



CARE OF COLLECTIONS

Icon
THE INSTITUTE OF CONSERVATION

‘Waking Up’ Collections: A Post-lockdown Guide

With museum and heritage organisations necessarily closed during the Coronavirus (Covid-19) lockdown, collections are being held dormant for a significant period, increasing the risk of general deterioration caused by the environment, pollutants and pests, as well as reduced levels of preventive monitoring and control.

This checklist and guide outlines how to address collection conservation issues that might have occurred during this time.

This guidance has been coordinated by the **Heads of Conservation and Scientific Departments in National Museums, Galleries, Libraries and Archives Group** and the **Icon Care of Collections Group** with specific input from specialist colleagues at:

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Icon Care of Collections Group is a special interest group of [Icon \(the Institute of Conservation\)](https://www.icon-conservation.org/).

CHECKLIST



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BEFORE YOU RETURN TO SITE	
PRIORITISE HEALTH & SAFETY	
1	Align this work with your organisation's broader return to site planning. 'Waking up' collections should only commence when buildings have been checked and made safe by Building and Estates specialists. This will ensure your teams can safely access facilities such as running water without risk of legionella for example.
2	Check and adapt plans to 'wake up' collections with HSE and UK Government guidance including who should return to site and when, systems for social distancing while on site, protective equipment, and facilities for frequent handwashing.
PLAN TO RECOMMISSION EQUIPMENT	
4	If you use plant or systems like air handling units to maintain the environment collections are held in, check their status with your Building and Estates teams. Where they have been shut down to save money/energy during this period, aim to restart these systems in a way that does not compromise collections. For example, bring units online slowly in phases where possible to avoid large jumps in relative humidity and/or temperature.
3	Consider any equipment you use to work with collections that has been dormant and what maintenance checks it may need on return to site to ensure it is safe to use. Contact service contractors to check they are operating if you need them to service equipment.
IDENTIFY RISKS TO YOUR COLLECTION	
4	Take time to identify potential risks to dormant collections in your care as well as the impact these risks could give rise to. The specifics and extent of risks will depend on the kind of collection and the environment it is held in. When assessing risks consider: <ul style="list-style-type: none"> ▪ Data from building maintenance and environmental monitoring systems ▪ Issues identified during essential collection site checks e.g. pest activity or dust built up on object surfaces ▪ Known problems with the environments your collections are held in e.g. buildings known to leak may result in water damaged collections or mould growth
CREATE COLLECTION TREATMENT/RESPONSE PLANS	
5	Create a treatment/response plan for each risk identified and, where possible, order/prepare the relevant materials, equipment, and personal protective equipment.
6	Contact suppliers to check if they are operating and what supplies they have in stock should they be needed immediately. Consider alternative suppliers if required and set up accounts with them.
PREPARE TO UNDERTAKE PRELIMINARY COLLECTION SURVEYS ON RETURN TO SITE	
7	Prepare to undertake preliminary collection surveys when you can return to site. These surveys should be prioritised by risk to enable you to best use the staff and resources you have available. Focus first on: <ul style="list-style-type: none"> ▪ Collections vulnerable to agents of deterioration and/or other known inherent vulnerabilities e.g. organic materials, taxidermy, archaeological metals, etc. ▪ Collections held in poor environments ▪ Loan objects that require checks/reports to lenders and/or insurance providers ▪ Collections containing hazardous materials e.g. mercury

