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New synonym of *Drosophila yakuba* Burla, 1954 (Diptera: Drosophilidae)

S. F. McEVEY Laboratoire de Biologie et Génétique Evolutives, Centre National de la Recherche Scientifique, Gif-sur-Yvette, France

Abstract. New biological and bibliographic information confirms that the widely accepted name *Drosophila yakuba* Burla, 1954 and the unused name *Drosophila opisthomelaina* are synonymous. The latter was coined by Nolte & Stoch in a 1950 work containing a disclaimer and is unavailable by strict application of Article 8b of the *International Code of Zoological Nomenclature* (3rd edn, 1985). In a previously overlooked publication, Nolte (1958) cites *D.opisthomelaina* as a senior synonym; the work also contains diagnostic information. Synonymy is not disputed but before 1958 the name was unavailable. Thus *D. opisthomelaina* Nolte, 1958 is treated as a junior rather than a senior synonym of *D.yakuba*. These nomenclatural corrections remove confusion concerning records of this species in southern Africa and will probably be met with general approval. The distribution in southern Africa and Madagascar of *D.yakuba* and closely related species: *D.melanogaster* Meigen, 1830, *D.simulans* Sturtevant, 1919 and *D.teissieri* Tsacas, 1971, are summarized.

Introduction

There are an increasing number of evolutionary studies of the seven species closely related to *Drosophila melanogaster* in their native Afro-tropical habitats. These studies have recently been reviewed by Lemeunier *et al.* (1986) and Lachaise *et al.* (1987). On the basis of ecological, biogeographic, behavioural and pheromonal characteristics these species are believed to form a monophyletic group (Lachaise *et al.*, 1986; Cobb *et al.*, 1985, 1986; Robertson, 1983; Jallon & David, 1987). They are also morphologically very similar (Bock & Wheeler, 1972; Lemeunier *et al.*, 1986; Bock, 1980) and are thus classified together in the *melanogaster* subgroup. As a result of increased interest in these species as models for research into speciation (Robertson, 1983; Cobb *et al.*, 1985; Lachaise *et al.*, 1987) and natural interspecific introgression (Solignac & Monnerot, 1986; Solignac *et al.*, 1986), accurate information about distribution and habitat are of great importance.

Four species of the *melanogaster* subgroup occur in southern Africa but one of them has two names and consequently the biogeography is confused. The confusion is resolved below by suppressing one of the names.

Correspondence: Dr Shane F. McEvey, Wesley College, University of Sydney 2006, Australia.

Discussion

In 1950 Nolte and Stoch reported the discovery of a new species of *Drosophila* from the 'north-eastern parts' of South Africa (the Northern Transvaal); they named it *Drosophila opisthomelaina*. They noted that it was morphologically close to, but distinct from, *D.melanogaster* and *D.simulans*. Their 'description' and the later description of *D.yakuba* Burla (1954), from the

Ivory Coast, evidently refer to a very similar taxon. The two names were recognized as being synonymous first by Nolte (1958) and later by Paterson (unpublished), but there has been lingering doubt (e.g. Tsacas, 1980; Lemeunier *et al.*, 1986) about the availability of the name '*D.opisthomelaina*' because of the dubious status of the publication in which it first appeared (Wheeler, 1981a) and because of earlier uncertainty about the synonymy.

In both descriptions there is reference to curious, deeply furrowed cerci quite unlike the uninterrupted cercal form found in *D.melanogaster* or *D.simulans*. Under normal circumstances a comparison between the material used by Nolte and Stoch on the one hand and the type-material of *D.yakuba* on the other, would have resolved a question of synonymy. However, Nolte and Stoch did not designate types nor did they indicate that material had been deposited at a museum. Their material cannot now be found. Before it was lost however, Paterson (pers. comm.) compared living material from one of Nolte's '*D.opisthomelaina*' strains (Inhaca Island, Mozambique) and Burla's (1954) description of *D.yakuba*. Paterson detected no difference and concluded that the taxon 'described' by Nolte and Stoch was synonymous with *D.yakuba*; this finding was not published.

The 1950 'description' by Nolte and Stoch was printed in *Drosophila Information Service* (*DIS* number 24, page 90) at a time when its status as a formal publication was equivocal. On the cover of *DIS* upto number 29 of 1955, there was the disclaimer: 'This is not a publication...' (Wheeler, 1981a). In the third edition of the code (ICZN, 1985), Article 8b reads: 'Purpose may be disclaimed. A work that contains a disclaimer that it is issued for permanent scientific record is not published within the meaning of the Code.' Thus, by strict application of Art. 8b, a name published in *DIS* while it carried the disclaimer is not available for the purpose of the Code, and the 1950 'description' by Nolte and Stoch is deemed not formally published; *Drosophila opisthomelaina* sensu lato is not available and in 1954 when *D.yakuba* was described, there was no synonym.

