

**Nomenclatural note
on the identity of *Agrion viridis* VANDER LINDEN, 1820:
a plea for the selection of a neotype
(Odonata: Zygoptera, Lestidae)**

Nikola-Michael PRPIĆ

Abstract

It has been recognized previously that the name for the Western Willow Spreadwing, *Lestes viridis*, in its original combination *Agrion viridis* VANDER LINDEN, 1825, is a junior homonym of *Agrion viridis* VANDER LINDEN, 1820, which is regarded as a junior synonym of *Lestes barbara*. The junior homonym normally must be replaced by its junior synonym *Agrion leucopsallis* DE CHARPENTIER, 1825, which would remove a well established and widely used name from the Odonata. Here I show that *Agrion viridis* VANDER LINDEN, 1820, is no synonym of *Lestes barbara*, but has been based on a heterogenous type series that also contained several other *Lestes* species. Since no types are extant, it is suggested that a topotypic neotype should be selected to establish the identity of *Agrion viridis* VANDER LINDEN, 1820, with the species currently called *Lestes viridis*. This action would conform to the regulations of the International Code of Zoological Nomenclature and preserve the usage of *Lestes viridis*.

Introduction

Compared to other insect orders like beetles (Coleoptera) or butterflies (Lepidoptera), the dragonflies and damselflies (Odonata) are a relatively small insect order. For example, the number of species in Germany is only around 80 (MÜLLER & SCHORR 2001). In contrast to many other of the smaller insect orders, the Odonata have always received much attention from both professional and amateur entomologists, and the German Odonata fauna is very well studied. It is therefore surprising to find that the nomenclature of many of the German species is in an almost chaotic state. One matter of much dispute is the nomenclature of the European species of the Spreadwings (Lestidae). One complicated case is the Western Willow Spreadwing that is currently called *Lestes viridis*. The authorship of this name is usually attributed to VANDER LINDEN (1825), but the name actually appears in the literature before that date, namely in VANDER LINDEN (1820a) and VANDER LINDEN (1820b). These references have been largely neglected in the literature (for example, they are missing in the world catalogue by STEINMANN (1997)). LOHMANN (1993a) and JÖDICKE (1997) have drawn attention to this nomenclatural problem, but the matter has remained unresolved.

Nomenclatural history of the name *Agrion viridis*

The first description of *Agrion viridis* has been published by VANDER LINDEN (1820a), based on an unspecified number of specimens from Bologna (Italy). However, in the same year he became convinced that his *Agrion viridis* is identical to *Agrion barbara* described previously by FABRICIUS (1798) (VANDER LINDEN 1820b). This notion has been adopted by all subsequent authors. In 1825 VANDER LINDEN published another description of *Agrion viridis*, but this time based on new specimens from Brussels (Belgium) which indeed belonged to the species currently called *Lestes viridis*. From a nomenclatural point of view, this unfortunate „recycling“ of a name for a different species is extremely problematic. Nevertheless, this second description has then been accepted by all subsequent authors, and there is „common agreement“ that this second publication of the name is the original description of *Agrion viridis*. JÖDICKE (1997) has already drawn attention to the fact that such „agreements“ are not supported by the International Code of Zoological Nomenclature (ICZN 1999). In fact, because both names are based on different type specimens, *Agrion viridis* VANDER LINDEN, 1825, is a junior homonym of *Agrion viridis* VANDER LINDEN, 1820, and is therefore permanently invalid. There is a junior synonym available, *Agrion leucopsallis* DE CHARPENTIER, 1825, and this name normally must then replace *Agrion viridis* VANDER LINDEN, 1825, as the valid name for the species in question. Of course, replacing the well established and widely used species epithet *viridis* with the relatively unknown and largely unused species epithet *leucopsallis*, is something that should be avoided. This might explain why all authors so far have accepted the „illegal“ species epithet *viridis* VANDER LINDEN, 1825.

Discussion of the identity of *Agrion viridis*

Nevertheless, species names cannot be validated by „common agreement“ and the situation should and must be resolved based on the rules of the International Code of Zoological Nomenclature in order to assure nomenclatural stability. Therefore I would like to draw attention to an alternative possibility to solve this nomenclatural problem within the framework of the International Code of Zoological Nomenclature and that preserves the species epithet *viridis*.

