

National Biodiversity Network. Compiled by local groups in Britain and Ireland, the database contains 140,000 recorded samples dating back to the eighteenth century.

Technology is also an important way to harness amateurs' contributions. Charles Godfray, an evolutionary biologist at the University of Oxford, UK, has worked to set up a peer-reviewed, single repository for all taxonomic information online — a sort of wiki-taxonomy<sup>6</sup>. That, he says, could help amateurs check the taxonomic designations of species that have been described. “The single thing that stops amateurs from being better involved in the process of taxonomy is getting at the literature,” says Godfray. He is beginning to see his dream realized with a test website called CATE, for ‘creating a taxonomic e-science’, which he hopes will hold the taxonomy for aroids (popular house plants) and hawkmoths.

Polaszek notes that there is plenty of work for both amateurs and professionals. “We’ve got tens of millions of species to be described, and the easier this is, the better it is for everybody,” he says. The ICZN is setting up a new system, called ZooBank, that requires species descriptions to be registered online. Within a year, he says, ZooBank could even be modified to include purely web publications such as CATE.

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— Andrew Polaszek

But could such changes sort out the mess over Australian reptiles? Perhaps not. In the 1980s, two amateur herpetologists called Richard Wells and Ross Wellington published more than 550 species descriptions that have since been changed<sup>7</sup>. An attempt to annul the work of the pair was rebuffed by the ICZN and taxonomists still have to sort through this work to determine whether the names chosen by Wells and Wellington have priority over other publications.

Hoser, for his part, found inspiration in their example and christened one death adder *Acanthophs wellsei*. It may have been a fitting tribute, as the name itself was improperly constructed. In a redescription of the species, Aplin amended the name to *Acanthophs wellsii*. ■

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1. Aplin, K. P. *Monitor* **10**, 104–109 (1999).
2. Wüster, W., Bush, B., Keogh, J. S., O’Shea, M. & Shine, R. *Litteratura Serpentina* **21**, 67–91 (2001).
3. Burkhardt, F. H. & Smith, S. (eds) *The Correspondence of Charles Darwin, Volume 4: 1847–1850*, 210 (Cambridge Univ. Press, Cambridge, 1988).
4. Pilon, Y. & Chase, M. W. *Conserv. Biol.* **21**, 263–265 (2007).
5. Hopkins, G. W. & Freckleton, R. P. *Anim. Conserv.* **5**, 245–249 (2002).
6. Godfray, H. C. J. *Nature* **417**, 17–19 (2002).
7. Thulborn, T. *Nature* **321**, 13–14 (1986).

## The royal raccoon from Swedesboro

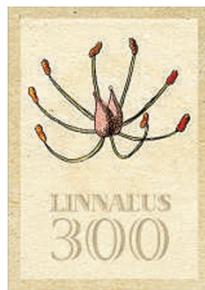
Although Linnaeus is best known for his botany and taxonomy, he was also an anatomist — and a keeper of pets. **Henry Nicholls** tells the story of Sjupp the raccoon.

**N**ot many people would respond to the death of a pet by dissecting it. But Carl Linnaeus was an exceptional man. In 1747, Sjupp, his pet raccoon, clambered over a fence at the botanical garden in Uppsala and met a dog on the other side. The meeting was not a happy one for the raccoon. Unwilling to forego the opportunity to describe the raccoon’s anatomy and find out where it sat in his system of nature, Linnaeus laid the mauled body out on a slab and picked up his scalpel.

Linnaeus’s subsequent account of his raccoon is a perfect illustration of his powers of observation and attention to detail. But it is also a record of tenderness and affection, steeped in the rhythms of daily life at the botanical gardens. It deals with the dead animal’s character as well as its anatomy — and in so doing reveals something of the character of the anatomist himself.

Sjupp was a gift from crown prince Adolf Fredrik, known to Swedish schoolchildren as ‘the king who ate himself to death’ because he keeled over in 1771 after putting away 14 helpings of a traditional pudding. He was also, admittedly less memorably, a keen amateur naturalist as was his wife. The pair acquired thousands of natural-history specimens, according to Anthea Gentry, a research associate at the Natural History Museum in London who has been studying the mammals and birds in the Swedish royal collections.

“For the royal couple, this was an enterprise driven by a desire to establish a collection of the most rare, conspicuous and interesting species,” says Gentry. The queen invited



Linnaeus to catalogue and describe what they had acquired. Because they contain the specimens that Linnaeus used to describe various species — the ‘type specimens’ — the collections took on tremendous scientific significance. “They contain so many type specimens that they are as important as any other collection of similar size,” says Gentry.

### Sweet tooth

After Sjupp made the journey from the small zoo in the Royal Gardens in Stockholm to Uppsala he was kept in the royal manner to which he was accustomed. Although he would eat just about anything, “what he liked best were eggs, almonds, raisins, sugared cakes, sugar and fruit of every kind”, Linnaeus observed<sup>1</sup>. “Should there be any cake or sugar on the table or in a cupboard he was on it in a flash, and thoroughly enjoyed himself. If a student came in who happened to have raisins or almonds on him, he at once attacked his pocket and fought until he had captured the spoil. On the other hand, he couldn’t bear anything with vinegar on it, or sauerkraut, or raw or boiled fish.”

