

White Paper: Conservation Needs Assessment Project, UCB Libraries' Combined Collections

Patricia Morris, June 2009

The UCB Libraries Preservation Department undertook a conservation needs survey between 2005 and 2008 in order to determine what sort of resources the Libraries needs to achieve its strategic goal to “*Build, sustain, and preserve a collection of information resources that is relevant to current and future campus teaching and research needs.*”¹ The findings for the combined collections were presented to the Libraries Council in 2009 along with written reports for most of the open stacks collections. More detailed discussions of the survey findings for each of the Libraries' nineteen sub-collections are taking place over the coming months. During these discussions with each collection's custodian, Preservation will suggest strategies for addressing each collection's specific needs and solicit comment and support from the custodians and collections development personnel. Results are posted at http://ucblibraries.colorado.edu/preservation//cnap_doc/cnap_doc.html. The goal is to develop flexible strategies to achieve long-term access to the materials in our holdings. The following paper briefly describes our survey and broadly outlines strategies proposed at the Council Meeting.

Survey Resources and Process

The survey work was begun in 2005 and completed in 2008. UCB selected a random sample from each of its major sub-collections to obtain a confidence level of 95% with confidence intervals (\pm) ranging from 2.7 to 4.8 for each of the sub-collections. The confidence level of our sample for the combined collections was 99% (± 0.9). Sample sizes ranged from 399 to 1,066, and 18,471 items were examined by trained student workers, supervised by full-time Preservation staff. We surveyed 16,488 books and 1,983 non-books (e.g., boxes, map drawers, microform drawers, CDs, records). Most of the random samples were drawn from our catalog (Chinook) using Millennium in combination with Excel's sampling and VLOOKUP functions. The process is described at <http://ucblibraries.colorado.edu/preservation/Manual/procedures/samples.pdf>.

The Libraries have very limited numbers of personnel (FTE's), but we had access to student labor of high quality. We also had access to salary savings within the Technical Services Division which we used to hire and train student workers to do much of the work for this large project. The students undertook the routine tasks of searching, pulling, plus checking books in and out for the project. Students also did the actual assessment of the items, an unusual approach in such surveys. To collect accurate and uniform data we developed our survey form in an Access database and used a detailed training manual to teach students how to complete the assessment of each item. Links to the documentation for the manual and the survey form are available at http://ucblibraries.colorado.edu/preservation//cnap_doc/cnap_doc.html.

Students began assessment work under close supervision, completing a paper version of the data entry form for each item. Within three to five weeks student workers demonstrated whether they were capable assessors, and by the end of the training period they were entering data directly into the database. (Students who had problems with assessment were either given additional training to reduce their error rate or they were let go.) Any items that were brittle, near brittle, or had considerable damage were referred to the Preservation Department staff. Full-time staff continuously spot-checked students' work. Careful selection and training, combined with a carefully thought out manual, proved successful in developing consistent and reliable data. One full-time staff member devoted at least 60% of her time to the project, while another FTE contributed some portion of her time (as much as 30%) for part of 2008 and 2009.

Figure 1: Student Hours and Wages Paid for the Duration of the CNAP

PERIOD	Student Hours	Student Salary
2005-06	651	\$5,593
2006-07	3,190	\$31,122
2007-08	2,652	\$24,590
2008-09	232	\$1,958
TOTALS:	6,725	\$63,263

The survey portion of the project lasted almost three years; costs in salary savings supplemented with special projects funds totaled of \$63,263. This is the equivalent of more than two years' salary for a Library Technician I. However, no individual employee could possibly have completed all of this work in the same amount of time. An assessor cannot work efficiently for more than two to three hours at a time. Student employees usually work short shifts, a schedule that lends itself to the intense work of assessment. When students did work longer shifts, they interspersed item assessment with more routine tasks, enabling them to maintain focus for assessment. A few students proved so adept at the work, they were able to train new students hired on the project. Other students were adept with databases and helped with database maintenance. In short, the use of this talented pool of student labor provided us with a massive amount of data in a very cost-efficient manor.

Special collections—primarily non-book materials and largely uncataloged—required a different survey form and a new training manual. These were developed in 2008, using a modified version of the survey forms developed at Columbia University published in 2007 (<http://www.columbia.edu/cu/lweb/services/preservation/surveyTools.html>). Our survey process for special collections did not include Columbia's appraisal. Our survey findings should be used to help the special collections staff develop strategic goals for their collections, and it will quantify the resources needed to preserve the collections.