8	<p>Preliminary surveys should include the following assessments to establish whether new damage or deterioration has occurred:</p> <ul style="list-style-type: none"> ▪ Changes to collections e.g. objects that have fallen from their usual positions or new visible changes including cracks and splits, warping and cockling, breaks ▪ Signs of vermin or insect activity. Check pest traps, look for mouse/rat droppings, shredded material from mice making nests as well as insect activity indicators on collections e.g. dead or live insects, frass, webbing, cast skins ▪ Unusual large deposits of dust or debris ▪ Bird or bat droppings ▪ Signs of mould growth, focussing on parts of the building or collection where there have been issues in the past or records of higher relative humidity levels ▪ Signs of new corrosion on metal objects, focussing on the most vulnerable parts of the collection.
CHECK COLLECTION DOCUMENTATION PROCEDURES ARE IN PLACE	
9	<p>Collection surveys are underpinned by agreed documentation protocols and procedures. Ensure the following are in place:</p> <ul style="list-style-type: none"> ▪ Recording and reporting Damage and Loss to capture information and images to inform future investigations and/or insurance claims ▪ Condition Reporting (written summaries and images) to document and assess the condition of objects and make recommendations for future use, storage, and treatments ▪ Object Movement and Location control to pinpoint the specific location of an object quickly and easily. This is particularly important if you need to relocate objects quickly to new or temporary storage locations.
IDENTIFY AND BRIEF YOUR TEAM	
10	<p>Identify the staff who will focus on preliminary collection surveys when you can return to site. Brief them on:</p> <ul style="list-style-type: none"> ▪ The areas and collections to survey first ▪ What the likely risks are and how to identify them ▪ What treatment/response plans to implement if issues are found ▪ What equipment and PPE to use ▪ When to ask for help before commencing treatment ▪ The collections documentation procedures to follow throughout this process
ON RETURN TO SITE	
SURVEY, DOCUMENT, REPORT, RESPOND	
11	Your planning will come into play here enabling your staff to effectively check for, document, report and respond to issues identified.
12	Where you identify collection issues, prioritise deterioration that will get worse if it is not dealt with promptly e.g. mould growth or collections wetted by water ingress.
13	Remember, damage and deterioration should be documented (images and written summaries) before you start to deal with it, so that you have evidence should you decide to make an insurance claim.
14	You may wish to survey the rest of your collections once you have completed priority collections and areas.
COLLECTIONS CARE ESSENTIALS	
15	For organisations with limited in-house conservation expertise, the following guidance on Collections Care Essentials is designed to assist you in planning how to respond to the most likely issues arising during this period.



'Waking Up' Collections: A Post-lockdown Guide

Collections Care Essentials

Contents

This guidance is designed for organisations holding heritage collections with limited inhouse conservation expertise. It focuses on risks arising when collections are left unattended for a significant period specifically:

1. Insect Pest
2. Rodent Pest
3. Dust
4. Water Ingress
5. Mould
6. Bird and Bat Droppings
7. Other kinds of Collections Damage

The information is designed as a starting point to assess the likelihood of these risks impacting your collections and actions you can take to prepare for and resolve issues arising when staff return to site after the Covid-19 quarantine measures.





Throughout this guidance, there are links to existing online resources.





If you need a conservation expert to support this work, the [Icon Conservation Register](#) can help you identify someone with the right skills in your area.

1. Insect Pest

Both historic buildings and collections can harbour insect pests. Like any other animal they are looking for food, shelter, warmth and water to survive. Very few insects are insect pests, only the ones that cause damage to collections. It is important to be able to spot the ones that do. These are insects that feed on materials such as wood, textiles, fur and feathers. Below are examples of the most common insect pests found in collections. This is not an exhaustive list and more information on insect pest resources can be found below.

WHAT DOES IT LOOK LIKE?

Webbing Clothes Moth	Varied Carpet Beetle
 <p data-bbox="165 1025 778 1115">Adults are a dull gold colour, 5-7mm long. They like dark areas to lay eggs; the larvae cause the damage.</p>	 <p data-bbox="826 1025 1453 1144">Adults are small and round, 2-3mm long. Larvae (often called 'woolly bears') can grow up to 5mm, are avid feeders and can cause extensive damage to collections.</p>
 <p data-bbox="165 1641 794 1794">Webbing clothes moth are keratin feeders, attacking fur, feathers, skins, wool and soiled silk. Signs of infestation are gritty frass, silk webbing, dead insects and insect casing. They cause irregular holes and grazing damage.</p>	 <p data-bbox="826 1641 1453 1731">Varied carpet beetles are keratin feeders too, so will attack wool, fur and feathers. Signs of infestation are frass, dead insects and insect casing.</p>

