



The Linnean

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misconception rectified

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Articles should be emailed to the Editor in MS Word format, or sent on disc. Images should be sent as JPEGs or TIFFs at no less than 300dpi. Correct copyright information for images should accompany the article.

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SUBSPECIES IN THE CYPRAEIDAE: WITNESS FOR THE DEFENCE

It was with great interest that I read Mr Okon's (2017) recent article on the naming of sub-species in the Cypraeidae. It is a group with which I am regrettably unfamiliar and, typically, I would therefore hesitate in venturing any refutation of what he has said. However, it seems to me that, although firmly grounded in this specific group of molluscs, his remarks are in fact illustrative of broader and more far reaching taxonomic problems, related to the description and categorisation of within-species phenotypic variation. Indeed, many of the points he made are applicable, at least in principle, to my own group, the Lepidoptera, and there are one or two that I feel I must offer an alternative perspective on.

My principle objection lies with his argument that "[w]hereas species is both a natural and taxonomic concept, subspecies is not, and has little biological meaning". I think that this could not be further from the truth. Species are indeed "natural" in that our classifying them as discrete entities reflects true isolation in a state of nature—under Mayr's definition of a population of freely interbreeding organisms, reproductively isolated from other such populations, a species might be thought of simply as an isolated pool of genes, cut-off from mixing with other such pools; the unique genetic composition of the pools, resultant from this isolation, gives each species their distinctive phenotypic characteristics. These, in turn, form the basis of any morphological means of species determination.

I would argue that, in a similar manner, the term "sub-species" is an attempt to taxonomically acknowledge geographical variation, resulting from local adaptation and random genetic drift, and provide a context in which it can be described and classified. We can imagine populations or groups of populations as being present at different points on an axis of speciation, from total genetic interchange and homogeneity (a single species) to complete genetic isolation and divergent gene pools (new daughter species). In this sense, then, the category "sub-species" is surely as biologically valid as "species" in that it too reflects a natural distinction; an isolated, phenotypically distinct population, albeit to a lesser degree and more modestly advanced along the road to speciation than full species.

I can, however, sympathise with the criticism that many populations or within-species variants are entirely inappropriately described as "sub-species". In the Lepidoptera, for instance, the geographically distinct populations of *Coenonympha tullia* which occur in Britain, named *scotica*, *polydama*, and *davus*, have been called sub-species, despite it being not at all uncommon for individuals resembling one "sub-species" to occur in the distribution of another. Indeed, localities are known where individuals belonging to all three "sub-species" fly together (Ford 1953). It seems to me that local adaptation is certainly at work—there is a discernible general pattern of geographical phenotypic variation (Dennis 1992)—but to name these groups sub-species, and at least implicitly suggest that they are in some way incipient full species, is I think very difficult to justify. This is a far softer form of divergence, with much continued gene flow, closer to the single species end of the axis I outlined above.

This approaches the heart of the issue as I see it—not a problem with sub-species as a concept, but rather a lack of any other recognised taxonomic categories for describing

different types of within-species variants. I have proposed the resurrection of the term “race”, once used commonly by entomologists, for weakly divergent populations of the kind illustrated by *C. tullia* (Weir 2016). Similarly, Mr Okon eloquently illustrates the absurdity of calling what is plainly a polymorphic variety of *Zoila marginata*, of limited geographical distribution, a sub-species.

I am not, however, of the opinion that it is a waste of time to formally name within-species taxa. Rather, for those interested in intraspecific variation, such names are often as necessary as those of species, and for entirely the same reasons: to prevent repeated, lengthy and potentially confusing written descriptions. I believe that with a broader range of categories, that could be specified with prefixes to the formal names, so much more biological information could be conveyed: distinction could be made at a glance between weakly or strongly divergent geographical populations; polymorphic varieties; seasonal forms; rare mutants; and, so on. I have argued this case at some length previously (Weir 2016).

To conclude, sub-species is not only a meaningful category, it is essential if we wish to taxonomically describe biological reality. In fact, I regard the pre-eminent problem with naming intraspecific variants as being a lack of formal, taxonomic recognition for the different types of within-species variation evident in nature. Finally, I would emphasise that I do not make this recommendation for more complex naming lightly—lepidopterists have, more than most, been seduced by the allure of inventing new names and I suggest that the 446 named aberrations of the British Lycaenid *Lysandra coridon* (Howarth 1973), make 1,500 names among 250 cypræid species somewhat lose its sting.

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UPCOMING EVENT

Maxwell Knight Symposium—Sat 24 November 2018

The British Herpetological Society (BHS) Commemorative Symposium

Organised by the British Herpetological Society (BHS), with support from the British Chelonia Group (BCG), the Amateur Entomologists Society (AES), the Institute of Animal Technology (IAT), the British Veterinary Zoological Society (BVZS), the Frightened Face of Nature (FFON) and others. The Symposium commemorates the 50th anniversary of the death of Maxwell Knight (MK), the famous naturalist, who was also MI5’s ‘Greatest Spymaster’. VENUE: Birkbeck College, London (tbc). [More in the next issue of PuLSe.](#)