Survey Findings

During the last months of 2008 and the beginning of 2009, the Preservation staff began compiling data and analyzing the findings. The data were transferred to Excel for statistical analysis, and we used the data to generate a series of recommendations for future action. The assessment sorted materials into three broad condition categories.

- **Little to No Damage:** There is no damage, or only mild wear or minor page damage is evident. The paper is flexible or nearly brittle. Brittle items are always referred, even if there is no damage.
- **Moderate damage – Action needed:** Damaged to the extent that some preservation action is necessary.
- **Significant Damage:** Damaged to the extent that we are in imminent danger of losing material or have already lost material that cannot be easily replaced. Paper is brittle regardless of degree of damage.

“Moderate” and “significant” damage meant that some preservation action or conservation treatment was necessary when the item was inspected. Preservation actions ranged from creating a simple enclosure or making repairs to improving environmental conditions by moving materials to PASCAL (our off-site storage facility) or creating an archival photocopy. Conservation treatments ranged from in-house book repairs or some form of rebinding to advanced treatment by a conservator or digitization for long-term access. The primary distinction between “moderate” and “significant” lay in the urgency of need.

Figure 2: *Summary of Condition - Entire Collection*

CONDITION	Projected Numbers	Percentages
Little to No Damage	2,229,993	59.1%
Moderate Damage	1,035,079	27.4%
Significant Damage or Refer	510,702	13.5%
TOTAL	3,775,774	100.0%

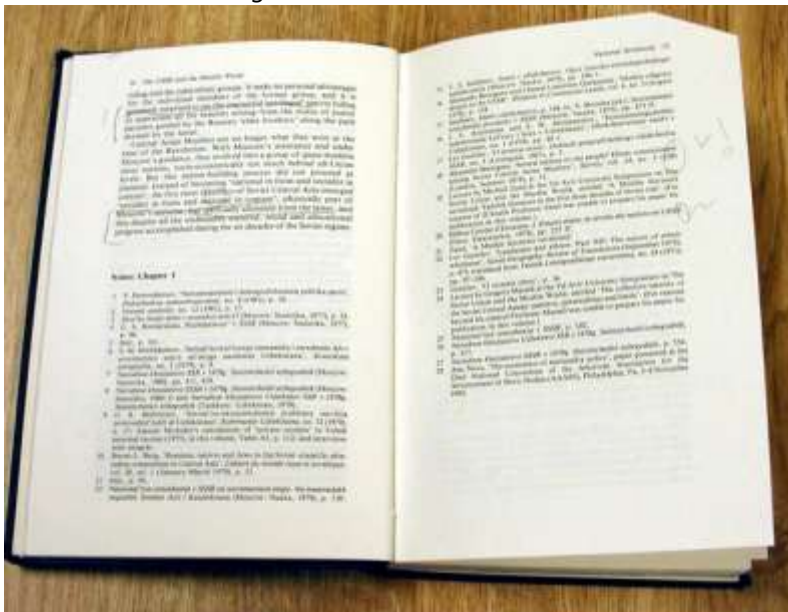
Results indicated that 40% of the combined Libraries’ collections (both circulating and non-circulating) show moderate or significant damage.² In other words, if the book is to be retained for continued long-term use, some sort of remedial action is required, either in-house (book repair by a student or staff technician) or by a vendor (rebinding, conservation treatment, reformatting). This is a comparatively large portion of the collections. The University of Tennessee rated approximately 24% of its collections in “Fair” or “Poor” condition in 2002. The Yale survey of 1985 revealed that no more than 25% of any collection required immediate treatment, and only 13.2% of the holdings in its largest library (Sterling) needed immediate treatment.³ Although the definition of the term “in need of treatment” differs with each survey, UCB appears to have a significantly larger problem than other libraries. In point of fact, our data is skewed low because a large portion of the older, uncataloged Government Publications was not included in the survey.⁴

Figure 3: Causes of Damage⁵

Projected Number	Percent	Cause
737,055	19.5%	Library environment
856,476	22.7%	Patron
1,889,563	50.0%	Normal wear and tear
217,506	5.8%	Poor original design or workmanship
348,136	9.2%	Previous preservation actions (ours or others)
626,429	16.6%	Processing damage

