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New additions to the Vietnamese Odonata fauna: Records of *Podolestes pandanus* Wilson & Reels, 2001a: Zygoptera: Argiolestidae) and *Risiophlebia guentheri* Kosterin, 2015 (Anisoptera: Libellulidae) from a swamp cypress nature reserve in the Central Highlands of Vietnam

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## Abstract

*Podolestes pandanus* Wilson & Reels, 2001, is recorded for the Vietnamese fauna and the occurrence of *Risiophlebia guentheri* Kosterin, 2015 in the Central Highlands of Vietnam is confirmed.

**Key words:** Odonata, new records, *Podolestes pandanus*, *Risiophlebia guentheri*, Vietnam

## Introduction

The Odonata fauna of Vietnam is truly amazing and new species and new records continue to be discovered (i.e. Karube et al. (2020) or Kompier et al. (2020, 2021)). During a field survey in a nature reserve focusing on the swamp cypress (*Glyptostrobos pensilis*) (Fig. 1) in Ea H'leo District, Dak Lak Province of the Central Highlands of Vietnam, we discovered *Podolestes pandanus* Wilson & Reels, 2001, a new record for Vietnam. In addition, we collected specimens of *Risiophlebia guentheri* Kosterin, 2015 in the same general area. There are two nature reserves to protect small populations of swamp cypress in Vietnam: Ea Ral Commune, Ea H'Leo District (about 49 hectares) and Trap K'Sor, Krong Nang District (about 61,6 hectares), both in Dak Lak Province (see also Averyanov et al. 2009 and Ye et al. 2022).

## Material and methods

Adult specimens were collected by hand net in June 2022. Photographs of the specimens in nature were taken with a Nikon D850 digital camera with Nikon AF Micro 200 mm f4D IF-ED lens. Other photos of their structures were taken with an Axiocam Eric 5s camera on Zeiss Stemi 508 stereomicroscope. The distribution map was derived from Google Earth Pro., Version 7.3 and plotted using Adobe Photoshop 7.0. Plates of figures were made with Adobe Photoshop 7.0.



Figure 1. Dr. Phan and Dr. Keetapithchayakuk survey in the swamp cypress Nature Reserve. (A), habitat & (B), Dr. Keetapithchayakuk was collecting odonate larvae (Photographed by Q.T. Phan).

## Results and discussion

*Podolestes pandanus* Wilson & Reels, 2001

Figs 2–3

Material examined. 12 ♂♂, 7 ♀♀, swamp cypress Nature Reserve (13.2296 N, 108.1824 E, 565 m a.s.l.) in Ea Ral Commune, Ea H'Leo District, Dak Lak Province, Central Highlands, 8.vi.2022, Quoc Toan Phan leg.

Notes. A new record for Vietnam. Body coloration (Fig. 2A–C) and morphological structures (Fig. 3A–D) of the male as well as the female of the Vietnamese specimens match well with the original description in Wilson & Reels (2001). This record adds a second species of the genus *Podolestes* to the Vietnamese odonate fauna after Kompier (2015) had noted *P. coomansi* Lieftinck, 1940 in Phu Quoc Island in southern Vietnam. Unfortunately, we did not find exuviae or larvae of *P. pandanus*. This study may have been too late in season to collect larvae, possibly, most of them may have been already emerged to imago, but it is known that the larva of this genus are often extremely elusive. Choong & Orr (2010) recommend the best way to collect *Podolestes orientalis* larva "... remove leaves and sticks at the water edge careful to reveal them and then catch them between finger and thumb..." and regarding their exuvia "... It was hanging from a dead leaf 15 cm above the ground under the wild ginger plants (*Etilingera metrio-cheilos*) growing beside the pool. The exuvia was ca 15 cm from the water's edge..."

Distribution (Fig. 6). China (Qingpilin, Hainan) (Wilson & Reels 2001), Vietnam (Ea H'le, Dak Lak Province) (this study).



