LIBRARY LEADERSHIP & MANAGEMENT

Water, Mold and Pests: The World of Preservation Disaster Statistics*

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*During the academic year 2016-2017, the Consortium of Academic and Research Libraries in Illinois (CARLI) Preservation Committee, of which Beth was a member, decided to gather and provide resources on disaster preservation issues. While the committee was weighing topic ideas, a thread from the American Library Association Preservation Administrator Discussion Group (ALA PADG) on gathering disaster statistics was brought to the committee's attention by Elizabeth Clarage and Nicole Swanson. That thread inspired the research that led to this article and a much abbreviated version of this piece was published in the May 2017 *CARLI Newsletter*. The authors are also grateful to Steffen Scharmacher for his able assistance on graphs. (McGowan, 2017)

Introduction

Although some academic and large public libraries, primarily well-endowed institutions, collect statistics concerning the intersection between disasters and preservation activities, there is no regular national collection of statistics about these matters. (Meyer, 2009) and Peterson et al., 2016).This state of affairs is not new: libraries have never collected information on disasters systematically despite years of keeping statistics on other preservation concerns. However, for a brief period of two years, the Association for Library Collection and Technical Services of the American Library Association (ALCTS/ALA) collected preservation statistics that included information about disasters from libraries and other cultural heritage foundations. After a low response rate to a long survey, the disaster questions were abandoned. Thus, with the exception of two years (FY2012 and FY2013), our field has no data upon which to base preparation proposals for disaster and preservation issues. This article reviews those two years of data.

Literature Review

The literature concerned with preservation disaster statistics occupies a tiny subset within the broader category of library disasters, and the planning and preservation issues that accompany them. "Disaster" encompasses everything from wars and catastrophic natural events to insect infestations. Disaster management and planning may be on an international scale (Matthews, 2007), and proceed all the way down through country, state, and provincial organizations, to the level of individual institutions. Preservation of institutionally-held materials, primarily in libraries, archives, and museums, is a similarly immense topic; with research

devoted to digital preservation and security, to policies, comprehensive plans, and the extensive minutiae of practicalities and logistics (equipment, facilities, supplies, processes, etc.).

Archives have traditionally been more prominently associated with preservation than have libraries, explained perhaps by the archival injunction *to* preserve, whereas for the library collection, access is paramount and preservation ensures its use (Stefano, Walters, 2007). Concern at the institutional level for the condition of library collections has been collated by the Association of Research Libraries (ARL) data for the largest North American research libraries with annual surveys of preservation statistics that began in 1982. (ARL, 2004 & Peterson, Robertson, and Szydlowski, 2016)

In 2002, the ARL published an extensive research report that contained an initial study and comprehensive methodology and survey for the assessment of preservation programs in non-ARL libraries. (Kenney, Stam, 2002) The survey was concerned with preservation planning and normal—non-disaster—activities. One question (7a), however, inquired about contract expenditures for conservation, which "may also include item-by-item treatment of materials damaged by water, fire, and mold" (ibid, 47). This question, then, would pick up references to disaster events that had occurred in the participating libraries. While intended by ARL as a potential assessment tool for preservation conditions in non-ARL libraries, no reports have been published since the initial compilation in 2002.

Recommendation 5 in the Kenney-Stam report asserts the importance of regional collaboration to share information and expertise, among them publicizing approaches that are "grounded in real-world experience" and "developing a means for measuring the success of collaborative preservation efforts through annual reporting of statistics (ibid, 19)". ALA introduced its national Preservation Statistics Survey in 2012 in response to the end of ARL's preservation surveys (Peterson, 2016). With the discontinuation of that survey after two years, archives and libraries have had no current instrument with which to assess and compare information about library disasters. One may glean useful information from individual institution's reports of disaster events (for example, floods in Oregon (Kern, 2008) and molds and insects in South Africa (Ngulube, Magazi, 2006), but reports of discrete incidents cannot begin to approach the evaluative power of a statistical data set. Individual reports can neither measure the success of collaborative preservation efforts, nor provide aggregated data for planning grounded in real-world experience.

Methodology

As stated above, the ARL conducted a preservation survey of major academic and research libraries from 1984 until 2008, at which point the Preservation and Reformatting Section (PARS) of the American Library Association (ALA) began a preservation survey to replace the ARL survey.

