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Planning for Growth
Liverpool Museum Herbarium 2001

Introduction

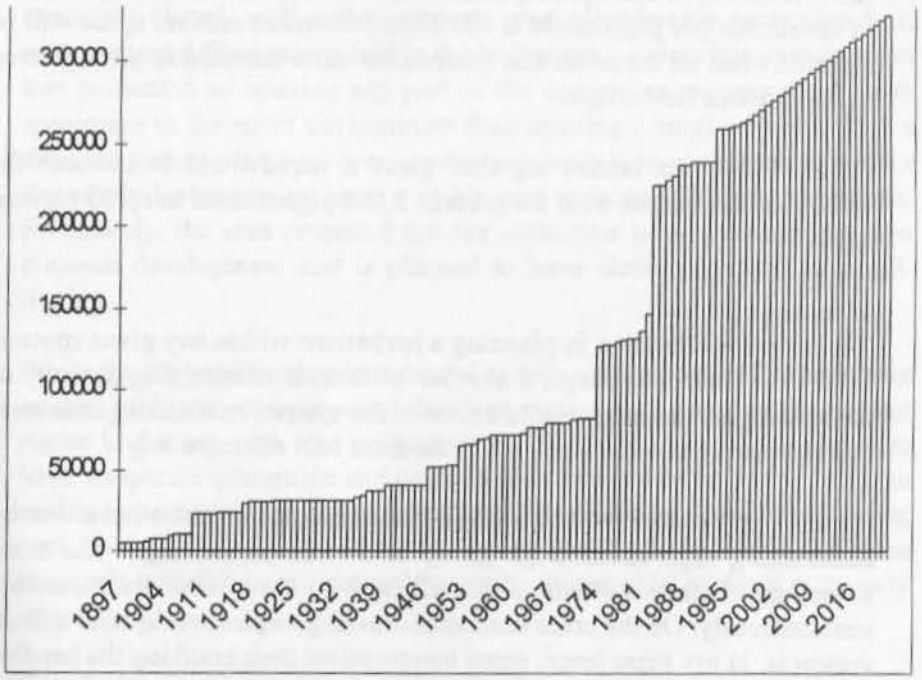
The Botany Department at Liverpool Museum (NMGM) contains just over 325,000 specimens. The department is currently developing plans for the restorage of this collection as part of a major programme of redevelopment in the museum. It is planned to move to a new storage area in 2001 which will meet our needs for the next 20 years. This paper describes some of the aspects of this planning.

When looking at our space requirements for the future we are attempting to match the likely size of the future herbarium to the spaces which will become available as part of the redevelopment. This paper will review how we have estimated our future size of the collection and consider some of the factors, especially those which raise conservation issues, which have led to the current proposals. It deals with the section of the plan involving material preserved on herbarium sheets, numbering around 275,000 specimens. It does not include the collections of packeted cryptogams and economic botany items, which makes up the remainder.

Expected growth through acquisitions

While planning for future accessions can never be a completely accurate science. There are some lines of evidence, which should be analysed. The most important of this is of course the track record of past growth of the herbarium (Figure 1). This shows that growth has averaged 2,600 specimens per annum over the last hundred years. However there has been wide variation from this average with some very inactive periods e.g. the 1920s, while the acquisition of 150,000 specimens from the University of Liverpool herbarium in a sequences of transfers in 1974 and 1986 also distort the picture. Removing this single acquisition gives a lower long-term average of 1,400 specimens p/a. However, even if we exclude this major acquisition, the average for the last 20 years has been higher than the longer historical trend with an average of 2,800 specimens per annum. It is reasonable to assume that the most recent past will be our best guide to the immediate future, so we have adopted this last figure for planning.

Figure 1. *Growth of Liverpool Museum Herbarium*



Space requirements of the conservation programme

A very large fraction, that is around 60%, of the sheets in the herbarium do not meet the conservation standards we are currently trying to achieve. Until about 20 years ago, collections donated to the herbarium, including those from amateur collectors, were accepted and incorporated without consideration of their long-term conservation requirements. Thus many specimens are mounted on paper too thin to support the specimens adequately and include such horrors as specimens mounted on newspaper. Other specimens are mounted on very small sheets which, when mixed with larger sheets, can move around and damage the specimen below. Yet others have used pressure sensitive adhesive tape (*Sellotape*) which loses its adhesion and stains the mounting paper after a few years, and nearly all the specimens are stuffed into overflowing genus folders.

Evidence from the Roylean Herbarium conservation project currently underway in Liverpool shows that following conservation the average

maximum number of specimens that can be stored in a pigeon hole reduces to 50. A survey of the whole herbarium has shown that the average number of specimens per pigeonhole is 75. Thus 50% more cabinet space will be required when all the collection reaches the same standard as that achieved in the Roylean Herbarium.

Putting these two factors together gives a requirement to increase the volume of the system from the present 3,666 pigeonholes to 6,755 pigeonholes.

Planning options

The main consideration in planning a herbarium within any given space is to strike a balance amongst a number of factors: maximising capacity of the system; maximising ease of access to the system; minimising conservation threats to the collection - all in the most cost effective way.

Maximising capacity within a given floor area can be achieved either by constructing high cabinets (2.4m +) or by compactorising. The main advantage of static systems is that all parts of the system are accessible simultaneously. On the other hand manoeuvring stepladders around a fixed system is, in my experience, more inconvenient than cranking the handles to open and close a mobile system. Of course, if space is very pressured, a high, mobile storage system could be considered and while it combines the benefits of both systems it also compounds the problems as well.

If very high ceiling heights are available (over 4 metres) another option to consider would be installing a mezzanine floor. However, this is not possible within the space allocated in the master plan for the herbarium.

An advantage of mobile storage schemes is that they can be cheaper than static systems. The extra cost of laying tracks and installing mobile bases can be more than offset by using a doorless system as, the doors can contribute a third or more to the cost of a herbarium cabinet, depending on the door design. It is likely that we will choose this route for the additional cabinets we will require because of the significant cost savings mentioned above.

Conservation issues

RH and temperature monitoring in our herbarium has shown that (as expected) closed, well-sealed cabinets give considerable protection from environmental fluctuations within the herbarium. A doorless system offers less protection as opening any part of the compactor exposes many more specimens to the room environment than opening a single cabinet. Thus a doorless system places an even greater emphasis than usual on the need for the whole herbarium to have a stable and suitable RH and temperature. Fortunately, the area proposed for our collection is in a zone of the new museum development that is planned to have close-controlled air conditioning.

While the air conditioning is expected to take care of any RH, temperature or dust problems, the proposed doorless system also requires the greatest rigour in dealing with pest management. Thus a key part of the plan is to have a separate quarantine and packing area to ensure that every specimen entering the herbarium is first fumigated by freezing. Insect monitoring, both inside and outside the herbarium room, and the highest insect hygiene standards will also be maintained to arrest any potential problem at an early stage.

Conclusion

Figure 2 (overleaf) shows the proposed layout of the herbarium although these may change as the architects refine their plans. The herbarium collection will be compactorised into two units; one based on reusing existing cabinets, and a new system based on doorless units. This will give us the space within the overall scheme to include adequate benching for laying out specimens and study areas adjacent to the collection as well as space for an extensive library.

The move to the new herbarium is scheduled to be complete by August 2000 and, if all goes according to plan, we will have a storage system with the capacity for future growth, excellent access and study space for staff and visitors while meeting the conservation requirements of the specimens.

Figure 2. *Proposed layout for Liverpool Museum Herbarium*

Scale approx 1:150