Figure 2. *Podolestes pandanus* in nature. (A), male; (B), female; (C), tandem. (photographs taken at 8.vi.2022 by Q.T. Phan).



Figure 3. Structures of *Podolestes pandanus*, male. (A, B), anal appendages in dorsal and lateral view; (C, D), genital ligula in lateral and ventral view.

*Risiophlebia guentheri* Kosterin, 2015

(Figs 4–5)

Material examined. 5 ♂♂, 3 ♀♀, swamp cypress Nature Reserve (13.2296 N, 108.1824 E, 565 m) in Ea Ral Commune, Ea H'Leo District of Dak Lak Province, Central Highlands, 8.vi.2022, Quoc Toan Phan leg.

Notes. Asahina (1969) recorded *Risiophlebia dohrni* (Krüger, 1902) in "Blao" (old place name in Ma language), now Bao Loc City (Lam Dong Province), south of Dak Lak Province. Recently Kosterin (2015) described *Risiophlebia guentheri* in the border region of Cambodia-Vietnam and presumed that it could also occur in Vietnam. The records of *R. dohrni* by Asahina (1969) in Bao Loc is a misidentification, and is in fact *R. guentheri* (Kosterin 2015): This record "is situated as close as 102 km SSE of the type locality of *R. guentheri*, in the same Central Plateau of the Annamese Mountains and at an elevation of 760–780 m a.s.l. No doubt, this record referred in fact to *R. guentheri* as well." Here we confirm the occurrence of *R. guentheri* in Vietnam basing on a careful comparison with figures of the type material presented in Kosterin (2015). Our specimens have the same relatively large hindwings (length 25–26 mm) and the same structures of the male anal appendages and secondary genitalia (Fig. 5A–D) and female body coloration (Fig. 5E–F) agreeing with the original description. At the moment, we do not have any specimens from Lam Dong Province but the record of "*R. dohrni*" by Asahina (1969) was considered to be *R. guentheri* by Kosterin (2015). Information on larvae of *Risiophlebia* species is lacking. In the framework of this survey, we found many larvae of Libellulidae (*Orthetrum* spp., *Brachythemis contaminata* and *Rhyothemis* spp.), but did not find *Risiophlebia* larvae. We pre-



Figure 4. A male of *Risiophlebia guentheri* in nature (photograph taken at 8.vi.2022 by Q.T. Phan).