The ALA survey's official title, *A Survey of Preservation Activities in Cultural Heritage Institutions: FY2012* was considered a pilot survey. While based upon the discontinued ARL preservation survey, the ALA's 2012 survey clarified some definitions and added some

questions to the original, thus filling some perceived gaps. Furthermore, the ALA survey expanded the reach of the survey beyond libraries to other cultural institutions including archives and museums, using email lists as a means of distribution. Institutions were invited to respond from April 25, 2013 until August 1, 2013 about their preservation activities during the 2012 fiscal year. The preponderance of institutions responding (over 70%) to the survey were academic libraries, with another 11% either public or federal libraries. Thus only about 16% of institutions responding were other kinds of cultural heritage organizations. A full copy of the survey instrument is available on the ALA website. (*ALCTS FY2012 Survey Questionnaire*)

The following year, covering Fiscal year 2013, the survey was again tweaked – refining instructions, navigation and definitions. The survey was again distributed via email to preservation and library lists, and was open from January 15, 2014 through May 31, 2014. The 2014 response pool was all drawn from libraries, 88% of which were academic with small numbers of other kinds of libraries responding. Again a full copy of the survey instrument is available on the ALA website. (*ALCTS FY2013 Survey Questionnaire*).

After these two years, the preservation survey used by the ALA dropped the disaster questions to make the survey less cumbersome to respondents. But the two years covered by the Preservation Statistics Survey are tremendously instructive. Unfortunately, the data from those two years have not been sufficiently examined because reports based on the surveys focused on general preservation issues rather than disasters and preservation specifically. This article returns to the data sets of those surveys to examine this issue more closely. The ALCTS Preservation surveys for FY2012 and FY2013 included four questions about disasters. Three of these were rather basic, not requiring much thought:

1.) What were your institution's expenditures for disaster recovery vendors;

2.) What is the state of disaster preparedness plans in your institution;

3.) And, does your digital planning include planning for disasters?

This article will not spend much time on the responses to these questions as they do not help libraries determine how to prepare for disasters. Instead the article will focus on the last question:

4.) Detail the number of incidents by incident type, provide an estimate of total staff hours dedicated to recovery, and disclose if ever a disaster recovery contractor was engaged to assist in the response.

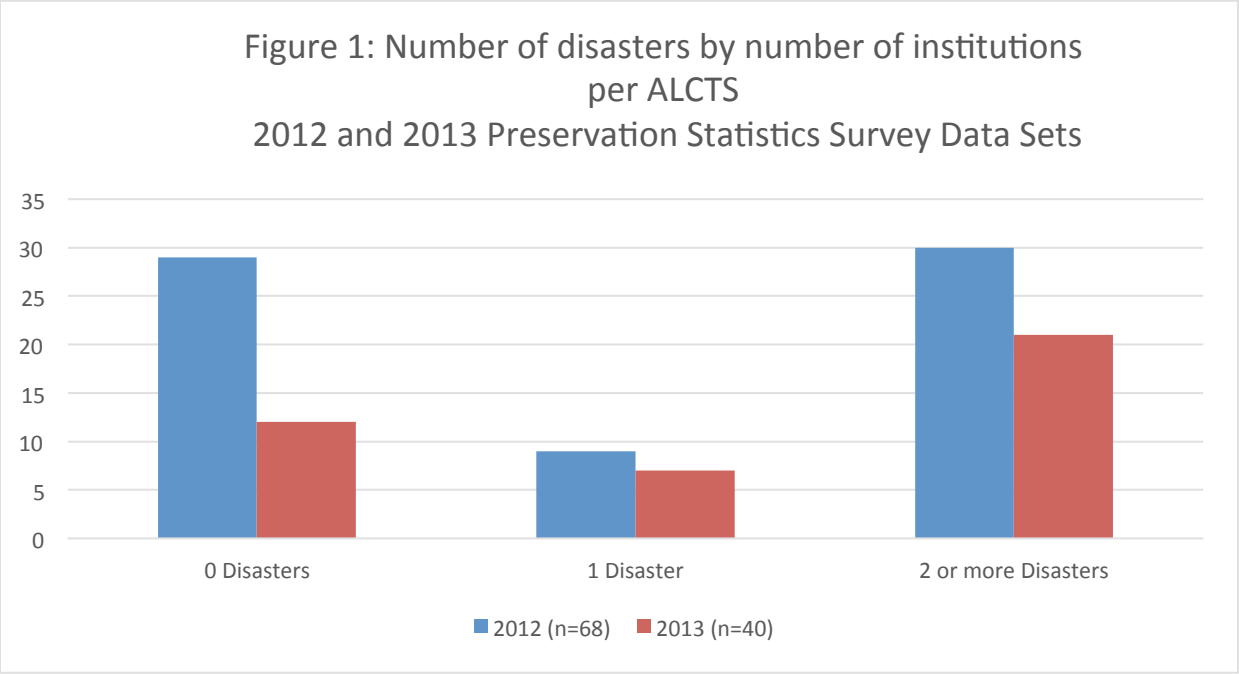
This final question is complex and multifaceted. It asks organizations to first count the number of disaster incidents they had experienced in five categories including water, mold, fire, pests and other. In addition, it asks how many staff hours were required to recover from those events and whether or not a contractor had been hired. Unfortunately, the survey did not ask respondents to note number of staff hours dedicated to conservation work for **each individual** disaster or whether outside contractors worked to preserve materials for **individual** disasters. Still, this question allows a discussion of the number, the type and severity of disasters experienced by institutions. What follows here is an analysis of the answers institutions provided to this question.