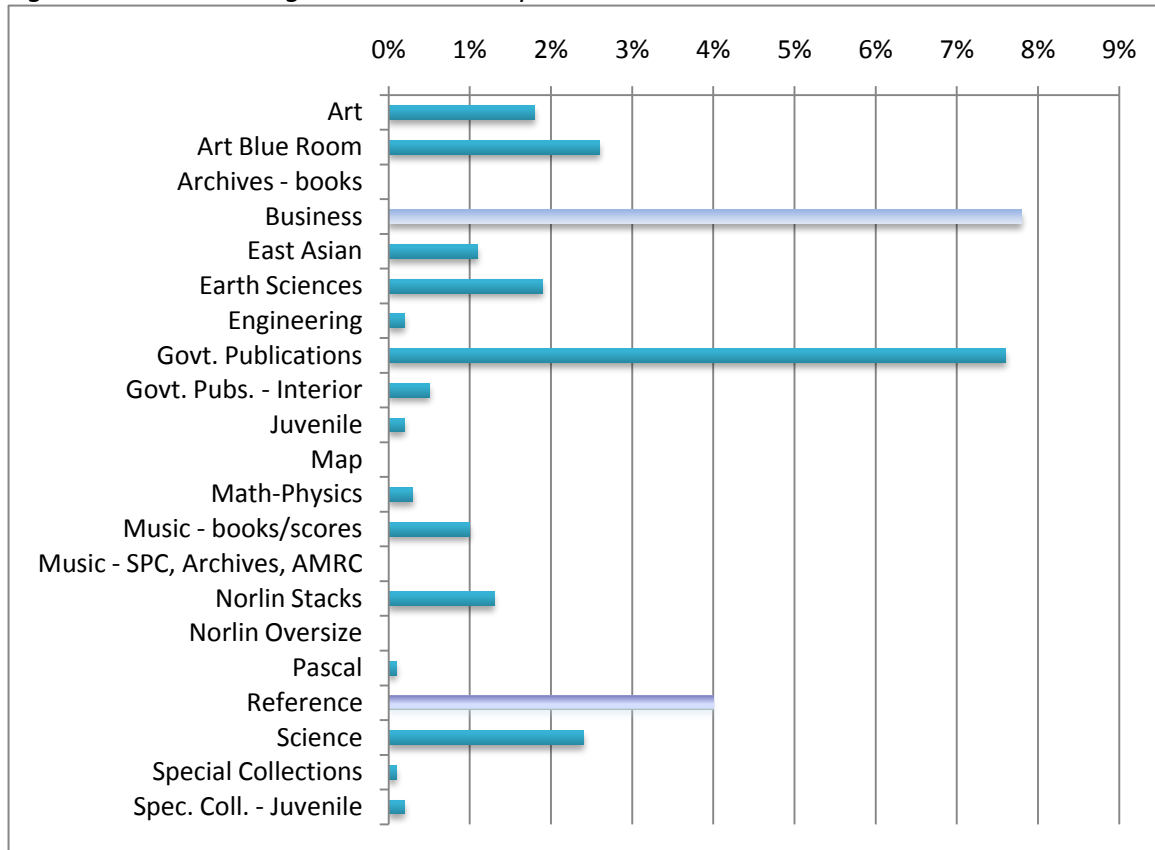
Roughly half the damaged materials were found to be damaged from normal wear and tear. (Books in use will fail at the front joint; covers become worn and scuffed, even dirty; text blocks eventually pull away from their bindings; binding materials eventually fail.) Nearly one-quarter of the damage was done by patrons, in descending order: marked pages, post-it notes (counted only when there were more than ten in a book) and other “alien” materials, dog-eared or folded pages, torn or cut pages (including animal damage), and patron “repairs”.

Figure 4: Minor Patron Damage



Unfortunately, the library itself seems to have inflicted a good deal of the damage. The “library environment” was the source of 16.6% of the problems: i.e., shelving practices (knife-edge book ends, overcrowding, inadequate support, and/or a lack of oversize shelving) and excessive particulate pollutants (dust and grit).

Figure 5: Poor Shelving Observed – Comparative



Note: Business and Reference materials have been relocated since the CNAP was conducted for those collections.

There was remarkably little insect damage—thanks to our arid climate. Light damage was confined to a few specific locations within our main library building. Just under 10% of the damage was the result of previous preservation actions such as outdated repair techniques and binding practices. The majority of processing damage arose from a variety of labeling practices, most of them developed independently within the sub-collections to facilitate the shelving of reference materials.

