
- Types of damage

A more detailed list of survey questions can be found in Brian J. Baird’s *Library Collection Assessment through Statistical Sampling* or from other published condition surveys such as the Yale and Stanford surveys. However, the basic data points listed above should enable an institution to understand the rates and types of damage to its collection, as well as some of the underlying conditions that may contribute to that damage. Data entry must be structured to facilitate analysis. Drop-down menus and checkboxes should be used as much as possible. If paper survey forms or free-text fields are being used for data collection, instruction sheets with standardized language or abbreviations should be provided to every survey team.

Sample Size

Once the survey tool is developed, the next step is to determine the number of volumes to survey for the sample set. There are helpful in-depth resources to explain statistical significance and confidence levels, but a good rule of thumb is that to have a 95 percent confidence level at a +/-5 percent confidence interval, the sample size must be at least 384 items. To have 99 percent confidence at a +/-5 percent confidence interval, the sample size must be at least 600 items. To achieve a smaller confidence interval, the sample size needs to approximately double for every percentage point. But 384 volumes is a suitable number to
start with, which can be rounded off upward to 500 volumes to account for variation or errors in the sample selection process.

When designing the survey, the surveyors must note that the data can only represent the body of the collection that the sample is drawn from. If a research library includes multiple library facilities, the sample population must draw its sample from across all libraries, collections, or locations in order for the survey to accurately represent all holdings. If the expectation is to describe the conditions of both individual collections (Campus Library A and Campus Library B) and the broader library collections, then statistically significant samples must be surveyed from each individual library collection or location (384 from Library A and 384 from Library B). As long as the same survey tool is used, the survey data from multiple libraries or collections can be combined to describe the condition of the entire library system.

**Random Sample Formulation**

For the sample to be statistically significant, it must also be random. Simply walking down the stacks and selecting books to survey until the sample size is met will not achieve this requirement. There are a variety of ways to ensure a random sample. It may be possible to run a query in an ILS to produce a random selection of volumes. This method could also be used to automatically input some catalog data into survey forms, thus reducing the time required to fill out the survey tool for each sample item.

Less technologically inclined methods involve calculating the number of shelves in a collection and dividing that by the sample size to identify which shelf a sample would be pulled from, and then selecting a set, arbitrary book to survey (e.g., always the third book from the left side). For example, if a library has 1,900 shelves and the predetermined sample size was 500 volumes, \( \frac{1900}{500} = 3.8 \). Rounding down from 3.8 to ensure that the sample size met the minimum requirement of 500, the surveyor would look on every third shelf and inspect the third book from the left. Rounding down also provides flexibility in case there are empty shelves or shelves with fewer than three books on them.

A related method would be to assign consecutive numbers to each shelving bay, and then use a random number generator to randomly select a bay number, a shelf number on that bay (always counted from top to bottom or vice versa), and a volume number on that shelf (always counted from the
same side). For example, in a library with 1,900 bays and 7 shelves per bay, we could use a spreadsheet or other program to fill out 3 columns, where the first column contains random numbers from 1 to 1,900 for the bays, the second column contains random numbers from 1 to 7 for the shelves, and 1 to 30 for the volume on the shelf. An output might read 917, 3, 24, which would lead the surveyor to the 917th bay, the 3rd shelf from the top, and the 24th book from the left side. If there were only eighteen books on the shelf, the survey instructions would have to provide a standard guidance that the surveyor could either use a random number generator to create a new number for the volume, or skip that entry completely and move to the next randomly generated line in the spreadsheet. This method needs to account for differing shelf counts and can result in the creation of nonexistent sample locations, but more random locations can easily be created to ensure a large enough sample size.

**Conducting the Survey**

With the tool designed and the random sample selected, the process of surveying is fairly straightforward. The surveyor should have a book cart and a laptop or tablet. Paper printouts of the sample locations may be helpful in facilitating the process. The surveyor will locate the item to be surveyed, pull it from the shelf, inspect it, complete the survey form, and return the book before moving on to the next item. Baird estimates that an experienced surveyor can complete the inspection in one to two minutes per book, although in large libraries additional time should be allotted to move between survey locations. Teams of surveyors can be used to speed up the data entry, with one person inspecting the item and another recording the information. Multiple surveyors or survey teams can also be used with cloud-based platforms, such as Google Forms or Qualtrics, which allow multiple surveyors to simultaneously input data.