Results

Number and Frequency of Events

What perhaps was most surprising was the large percentage of institutions that reported disaster incidents with the ALCTS *FY2013 Preservation Statistics Report* noting that 72% of institutions had experienced at least one such event. (Peterson, et al., 2014,16) And, while the *FY2012 Preservation Statistics Report* did not note the percentage of institutions that reported incidents, it can be seen from the *FY2012 Preservation Statistics Survey data set* that 63% of institutions surveyed noted that they had experienced adverse events. (*ALCTS 2012 Preservation Statistics Survey Data Set*) Those statistics are the only disaster-related statistics that are discussed in the *FY2012 and FY2013 Preservation Statistics Reports*. Everything that follows in this article comes from a re-examination of the *ALCTS 2012 and 2013 Preservation Statistics Survey Data Sets* as presented on the preservation web page of the ALCTS.

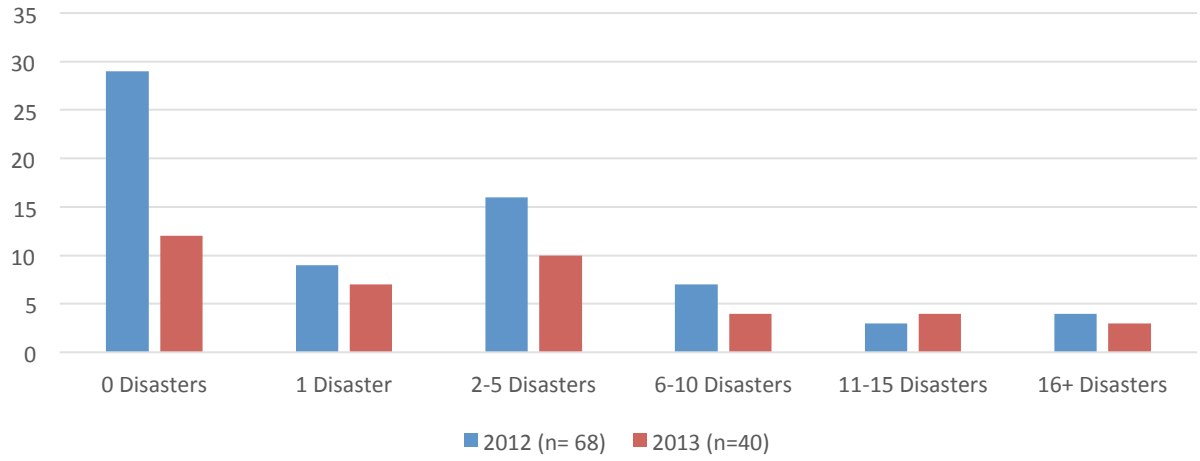
So while it is surprising that well over 50% of institutions suffered at least one disaster in both 2012 and 2013, it is perhaps even more surprising to learn the NUMBER of incidents reported. Cultural institutions reporting any kind of adverse event generally reported multiple events. (See Figure 1)



Upon reflection, such reports are to be expected. For example, it might have been anticipated that the Library of Congress, with its vast holdings, would have experienced multiple water incidents in both years. But to learn that three quarters of the organizations (30 of 39 in 2012 and 21 out of 28 for 2013) that reported preservation disasters in their libraries reported

more than one such episode may still astonish. Even more unexpected, a full 25% of institutions in the 2013 survey weathered more than ten such incidents that year and just under 20% had more than ten preservation disasters in 2012 – with about 10% each year reporting more than 15 incidents. Thus, according to our data, if you have one adverse event, you are much more likely to have more than one and often MANY more than two. (See Figure 2) (*ALCTS 2012 Preservation Statistics Survey Data Set* and *ALCTS 2013 Preservation Statistics Survey Data Set*)

Figure 2: Number of Institutions and number of Disasters in 2012 and 2013 per ALCTS *Preservation Statistics Survey Data Sets*



Types of Events

The vast preponderance of all incidents were water-related –in 2012, nearly 50%; the next most common disaster being mold with just over a quarter at 26%; pests were the third most common, comprising about 20% of total disasters. Fire and "other" make up the remaining 4% of total disasters. While in 2013 numbers varied somewhat, water made up nearly 60% of incidents; mold held nearly steady with 26%; pests dropped to 12%, and other and fire were fairly insignificant. See Figures 3 (2012) and 4 (2013). (*ALCTS 2012 Preservation Statistics Survey Data Set* and *ALCTS 2013 Preservation Statistics Survey Data Set*)

Figure 3: 2012 Disaster Incidents by type per ALCTS Preservation Statistics Survey Data Set