To my knowledge no original specimens of the Bologna series of VANDER LINDEN are extant, thus the original description of *Agrion viridis* VANDER LINDEN, 1820, is the only source of information and has to be carefully analysed. It reads as follows: „*Agrion Viridis*. A.[grion] supra tota viridi-aenea; subtus pallide flava; abdomine virescente; alis in quiete patentibus“. On the same page VANDER LINDEN (1820a) then gives a more detailed description: „Supra tota viridi-aenea, aliquando rubescens, lineis tribus longitudinalibus in thorace flavis, saepe paulum distinctis, scutellum flavo aut cinereo. Antennae nigrae; oculi supra fusci, subtus flavi. Subtus caput flavescens; pectus flavescens, saepe cinereo pulverulentum; abdomen virescens, linea media longitudinali segmentorumque intersectione fuscis. Pedes flavi ciliati, lineis duabus in femoribus, in tibiis unica, tarsis nigris. Alae albae, macula marginali fusca, aliquando albo punctata. Alae in quiete semper patulae. Mas distinguitur abdominis apice cinereo, appendicibus unguiculatis fuscis.“

This description contains information about the variability of the new species (e.g. „aliquando rubescens“, „saepe paulum distinctis“) and thus indicates that the description was based on several specimens. Indeed, I argue here that the original set of specimens even contained several different species of the genus *Lestes* and the description therefore is a mixture of characters of several species. As indicated by the title of VANDER LINDEN's work, the specimens were all collected in or near Bologna („Bononia“) in northern Italy. In this area the following species of *Lestes* are known to occur (note that I use the currently used names irrespective of their potentially problematic nomenclature): *Lestes sponsa*, *Lestes dryas*, *Lestes barbara*, *Lestes virens*, *Lestes macrostigma*, *Lestes viridis*, and *Lestes parvidens*. In the following I correlate the descriptions by VANDER LINDEN (1820a) with the characters of those species of *Lestes*.

1. „*supra tota viridi-aenea, aliquando rubescens*“ (upper side completely copper-green, sometimes becoming red); „*subtus pallide flava*“ (under side pale yellow); „*abdomine virescente*“ (abdomen shining green); „*alis in quiete patentibus*“ (wings spread when resting); „*alae in quiete semper patulae*“ (wings always fully spread when resting).

These descriptions are general characteristics of the genus *Lestes* and do not specifically refer to one of the seven species. However, the species *Lestes barbara*, *Lestes virens* and *Lestes viridis* tend to become red with age, which likely is reflected in VANDER LINDEN's „*aliquando rubescens*“, but the green color is least extensive in *Lestes barbara*, and between the abdominal segments there is often a gap in the green color. This would not agree with „*supra tota viridi-aenea*“ and suggests that some specimens were *Lestes viridis* or *Lestes virens*.

2. „*lineis tribus longitudinalibus in thorace flavis, saepe paulum distinctis*“ (three yellow longitudinal lines on the thorax, often barely visible).

The yellow lines on the upper thorax are a general trait of female *Lestes*, but the strength of the lines differs between the species. The fact that VANDER LINDEN mentions that in some specimens these lines are very thin, suggests that his material was not exclusively comprising *Lestes barbara*, because in *Lestes barbara* these stripes are always wide and conspicuous, even in the male (except for older males in which the median stripe is lost by melanisation of the carina). Thus, the material likely contained at least some specimens of one of the other species that have narrower or very much reduced thoracic lines: *Lestes sponsa*, *Lestes dryas*, *Lestes virens*, *Lestes viridis* and *Lestes parvidens*.

3. „*scutellum flavo aut cinereo*“ (scutellum yellow or grey)

The yellow/grey scutellum probably means the pronotum or the area where the wings are inserted. These are indeed yellow or (blue)grey in females and males, respectively. This trait is not specific enough to indicate one of the seven species.

4. „*antennae nigrae*“ (antennae black)

The antennae of all seven species are mostly black, but *Lestes barbara* has the first antennal segment entirely yellow, and most other species have a yellow or whitish distal end of this segment. Only in *Lestes macrostigma*, *Lestes parvidens* and *Lestes viridis* the antennae are completely black. Thus, this description fits best with the latter three species.

5. „*oculi supra fusci, subtus flavi. Subtus caput flavescens*“ (eyes dark on the upper side and yellow below. Head yellow on the under side)

This description is too general, because it fits all species. However, on superficial inspection this description fits best with *Lestes barbara* and *Lestes virens*, because in these species not only the underside, but also the back of head and eyes is yellow and thus the two-color appearance is most obvious.

6. „*pectus flavescens, saepe cinereo pulverulentum*“ (breast yellow, often dusted with grey)

Gray or bluish pruinosity occurs in most species, but is restricted to the dorsal side of thorax and abdomen. However, pruinosity is developed best in *Lestes viridis* (especially in older individuals) and fine white or gray pruinosity is actually present on the ventral thorax and the coxae.

7. „*abdomen virescens, linea media longitudinali segmentorumque intersectione fuscis*“ (abdomen green, longitudinal median line and segment borders dark)

The „*linea media longitudinali*“ probably refers to the line that runs in the middle of the lateral sides in females of some *Lestes* species. This line is developed best in *Lestes dryas*.