Surveyors must be given some basic training to correctly identify issues, with the level of training correlated with the level of detail being collected by the survey tool. The focus of the training should be on correctly identifying formats, materials, and types of damage. Physical examples of damage are particularly helpful for students who may not have much exposure to typical preservation issues. Developing consistency across surveyors is important for producing meaningful data. With appropriate training and a clearly designed survey instrument, student workers or volunteers can successfully conduct the data collection portion of the preservation survey.
Analyzing the Data

With the raw data in hand, the important work of analysis can begin. Depending on the formulation of the survey instrument, different sets of information may be gleaned from the data. Most organizations without an active preservation program will find simple calculations, such as the percentage of the collection with damage or the percentage with brittle paper, the most helpful in being able to allocate resources to support conservation, binding, and boxing budgets. More detailed correlations may emerge between the volume size, date of publication, or region of publication and the damage noted; these correlations may guide acquisitions or shelf-prep activities that can reduce wear and damage. High rates of graffiti or marking in the volumes may provide the impetus for a public outreach campaign, or to provide mechanical erasers to student workers at the reference desk to erase graffiti when they are not assisting patrons.

As with all assessments, the results of the analysis should be readily calculated and highlighted so as to be easily understood by administrators and funders. The findings from preservation surveys are particularly well-suited to graphics and visualizations that convey both basic information about the collection as well as more detailed points, such as the relative rates of formats and damage types across a collection.

The University of Florida’s Baldwin Library Physical Condition Survey (1992) provides an excellent example of some of the basic visualizations that can better inform collection managers. The Baldwin Library of Historical Children’s Literature had long been known to have condition issues, but its needs had not previously been quantified. A sample of 540 volumes was drawn from the collection of 85,000 titles. From the data collected, the institution could better understand the relative age of the collections (see figure 6.1), as well as the extent of brittleness as measured by the double-fold test (figure 6.2).

From these charts, it is apparent that this collection comprises volumes primarily from the mid- to late nineteenth century, and there are serious and widespread issues with brittle paper. Additional analysis (figure 6.3) shows that the brittleness is not distributed equally, but rather reflects historic transitions to lower-quality wood pulp paper in the middle of the nineteenth century.
FIGURE 6.1 • Volumes in the Baldwin Library by publication date

FIGURE 6.2 • Results of double-fold test in Baldwin Library

By changing the volume count to a percentage (figure 6.4), the rates of embrittlement per decade can be better understood, allowing curators to plan for additional preservation support when they acquire new collections in the future.

FIGURE 6.4 • Rates of double-fold results in the Baldwin Library by decade

A more contemporary survey of active, unbound serials in the University of Florida's Marston Science Library shows the presence of damage in serials titles by the cover materials (figure 6.5).^{11}

**FIGURE 6.5** • Count of damage in serial titles by cover material

It is clear from this figure that there are meaningful amounts of damage to serials with both card and paper covers, with the majority of damaged titles having either coated card or coated paper covers. By shifting the X-axis to a percentage rather than a simple numerical count (figure 6.6), it becomes more apparent that the rates of damage are correlated to the paper/card stock covers rather than the coated or matte surface, with the paper covers seeing damage rates around 40 percent, card covers with damage around 30 percent, and serials bound in boards at 20 percent.