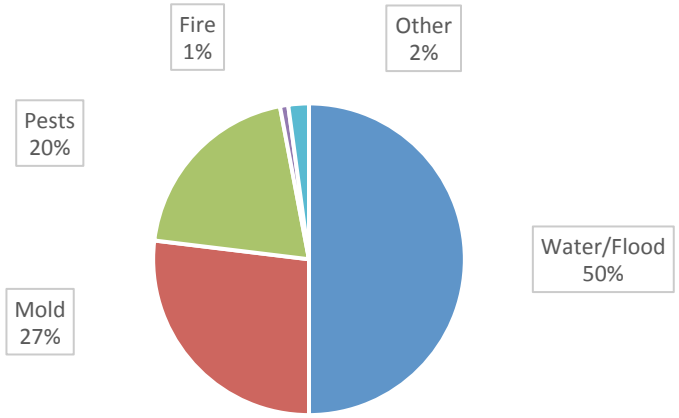
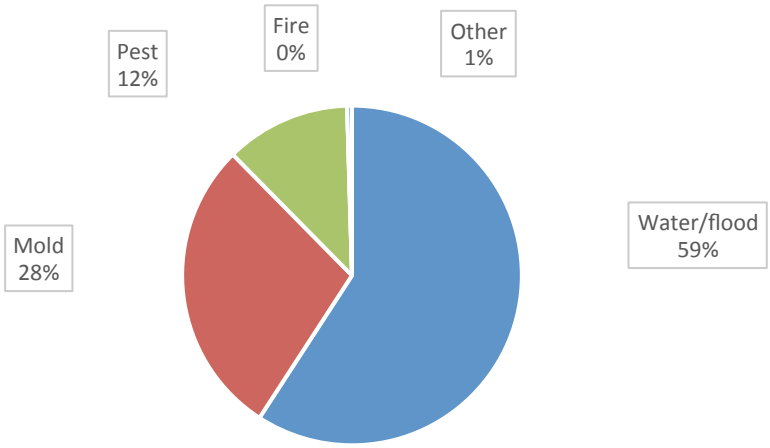


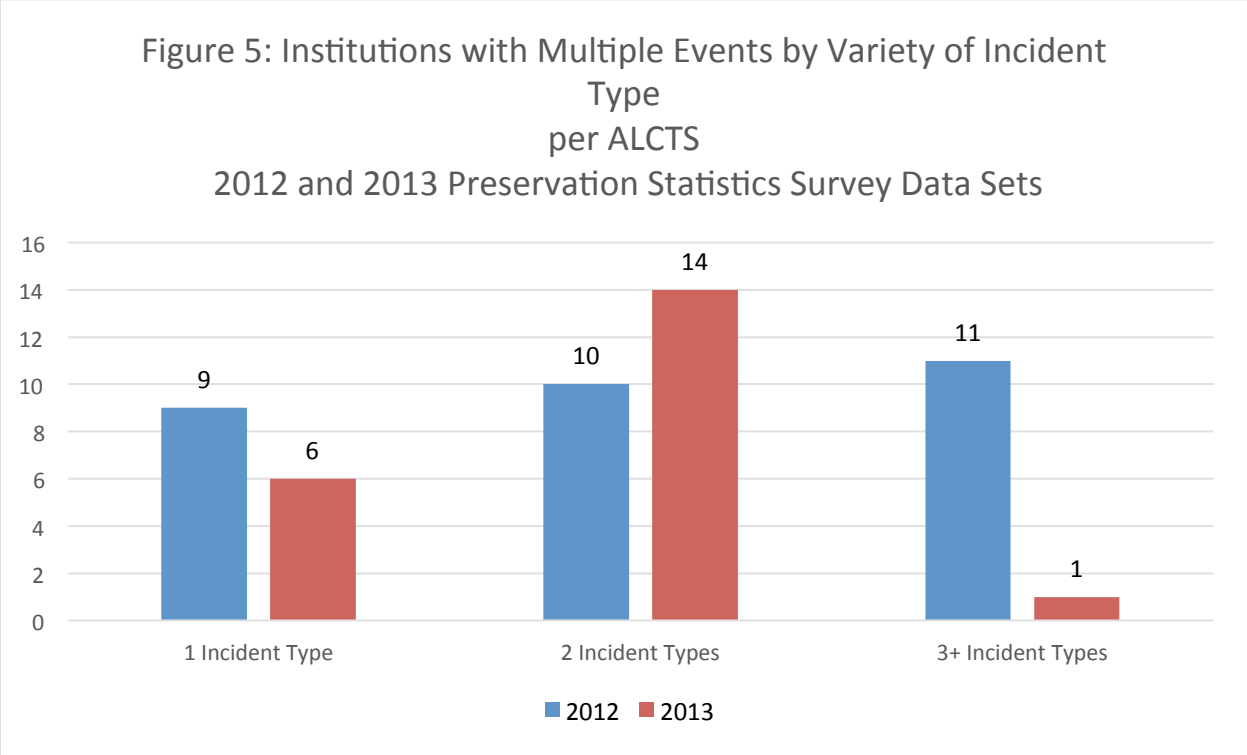
Figure 4: 2013 Disaster Incidents by type per ALCTS Preservation Statistics Survey Data Set