Furniture Beetle	Silverfish
 <p data-bbox="164 683 794 835">Adults are a dark brown colour, 3-5mm long. They lay eggs in the grain of wood and larvae tunnel into the wood. Adults emerge from the wood in the spring and summer, leaving exit holes. They require damp conditions with relative humidity above 55%.</p>	 <p data-bbox="826 683 1457 862">Adults are silver, 10-15mm long. They are segmented and wingless, with long antennae. Usually associated with damp conditions, there is a new strain (the grey) which breeds in drier conditions too. In large numbers they can indicate damp conditions or microclimates.</p>
 <p data-bbox="164 1323 790 1444">Furniture beetle signs of infestation are neat uniform exit holes, fresh frass and wood dust. Old furniture often has historic damage from furniture beetle, so it is important to look for active infestation signs.</p>	 <p data-bbox="826 1323 1457 1473">Silverfish are scavengers and feed on organic material, starch, animal glue and microscopic moulds on paper. They graze on the surface of objects, causing areas to thin, which will eventually form holes.</p>

METHODS TO MANAGE INSECT PEST

Where to look – Most insect pests like dark, undisturbed areas. Common places are under heavy furniture on wool carpets and under rugs, and dead spaces where there is dust and debris to feed on. They can also be found in windowsills, chimneys, unused flues or where food is eaten. Key collections to check are textiles (particularly wool, fur or silk) and taxidermy.

How to spot an infestation – Look for signs of damage, such as holes or areas of grazing. Check for 'frass': this is insect faeces, which has the appearance of small pellets or sawdust and can indicate an active infestation. Also check for insect casing: these are casts of pupal cases and dead insects. Some insects, like clothes moth, leave silk webbing.

WHAT TO DO IF YOU FIND AN INFESTATION

- If possible, isolate the affected object in a sealed bag or box to prevent any spread of the infestation.
- Thoroughly clean the area, making sure to remove all signs of pest activity. A good cleaning regime is the most effective tool against insect pests. Make sure to empty your vacuum bag or dustpan outside, away from any objects. Do not leave your vacuum unemptied if you have been cleaning up live insects.
- Seek advice on treatment from a conservator. Store-purchased pesticides can cause damage to objects, so always seek advice before treating.

HEALTH & SAFETY RISKS TO CONSIDER WHEN DEALING WITH PESTS

Seek guidance and read labels carefully before using any pesticides. Arsenic and mercury have been used as historic pesticides, particularly with taxidermy and herbarium sheets, so please check before inspecting these objects.

WHEN TO BRING IN A SPECIALIST

If you have an object or part of the building fabric that appears to have an active infestation of insect pests, you should consult a conservator on the best options for dealing with the infestation and any damage it might have caused.

OTHER RESOURCES AVAILABLE

Birmingham Museums have a very good website called [What's Eating Your Collections?](#) This has lots of advice and clear photos of insect pests, with examples of damage.





English Heritage offer advice and [guidance](#) on insect pests and have some very good [factsheets](#) and [posters](#) with further information about different species. They have also recently published 'Pests in Houses Great and Small' by David Pinniger and Dee Lauder: this is a key text with some good colour photos and case studies.

'Pest Management in Museums, Archives and Historic Houses' by David Pinniger is another key text on the subject with clear drawings and good, practical advice about setting up a pest monitoring programme.

2. Rodent Pest

Rodents such as mice and rats are attracted in to buildings by human food, the littlest of crumbs. Mice more commonly cause damage to heritage collections, as they are more frequently found indoors, but rats can also cause a problem. If collections are stored in warehouses or outside stores, rats may be able to access them. They will shred paper and other materials to make nests. They also defecate wherever they go as they are incontinent, contaminating and staining collection items.

WHAT DOES IT LOOK LIKE?

Mice	Rats
 <p data-bbox="164 1019 842 1171">House mice measure 12 to 20 cm in length, including the tail, and weigh 12 to 30 grams. They may be white, brown or grey in colour. Their snouts are triangular and feature long whiskers. Mice have large, floppy ears and long, thin, hairy tails.</p>	 <p data-bbox="868 1019 1567 1200">Rats are medium-sized to large rodents and may grow to be as long as 40 cm or more and weigh considerably more than mice. Their coats are white, grey, brown or black in colour. The snout of the rat is more blunt than that of the mouse and their long tails that are commonly hairless and scaly.</p>
Damage	Droppings
	

METHODS TO MANAGE RODENT PEST

Mice and rats like warm, cluttered, undisturbed areas – so good housekeeping is essential to deter them. Keep food in well-sealed containers and eating and food prep areas separate to collection areas. The reduction of potential harbourage in quiet, less visited areas and correct storage of

excess items, for example office, shop and stationery products, will also help. Regular disposal of other waste products is also an essential requirement.