For a library with a limited budget to spend on serials binding, these rates provide valuable insight into where to focus the binding budget. Other institutions will have their own local concerns that condition surveys can address to improve the long-term access to the collections.
COLLECTION ASSESSMENT

A collection assessment is a long-term data collection program to evaluate archival collections based on housing conditions, material conditions, and/or formats in order to better understand the composition of large, complex collections and their short- and long-term preservation needs. The collection assessment typically involves the inspection of archival collections undertaken at the box, folder, and/or item level to record basic condition information. A well-designed and executed assessment should allow for organizations to plan for both box-level interventions, such as rehousing unique artifacts, and for collection-wide projects, such as replacing all acidic folders. Due to the unique nature of archival collections, collection assessments may not always be used to guide long-term programmatic changes to preservation workflows, although the data may be able to identify improvements in existing processing workflows in order to reduce retrospective interventions.

Collection assessment is a tool that enables special collections and archives to better understand their collections. Because of the commitment of time and resources to the development of a tool and the box- or item-level assessment,

these projects are not an efficient use of resources for large library collections, although a library may possess a smaller subset of materials, such as a map collection or fine art collection, which would be appropriate for a collection assessment.

As with other preservation surveys and assessments, a collection assessment should be designed to meet the specific needs and existing resources of a given institution. The amount of data collected should reasonably reflect the organization’s commitment to and understanding of preservation. There is little reason to spend significant amounts of time and labor collecting detailed data points if there is little expectation that the results can and will be acted upon. Institutions with more developed preservation programs may benefit from more intensive data collection, such as identifying specific audiovisual or digital formats in order to provide support for grant-funded reformatting projects.

**Collection Assessment Design and Planning**

At its essential formulation, the collection assessment is designed to collect basic archival holdings information, such as collection title, box count, and box sizes or linear feet of collections, tied to the assessment of the collection’s storage environment, housing condition and quality, the physical condition of the collection items, and the risk of damage or loss posed by the item format (with risk being a judgment call based on the format stability as it is understood by the preservation and archival communities). The title, box count, and box sizes or linear feet are entered as free text and numbers, while the assessment data (environment, housing, condition, and risk) should be entered on a numerical scale. Different organizations have used different scales, primarily a 3- or 5-point scale (figure 6.7). A simplified scale minimizes the decision-making for novice assessors and allows for easier clustering of issues for analysis and project planning. Whichever scale is decided upon for a given assessment must be followed consistently.12

The assessment should also include checkboxes to clearly identify the presence of vulnerable or problematic formats. In a fashion similar to the assessment ratings, minimizing the detail of the categories reduces the amount of knowledge and time required for the assessors to complete each collection assessment. Basic categories such as film/photographs, audiovisual, digital media, oversize, and bound can convey essential format information and guide staff to the collections for additional follow-up without forcing the initial
assessor to collect data that may not be usable by an organization. Larger organizations may benefit from additional details in the assessment process, including format specifics, item counts (or linear inches/feet of a given format), and more detailed material types. The assessment can also include a free text field, but free text entries should only be made in addition to the formal assessment areas, since free text is difficult to quantitatively analyze.

Any assessment platform should be designed to link to or fit within existing institutional databases and collection management systems if possible, to ensure that collection- or item-specific data is not siloed from existing records. Linking the collection assessment tool with collection management systems can also expedite the assessment process because basic information, such as the collection title, accession number, and box listing, can be drawn from the central database and be pre-filled in the collection assessment forms.

If there is no existing collections platform, the assessor should consider developing a database to input and maintain the data collected during the assessment. A database will provide a more functional interface than a spreadsheet for the recurring updates and entries. If an organization does not possess the technical ability to develop, support, or maintain an internal database, a spreadsheet may be used to arrange basic data, although the analysis and interpretation will be more time-intensive. Paper forms can be used for data collection prior to data entry.

