**Biological correlates of description date in carnivores and primates**

**Collen B**, Purvis A & Gittleman JL (2004) *Global Ecology and Biogeography* 13: 459-467

There are thought to be roughly 5-10 million species of animals and plants alive on Earth, but the number that have been formally given names and descriptions by taxonomists is ‘only’ a shade under 2 million. So do we really know what biodiversity is like? We do if there’s no bias in which species have been given descriptions – if taxonomists effectively picked species to name absolutely randomly out of all the ones that exist, then the named species would be a representative sample of the whole set, so we would know what life is like. But if there’s a bias, that’s no longer true. If, for instance, taxonomists named the colourful species first, then we would think nature was more brightly coloured on average than it actually is. This paper – Ben’s first paper to be published – looked in detail at primates and carnivores to see whether the early-described species are ecologically or morphologically different from those described later. If so, there’s been a bias; what’s more, we can start to guess what the as-yet-unnamed species will probably be like. It wasn’t the first paper to look at correlates of description date, but it was an advance on earlier work because it considered a wider range of hypotheses, in a statistical analysis that tested them all at the same time.

Some papers are plotted out a long way ahead. An idea is developed and nurtured, and becomes a full program of research; the route to the ultimate objective is planned out as far as possible; the building blocks – the methods, the data – are put together; the analysis is done; and the paper is written. Most papers are not like that however. Most papers are more opportunistic: an idea is developed and nurtured, but in full knowledge of what building blocks are already available, to see if it’s possible to do something useful quickly without getting too bogged down – because most papers are not really the papers you’re supposed to be writing. This was one of those papers. I had accumulated a (for the time) detailed database (OK, Excel spreadsheet…) on the ecology and life history of primate species, and John Gittleman had something similar for carnivore species. John and I were involved in a project with Georgina Mace to understand why some mammal species were at greater risk of extinction[[1]](#footnote-1), so these data had already been analysed in quite a few ways, but no-one had looked for correlates of description date. We had all the data, and Ben already knew the methods, so the idea and the building blocks were all in place. He did a really good job of the analysis and the first draft, which John and I helped turn, over about six iterations, into a manuscript ready for submission. Ben worked quite a shift to submit the manuscript to *Global Ecology & Biogeography* in mid-December 2003; Tim Blackburn[[2]](#footnote-2) was the handling editor. As this was Ben’s first paper, it was also his first encounter with the dreaded cliché that is “Reviewer 2”. (In writing this piece, I dredged my email archive and found one from Ben from April 2004, showing a mostly anguine attitude to the reviewer comments but asking plaintively “How do you deal generally with Reviewer 2?”, followed by “What will the winning lottery numbers be this weekend?” Equally insoluble mysteries…)

Although Ben’s research focus shifted a lot from this first step, three threads that ran through a lot of his subsequent work can be seen clearly here. The first is synthesising data from many species to try to find general rules, or at least rules of thumb. The second is *testing* whether the sample (here, the set of described primates and carnivores) is actually representative of the group of interest (here, all primates and carnivores): most researchers tend to *assume* that it is. Third, linking between new scientific findings and how conservation is, or should be, done: the discussion points out that systematic conservation planning is often done on the basis of where narrowly-distributed species live – but our results suggested that there are

probably lots more narrowly-distributed species still to find. Ben had put conservation in the title of the submitted version. Reviewer 2 wanted it removed from the paper altogether. Ben, again hinting at what was to come, quickly found a sensible and workable compromise, not winding the reviewer up but nonetheless clearly saying what he wanted to say. The revised version went through on the nod, and Ben sent me a pdf version of the published paper on 9th August 2004 (in an email mostly about finalising another manuscript for submission).

The paper has been referenced in over 60 other papers so far – a pretty good impact, especially for a first paper. Some of these citations come from similar analyses of other taxonomic groups; some are from papers that build on the same thinking to try to estimate how many species we might ultimately name; and many cite it for the key conclusion that looking only at what we have already named can give us a distorted picture of biodiversity.

Professor Andy Purvis

Natural History Museum, London UK

1. Georgina, John and I had all shared the same PhD supervisor, Paul Harvey. Ben’s academic lineage was so inbred he might as well have been academically haploid. [↑](#footnote-ref-1)
2. Tim was also supervised by Paul Harvey… [↑](#footnote-ref-2)