Clearly much of the damage in the collections can be eliminated or at least curtailed by improving practices in processing and stacks maintenance—“preventive” conservation strategies. The substantial damage already done to the materials must be addressed, however—the “remedial” strategies presented in our report.

Preventive Strategies for Preservation

Work routines are being addressed to improve handling and address minor problems before the books require major repairs.

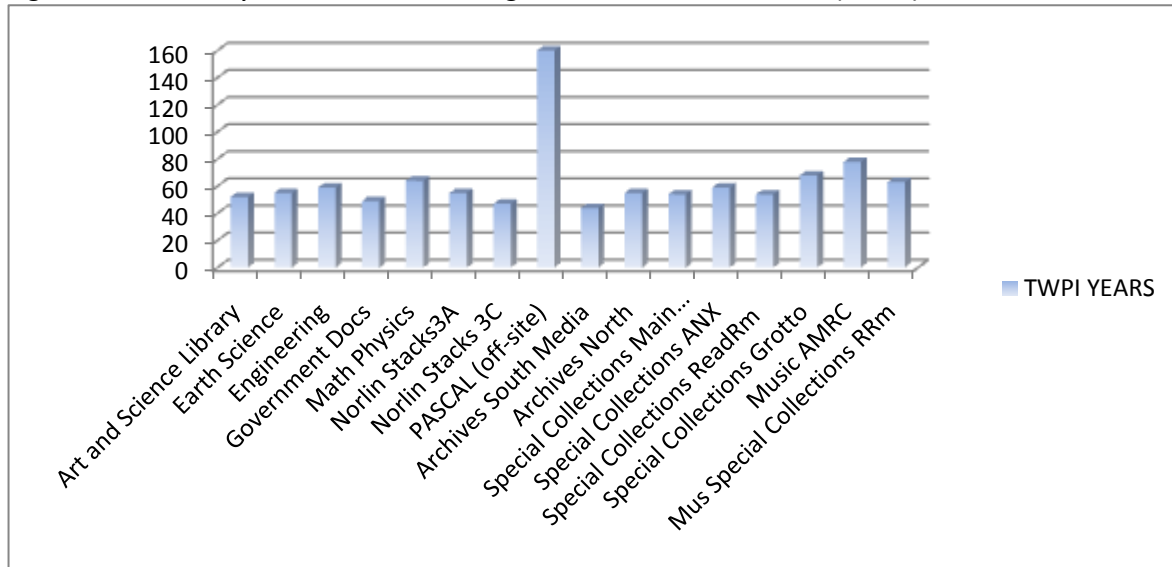
- ▶ Technical Services staff has examined and changed a number of processing techniques to reduce damage and information loss. We have adopted standardized and minimal labeling, and careful placement of tattle tape and bar codes. CoLibri covers are now being used to protect selected book covers and dust jackets.
- ▶ Preservation has expanded the “rescue program” in Norlin Circulation to capture damaged books before they are checked out again.

Preservation suggests education to increase simple measures to avoid or limit damage. It is essential that the Preservation Department work more closely with the personnel who handle the library materials every day.

- ▶ Incorporate preservation training into the orientation for student workers and staff.
 - Train student workers in Circulation to remove “alien materials” and call slips.
 - Train Circulation desk staff and students to check for damage before they put the materials on the sorting carts.
 - Train the shelving teams to spot damaged items and turn them over to Preservation rather than put them back on the shelves.
- ▶ Increase shelving for oversize materials, or transfer more oversize items to off-site storage.

PASCAL is an important preservation resource—if we use it properly. Our environmental monitoring program data indicates that the off-site storage facility maintains the Libraries’ best conditions for light, temperature and humidity—nearly 160 years, twice that of the AMRC, our best site on campus. Handling of the materials is still minimal; shelving is appropriate; access is secure.

Figure 6: University Libraries Time-Weighted Preservation Index (TWPI)



Note: TWPI is the approximate length of time before vulnerable organic materials would show deterioration under these environmental conditions.