HEALTH & SAFETY RISKS TO CONSIDER

Some rodents may carry and potentially spread diseases that can be harmful to humans. Any areas that have evidence of rodent activity should be thoroughly cleaned and disinfected. Staff should consider fitted face masks, close fitting vinyl or nitrile gloves and goggles when cleaning areas with evidence of rodent activity.

WHEN TO BRING IN A SPECIALIST

If you see mice or rats or any kind of pest in your building, be sure to take action as soon as possible. Mice and rats reproduce quickly, so it's best to be vigilant. Contact a specialist pest contractor to deal with any rodent pest. Pest contractors like [Acheta](#) or [Rentokil](#) may be able to help. If you need advice or help treating collections damaged by rodents, contact a conservator.

OTHER RESOURCES AVAILABLE

English Heritage offer advice and [guidance](#) on rodent pests.

The Museum of London has an e-learning module on pests:

<https://www.museumoflondon.org.uk/Resources/e-learning/introduction-to-museum-pests/s02p05.html>





Further resources can be found on [MuseumPests.net](#).

Acheta, an independent pest consultancy business has a useful guide demonstrating good and bad proofing practice for buildings <https://acheta.co.uk/downloads/Pests-and-buildings-an-Acheta-guide-Jul-18.pdf>

3. Dust

Dust is the accumulation of small particles that have settled out of the air. These particles can be organic (dead skin cells, clothing fibres) and mineral (soil and building materials e.g. concrete). An accumulation of dust is detrimental to the preservation of objects. Dust can trap pollutants and moisture at the surface of an object causing damage. A build-up of dust containing organic material can be a food source for insect pests, e.g. clothes moth. It is important to remove dust using the least abrasive method possible and to match the frequency of cleaning to the stability of the object.

WHAT DOES IT LOOK LIKE?

<p>Dust on robust surfaces</p>	<p>Dust on textiles</p>
	
<p>Dulls the sheen of the object</p>	<p>With time dust can work its way into the weave and become very difficult to remove</p>
<p>Dust on mixed surfaces</p>	<p>Dust on taxidermy</p>
	
<p>May require multiple cleaning methods to remove</p>	<p>A coating of dust appears to fade the colour and will work its way into the fur</p>

METHODS TO MANAGE DUST

- **Protect staff** - take preventive measures to protect staff working in the area. See the Health & Safety risks section below for more details.
- **Reduce surrounding dust first** - start by removing dust from areas surrounding objects to reduce the dust level as much as possible then select a method appropriate to the object.
- **Use vacuum cleaners or microfibre cloths** to *remove* the dust rather than just moving it around with traditional dusters.
- **Check for fragile areas** - if available, check any existing condition documentation which may note fragile areas that cannot be seen because of the dusty surface.
- **Top down** - in all instances, dust from the top of the object downwards.
- **Robust objects with smooth/stable surfaces** e.g. painted metal, glazed ceramic, smooth wood. Clean surfaces with a microfibre cloth to trap and remove dust. Fold the microfibre cloth into a pad and use flat wipes across the surface of the object in the direction of the grain if there is one. Do not use this method where the surface is jagged or rough as the cloth will snag. In these instances, use the brushing methods detailed below.
- **Textiles and taxidermy**: brush the surface using a gentle sweeping motion flicking the dust away from the object. If you have a vacuum cleaner with variable suction levels, set this to low and remove attachments to flick the dust into the tube of the vacuum cleaner.
- **Robust surfaces that are more intricate** e.g. moulded wooden finishes. Use a good stiff brush sweeping/flicking the dust out of crevices and, where available, into a vacuum cleaner tube on low setting as above.

If the dust is oily or gritty do not rub the surface of the object with a cloth. In these instances, wet cleaning may be required in consultation with a conservator.

HEALTH & SAFETY RISKS TO CONSIDER WHEN DEALING WITH DUST

In areas of high dust levels, staff should consider face fitted masks with an FFP2 or FFP3 rating (e.g. 3M 8810 or 3M 8822 disposable dust/mist respirators), closefitting vinyl or nitrile gloves and goggles. Removing dust may mean working at height. Ensure that you have a suitable risk assessment in place, are working from a stable ladder or platform and are not carrying out this kind of work alone. Try not to clean above head height unless you can do this with vacuum extension poles and avoid excessive stretching. Wear eye protection if working above head height.