Variety Within Experience of Multiple Events

However, institutions experiencing multiple events generally experienced more than one type of event. While it might be expected that institutions afflicted by adverse events might have sustained only the most common event -- water damage – twenty-one out of thirty, or roughly

two-thirds, of the institutions that weathered adverse water events also underwent other sorts of ordeals. In 2012 only nine of thirty institutions reporting multiple disasters, or just under a third, experienced only a single type of disaster. Similarly in 2013, while fifteen of twenty-one institutions, just over two-thirds, suffered multiple types of disasters, only six (or again just under a third) reporting multiple disasters experienced only a single type of disaster. Thus overall, there is a pattern. Generally, if an institution undergoes more than one preservation incident, it will experience multiple types of disasters. However, the pattern is not absolute. For in 2012, about half the institutions that suffered multiple disasters confronted two types of damage while the other half confronted three or more types of trouble. In contrast, the vast majority of institutions that underwent multiple incidents needed to manage only two types of events. Thus we really do not have enough data to extrapolate how frequently libraries should be prepared for more than two types of events. (See Figure 5) (*ALCTS 2012 Preservation Statistics Survey Data Set* and *ALCTS 2013 Preservation Statistics Survey Data Set*)



Severity and Cost

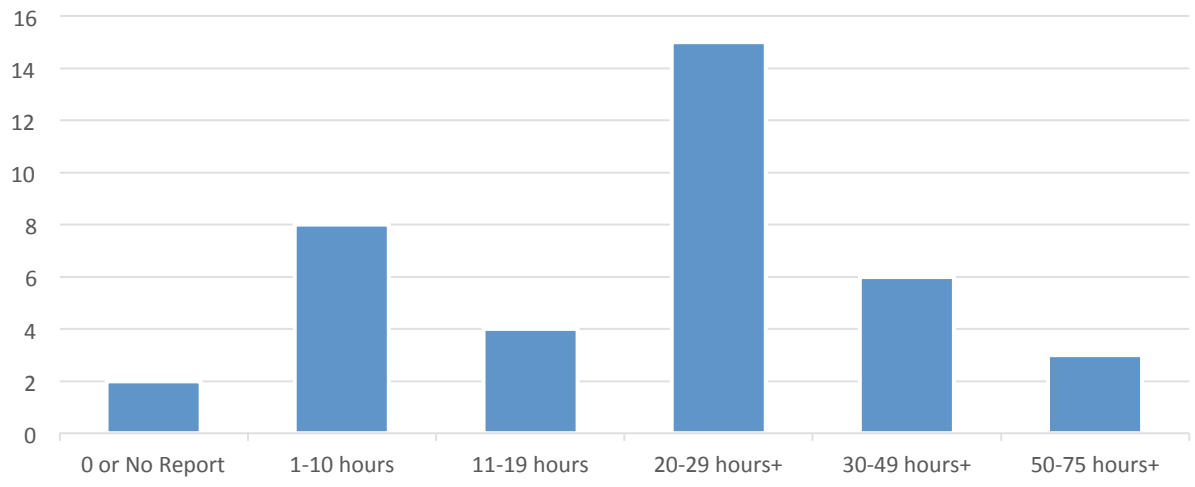
The alarming frequency of cultural institutions reporting damaging incidents provides some insight on planning for future disasters. However, to adequately plan for future disasters, cultural institutions of all types also need to understand the extent of damages that disasters inflict and what the expenses incurred to remedy those damages generally are. Unfortunately, due to the ambiguity of the survey questions, there is no clear information on these issues.

As noted above, the survey did not ask respondents to specify the number of staff hours dedicated to conservation work for **each individual** disaster or whether outside contractors worked to preserve materials for **individual** disasters. Instead, the survey provided space for each type of disaster accompanied by the number of incidents, the approximate number of hours for that type of disaster and a yes or no response to the issue of contractor use for that kind of event. It is unclear whether or not the number of hours provided is an average number of hours per incident or if it constitutes an estimate of average of overall number of hours on all incidents of that sort. Furthermore, each response for the number of hours on a disaster provides for a range of hours, each year using different time intervals.

