
Doing Darwin's experiments



Survivor seeds

Activity 2c: Owl pellet dissection

Subject: Science

40 minutes

Suggested preparation

Presentation:

[Doing Darwin's experiments](#)

What do I need?

Letter 1681 Charles Darwin to Joseph Hooker

Darwin's experiment notebook extract

Letter questions

Who's who?

Online film clip on dissecting bird pellets

Owl pellet dissection recording table

Owl pellets (order online from biological suppliers or contact local sources)

White paper

Pair of tweezers

Small pots of moist compost

Plant labels

In Darwin's experiment, he fed a rat containing seeds to a snowy owl and dissected the matter that was regurgitated by the owl. In this experiment, the rat is omitted! Dissect an owl pellets and plant any seeds that you find.

What do I do?

1. Read through the letters and Darwin's notes and answer the questions.
2. Watch the film clip on dissecting owl pellets.
3. Break owl pellet in half onto white paper, then into smaller pieces. Carefully extract the pieces of bone and any plant material or seeds that you find.
4. Try to identify contents; plants, seeds and animals.
5. Record your findings and results on the chart
6. Plant any seeds you find in small pots of moist compost.
7. Label with as much information as possible.
8. Monitor at regular intervals. Record your results.
9. Compare your results to Darwin's and discuss why they might be different.

Letter 1681, Charles Darwin to J. D. Hooker, 15 May 1855?

15th Down

My dear Hooker

... Everything has been going wrong with me lately; the fish at the Zoolog. Soc. ate up lots of soaked seeds, & in imagination they had in my mind been swallowed, fish & all, by a heron, had been carried a hundred miles, been voided on the banks of some other lake & germinated splendidly,—when lo & behold, the fish ejected vehemently, & with disgust equal to my own, all the seeds from their mouths.—



But I am not going to give up the floating yet: in first place I must try fresh seeds, though of course it seems far more probable that they will sink; & secondly as a last resource I must believe in the pod or even whole plant or branch being washed into sea: with floods & slips & earthquakes; this must continually be happening, & if kept wet, I fancy the pods &c &c wd. not open & shed their seeds.—...