FIGURE 6.7 • Point scales for two samples

<table>
<thead>
<tr>
<th>Sample 3-Point Scale</th>
<th>Sample 5-Point Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = Good. No need for attention.</td>
<td>1 = Perfect condition.</td>
</tr>
<tr>
<td>2 = Fair. Stable, but will likely need</td>
<td>2 = Good. Minor signs of wear.</td>
</tr>
<tr>
<td>attention in the future.</td>
<td></td>
</tr>
<tr>
<td>3 = Poor. At risk for loss or causing</td>
<td>3 = Fair. Some damage to materials/</td>
</tr>
<tr>
<td>damage. Needs attention immediately/</td>
<td>housings, but stable and fully</td>
</tr>
<tr>
<td>short-term.</td>
<td>functional.</td>
</tr>
<tr>
<td></td>
<td>4 = Poor. Widespread damage. Some</td>
</tr>
<tr>
<td></td>
<td>pieces heavily damaged or</td>
</tr>
<tr>
<td></td>
<td>inaccessible to researchers. Housing</td>
</tr>
<tr>
<td></td>
<td>needs attention.</td>
</tr>
<tr>
<td></td>
<td>5 = At risk. Ongoing loss or damage</td>
</tr>
<tr>
<td></td>
<td>from format issues or inappropriate</td>
</tr>
<tr>
<td></td>
<td>housings. Potential mold or pests.</td>
</tr>
<tr>
<td></td>
<td>Needs attention immediately.</td>
</tr>
</tbody>
</table>

An example of a complex, freestanding collection assessment database is the Columbia University Libraries’ Special Collection Materials Survey Instrument. This Microsoft Access 2003 database collects dozens of data points to provide an in-depth understanding of the complex holdings of the libraries’ Special Collections and provide the robust Preservation Department with the opportunity to target individual items or collections for specialized attention and treatment. In comparison to the Columbia instrument, the Smithsonian Institution Archives’ Preservation Assessment is a basic assessment form that is designed to integrate into an existing collections management system. The form only collects seven data points, as well as a “flag” checkbox to request immediate attention for mold, pests, or conservation treatment. However, both assessments provide levels of data that are appropriate to meeting the needs of the institutions and collections.

Conducting the Assessment

Unlike the preservation survey, a collection assessment does not require a random sample to provide effective data. The ultimate goal of a collection assessment is to collect data on every box or item in every collection at an institution so that appropriate preservation interventions can be made. After improvements to the collection have been made, the assessment database can be updated to reflect new scores, thus providing a quantifiable measurement of the improvement of the collections, at least on a scale relative to their previous condition.

The best place to start with a collection assessment is with an organization’s most heavily used or most valued collections. These collections can provide a benchmark for the assessment, but are also the most likely ones to spur institutional action if clear needs can be identified and articulated. In smaller institutions, the assessment could also start in one area of storage and proceed linearly until all collections have been inspected and assessed.

The assessment itself is a straightforward process once the database and entry method have been formalized. The assessor should have a cart or table to work on, a list of collections and their locations (including any secondary locations for collections that are not stored contiguously), and a data collection method (paper forms, tablet, or laptop). The assessor should locate the collection and then inspect each box individually, being sure to check folders for unusual formats or damaged items. The findings are recorded and entered
into the database before moving on to the next collection on the list. While the box and archival collection data should be inspected together, the overall assessment process does not need to be undertaken at one time, and in fact should be set up to be supported over an extended period of time in order to measure changes in the collection and its needs.

**Staffing**

The staffing of the assessment will vary from institution to institution. Because of the long-term nature of the assessment, the data collection portion is not a process that makes sense to outsource to contractors. Professional and para-professional collections staff should be able to make the necessary decision to provide numbered ratings. In smaller organizations or larger university settings, volunteers and student workers may be available, or may be the only labor available, to conduct assessments. Volunteers and students are capable of conducting collection assessments if they are provided with appropriate training to understand the expectations of housing quality and physical condition issues. Volunteers and students frequently also struggle with format identification. A major point of emphasis for planning student and volunteer projects must be consistency. If different assessors have different understandings of what numerical ratings to assign to the same collection, then the results can end up less helpful than with consistent, if skewed, results.