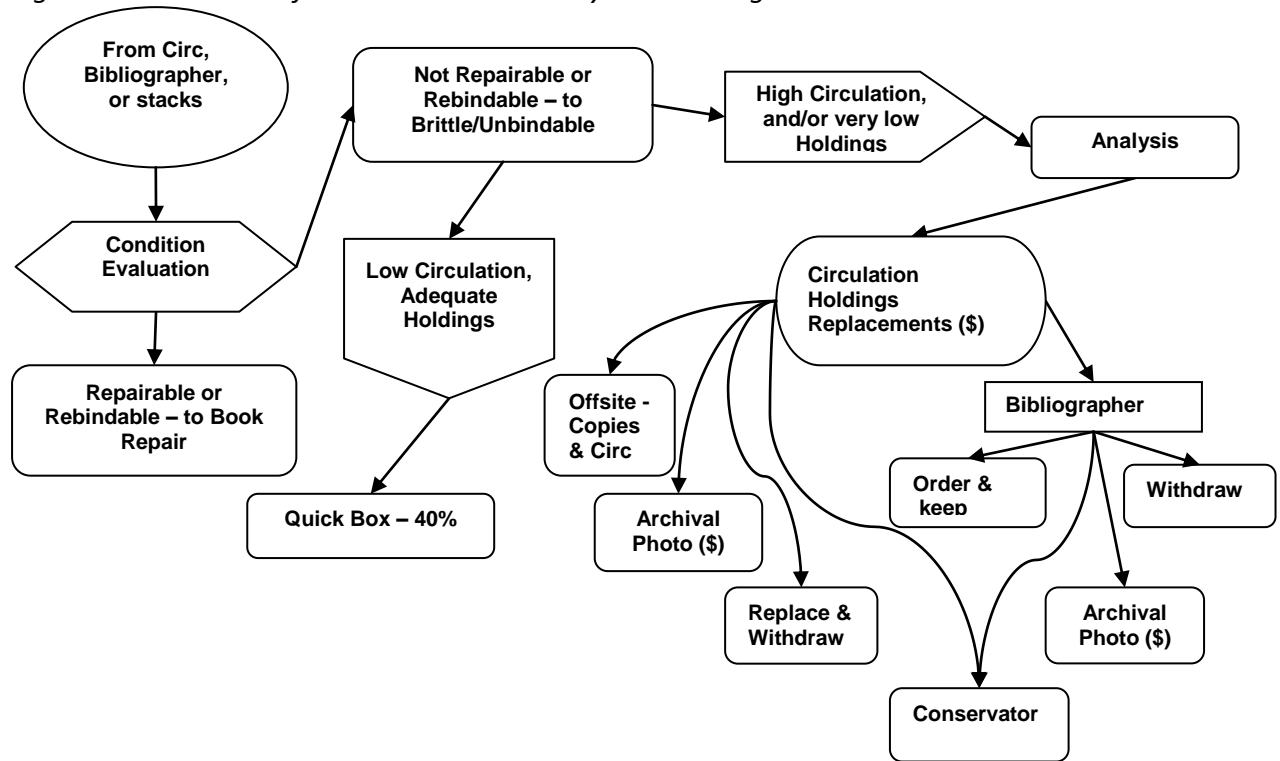
- ▶ Improve the handling of materials in transit to and from storage in PASCAL. (Special Collections materials are now transported by our own library staff, but the transfers from general circulation are moved by a courier service whose personnel are not on staff.)
- ▶ Study work routines in PASCAL, where scanning and electronic document delivery is on the rise. Establish policies there for handling our materials to ensure best practices.
- ▶ Remove vulnerable materials from the on-campus libraries to the safer conditions of PASCAL—but only after they pass through Preservation Analysis and Management, which will inspect the materials and provide enclosures to protect them, should they require them. Very brittle or fragile materials may be sorted to Brittle Books Analysis.

Remedial Strategies for Preservation

There is an overlap inherent in “preventive” and “remedial”, but the major emphasis of the latter approach is on activities to correct existing problems through conservation treatments, reformatting options, replacement or withdrawal.

