



## ***Geoplana multicolor* Graff (Platyhelminthes: Tricladida): new records and taxonomic re-interpretation of morphological characters**

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### **Abstract**

Many species of land flatworms have been described based on specimens, or even on a single specimen, from a sole locality. Thus, populational or individual variations are poorly known. The external morphology of *Geoplana multicolor* Graff, 1899 was first described based on a single specimen from the vicinities of the city of São Paulo, South Brazil. Marcus (1951) analysed specimens from São Paulo with a similar external aspect and considered them as conspecific with *G. multicolor*, describing their internal anatomy. In the present work, we amplify the known distribution of the species, by registering its occurrence in four localities of southern Brazil (state of Rio Grande do Sul), and comparatively analyse this relatively ample material, which includes different developmental phases. The description of histological aspects, especially those regarding musculature and secretory cells of the copulatory organs, has been enhanced and amplified after the present analysis. Thus, the description of *G. multicolor* is here complemented, with an improvement on the interpretation of important taxonomical characters. In addition, the paper reports, for the first time, the occurrence of an ejaculate attached to the atrial wall of a species of Geoplaninae which presents a penis papilla, and briefly discusses its significance.

**Key words:** Geoplaninae, taxonomy, developmental stages, spermatophore

### **Introduction**

Many species of land flatworms have been described based on a few specimens, or even a single specimen, from a sole locality. Thus, populational variation is poorly known. Later the species may be found in other localities usually by other researchers, being re-described, after facing the difficulties of being convinced of the co-specificity of the new material. Researchers must also face morphological differences between specimens due to different maturation stages and/or physiological phases. Such difficulties are increased by the fact that flatworms are soft-bodied animals which may contract during fixation.

The external morphology of *Geoplana multicolor* was first described by Graff (1899) based on a single specimen collected in the neighborhood of the city of São Paulo, South Brazil. Marcus (1951) analysed specimens from São Paulo with a similar external aspect and considered them as conspecific with *G. multicolor*, describing their internal anatomy. Later, Froehlich (1955) described aspects of the musculature and epidermal glands of *G. multicolor* sensu Marcus, followed (Froehlich, 1956a, b, 1957) by an analysis of specimens of *G. multicolor* from the states of Rio de Janeiro and Paraná. He considered their external and internal morphology to be, in general, coincident with Marcus' description (1951).

In the present work, we study several specimens from four localities of southern Brazil (state of Rio Grande do Sul) and re-analyse the specimens studied by Marcus (1951), from the state of São Paulo, in order to re-define characters of taxonomical significance.

### **Material and methods**

Specimens were collected by direct sampling in soil-litter, under and inside fallen logs and branches, and under rocks in the following localities of the state of Rio Grande do Sul, Brazil: the town of Caxias do Sul (29°10'S;