**Analyzing the Data**

The collection assessment does not need to be “completed” with every collection at a repository inspected before any analysis can be conducted. Basic benchmark numbers can be computed to help understand the collection. These benchmarks will vary depending on the design of the assessment database, but averaging the ratings for housing quality, physical condition, and risk can provide insights into overarching collection needs, such as rehousing projects or conservation treatments. These baseline numbers can also be compared year-over-year as additional collections are surveyed or interventions are made and initial assessment numbers are updated. Raw numbers can also be valuable for project planning, such as improving collections with low housing quality ratings or missing folders. The physical condition and risk numbers can be

correlated with the data points collected on the basic formats of the collections to plan more intensive housing projects, such as rehousing glass-plate negatives, conservation treatments, or reformatting.

**Proactive Collection Assessment**

While collection assessments are primarily enacted as retrospective projects to understand what institutions already have on their shelves, the assessment can also be conducted before the collections reach the shelves during archival processing. Archives staff can be trained to conduct the collection assessment at the point of ingest or appraisal, allowing for the assessment data to grow along with an institution’s collections.

**ITEM-LEVEL CONDITION REPORTS**

Item-level condition reports are the simplest form of preservation assessment in regard to technical needs. The goal of the condition report is to qualitatively describe a single object independent of any other object or collection function. Precision and accuracy are key for this type of assessment, and the report should take care to record essential characteristics such as the size, format, material characteristics, media type(s), visible damage, and distinguishing marks of the object. Like other types of assessments discussed, the level of description should be suitable to meet the needs of the project.

Different goals for item-level reports require differing levels of recorded detail and staff time. An object going out for an exhibition loan should be assessed to ensure that the object is returned in the same physical condition that it was in prior to the loan. An exhibit loan may also focus more on the description of content to ensure that the correct object is returned to the loaning institution. A condition report for a conservation treatment proposal would focus less on the content description and more on describing existing damage and potential risks inherent in the structure or materials. These details would be highlighted to convey specific needs to curators to better understand the reasons for suggested interventions. For some complex, but high-value items, staff may write a condition report to allow future staff to track, measure, or at least acknowledge changes that happened during display or storage. Such reports would duly focus on areas of risk or concern, such as the precise area covered by silver mirroring in a silver gelatin photograph, or the extent of fading.
of sensitive media such as watercolors or felt-tipped markers. Assessments can also go beyond the visual, describing the surface textures of paper, the odors of deteriorating film, or even the “rattle” of a plastic sheet.

**Conducting the Item-Level Assessment**

The assessment should begin with recording the available descriptive metadata, such as title, author/creator, call number, date of publication, and other existing bibliographic information. Next, take precise measurements of the item, either in two or three dimensions as appropriate, including a page count if applicable. If the item is a print or photograph, be sure to measure both the size of the paper and the size of the image area. Then provide a concise description of the physical item, including materials, binding style, format, and media. If it is a photograph or work of art on paper, describe the imagery in broad detail. When describing the item, try to identify physical characteristics that may be unique to this copy of the item, such as inscriptions, damage, staining, ownership markings, or irregularities. These distinguishing features should also be measured and located on the item, for example, “there is a ¾-inch-long tear that extends from the bottom edge into the image area,” or “the upper board shows abrasions 1 inch above the titling.”

Item-level condition reports to document at-risk collection formats should include much of the same descriptive metadata, but should focus the documentation much more finely on the at-risk aspects of the item’s composition. However, this type of documentation is time-intensive and may be of little value to many collections, since the documentation can only track changes to individual items that may happen over decades, not prevent or reverse such changes. In addition to creating the documentation, the institution also has to maintain that documentation indefinitely into the future so that comparisons can be made. Photographs can also be used to establish visual baselines or supplement written reports.

**Maintaining Item-Level Condition Reports**

Item-level condition reports can only serve their long-term purpose if they remain accessible over time. Paper reports should be kept in collection files for future reference. Digital files should be saved in stable file formats, in a
permanent location with other collection records. Saving the report to an individual hard drive, a staff member’s shared drive, or to cloud-storage may not ensure its continued existence as institutional hardware and systems are upgraded over time.