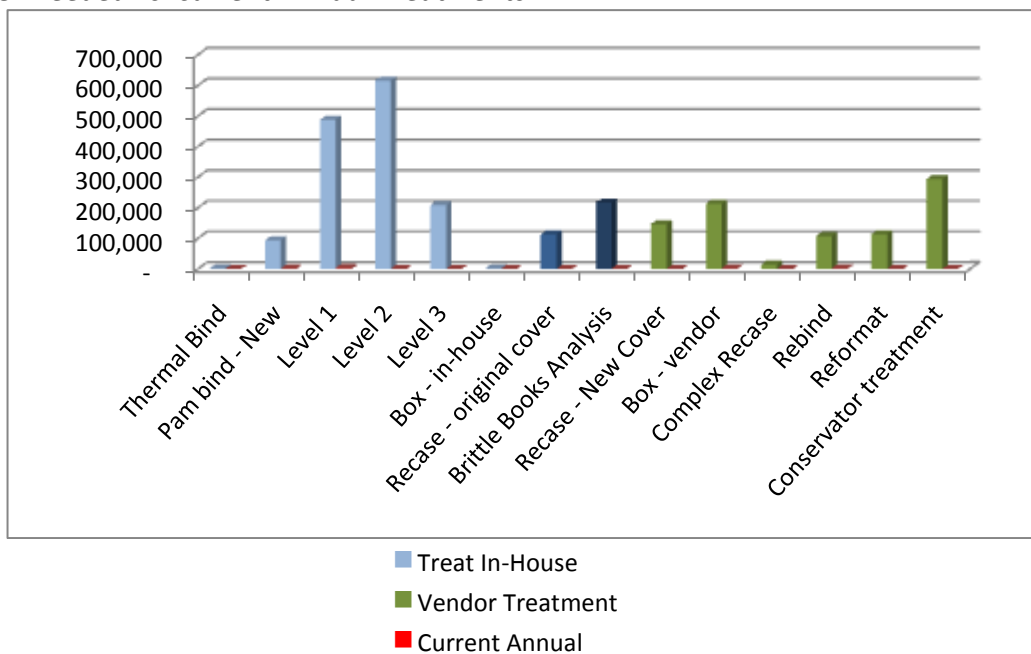
- ▶ Brittle Books analysis has been streamlined to move brittle items through more rapidly. The bindery’s photocopy services have been employed more fully to reformat brittle and unbindable titles in continued use when they cannot be replaced and current holdings do not provide adequate substitutions or duplicates.
- ▶ Large transfers of materials to PASCAL should be coordinated with the Preservation Department because the materials should pass through Preservation Analysis and Management before they are sent off site. Fragile items have to be prepared for the transit process and must have notes in the item records to route them back through Preservation each time they are recalled by patrons.
- ▶ The Preservation Analysis and Management function should be extended to the branch libraries; it is now exercised only in Norlin. Preservation personnel “rescue” damaged items from Circulation and the stacks, analyze various factors: extent of damage, circulation rate of the item, extent of internal and external holdings, cost of replacement, cost of treatment or reformatting options, and then apply appropriate treatment or recommend disposition of the item.

Figure 7: Flow Chart of the Preservation Analysis & Management Function



If the Libraries is to deal with the damage it has on hand—and the inevitable damage to come—it is obvious that we need to expand resources to do conservation treatments and reformatting.

Figure 8: Needed vs. current Annual Treatments



- ▶ We have increased productivity in the book repair unit by 65% since the chart above was created: adding more student and staff hours in the unit, moving much of the pamphlet binding to the commercial bindery, and re-organizing the work flow. We need to increase our student work force to do more in-house repairs.
- ▶ We need additional work space if we hire many more student workers, however.
- ▶ Equipment must be purchased to expand our treatment options: work stations, supply cabinets, water deionization equipment, etc. This will also require additional space.
- ▶ Continue and expand our Brittle Books program, increasing archival photocopying and pursuing routine digitization for appropriate projects, blending our preservation projects into a larger institutional digitization program.
- ▶ For the time being, contract out conservator services for items that require immediate treatment beyond our in-house capabilities (Maps, rare books, etc.).
- ▶ Use the bindery's services more effectively: book boxes, pamphlet binding, develop their capability for digitization, conservation treatment facilities, etc.

In the long term, however, the survey indicates that the Libraries will have to invest in substantial resources in order to conserve its most valuable materials cost effectively. These are our rare and unique materials; we cannot afford to replace them; some cannot be replaced. Many are also our most vulnerable materials, but the Libraries of UCB has a commitment to making these materials available for research and teaching. Digital access may well prove adequate—even preferable—for instruction, but scholarly research more often requires access to the original materials.

- ▶ The Libraries must acquire the best possible environment for preservation—particularly for its Special Collections (rare books, photograph books, ephemera collections), a rapidly deteriorating collection of photographic and audio visual media in the Archives, and the materials in the American Music Research Center. PASCAL offers the best conditions available, but the temperature is too warm for failing negatives on acetate and nitrate. Dedicated air handling units in Special Collections and the AMRC are coming to the end of their useful life, as indicated by slowly warming conditions in those stack areas. A new storage facility should not be based on evaporative cooling but on cooling coils to maintain much more stable humidity.
- ▶ Contractual conservation services are not cost effective on a large scale, and many of our circulating collections need treatments that require specialized equipment available only in a conservation lab. The Libraries should move toward the creation of a conservation lab: identify appropriate space; develop a budget for the equipment; begin fundraising to build the lab.