Be aware, dust on taxidermy specimens may become hazardous due to historic pesticides. Consult a specialist conservator if you think there is a risk.

WHEN TO BRING IN A SPECIALIST

You may need to consult a specialist when an object's surface is fragile, or dust has become 'stuck' to the surface and requires conservation cleaning instead of light dusting.

OTHER RESOURCES AVAILABLE

The V&A has posted images of different dusting methods at this page:

<http://www.vam.ac.uk/content/articles/b/behind-the-scenes-object-cleaning-technicians/>

4. Water Ingress

Water ingress in museums and historic houses can be caused by natural occurrences, such as floods, mechanical failures, or as a result of aging buildings. Areas of risk in a building include roofs, chimneys, windows and internal piping systems that can leak into collection areas. Floods and water leaks can cause extensive damage to building fabric, interiors and many objects are vulnerable to damage from even the smallest amount of contact with water.

WHAT DO COLLECTIONS IMPACTED BY WATER LOOK LIKE?

There are many forms of collection damage caused by water. The type and extent will depend on what the object is made from and its condition. Here are some examples of what certain materials impacted by water look like. For a detailed list of water damage descriptions see the Canadian Conservation Institute [Agents of Deterioration: Water](#) guidance.

<p>Varnish</p>	<p>Paper</p>
 <p>'Blanching' effect of certain types of furniture coatings like varnish can be caused by water and moisture penetration</p>	 <p>Distortion, cockling, staining and softening of paper items</p>
<p>Metal</p>	<p>Textiles</p>
 <p>Contact with water can cause serious corrosion</p>	 <p>Contact with water on textiles can cause staining or cause dyes to run</p>

METHODS TO MANAGE WATER INGRESS

- **Protect staff** - take preventive measures to protect staff working in the area. See the Health & Safety risks section below for more details.

- **Document** the location of the water leak and details of any collections impacted or at risk of impact. This will allow you to monitor the issue over time and provide information to Building and Estates Management colleagues to address the problem.
- **Immediate response** – where possible remove objects to a dry area with stable relative humidity to air dry. If you can't move the objects, cover with polythene sheeting to divert water until the issue can be resolved. Use absorbent mats and/or buckets to prevent more water from reaching the objects where possible.
- **Risk of microclimates** – avoid moisture build-up between polythene sheeting and objects by removing the polythene as soon as it is safe to do so.
- **Prevention** – minimise the risk and severity of damage by blotting and not rubbing object surfaces with a white cloth or paper towel. Encourage drying with a cold air fan. This process will also minimise the risk of mould growth on organic materials. See the *Mould* section below for more information.

HEALTH & SAFETY RISKS TO CONSIDER WHEN DEALING WITH WATER INGRESS

Water ingress can be contaminated with harmful bacteria depending on its source. For example, salt water from tidal flooding or contaminated water from a sewer backup. If water is contaminated staff should use the following PPE as a minimum: face fitted masks with a UK Standard Assigned Protection Factor of at least 20, e.g. FFP3 or powered TH2, closefitting vinyl or nitrile gloves, eye protection to EN 166 standard where there is a risk of splashing, and overalls.

Wet vacs or any other electrical equipment should be used with an RCD unit to avoid any risk of electric shock.

Further information on bacterial and water contamination can be found on the HSE website <https://www.hse.gov.uk/metalworking/bacterial.htm>

WHEN TO BRING IN A SPECIALIST

If objects and areas are impacted by contaminated water, consult your local land contamination advisor and specialist for toxic waste disposal instructions. If you need advice or help treating collections damaged by water ingress, contact a conservator.

OTHER RESOURCES AVAILABLE



The Museum of London has published a very useful Salvage Pocket Guide for water-damaged objects: <https://www.museumoflondon.org.uk/application/files/9414/5615/4887/pocket-salvage-guide.pdf>

5. Mould

Mould is the common name given to the physical growth of fungi. Collections left unattended in dark, damp and stagnant environments are at risk of damage from mould. Where your collections are held in such environments, preparing mould inspections and management plans, ready to implement when you return to site, is recommended. And, because mould can be a hazard to human health, considering expert advice in instances of significant outbreaks is key.

