

# DECAY

TIME, OBJECTS & DESTRUCTION

Decay is when objects rot, break down or wear away.

It's the reason why your bananas go black and your bike rusts if you leave it outside - decay is all around you!

In the Museum of Archaeology, you can see things that people in the past made and used. Decay changes how things look over time and destroys some things completely.

There are many things that make objects decay.

These are called the 'Agents of Decay':



## From people...

Physical force – don't drop it!  
Greasy fingers  
Vandalism



## ...to natural disasters

Fire  
Flooding



## Things that are all around us...

Temperature  
Light  
Dust  
Pollutant gases  
Air moisture



## ...and some we hope aren't

Pests - rats, moths and creepy crawlies  
Moulds and bacteria

All these agents can cause decay, but they act at different speeds on different materials. Inside the gallery we'll explore the worst offenders...

Hi, I'm Mouldy!  
Follow me to explore the grimy and gruesome causes of decay, the science behind it and what decay means for the future...



## The Science Behind Decay

How does it all work? Is light really destructive? And how does water destroy glass?

The key is **TIME**

Drop a bottle and it will break straight away, but most things that cause decay take a lot more time.

Here are four of the most dangerous agents of decay...

### Pests

From rats and mice to beetles and grubs, there are all sorts of pests that see objects as dinner!

They can eat anything that has been made from living plants and animals, like leather shoes, wooden furniture, cotton and wool fabric and much, much more. Rats and mice will even gnaw on things they can't eat, so lots of things can end up full of holes if there are pests about.

Once pests find something they can eat, they can cause an object to decay very quickly. Even small insects such as carpet beetles eat a lot when they are larvae. These hairy larvae are called Woolly Bears.



*Anthrenus museorum* larva, also known as Woolly Bear (Author: André Karwath)



*Anthrenus museorum* as adult beetle, also known as museum beetle (Author: Olaf Leillinger)

### Light

We need light to see but it's very damaging.

It constantly decays lots of things but so slowly that we almost don't notice its impact. Light changes the structure of objects at a microscopic level. It causes colours to fade and makes things brittle. It damages fabrics and paper the most, but it can also decay wood, paints and plastics.

Tests with special fabrics show the impact light has on fabric dyes. Dyed fabric can fade within weeks or months. The rate the dye fades depends on how direct and bright the light is and the type of dye.



Woolly Bears might sound nice and fluffy, but these destructive little insect larvae feed on leather, fur or feathers

### Biological Attack

Mouldy might be our friendly guide but fungi and bacteria are not kind to objects.

There are many different types of fungi including moulds, mushrooms and mildew!

These living micro-organisms thrive in warm and damp places, but they also need food – our objects! Micro-organisms grow on surfaces and eat away at the layers if they are left alone. This causes rapid decay.



Mould on damp living room wall (Author: Infrogmation)



Mildew on leaf (Author: Jeff Kubina)



Fungi growth on wood

### Air Moisture

Air always holds some water. This is known as air moisture. The amount of water in the air can change, so air can be very damp or very dry.

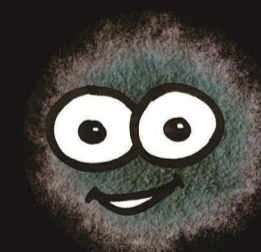
Air moisture can decay lots of different materials in lots of different ways and at various speeds. It makes things swell and shrink, which stresses them very slowly. Damp, warm air attracts pests and biological attack that decay things very quickly.

Water in the air is particularly damaging to metals, especially iron. Most metals chemically react with water – as air moisture or liquid – and create a new material.

The new material forms over the surface of the metal object. This is called corrosion and is often lumpy and colourful.

It can even get into materials that we think of as waterproof, like glass, ceramic, and stone! Once inside, moisture can draw minerals to the surface and make objects flake and crack. This can happen very quickly or over hundreds of years.

A single tooth can host 500 million bacteria - these cause teeth to decay. That's why it's important to brush your teeth.



## Decay Throughout Time



Understanding decay - and how it destroys some things before others - helps us to make sense of the past.

Most prehistoric objects made from leather, wood and other materials have long since decayed. However, stone objects do survive but we know this isn't the full story...

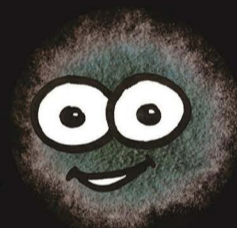
Think about the **DECAY** objects in the cases – what do you think will happen to the things you own, and the materials they are made of?

Will future archaeologists be able to understand how you lived from what survives?

They might not get everything right because of the effects decay might have on the evidence. So do you think archaeologists have accurately understood the lives of past people?



Phew! I didn't realise decay was so important. Thank you for joining me on my journey!



### The exhibition team would like to thank:

Helen Armstrong, Dr Craig Barclay, Rachel Barclay, Dr Mary Brooks, Ruth Chamberlain, Sara Chamberlain, Dr David Erickson, Terry Frain, Vicky Garlick, Gemma Lewis, Julia Oliver, Allison Percival, Dr Sarah Price, Dr Benjamin Roberts, Dr Robin Skeates, Mel Smith, Phil Smith, Sam Stacey, Graham Taylor, Dr Gemma Tully, Kate Weightman, Beth Wetherell

AlphaGraphics, Durham Archaeology Explorers, Durham University, Durham University's Department of Archaeology, Durham University's Museum of Archaeology, Evancliffe Leather, MA Museum and Artefact Studies, Oriental Museum, Palace Green Library, Palace Green Library's Exhibition Team, Potted History, Statex Colour Print, Teesside University

Thank you from all of us!