- ▶ Special Collections materials needing attention should be treated by a conservator or by a highly trained technician under a conservator's supervision. The Libraries should plan to acquire the services of an in-house conservator. If a position cannot be added, a vacant position would have to be reallocated to this function. An interim measure could be to have a conservator on retainer to review items for treatment, train and supervise technicians with advanced skills on specific jobs, and perform treatments on the most valuable or difficult pieces. An in-house committee with representatives from special collections (that is all the collections with special needs materials), Archives, and Preservation would have to devise detailed treatment priorities for the conservator's treatments.
- ▶ Establish a digitization program which incorporates preservation projects as part of its routine functions and budgeting process. This is particularly necessary for the preservation of our large photographic media holdings. The Preservation Department would work with the digitization program to develop procedures and practices for long-term access to the materials for which digitization is the best preservation option.

Next Steps

The survey results were presented to the UCB Libraries Council in 2009 to inform them of the nature and extent of preservation needs. The problems were first defined for the combined collections; directors of most of the Libraries nineteen sub-collections received individual reports on each of those collections. Over the next few months, the Director of Preservation will meet individually with the directors to discuss details of the survey findings with regard to their collection areas. The object of these discussions is to develop preservation strategies appropriate to each collection. The custodian of each collection will be informed regarding preservation issues particular to that collection. The custodian will be encouraged contribute ideas and voice concerns. The collection librarian will, after all, be responsible for training any new student workers every semester to adopt work routines that contribute to preservation of the materials. Major projects can be devised for specific collections. The

Math/Physics library, for example, is overcrowded and subject to flooding from the labs on the floor above. Preservation proposes a strategy to reduce the overcrowding to the point caps can be placed on the shelving units. In the process, we hope to address the preservation of the mathematics materials, which are heavily used but often brittle or nearly brittle.

A separate report on the complex issues related to our special collections will be presented to the respective collections' directors late in July. These collections include the Map Library, Archives, Special Collections (primarily volumes), the AMRC, Music Special Collections, and the oversize materials. The sampling methodology for these materials was based upon inventories and a random numbering system, for the most part. The materials are much more complex, and many of the strategies require discussions of policies, intellectual access, and long-term planning for resources. Those matters which can be addressed easily are covered in the recommendations for combined collections.

Some activities are in process. Bookends are being distributed in some of the stacks to replace the butterfly bookends attached to the shelves. The dirt in Archives should be vacuumed away by the end of the summer. Before the fall semester begins, Preservation should have selected training videos for the new student workers in circulation and shelving. The videos (available online from other libraries) will be incorporated into their training. A campaign to curtail the patron damage to scores in the Music Library should be organized in time for the fall semester. (Repeated marking of the scores in pencil eventually leads to marking in ink; and scores finally become unusable.) A general exhibit on preservation related to careful handling books will be mounted in the main library prior to the start of fall semester to make students more aware of their role in preservation. (The exhibit is supplemented with a series of bookmarks to be handed out to students at the checkout counters.) Preservation would like to place an electronic version of this exhibit in the new Information Commons opening this fall.

Budget figures for equipment and supplies needed for more book repair and more boxing are being prepared for the new fiscal year. Early in 2010, the staff in Preservation will organize a training program for branch personnel in select book repairs. Trained by the preservation staff, personnel will learn how to do some simple tasks with tools and supplies from the Preservation Department: safely removing pencil markings, replacing CD pockets, small page mends, etc.

The Preservation Department will also undertake various studies, the first of which will be an assessment of the work flow at PASCAL. As more materials are being transferred to PASCAL to reduce the serious overcrowding of the libraries on campus, we anticipate more items will be recalled. Cataloging is making these materials ever more accessible with enhanced catalog entries that include the table of contents for many volumes. More large runs of periodicals are being transferred off site as research databases increase content; articles can now be requested from PASCAL via electronic delivery. Other planned studies involve more specific areas of interest: the impact of our policies for paperbacks (a rapidly growing portion of our collections as a result of budget constraints and publishing trends for academic titles), the long-term effect of hinge mends, etc. Cost studies of archival photocopies and page replacements in the era of Google books, the cost effectiveness of our relationship with the

Shelf2Life program in partnership with BCR and a print-on-demand publisher are early suggestions.