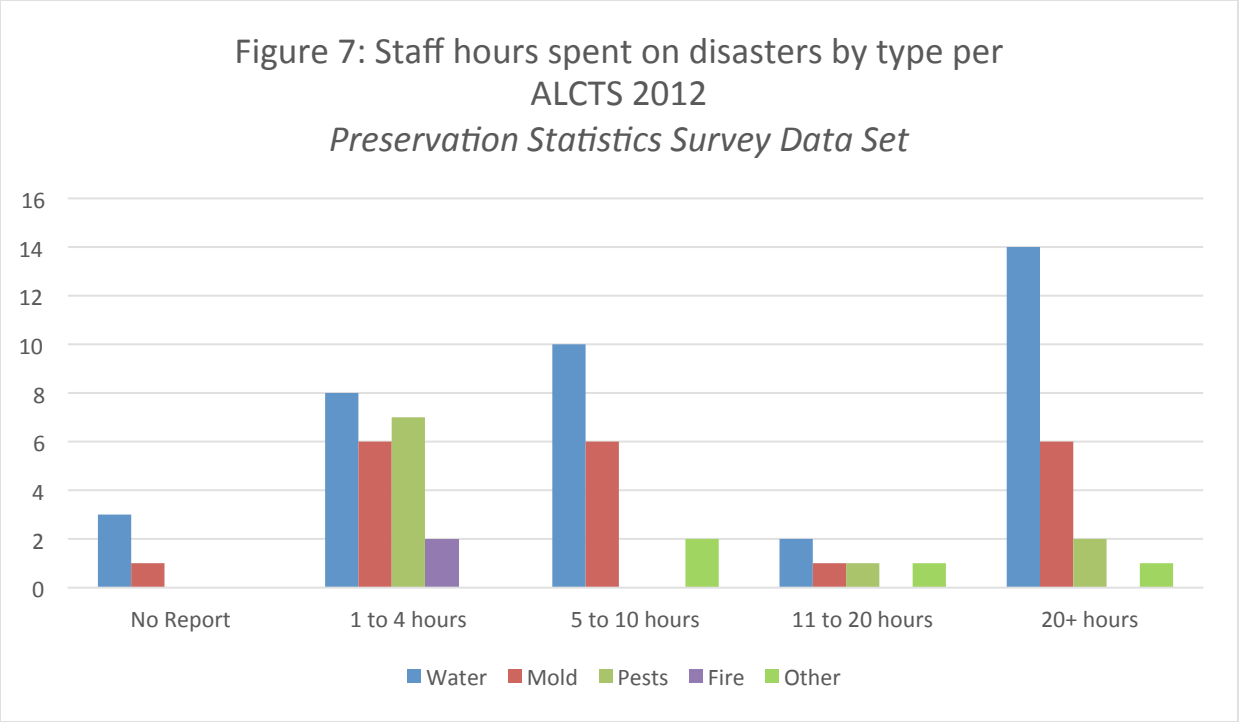
Staff Involvement

Despite these limitations, the number of staff hours used by institution per year to remediate disasters is known. Below is a chart that includes this information for 2012. (See Figure 6)

Figure 6: 2012 staff hours required to respond to disasters
per
ALCTS Preservation Statistics Survey Data Set

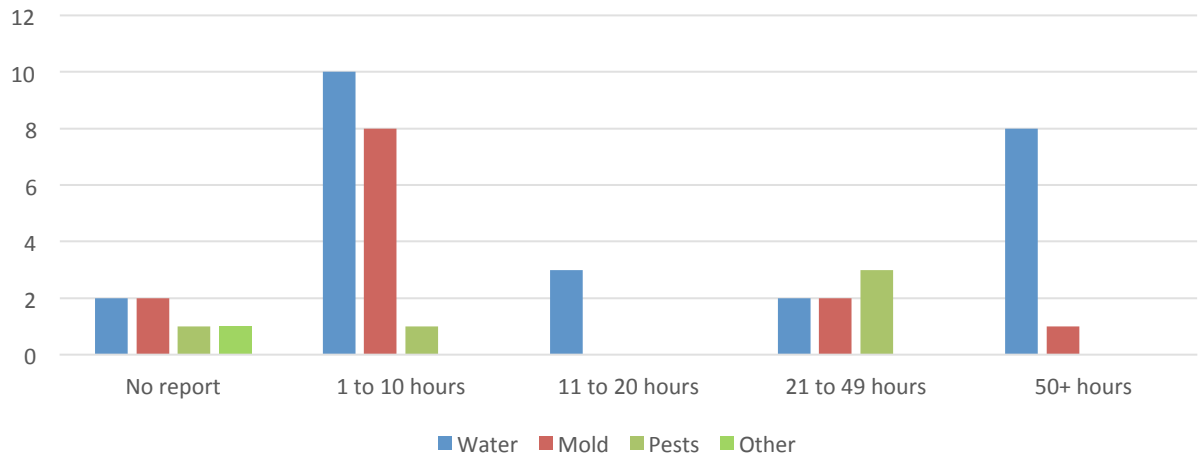


In addition to overall staff hours spent by different institutions, the number of hours spent to address different kinds of adverse events is clear. Unsurprisingly, as water is the most frequent kind of incident, water events require the greatest response in terms of staff hours – in 2012, fourteen institutions of the thirty-seven (or about a third of institutions) reported at least one water incident and spent more than 20 hours of staff time repairing damage. (See Figure 7) (ALCTS 2012 Preservation Statistics Survey Data Set)