WHAT DOES MOULD LOOK LIKE?

Mould growth generally appears as small, circular, slightly fluffy white/grey patches. It can be distinguished from dust which is a smoother in appearance and often darker in colour. It is hard to see mould in bright light, inspect collections with a torch to provide a raking light or a UV light source if available.

Mould	
	
Front board and spine clearly showing mould growth	Typically, mould is often visible on exposed edges of objects
	
Mould growth on a taxidermy bird specimen	Interior of a non-archival quality box where mould has germinated on poor quality materials

METHODS TO MANAGE MOULD

- **Protect staff** - take preventive measures to protect staff working in the area. See the Health & Safety risks section below for more details.
- **Document** the location of the mould and details of any collections impacted or at risk of impact. This will allow you to monitor the issue over time.
- **Consider the environment** - because mould grows in warm, stagnant environments, check humidity and airflow levels. Where relative humidity is above 60%, reduce it with stand-alone dehumidifiers or, where installed, air handling systems. Consider introducing cold air fans to increase airflow.
- **Isolate collections** – when only a few objects are affected, isolate these by placing them in sealed bags or boxes. This will prevent the spread of mould spores to other collections. Where it is a large collection area and the level of outbreak is severe, seal all entrances and ventilation systems to the room the collection is held in using heavy gauge polythene to prevent spores travelling to other areas and collections.
- **Expert treatment** - because mould presents a risk to human health, only staff with appropriate training should handle or treat collections affected by mould.

HEALTH & SAFETY RISKS TO CONSIDER WHEN DEALING WITH MOULD

Some active mould is classed as a 'respiratory sensitiser' under the Substances Hazardous to Health (COSHH) Regulations 2002, <https://www.hse.gov.uk/coshh/index.htm>. Some moulds produce toxins that are harmful to human health. People with allergies or respiratory conditions such as asthma should not work in areas where mould infestations are located or come into contact with affected material.

Staff handling or working in areas where a mould outbreak is identified should use the following PPE as a minimum: fitted face masks with an FFP2 or FFP3 rating (e.g. 3M 8810 or 3M 8822 disposable dust/mist respirators): Closefitting vinyl or nitrile gloves and goggles. For large-scale outbreaks a higher level of personal protection may be required e.g. full-face respirators and body suits.

WHEN TO BRING IN A SPECIALIST

If you suspect a significant mould outbreak and need help identifying the extent of the issue and the level of risk associated, contact a mould specialist who can complete sampling and air testing. If you need advice or help treating collections affected by mould, contact a conservator.

OTHER RESOURCES AVAILABLE

The British Library have published a guide to preventing and treating outbreaks in Library and Archive collections available at this link: <https://collectionstrust.org.uk/resource/mould-outbreaks-in-library-and-archive-collections/>.

The Canadian Institute of Conservation has also published extensive guidance for managing and treating mould in collections here: <https://www.canada.ca/en/conservation-institute/services/conservation-preservation-publications/technical-bulletins/mould-prevention-collection-recovery.html>

6. Bird and Bat Droppings

Bird droppings are most commonly found externally, but if buildings are left unattended, birds may find their way inside. Bird droppings can stain objects, are chemically corrosive and may be difficult to remove. Pigeon droppings in particular can be a health hazard.

Bat droppings are made up of indigestible insect remains and are very dry and crumbly. They are not hugely damaging to surfaces but if combined with moisture can stain surfaces. Bat urine is incredibly corrosive and will etch and stain surfaces if left untouched for a long time. Note that bats and birds are protected species and licenced contractors must be used if bird or bat roosts need to be dealt with. It may not be possible to relocate bats depending on the type of roost.

WHAT DOES IT LOOK LIKE?

Bird droppings are a mixture of white and usually brown crusty deposits; the colour varies depending on the food source. There may be individual splodges or streaks depending on how often a perch or roost is used. Bat droppings resemble mouse droppings. They are dark brown ovals 3-5mm long. They can be distinguished from mouse droppings by a simple squish test. Wear gloves and gently press on the dropping. If it squishes, it is mouse. If it crumbles into a dry mass with sparkly particles, it is bat. Bats excrete the wing cases of the insects they eat; these give the slight sparkle. Bat urine has a very acrid smell that catches in the throat.