Over the next few years, Preservation will expand the book repair operation. The CNAP made it obvious that this is essential to the collections' preservation. We have identified a larger area in Norlin into which we can move the operation. The Administration has made a commitment to at least continuing our funding levels for student labor. The purchase of additional equipment is likely to be incremental unless the Administration decides to pursue a capital campaign to build a conservation lab.

In 2009-2010 Preservation will explore the possibility of improving the bindery's capability to digitize materials to meet the standards required for UCB's digital library collections. If our current bindery service cannot meet the standards, Preservation will contract out the work with OCLC in order to digitize projects that are too large for our in-house lab and not part of the Shelf2Life project. By the time we are developing a budget for 2010-2011, we should have a reasonable idea of how much of the budget should be dedicated to digitization for preservation. CNAP helped us identify several appropriate projects.

Long Term Goals

In the long term, the Libraries will have to improve environmental conditions for collection storage. The Administration is aware of the gradual failing of our dedicated HVAC units. They are aware that the large holdings of photographic media are at risk and have suggested possible alternative storage sites. The issues of intellectual access to the materials have to be sorted out with the Archives personnel. When the buildings' HVAC systems as a whole begin to reach the end of their useful life, Preservation has put in place guidelines for the performance of new equipment. Facilities Management is informed of the problems and our environmental goals.

The construction of a conservation treatment facility is less problematic than its staffing. The Administration has expressed support for such a facility, either as a part of a major renovation of the old Fleming Law Library Building or as a new regional facility. UCB has a history of sharing resources with other institutions in the region. (PASCAL is such a project.) While it might be easier to fund a regional lab, the CNAP indicates the services of a full-time conservator would best serve our collections. Preservation will mount a survey of other institution's conservation operations to try to calculate how much of a conservator's time would have to be dedicated to the care of our collections. Ideally, any shared facility would have a minimum of three or four conservators, at least one of whom would be responsible solely for the UCB collections.

Summary

If the collections are to be preserved for long-term use, the Preservation Department needs support from the Council and the bibliographers who develop the collections. Many of the preservation strategies proposed as a result of the survey will require understanding of the preservation problems and a significant effort on behalf of the Libraries' entire staff and faculty

to deal with those problems. Work routines will have to change in many cases to reduce mishandling of the materials. Libraries personnel will have to work with the patrons to protect the collections from damage. A substantial portion of the materials budget must continue to be dedicated to preservation and conservation of the materials. The Preservation Department's work space has to be expanded, and more equipment and personnel are going to be required. These are the immediate needs.

Our extensive survey—in greater detail than most other item surveys—provides us with the opportunity to prioritize and adopt strategies with flexibility. The university is entering a time of fiscal constraint. The Libraries has long been understaffed. The lack of funding is likely to ease with time because the UCB faculty supports maintenance and growth of the Libraries' Materials Budget—the source of funding for preservation activities. The staff shortage, however, is a chronic problem; increasing personnel in the department will only occur if the institution is persuaded to reallocate current staff lines. Equipment purchases are also going to be incremental because the Libraries Administration has cut its equipment budget for many years to meet financial cutbacks. Unless the administration seeks special funding for the larger items required for so many conservation treatments, Preservation is likely to continue using very costly contract conservation services for the most at-risk items.

Submitted by Patricia Morris, Ph.D.
Faculty Director of the Preservation Department
June 2009

¹ University Libraries Strategic Plan, 2006. <http://ucblibraries.colorado.edu/dean/strategicplanfinal.pdf>

² The survey found nearly 60% of the pages were acidic. The option of mass deacidification does not seem feasible at this point in time. We found the level of brittleness a more useful measure regarding the immediacy of need.

³ Mary Ellen Starmer and Dea Miller Rice, "Surveying the Stacks: Collection Data and Analyzing Results with SPSS", *LRTS*, 48(4), p. 269. Gay Walker, Jane Greenfield, John Fox, and Jeffrey S. Simonoff, "The Yale Survey: A Large-Scale Study of Book Deterioration in the Yale University Library", *College and Research Libraries*, 1985, p. 120

⁴ This portion of the collection is uncataloged, but so many of the series are now available in electronic formats we could not devise an effective strategy for sampling the materials without substantially delaying the completion of the survey. We opted to return to this collection as a separate project, developing a new strategy for sampling this collection.

⁵ Many items had more than one type of damage. These figures are useful in terms of trends and the strategies to deal with them.