**Digital Preservation Assessment**

Digital preservation remains an evolving field, but over the past decade a number of methods for the programmatic assessment of digital materials have been developed. These assessment methods are measures of organizational commitment and capabilities with a focus on measurements of institutional governance, technical infrastructure, and digital object management. Each assessment requires different (but frequently overlapping) types of documentation based on the ISO 14721 Open Archival Information System (OAIS) reference model.\(^{18}\) The expected time commitment to complete the assessments or audits also varies, but is frequently described as demanding 3–12 months, depending on the assessment process selected.\(^ {19}\)

The primary assessment and/or audit methods are:

* **Trusted Digital Repository ISO 16363:** This evolved from the Trusted Repository: Audit and Checklist (TRAC) into a formal audit process. This ISO standard requires the completion of 109 criteria as measured by certified external auditors.\(^ {20}\)

* **Trusted Repository: Audit and Checklist (2007):** This was developed as a self-assessment checklist for institutions and utilizes eighty-four criteria. It was used by the Center for Research Libraries to certify repositories prior to the publication of ISO 16363.\(^ {21}\)

* **Data Seal of Approval (DSA):** This is a self-assessment of sixteen guidelines that is then peer-reviewed by a DSA board member. DSA was begun by the Data Archiving and Network Services (DANS), a research institute of the Dutch Academy.\(^ {22}\)

* **NESTOR Seal for Trustworthy Digital Archives:** This is a self-assessment of thirty-four guidelines based on DIN 31644,\(^ {23}\) followed by a review of the assessment by two external reviewers. NESTOR is aimed primarily at German institutions, but the self-assessment can be conducted by anyone.\(^ {24}\)

* **Digital Repository Audit Method Based On Risk Assessment (DRAM-BORA):** This is a self-audit process developed by the Digital
Assessment as a Discovery Process

While preservation assessments are undertaken to better understand the risks and needs of a collection in order to provide a basis for thoughtful planning and resource allocation, the assessment process also forces staff to interact directly with collections and facilities. Walking through the storage areas and looking at volumes and into boxes, the surveyor may encounter situations or formats that require more in-depth consideration or immediate actions.

The most worrisome discoveries in the stacks are likely to be moldy or pest-infested collections. Unless a collection is wet from an ongoing leak (which should cause all other work to stop until resolved), mold that is encountered in collections usually will be inactive, appearing dry and powdery. There may be visible damage from where the mold has consumed the substrate that it grew on, including losses, staining, or changes to the surface texture. In this state, the mold is not an immediate threat to collections, although it could cause allergic reactions among staff and researchers. The affected materials should be separated and cleaned to reduce the risk of the mold reactivating and spreading.

Similarly, evidence of pests or pest infestations needs to be dealt with immediately in order to reduce the risk of damage to collections and to staff or researcher health. Common pests in North America include mice, silverfish, cockroaches, and webbing clothes moths, but other pests may be more of a threat depending on the location of the institution and collection formats. The damage is typically consumed paper or cardboard, with visible frass or scat. Infested collections should be inspected, rehoused, and frozen to eliminate the pests, if appropriate.

Some formats, particularly in archival collections, should also receive additional attention based on their physical or material vulnerabilities. While most paper-based collections will remain stable if provided with minimal standards of storage and housing, many other formats are at much greater risk of damage from poor storage, handling, or chemical deterioration:

*Cellulose nitrate film:* This substance, the earliest plastic, was used as the base for motion-picture film and photographic negatives until the 1950s. Cellulose nitrate rapidly deteriorates in standard storage environments. The deteriorating film will off-gas acidic vapors and is an extreme fire hazard. The storage and handling
(including shipping) of nitrate film is regulated by the National Fire Protection Association standard NFPA 40, and all nitrate film should be separated from other collections and addressed immediately.\textsuperscript{26}

\textit{Cellulose acetate film:} Also known as safety film, cellulose acetate was introduced to replace the highly flammable nitrate film and can be found as the base for motion-picture film, photographic negatives, and microfilm produced from the 1950s through the 1980s. Acetate film deteriorates in an autocatalytic process known as Vinegar Syndrome, named because of the distinctive odor of vinegar from the deterioration of the film to acetic acid. Once the deterioration has begun, it cannot be stopped or reversed, but only slowed by storage at cold temperatures. Deteriorating acetate film should be separated from other collections and have its storage, replacement, and/or disposal addressed in the short term.\textsuperscript{27}