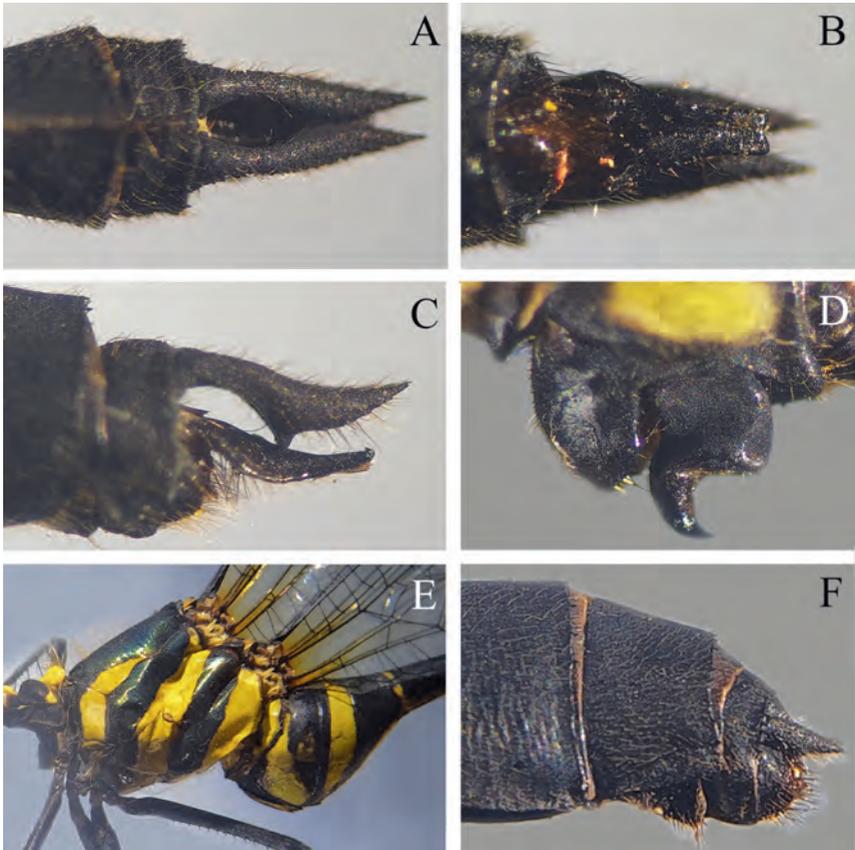


Figure 5. Morphological structures of *Risiophlebia guentheri*. (A, B, C) anal appendages in dorsal, ventral, and lateral view; (D), secondary genitalia, lateral view; (E), synthorax of female, lateral view; (F), abdominal tip of the female, lateral view.

some they may live under deep leaf litter in shallow water. The study of *Risiophlebia* larvae needs to be intensified prior the start of flight season of the imagines.

Distribution (Fig. 6). Cambodia (Dak Dam village, Mondulkiri Province; Mts, Koh Kong Province) (Kosterin 2015; Kosterin & Chartier 2018), Thailand (Khao Khitchakut National Park, Chanthaburi Province) (Sribal et al. 2018), Vietnam (Ea H'leo District, Dak Lak Province; Bao Loc City, Lam Dong) (Asahina 1969; this paper).

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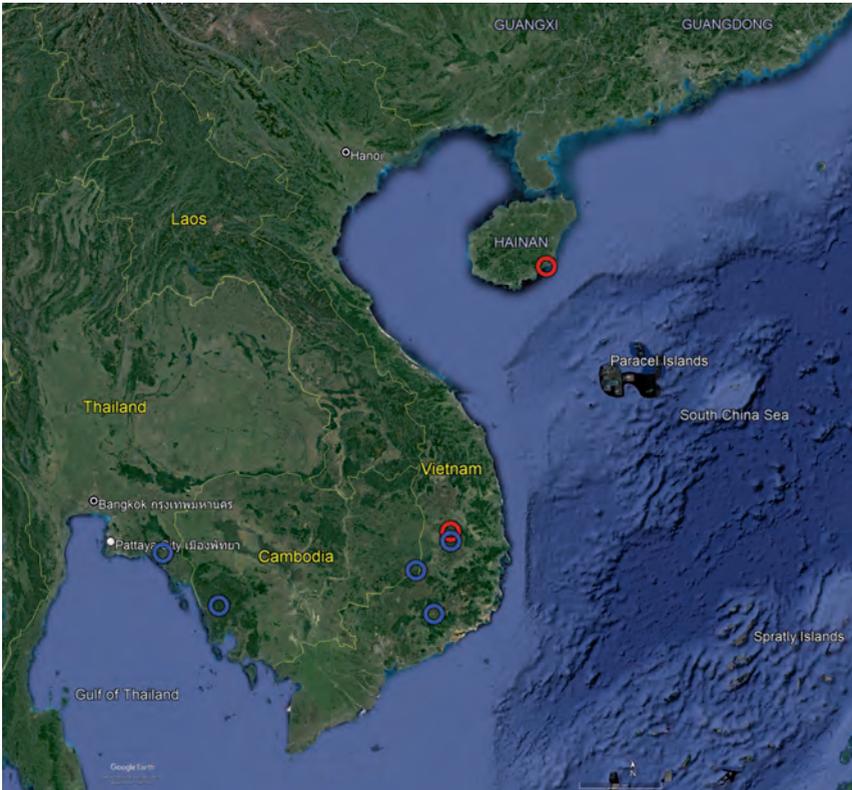


Figure 6. Map of distribution of *Podolestes pandanus* (red circles) and *Risiophlebia guentheri* (blue circles).

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