Bird droppings



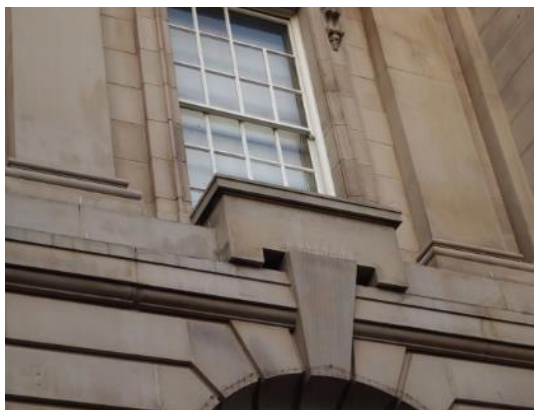
A windowsill with a large build of droppings from a nest site.



Bird droppings on a church pew



Well-fitting bird netting



Bird spikes and wires

Bat droppings



A large accumulation of droppings beneath a roost entry on a church pew



Butterfly wings and some urine spots are evidence of bats



The spots on this medieval wall painting are little bat droppings sticking to the painted plaster



The blue spots on this medieval brass have been caused by urine spots corroding the metal

METHODS TO MANAGE BAT AND BIRD DROPPINGS

BIRDS

- **Protect staff** - take preventive measures to protect staff working in the area. See the Health & Safety risks section below for more details.
- **Prevent entry to roosting birds** - the best way to manage bird droppings is to stop birds entering the building to roost. Check for broken windows, missing tiles and gaps in the structure. If these are found, they should be repaired as a matter of urgency, even if the repair is temporary, to prevent birds from entering. Longer term, bird nets and wires prevent birds from roosting on the exterior of the building and will help to deter them from entering.
- **Remove small amounts of bird droppings** by carefully scraping the bulk of the deposit away and then softening the remainder in warm water and then swabbing it off. Deposits on fragile surfaces will need the attention of a conservator.

- **Large amounts of bird droppings**, especially if caused by pigeons, should be managed by a specialist cleaning contractor. You will need support from a conservator if objects are similarly covered.

BATS

- **Protect staff** - take preventive measures to protect staff working in the area. See the Health & Safety risks section below for more details.
- **Bats have protected status** and are very small making them more difficult to manage. Consult a bat specialist on ways to allow bats to roost without entering the building.
- **Record** where accumulations of bat droppings are found as this is an indicator of where the bats are roosting. Take photos and consider plotting them on a map of the building and monitor in the future. This will inform future surveys if you ever need them for building works or mitigation.
- **Remove** droppings and dust working from the highest area to the lowest to avoid re-contaminating clean surfaces. Vacuum these up if possible, if not, use a dustpan and brush. If the droppings are uncontaminated with mould spores and not too dusty put them on your garden! They are excellent as a fertiliser.
- **Bat urine** - sticky residue indicates the presence of bat urine. This can be removed using water on a cloth or cotton wool swab. Conservation detergent can be used sparingly if the deposit is not easily removed in plain water. If not available, try Ecover (fragrance and paraben free) and Boots Sensitive washing up liquid. Use all detergents sparingly and rinse the area with plain water and a clean cloth or swab.
- **Further cleaning** may be required after the removal of droppings and urine, such as waxing furniture, polishing metal and washing the floor. In museums and historic houses, it may be best to consult a conservator about methods and materials if this kind of cleaning is not carried out regularly.
- **Unpleasant smell** - if you find that there is still an unpleasant smell ventilate more. Consider using fans while leaving the windows and doors open if it is safe to do so. The use of lavender or citron can help to mask the smell and have the added benefit of repelling cluster flies which may be attracted to the smell.

HEALTH & SAFETY RISKS TO CONSIDER

Bird droppings can be bad for your health. Once dried they turn powdery and if inhaled can result in illnesses. Pigeon droppings can transmit ornithosis, a form of psittacosis (as can the birds themselves) to humans and this can result in serious illness. Once bat urine dries it forms ammonia and sits in a powdery residue on the surface of objects. This can cause irritation in lungs if inhaled.