\textit{Glass plate negatives:} These negatives and lantern slides are particularly vulnerable to damage from poor handling. These fragile items should be noted in order to receive appropriate housing and storage on fixed shelving.\textsuperscript{28}

\textit{Audiovisual formats:} Audiovisual materials are at risk from a range of environmental and storage conditions, as well as accessibility issues from a lack of reliable playback equipment. Audiovisual formats should be noted for potential reformating.

\section*{Preservation Assessments in Practice}

The best assessment tool is the one that works for the specific needs of a project and an institution. Different institutions will have varying amounts of experience, resources, and existing systems and infrastructure to guide and support an assessment or a survey. There are few wrong ways to collect data, as long as it is done in a structured and standardized fashion.

The earliest preservation surveys in the 1970s and 1980s were collected on paper forms. That data was also collated and tabulated by hand, with later surveys using paper forms to collect data that was entered into a spreadsheet or database. Institutions with little technical support or funding for hardware and software may still find that paper forms provide the simplest means for
data collection. Paper forms require no learning curve for volunteers, no power source to recharge batteries, and no Internet access to connect to cloud-based platforms; for these reasons, paper may also be the best choice for collecting data at off-site facilities or in disaster zones.

Spreadsheets, such as Microsoft Excel and Google Sheets, are excellent tools for organizing and tabulating data. However, for data collection purposes, they can be awkward when trying to collect more than a handful of data points, since the need to scroll through cells and rows of entries can result in errors during field surveys. Programs such as Google Forms or Qualtrics allow for structured survey forms that can output into spreadsheet or CSV formats. These programs allow the survey to be designed with standardized drop-downs, free text answers, and relevant follow-up questions. Google Forms and Qualtrics both offer some basic data analytics as well. Both programs are web-based platforms that require Internet access during data collection and analysis.

Databases, built in Microsoft Access, MySQL, or other formats, offer the greatest functionality and depth for data collection and analysis. They can be custom-designed to meet local needs, and they can connect with existing databases to provide for greater depth of analysis. Databases can also be structured to allow entries to be updated so that collection improvements can be measured and tracked. However, databases require more up-front design work and a commitment to maintain the software elements. Databases typically require a computer for data entry, but they are increasingly compatible with tablets and mobile devices for networked data collection.

A number of tools have been developed and are freely available to use for assessments of different types:

"Assessing Preservation Needs: A Self-Survey Guide" is a manual published by the Northeast Document Conservation Center to assist institutions in conducting their own preservation needs assessments. It includes worksheets and questionnaires to collect information, and sample recommendations to provide examples of the types of recommendations that may be drawn from the assessment data.29

CALIPR is a web-based library preservation needs assessment survey tool that was designed for the California Preservation Program to provide a prioritized list of broad preservation actions. The tool walks the user through the steps to develop a random survey sample, provides the surveyor with two standard survey

forms (one for print materials and one for audiovisual materials) that are easily filled out, and then conducts an automated preservation risk assessment based on the collected data. CALIPR is a basic tool that requires little specialized knowledge to utilize effectively in order to produce easily communicated priorities. However, the tool provides no customization and collects few specific data points to allow for deeper understanding for organizations with existing preservation support.30

The Preservation Self-Assessment Program (PSAP) is a web-based open-source tool to conduct basic needs assessments, condition surveys, and condition assessments on a wide variety of collection materials. PSAP was developed by the University of Illinois Urbana-Champaign (UIUC) with support from an Institute of Museum and Library Services National Leadership grant. The tool includes a thorough manual to walk novice surveyors through the process. There is also a Collection ID Guide to assist surveyors in identifying a range of common and less-common collection formats, including film, audio recordings, architectural drawings, and photographic images. PSAP was developed to collect data and analyze preservation needs at both an institutional level and an item or collection level. Number scores are given based on the interpreted risk, and updated data (such as improved collection housings or HVAC controls) can be added to receive an improved score. PSAP developed out of UIUC’s earlier Audiovisual Self-Assessment Program, but was greatly expanded in scope.31