The following year, the data became more granular. Hours spent on repairs are more carefully broken up at the higher level in the 2013 survey. That year in response to water damages, two institutions spent between twenty and fifty hours of staff time, while another eight organizations spent in excess of fifty hours of staff time. Thus eight of twenty-five institutions, or just under a third, required over fifty hours to repair water damage. These are significant losses. (See Figure 8) (*ALCTS 2013 Preservation Statistics Survey Data Set*)

Figure 8: Staff hours spent on disasters by type per ALCTS 2013
Preservation Statistics Survey Data Set



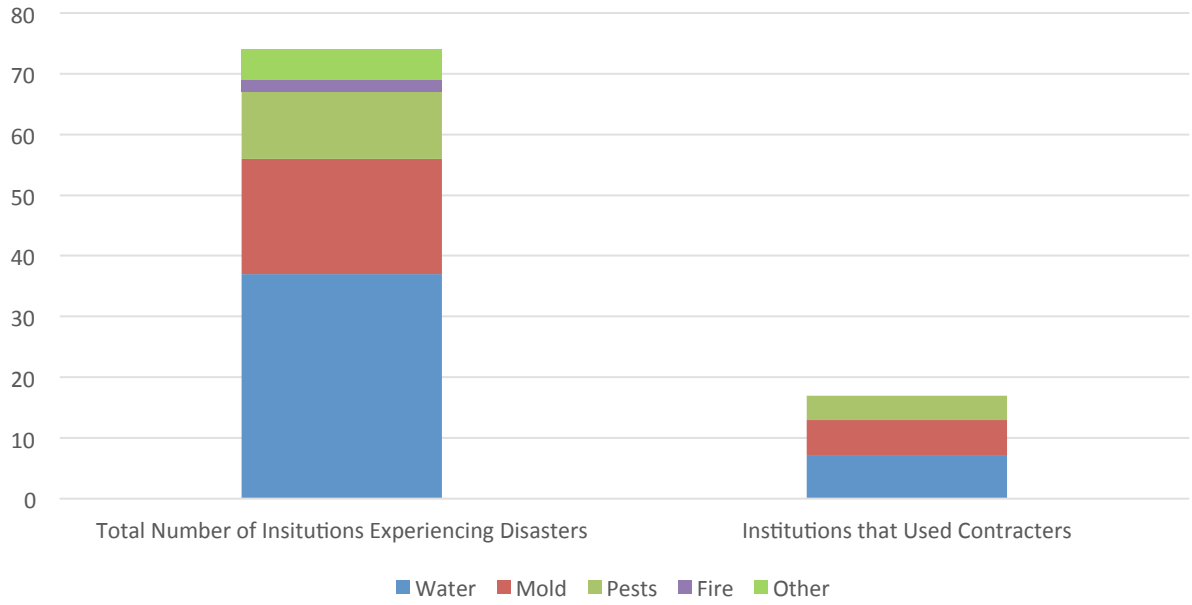
Contractors Hired

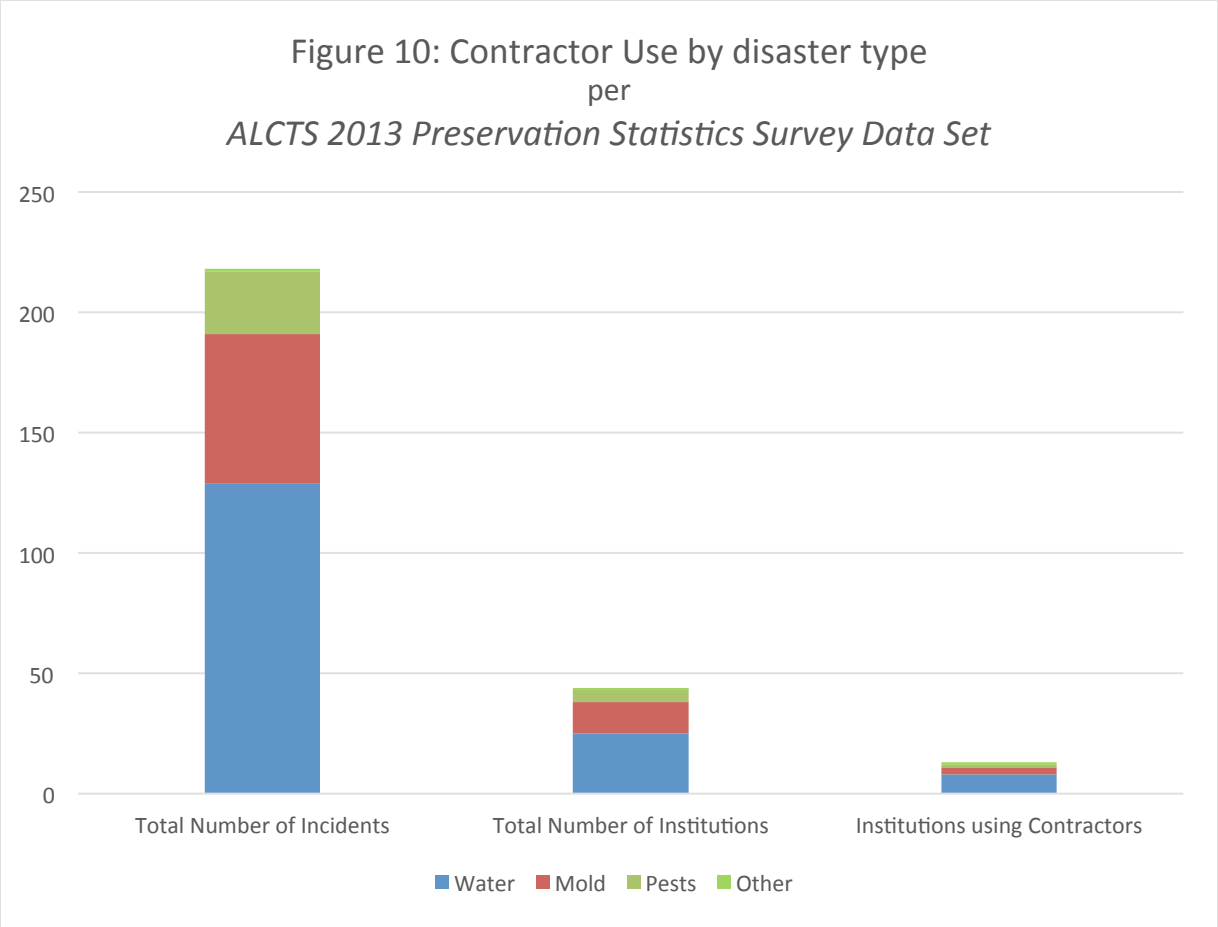
Similarly, it is uncertain whether every yes in the section on contract use suggests that all incidents resulted in the hiring of outside contractors, or whether in the course of the year with all incidents considered, a contractor's services were engaged.

With that caveat, the survey made clear that the frequency that cultural institutions hired outside contractors varied by type of disaster. In 2012, only 18% of the institutions that experienced water or flood disasters hired contractors. That same year, 32% of institutions experiencing mold disasters hired outside contractors and 36% of institutions experiencing a pest infestation hired an outside contractor. These numbers do not completely hold steady the next year. In 2013, 33% of institutions experiencing water disasters hired contractors, 23% of institutions experiencing mold disasters hired outside contractors, while 20% of institutions experiencing a pest infestation hired an outside contractor. (See Figures 9 and 10) (*ALCTS 2012 Preservation Statistics Survey Data Set* and *ALCTS 2013 Preservation Statistics Survey Data Set*)

The variation in these numbers suggests that it would behoove the industry to learn more about what the general need of institutions is to repair damages after adverse events of multiple types.

Figure 9: Contractor Use by disaster type
per