When Wheeler (1981a) addressed this nomenclatural problem his conclusion was based on the authoritative opinions of Basden, Sabrosky and Melville, he was unable to appeal to an article concerning editorial disclaimers in the second edition (1964) of the Code. In addition he was apparently unaware (Wheeler, 1981a, 1986) of the 1958 publication in which Nolte cited *D.yakuba* as a junior synonym of *D.opisthomelaina* (Nolte, 1958: 519).

Correspondence about the status of *DIS* as a publication passed between E. B. Basden, R. V. Melville, C. W. Sabrosky, L. Tsacas, M. R. Wheeler and G. B. White in the late 1970s, extracts of which have been published (Wheeler, 1981a). Copies of some original letters have been read for consideration in the present work. The opinion upon which there seems general concurrence is that printed disclaimers have very little bearing on whether a work is actually published. Never-the-less, it is also evident, especially in light of the present case, that disclaimers lead to nomenclatural instability. Thus, Art. 8b of the Code can be brought to bear here in order to maintain stability.

In a 1958 publication, in the journal *Evolution*, Nolte uses the name *D.opisthomelaina* and he treats it as having been published in 1950. This reference (Nolte, 1958) to *D.opisthomelaina* must, however, be treated as the first mention, and the accompanying details, which may be used to distinguish the taxon from *D.simulans* and *D.melanogaster*, as its description. Nolte's 1958 paper shows that there are differences in the diameter of the eye, the relative amounts of red and brown eye-pigments and the ratios of these amounts in the three species. Furthermore, Nolte (1958: 519) identifies the synonymy between *D.opisthomelaina* and *D.yakuba* suppressing the latter as a junior synonym. Although there is no doubt now about the synonymy, the suppression of *D.yakuba* is not acceptable.

The conclusion here then is to treat *Drosophila opisthomelaina* Nolte, 1958: 519, 520, 522, 524, 525, 529 as a **new synonym** of *Drosophila yakuba* Burla, 1954: 161.

It is expected that this solution will meet with general approval because stability is maintained. Since the early 1970s numerous authors have applied the name *D.yakuba* in a great number of publications (more than sixty). Whereas since 1958 the name *D.opisthomelaina* has, as far as can be found, appeared in two taxonomic lists only (viz Tsacas, 1980; Lemeunier *et al.*, 1986), and even then only with reservations. Five papers by Nolte on the eye-pigmentary system

of *Drosophila* were published in the *Journal of Genetics* between his 1950 (*loc.cit.*) and 1958 (*loc.cit.*) works, but *D.opisthomelaina* was not mentioned in them.

Lachaise *et al.* (1987) describe the distribution of *D.yakuba*, *D.teissieri*, *D.melanogaster* and *D.simulans* in the Afrotropical Region including southern Africa and Madagascar. Records of collections made by the author between 1982 and 1985 in Zimbabwe, Swaziland and South Africa are included in the latter and in McEvey *et al.* (1988). Other southern African records of these species (Nolte, 1958; Agnew, 1976) were not mentioned by Lachaise *et al.* (1987) but the several collection sites (Inhaca Island, Nelspruit, Mkuzi, Limpopo and Johannesburg) lie within the ranges figured by Lachaise *et al.* (1987). The drosophilid fauna of Zimbabwe remains poorly studied and there are no records of *D.yakuba* from there although it occurs both to the north (e.g. Kenya) and south (e.g. Limpopo River and Swaziland). Recent collections in Madagascar (by the author with J. R. David and S. Aulard) have confirmed that *D.simulans* is well established there while *D.melanogaster* and *D.yakuba* are less abundant. It is noteworthy that the iso-female type strain of *D.teissieri*, which was collected by H. E. Paterson at Mt Selinda (Zimbabwe) in 1970, remains the only record of this species in southern Africa. Differences in the morphology of the male terminalia and sperm are known to exist between it and strains from equatorial Africa (Lachaise *et al.*, 1981; Joly, 1989); such variation is unknown in other species of the *melanogaster* subgroup therefore *D.teissieri* warrents closer taxonomic study.

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