



‘Citizen science’ recording of fossils by adapting existing computer-based biodiversity recording tools

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Biodiversity recording activities have been greatly enhanced by the emergence of online schemes and smartphone applications for recording and sharing data about a wide variety of flora and fauna. As a palaeobiologist, one of the areas of research I have been heavily involved in is the question of whether the amount of rock available to sample acts as a bias on our estimates of biodiversity through time. Although great progress has been made on this question over the past ten years by a number of researchers, I still think palaeontology has not followed the lead offered by the ‘citizen science’ revolution in studies of extant biodiversity. By constructing clearly structured surveys with online data collection support, it should be possible to collect field data on the occurrence of fossils at the scale of individual exposures, which are needed to test competing hypotheses about these effects at relatively small spatial scales. Such data collection would be hard to justify for universities and museums with limited personnel but a co-ordinated citizen science programme would be capable of delivering such a programme.

Data collection could be based on the MacKinnon’s Lists method, used in rapid conservation assessment work. It relies on observers collecting lists of a fixed length (e.g. 10 species long) but what is important is that it focuses on getting observers to ignore sightings of the same species until that list is complete. This overcomes the problem of ‘common taxa being commonly recorded’ and encourages observers to seek out and identify the rarer taxa. This gives a targeted but finite task. Rather than removing fossils, participants would be encouraged to take photographs to share via a recording website.

The success of iSpot, which allows users to upload photos of plants and animals for other users to help with identifications, offers a model for overcoming the problems of identifying fossils, which can often look nothing like the examples illustrated in guidebooks. The requirements for a web platform could be met by the use of the freely-available Indicia software developed by the UK Centre for Ecology and Hydrology for biodiversity recording. However, some trials with the software have found it would be suitable for recording fossil occurrences as well. The software allows users to plot collections on maps, upload and share photographs and make identifications of material.

Within the UK, the British Geological Survey has made geological map data available via the iGeology smartphone app and the Geology of Britain website. Thus it is now possible for people with access to smartphones or the internet to know which geological units they are sampling from, which would previously have been difficult without access to paper copies of geological maps.

Such a programme could make a significant contribution towards reviving palaeontology and geology as field-based natural history and create wider interest in basic geological and taxonomic skills and form the basis for work on geodiversity recording and exploring links between geodiversity and biodiversity.