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Animal classification and the Taxonomy Initiative

R.D.M. Page & J.R. Downie*

Graham Kerr Building, University of Glasgow, Glasgow G12 8QQ

*E-mail: roger.downie@glasgow.ac.uk

John Graham Kerr (JGK) was interested in the naming, description, diversity and relationships of living organisms. This interest is seen particularly in his enthusiasm for the proper housing and development of the Hunterian collections, including Fabricius's insect "type" specimens which his colleague R.A. Staig catalogued. Taxonomy in zoology involves the description and naming of each kind of animal. Since the pioneering work of Linnaeus, each newly described kind (or species) has been assigned its own Latin binomial, a name of two words: first, the generic, then the specific, printed in italics, as in *Rana temporaria*, the common frog. The English or common name is how animals are referred to in everyday speech, but they can vary between countries and regions, while the Latin name is universal and allows scientists to be sure of which kind they are dealing with. The specimens used for the first description of any species are known as the "type" specimens and are intended to be carefully curated and catalogued in reputable museum collections. The full Latin name for any species includes the name of the describer: *Rana temporaria* L. denotes that this species' key features were first described by Linnaeus. Although Linnaeus accepted the prevailing dogma of his time that all creatures had been created by God, he and others could see that creation was not random: many species were similar to other species, but distinctly different from others. Linnaeus was therefore able to construct a hierarchy of similarity and difference that allowed the diversity of living organisms to be ordered. For example, *Rana temporaria* is similar to some other frogs, such as the pool frog *Rana lessonae,* but different from another group of frogs with adhesive digital pads, the treefrogs, assigned a different generic name - *Hyla.* While taxonomy is about naming species of organisms, systematics is about the ordering of them into similarity groups. Since the time of Darwin, systematics has aimed to reveal the evolutionary origins and relationships of groups of organisms.

In Glasgow's Department of Zoology, Staig was eventually replaced in 1948 by Roy Crowson's appointment to a University Grants Committee-funded lectureship in taxonomy. Crowson officially retired in 1979 (with no replacement), but continued to work on the taxonomy and systematics of beetles until his death in 1999. The UK had long been a leader in the discovery and naming of species, related to the country's wealth and access to so many colonised countries. Many of the type species discovered by British scientists are kept in the vast collections of the Natural History Museum in London (NHM). However, by the late 20th century, U.K. research in the classification of biodiversity was in decline, especially in universities. In 1992, the House of Lords Select Committee on Science and Technology, chaired by Lord Dainton, published the results of its enquiry into the state of systematic biology research. Its recommendations resulted in two outcomes: the Natural Environment Research Council's (NERC) Taxonomy Initiative (1994-1998) and the Wellcome Trust Biodiversity Initiative (1993-2002). In the NERC scheme, universities were invited to apply for one of three major grants. In Glasgow, Keith Vickerman was still in post as Regius Professor of Zoology, but no longer had administrative head of department responsibilities, and was therefore in a position to coordinate a bid. With the support of the Principal, Sir Alwyn Williams, a paleontologist with interests in taxonomy, Vickerman decided on a multi-disciplinary approach. Glasgow's successful bid (the other two awards went to Reading and Imperial College London) brought together zoologists, botanists, geologists and geneticists: the technology for sequencing DNA was becoming affordable and faster, allowing detailed genetic evidence to inform our understanding of evolutionary relationships.

The NERC grant provided for one lectureship and several research posts. Mark Wilkinson, a specialist on caecilian amphibians and an evolutionary tree theorist, was appointed to the lectureship. Ken Johnson, a researcher on fossil corals and Pete Hollingsworth, a plant taxonomist, occupied two of the research posts. Unfortunately, Wilkinson left Glasgow after a couple of years, for personal reasons, and ended up in the NHM from where he continued to collaborate with Bernie Cohen, geneticist on the Initiative, on amphibian research.

Wilkinson was replaced in 1995 by Rod Page who has remained in Glasgow ever since. Rod is a pioneer in the use of modern computer methods for the establishment of evolutionary trees (his early program TreeView (Page, 1996) has over 12000 citations). He also established a research group on bird louse phylogeny and co-speciation, including an excursion into evidence on human ancestors based on the relationships of lice (Reed *et al*., 2004). Of early collaborators, Hollingsworth progressed to be Director of Science at the Royal Botanic Gardens Edinburgh (RBGE); Johnson to be principal researcher at the NHM; Mike Charleston to be professor of Mathematics at the University of Tasmania; Vince Smith to be head of informatics at NHM; and Bernie Cohen continued his research into the phylogeny of marine invertebrates well past "retirement".

The reorganisation of biological science departments that led to the establishment of the Division of

Evolutionary and Environmental Biology (DEEB) brought a group of plant ecologists and taxonomists into the Graham Kerr Building, including the University's herbarium, and Jim Dickson of that group was part of the Taxonomy Initiative. Sadly, once they retired, these botanists were not replaced and work on plant taxonomy became very limited. One continuing example is work on begonias. Glasgow Botanic Gardens holds the U.K. begonia collection, and administers the MacIntyre Begonia Trust, which has funded several PhD projects co-supervised by Rod Page and staff at RBGE.

The NERC Taxonomy Initiative was stimulated by the House of Lords report, highlighting the lack of funding and activity in this field. Unfortunately, funding is again scarce, but Rod Page's research continues including collaborations with the Global Biodiversity Information Facility and the Biodiversity Heritage Library, creating websites and Databases on taxonomy.

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REFERENCES

Page, R.D.M. (1996). TreeView: an application to display phylogenetic trees on personal computers. *Bioinformatics* 12, 357-358. https://doi.org/10.1093/bioinformatics/12.4.357

Reed, D.L., Smith, V.S., Hammond, S.L., Rogers, A.R. & Clayton, D.H. (2004). Genetic analysis of lice supports direct contact between modern and archaic humans. *PLoS Biology* 2, e340. https://doi.org/10.1371/journal.pbio.0020340