8. „*pedes flavi ciliati, lineis duabus in femoribus, in tibiis unica, tarsi nigris*“ (legs yellow and with bristles, two lines in the femora, in the tibiae only one, tarsi black)

This is clearly a reference to *Lestes barbara*. Yellow legs occur in several species, but two black lines on the femur and a single black line on the tibia (at least on the third tibia) are only present in *Lestes barbara*.

9. „*alae albae, macula marginali fusca, aliquando albo punctata*“ (wings white, marginal mark dark, sometimes with a white spot)

The „*white spot*“ is clearly a description of the two-colored pterostigma of *Lestes barbara*. However, this is a typical trait of *Lestes barbara* (in freshly eclosed individuals the pterostigma is even completely white), i.e. all specimens have it. The fact that VANDER LINDEN indicates that the majority of the specimens had dark pterostigmata and only „sometimes“ a white spot was present, is thus clear evidence that other *Lestes* species were contained in his material.

10. „*mas distinguitur abdominis apice cinereo, appendicibus unguiculatis fuscis*“ (the male is distinguished by the grey tip of the abdomen, pincer-shaped appendages dark)

This description indicates that at least the male specimens in VANDER LINDEN's series were not *Lestes barbara*. In fact, males of *Lestes barbara* do not have blue or grey pruinosity at the tip of the male abdomen and they have conspicuously yellow appendices superiores (these are the „*appendices unguiculati*“ in VANDER LINDEN's description). The description of the male fits the following species: *Lestes dryas*, *Lestes macrostigma*, *Lestes sponsa*, and *Lestes virens*.

In summary, the comparison of the description of *Agrion viridis* VANDER LINDEN, 1820, with the characters of the *Lestes* species in the Bologna area shows that many characters indeed agree with *Lestes barbara*, as already stated by VANDER LINDEN (1820b). However, other parts of the description do not fit with *Lestes barbara*, but with other *Lestes* species. Thus, the series of specimens that was the basis for the original description was mixed and consisted of several species including *Lestes viridis*. Because of this heterogenous type series the name cannot simply be synonymized with one of the other names. Rather, a lectotype has to be selected from the type series to establish the identity of the taxon denoted by the name. Because no type specimens are known to exist today, a neotype should be selected. This neotype must derive from the Bologna area. In addition, I suggest that it should belong to the species currently named *Lestes viridis*, because specimens of this species were likely among the original type series. In this way, usage of the well-established species epithet *viridis* is legitimated under the regulations of the International Code of Zoological Nomenclature and the name is not to be replaced by the neglected species epithet *leucopsallis*. The valid species name and authorship would then become *Lestes viridis* (VANDER LINDEN, 1820). In accordance with Recommendation 75B of the Code I suggest that a specialist in odonatology who has access to the appropriate topotypical material should designate a neotype.

Zusammenfassung

Der Name der Weidenjungfer, *Lestes viridis*, in seiner Originalkombination *Agrion viridis* VANDER LINDEN, 1825, wurde bereits zuvor als jüngeres Homonym von *Agrion viridis* VANDER LINDEN, 1820, erkannt, welches wiederum derzeit als jüngeres Synonym von *Lestes barbara* gilt. Nach den

gültigen Nomenklaturregeln müsste das jüngere Homonym nun durch sein jüngeres Synonym *Agrion leucopsallis* DE CHARPENTIER, 1825, ersetzt werden, was allerdings einen gut eingeführten und weithin gebrauchten Namen aus den Odonata entfernen würde. Ich zeige hier, dass *Agrion viridis* VANDER LINDEN, 1820, in der Tat kein Synonym von *Lestes barbara* ist, sondern auf der Grundlage einer heterogenen Typenserie beschrieben wurde, welche mehrere *Lestes*-Arten enthielt. Da keine Typenexemplare mehr existieren, schlage ich die Wahl eines topotypischen Neotypen vor, um die Identität von *Agrion viridis* VANDER LINDEN, 1820, als die Art festzulegen, die derzeit *Lestes viridis* genannt wird. Diese Vorgehensweise würde sich an die Regeln des International Code of Zoological Nomenclature halten und gleichzeitig die Verwendung von *Lestes viridis* erhalten.

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Anschrift des Verfassers:

Nikola-Michael PRPIĆ
 Georg-August-Universität Göttingen,
 Johann-Friedrich-Blumenbach-Institut
 für Zoologie und Anthropologie,
 Abteilung für Entwicklungsbiologie,
 GZMB Ernst-Caspari-Haus
 Justus-von-Liebig-Weg 11
 D-37077 Göttingen
 E-Mail: nprpic@uni-goettingen.de

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Autor(en)/Author(s): Prpic Nikola-Michael

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