Linnaeus went on from Sjupp’s tastes to his temperament. “He became very friendly with people when he got to know them, letting them pat and play with him (especially if they ingratiated themselves by means of a few raisins).” But the raccoon also had a moody side. “Anyone who had once quarrelled with him found it almost impossible to get back again into his good books.” Linnaeus’s head gardener, who had once panicked and flapped when Sjupp bounded up to him and began to search his body for a tid-bit, suffered this disdain.

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“From that moment Sjupp developed an irrec-  
oncilable hatred of the man,” he wrote. “Every  
time he smelt him he began making a noise  
like a seagull, the sign that he was extremely  
angry.” In short, Linnaeus concluded, Sjupp  
could be “as obstinate as a knife grinder”.

His rich account of Sjupp’s life reveals  
the many levels at which Linnaeus engaged  
with the natural world, says Karen Reeds,  
historian of science and guest curator of a  
tercentenary exhibition on Linnaeus and  
America at the American Swedish Historical  
Museum in Philadelphia. “Nature really  
captivated him emotionally as well as scien-  
tifically,” she says. Testimony to his lasting  
affection, says Marita Jonsson, author of a  
book<sup>2</sup> on the power of place in Linnaeus’s  
work, is a watercolour of Sjupp that hung in  
the study at Hammarby, Linnaeus’s summer-  
house just outside Uppsala.

### Change of status

This fondness, though, held no squeam-  
ishness: the meat of his 1747 paper is an  
organ-by-organ description of the raccoon’s  
anatomy. He named the raccoon *Ursus cauda elongata*, ‘the  
long-tailed bear’. But by the time he published his tenth edition  
of *Systema Naturae* in 1758, he had revised its name to  
*Ursus lotor*, ‘the washing bear’, in the light of new evidence  
and to bring it in line with his binomial nomenclature system.  
“It was typical of the way he was constantly tweaking his  
classification scheme,” says Reeds. “One of the most impres-  
sive things about Linnaeus was his readiness to change his  
mind as new information reached him.”

Today’s taxonomists are still struggling to come to an agree-  
ment about raccoons, mainly because of an overenthusiastic  
bout of ‘splitting’ in the early twentieth century. In a matter  
of decades, scientists had described more than 20 subspecies  
of the common Northern raccoon (Linnaeus’s *Ursus lotor*,  
and now called *Procyon lotor*). Things got particularly out  
of hand in the Caribbean, where each island population was  
designated as a distinct species.

A combination of molecular and con-  
ventional morphological approaches  
has now revealed that the Carib-  
bean raccoons are probably  
recent introductions to the  
islands from the mainland  
population, and therefore  
undeserving of any spe-  
cial taxonomic status,  
allowing taxonomists  
to collapse the apparent  
diversity of raccoons back  
down to something more  
meaningful<sup>3</sup>.

“In the Bahamas, they  
were delighted. They instantly  
changed the raccoon’s status  
from endangered to invasive spe-  
cies and set up a control programme



**Pet portrait: Linnaeus  
hung this watercolour  
of Sjupp the raccoon at  
his summerhouse.**

**Linnaeus’s study at  
Hammarby, Uppsala,  
Sweden.**



to eradicate them,” says Don Wilson, a taxonomist at the  
National Museum of Natural History in Washington DC.  
But in Guadeloupe, the locals were far from happy, having  
taken some pride in the distinctiveness of their raccoon.  
“They love the little rascals,” says Wilson.

Sjupp himself was no Caribbean exotic; he almost cer-  
tainly came from ‘New Sweden’, the Swedish colony on the  
Delaware River founded in the seventeenth century. Pehr  
Kalm, one of the ‘apostles’ Linnaeus sent out into the world  
to gather its riches, went there in 1748 and reported that  
raccoons, or more precisely their skins, were an important  
part of the North American economy. “The hatters pur-  
chase their skins, and make hats out of their hair, which are  
next in goodness to beavers,” Kalm noted in his *Travels into  
North America*<sup>4</sup>. “The tail is worn around the neck in winter  
and therefore is likewise valuable.” The village Kalm spent  
his winters in was actually called Raccoon at the time; today,  
though, it is known as Swedesboro.

Reeds says that Sjupp almost certainly came from this  
area, as did many furs exported to Sweden and the Neth-  
erlands: “It seems plausible that they would have sent a  
live specimen along with them.” When Kalm eventually  
returned to Uppsala, “Linnaeus was tremendously excited  
about what he found out”, says Reeds. Linnaeus was roused  
from his sickbed where he’d been suffering from a severe  
attack of gout and returned to his *Species Plantarum* with  
renewed enthusiasm, she says. And at some point, he got  
his hands on a second live raccoon — there is one listed  
in the 1769 inventory of Linnaeus’s menagerie. Whether  
it squawked at gardeners and snuffled through students’  
pockets, though, we do not know. ■

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1. Blunt, W. T. *The Compleat Naturalist: A life of Linnaeus* (Collins, London, 1971).
2. Jonsson, M. *Carl von Linné, Boningar, trädgårdar och miljöer*. (Bokforlaget Forum AB, 2003).
3. Helgen, K. M. & Wilson, D. E. *J. Zool.* **259**, 69–76 (2003).
4. Kalm, P. *Travels into North America* (Trans. Forster, J. R.) (Lowndes, London, 1772).

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