ALCTS 2012 Preservation Statistics Survey Data Set





Conclusion

These preservation crises may not be the large scale events – a la Katrina or Harvey – generally considered when devising disaster plans. But these two years of surveys reveal that smaller versions of these kinds of events happen all the time at a rate much higher than might have been suspected. Furthermore, the types of disasters experienced are various – both among institutions and within institutions. Given the regularity with which preservation disasters occur, these sorts of statistics about can and perhaps should inform standard cultural institutions' preparation.

To prepare both for a large scale disaster and the more common smaller adverse events, keeping track of these incidents seems advisable. The survey questions provide a great starting point. Perhaps, however, it would behoove institutions to keep information on individual episodes as well as noting the cumulative effects of disasters, large and small. For while it is important be aware of how many disasters an institution experiences per year and the total cost of those disasters, it would also be useful to discern how many staff hours are dedicated to remediating **each individual adverse event, and thus be able to anticipate how much**

different events may cost. Further, institutions may want to record how frequently a contractor is hired for **individual incidents.**

In addition to these basics, libraries and other cultural institutions may want to keep a general accounting of the number of items affected as well as the type of item, i.e., book, tape, cd, digital material, etc. A survey instrument might also capture within affected items, data on how many were salvaged and the means by which they were salvaged by staff intervention or contractor help. These accounting measures might also keep track of how many items were lost and how many of the lost items were replaced. Libraries would then have a clearer vision of the cost of adverse events, both to the institution and the state of cultural heritage in general.

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