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Cleaning dusty feathers, a technique that works!

Abstract

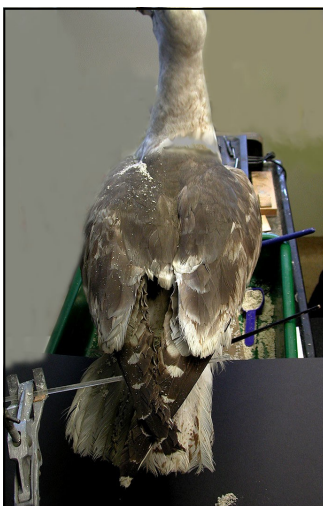
Until recently, dusty white feathers on a taxidermy bird were a problem, often ignored. They involved washing, layer by layer to prevent cross contamination, using conservation grade detergent, deionised water and a hairdryer. The result was never that satisfactory since the acidic dust linked with the feather protein resulting, after the hard work, in a pale grey bird. Laser cleaning is good but expensive and will only clean off the external layer of dust contamination. Using a document cleaning powder (used in paper conservation), a technique for cleaning bird feathers and neutralising acidic staining has been successfully developed.

Method

I have been searching around for some time trying to solve the ‘dusty white bird’ problem and have tried several techniques, some mentioned above, but none have been that effective given the amount of time and resource. Last year I ordered some Document Cleaning Powder from Preservation Equipment Ltd (cat. Number 782-1000) to try out on some specimen in the future.

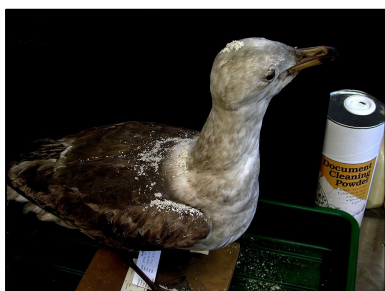
This year I had the good fortune to acquire Kathryn Medlock from the Tasmanian Museum & Art Gallery as a trainee in various taxidermy conservation techniques as she has some ailing Thylacines and many dusty white birds (including Albatrosses) to maintain. The Hampshire County Museums Service collection also has a (very) few dusty white birds, including a sub-adult Lesser Black-backed Gull *Larus fuscus*.

The problem with not quite mature seabirds is that the plumage is usually flecked with areas of brown and grey and it’s not always easy to differentiate dust stain from natural colour! The gull had also been slightly infested with *Anthrenus* larvae (a few skins present) with some resultant loose feathers! Undeterred, Kathryn and I set to the task and she had soon developed a fingers and thumb technique for actually massaging the document powder into the feathers without disarranging them. The infested areas were massaged with more care and support to prevent feather detachment. The massaging technique can pull loose or broken feathers out but by making a locality map they can easily be glued back in again afterwards using neutral pH PVA. Where acidic dust has embrittled feathers, even greater care must be taken and more time taken to prevent breaking the feather shafts.



sub-adult lesser Black-backed gull with much dust and dust stain contaminating plumage. A small area of white on the crown of the head shows where the first application of cleaning powder

The ‘powder and massage’ technique worked well and we quickly saw the first white patch appearing amongst the formerly grey feathers on the crown of the bird’s head (Fig. 1). The cleaning powder is quite coarse and has a mealy consistency, so is easily brushed out. As a dust magnet, the powder works well and takes on the dusty grey colour as it becomes saturated. The naturally grey feathers took on a new lease of life sheen-wise once the dust had been removed (Fig. 2). The bird took about 8 hours of treatment before it was considered to be clean (Fig. 3).



Back of same gull showing one side cleaned



Successful completion of the work leading to a much cleaner bird

Conclusion

I don't know of a similar method developed for the cleaning of this type of material. Although it may take a skilled conservator one day to clean an entire gull, the technique's efficacy is now proven. The powder appears to neutralise any acidic defects caused by dust in feathers and removes any contaminant coloration and even grease spots. This technique is considerably more convenient and less messy than the washing technique and the end result looks infinitely better.

Removing pooled fat and mothproofing freeze-dried mammals by perfusion

Abstract

This article follows up to a short piece that I wrote about 'lyophiloresistance' over 10 years ago in *Conservation News*, **51**: 38-39 (1993). It deals with the ongoing problem of removing *tris*-structured molecular compounds (e.g. dense fluids, such as glycols, and lipids) from freeze-dried biological specimens - particularly mammals.

A job that many taxidermists avoid, if possible, is the mounting of peoples' pets that have passed away! The difficulty of capturing the exact mood pose for the deceased animal combined with the removal of a larger amount of subcutaneous fat than usual can provide a daunting task!

A pet owner can even be so attached to their animal that even the thought of removing any body part is unthinkable – what to do? I was approached some months ago by just such a couple – could I freeze-dry their beloved cat without removing ANY body parts. I explained that the eyes would not look good and would normally be replaced with glass. No, that was out of the question but I could process the body with the eyes closed. I will always ensure that the finished result is final and if it doesn't quite capture the mood then that is the owner's risk. This was agreed and I set up the cat in the required pose with his eyes closed. Keeping the eyes closed is quite a problem, the eyelids tend to sag and leave the eyes one quarter open. Even when fully frozen, the lids just keep on creeping slightly open! Eventually they just had to be pinned shut.

Molecular size-related problems

Freeze-drying will remove water (as ice) and other cellular fluids in the form of sublimed vapour. Larger or heavier molecules, particularly those with a *tris* structure such as glycerol, glycols and of course triglyceride lipids, tend to get left behind: the process hasn't a low enough temperature to freeze them and once the mono-aliphatic molecules have been sublimed away, these remain behind and give rise to waxiness and other associated problems.

The cat freeze-dried well over a 10-month period, accompanied by a 'passing traffic' of smaller mammals, fungi and birds. The process of freeze-drying will, however, only remove a small amount of fat mainly in the form of monostearides. The heavier triglycerides remain in the body and gravity will form them into a pool on the lower side where they start to creep through making the ventral fur greasy. If left untreated this fat pool will continue to creep through and permeate much of the animal's skin; this leads to oxidation, fat