Wear an FP3-rated fitted face mask when removing bird and bat droppings as well as closefitting vinyl or nitrile gloves and goggles or other eye protection.

Droppings and dust are a breeding ground for bacterial growth and mould. Try not to disturb the dust too much while cleaning, which will distribute the mould spores and powdery residues into the air. Use slow gentle movements while brushing the worst of the droppings into a vacuum cleaner nozzle, ideally fitted with a HEPA filter. If a vacuum is not available, carefully brush into a dustpan or rubbish bag.

Removing bird and bat droppings may mean working at height. Ensure that you have a suitable risk assessment in place, are working from a stable ladder or platform and are not carrying out this

kind of work alone. Try not to clean above head height unless you can do this with vacuum extension poles and avoid excessive stretching. Wear eye protection if working above head height.

Dispose of the debris in heavy duty bags. If you think it is contaminated with mould, empty the vacuum cleaner immediately after cleaning and then clean the vacuum cleaner and replace the filter. Seal the rubbish bag and place in bins to avoid contaminating other areas or people

WHEN TO BRING IN A SPECIALIST

Large build-ups of bird droppings should be dealt with by specialist cleaners due to the health risk. Relocating bats must only be undertaken by bat specialists. They should not be disturbed by non-licensed persons. If you find a dead bat you should call the **National Bat Helpline 0345 1300 228** and they will tell you what to do with it. Please note bats are unlikely to be a problem unless there are lots of them, then a Volunteer Bat Roost Visitor may want to come and have a look.

If you have severe staining or damage on items like metal or wood consult a conservator. Sadly, some items can become permanently damaged and more cleaning will abrade layers of historic fabric.

OTHER RESOURCES AVAILABLE

Historic England have resources on managing bats in buildings.

Bats in Traditional Buildings <https://historicengland.org.uk/images-books/publications/bats-in-traditional-buildings>

For extra help or advice get in touch with the Bats in Churches project who have specialist information about dealing with bats in historically significant settings. <https://batsinchurches.org.uk> or bats.churches@naturalengland.co.uk

Vacant Historic Buildings examines risk from a variety of sources, including bats and birds

<https://historicengland.org.uk/images-books/publications/vacanthistoricbuildings>





Pests in Houses Great and Small, Pinniger, D and Lauder, D, English Heritage 2018 has useful information on birds and bats describing methods of entry, proofing methods and shows droppings.

7. Other kinds of Collections Damage

You may identify new damage to your collections that requires advice and guidance from specialist conservators to identify the underlying cause of the damage and provide treatment options if necessary. For example:

- **Light exposure** can cause objects to fade and object surfaces to become brittle and start to breakdown
- **Gaseous pollutants** can lead to the corrosion of metals, tarnishing of silver, and embrittlement and weakening of certain types of organic material
- **Unstable environments** can cause paper collections to cockle, organic material like wooden objects and natural history specimens such as taxidermy to crack or split, and salts to form on some objects. It can also cause reaction and damage to specific collection types like oxidation in fossil collections containing pyrite and foster the growth of Verdigris in pinned entomological (insect) collections.

WHAT DOES IT LOOK LIKE?

Light damage	Gaseous pollutants
 <p data-bbox="165 1256 632 1285">Faded colours (bottom half) on a textile</p>	 <p data-bbox="756 1256 1002 1285">Corrosion on copper</p>
Damage arising from unstable environment	
 <p data-bbox="165 1850 628 1912">Cockled historic wallpaper due to large fluctuations in relative humidity</p>	 <p data-bbox="756 1850 1182 1879">Salts forming on a marble sculpture</p>

Damage arising from unstable environment	
	
<p>Pinned beetle showing Verdigris growing on the pin and impacting the beetle</p>	<p>Oxidisation in Fossil pyrite collections</p>

METHODS TO MANAGE DAMAGE

In these instances, document the damage you identify with photographs and written summaries and, where it is safe to do so, move the object to a clean, stable environment with no or limited light. If the object is physically unstable and moving it may cause further damage, leave it in situ. **Contact a conservator** to discuss treatment options.

If you need a conservation expert, the Icon Conservation Register can help you identify someone with the right skills in your area <https://www.conservationregister.com/>