Goodbye my dear Hooker

Ever yours

C. Darwin

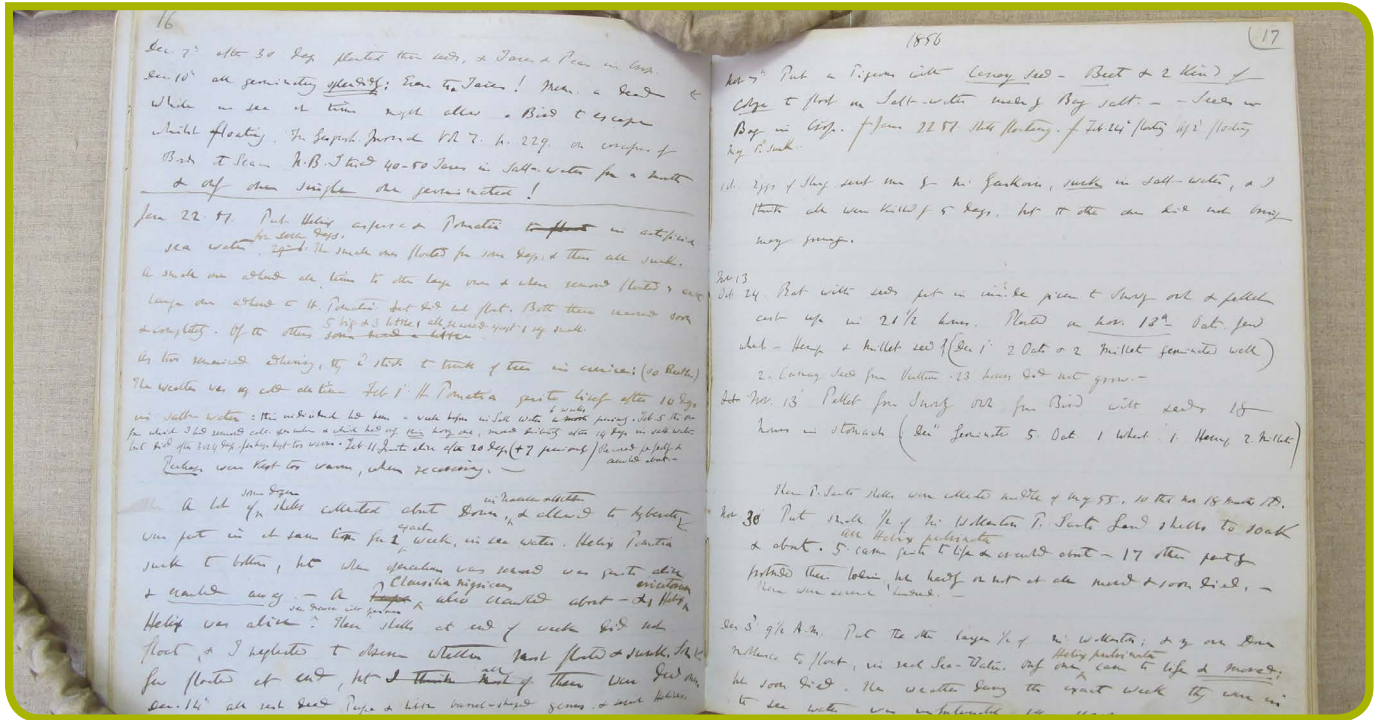


Charles Darwin

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Extract from Darwin's experiment notebook

Between 1855 and 1868 Darwin kept a notebook of the experiments that he carried out. In these pages Darwin explores how seeds may be dispersed including through the gut of animals inside other animals. (The notebook was amended by Darwin regularly, as shown by the information in brackets.)



1856

Nov 13

Oct r. 24. Rat with seeds put in inside given to Snowy owl & pellet cast up in 21.5 hours. Planted on Nov. 13th Oats. found wheat— Hemp & Millet seed fd (Dec 1st 2 Oats & 2 millet germinated well)

2— Canary Seed from Vulture— 23 hours did not grow.—

Oct. Nov. 13 Pellet from Snowy owl from Bird with seeds 18 hours in stomach: (Decr. Germinated 5: Oats. 1 Wheat. 1. Hemp 2. Millets)



Letter questions:

1. What does Darwin hope and imagine will happen to the seeds swallowed by fish in letter 1681. What is he trying to find out through this process?
2. Looking at the extract from his experiment book, are there any similarities with letter 1681 in terms of the process being observed? What are the results of Darwin's seed sowing? What does dissecting owl pellets help him to understand?

Owl pellet dissection recording table.

Location of pellet (if found):

Type of bird (if known):

Date	Content of pellet				Other
	Mammals	Insects	Plant materials		

Doing Darwin's experiments

Who's who?

Charles Darwin

Charles Darwin (1809-1882) was a naturalist who established natural selection as the mechanism for the process of evolution. He joined the voyage of HMS *Beagle* when he was 22, a journey he described as the 'most fortunate circumstance in my life'. He wrote to around 2000 correspondents all over the world as a means to inform his research. Most famously he published *On the Origin of Species* in 1859, but he researched and wrote extensively on natural history throughout his life.



Joseph Hooker

Joseph Dalton Hooker (1817–1911) was a botanist who worked chiefly on taxonomy and plant geography. Hooker accompanied James Clark Ross on his Antarctic expedition (1839–43) and later publishing the botanical results of the voyage. He was appointed palaeobotanist to the Geological Survey of Great Britain in 1846. He travelled in the Himalayas (1847–50) and introduced many plants to Britain for the first time. He became Assistant director of the Royal Botanic Gardens, Kew from 1855 to 65 and was made director in 1865. He held the post for 20 years and was knighted in 1877. He was a trusted colleague, close friend and confidant of Charles Darwin for most of his life and exchanged 1,400 letters with him.