The Field Audio Collection Evaluation Tool (FACET) is a downloadable (Windows XP or Vista) tool developed by Indiana University to evaluate and prioritize audio collections for further preservation interventions. The prioritization is based on a number of risk factors, including format, storage environment, and known preservation problems. FACET assesses issues at the collection, not item level, although an assessment score is given for each format type within a collection. There is some local interpretation that is required for surveyors. Once data is entered, FACET outputs a comparative score based on a combined preservation score and curatorial value score, as well as a summary of known risks. This
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Information can then be used by curatorial staff to determine priorities for action. The Columbia Mellon Survey Database is a downloadable collections assessment Microsoft Access 2003 database developed by Columbia University to survey archival and special collections materials. The database collects data on archival collections based on the PACSCL Consortial Survey Initiative model, which includes curatorial value, housing information, and folder- and item-level formats and conditions. The database then produces a variety of ranked reports to prioritize preservation interventions. However, the Access 2003 format is no longer supported by current versions of Microsoft Access. The database remains available for download from Columbia University Libraries, but would require updating or emulation for use.

Funding for Preservation Assessments

Funding to develop or conduct preservation assessments may be available from a variety of private, local, or state organizations. Currently there are two federal granting agencies that provide funding for preservation assessments: the Institute of Museum and Library Services (IMLS) and the National Endowment for the Humanities. The IMLS provides funding through its Museums for America Grants, Museum Assessment Program, and Conservation Assessment Program. The National Endowment for the Humanities provides funding through its Preservation Assistance Grants for Smaller Institutions and through Humanities Collections and Reference Resource Grants. Additional library funding and grants may be available through state-level organizations such as state libraries, archives, or historical commissions.

Communicating Findings to Institutional Stakeholders

Data collection is the goal of assessment, but to make an impact that data must be interpreted and communicated to stakeholders. Interpretation is a complex and multifaceted process that is likely unique to a given survey and a given organization, but a successful assessment will provide a list of potential actions that an organization can take to improve the preservation of its collections. Ideally, such a list would include a range of short-, medium-, and long-term...
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steps that can be implemented. Large capital improvements, such as upgraded HVAC systems or fire suppression systems, can have the largest and broadest positive impact on reducing risks and preserving collections, but it is unlikely that most organizations will be able to immediately afford such improvements. However, if a series of low- or no-cost projects can be implemented from the assessment data, visible improvements may build trust and positive buy-in from management or donors in order to focus institutional efforts on larger investments.

CONCLUSION

Preservation assessments serve as the foundation for enacting structured improvements in order to ensure enduring access to collections and materials. Assessments are part of a long-term process that can provide an understanding of the needs and risks of a given collection in order to implement meaningful progress towards preserving that collection for future generations of users. While preservation may be a specialized field about which many librarians, archivists, and curators do not feel knowledgeable, there are types of preservation assessments that can be undertaken with minimal exposure to the field. Additionally, preservation specialists and funding streams are available to support institutions conducting assessments.

The data and analysis from assessments can and should be used to guide policies and projects for the continued development of preservation efforts. The assessment itself is not a silver bullet for caring for collections, but it can provide a pathway toward tangible improvements, both big and small, that support the institutional missions of collecting organizations and their communities. The data can point to large-scale needs, such as facilities improvements or HVAC upgrades, or small improvements, such as adding bookends to library stacks or coat racks for researchers. Preservation is a process. Small changes over the long life spans of collection materials can have outsized impacts on the durability and usability of materials, and every step that can be taken to improve the collections helps to sustain those collections.

NOTES


4. Ibid., 97.


12. In the author’s opinion, a three-point scale is the simpler, more readily standardized scale that can easily be interpreted by assessment staff and volunteers regardless of their experience level.


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KEY RESOURCES


