

A List of Damselflies (Zygoptera: Odonata) Recorded from Azad Jammu and Kashmir, Pakistan

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Abstract. In the intensive survey of the valley of Kashmir for updating the record of damselflies inhabiting the region, a total of 15 genera and 31 species of damselflies were collected during the summer season of three consecutive years (2005-2007) which are reported.

Keywords: damselflies, Zygoptera, Odonata, Azad Jammu and Kashmir, Pakistan

Introduction

Damselflies are predatory both in larval and adult stages. The larvae are voracious feeders and prey upon aquatic insects e.g., mosquito larvae and aquatic larvae of other species (Sahayaraj, 2004). Adults normally feed on small flying insects such as gnats (Meyer, 2005), mosquitoes and midges during flight (Pedigo, 2002). The presence of odonates is taken as an indicator of ecosystem health for both aquatic and terrestrial ecosystems (Watson *et al.*, 1982). Adult damselflies feed on the insect pests of crops as well, especially of rice (Yousuf *et al.*, 1998; Yasumatsu *et al.*, 1975) and cotton (Yousuf *et al.*, 1995; Yunus *et al.*, 1980).

Odonates have been the focus of extensive research in many countries. They belong to one of the few insect orders that have been intensively studied in the tropics (Woodward, 2001). They have been documented on all continents except Antarctica and are usually concentrated in warmer, tropical habitats (Boyd, 2005). According to Sahayaraj (2004), approximately 5600 named species of Odonata have been described, so far, all over the world.

In the past, Fraser (1933-36) and Laidlaw (1915) reported Odonata from the subcontinent. Kanth (1985) studied the Odonata of Azad Jammu and Kashmir, but his survey was not comprehensive. Yousuf *et al.* (2000a; 2000b), Luqman (1995), Khaliq *et al.* (1995; 1990), Khaliq and Siddique (1995), listed odonates from different districts of Azad Jammu and Kashmir. However, this area has high topographic diversity and requires further surveys to reveal the existing zygopterous fauna of the region.

The distribution of damselflies is not well known in Azad Jammu and Kashmir. The valley is bestowed with diverse

habitats and abundant streams and springs. The objective of the present study is to prepare a comprehensive and updated record of the damselflies (Zygoptera) of Azad Jammu and Kashmir.

Materials and Methods

Twenty-eight different sites (four sites per district), as follows, were selected to collect adult damselflies from the valley of Azad Jammu and Kashmir (Fig. 1), concentrating on the habitat requirements of damselflies.

District Poonch: Rawalakot (L1), Banjosa (L2), Hajira (L3), Abbasspur (L4).

District Sudhnoti: Tarar Khal (L5), Palanadri (L6), Goraha (L7), Azad Pattan (L8).

District Muzaffarabad: Chikar (L9), Chakothei (L10), Patika (L11), Muzaffarabad (L12).

District Bagh: Arja (L13), Bagh (L14), Bajri (L15), Harighal (L16).

District Mirpur: Mangla (L17), Dudial (L18), Palak (L19), Azad Pur (L20).

District Kotli: Sensah (L21), Sarsawa (L22), Dongi (L23), Kotli city (L24).

District Bhimber: Samahni (L25), Barnala (L26), Kodala (L27), Bhimber city (L28).

Adult damselflies were collected during the summer season of three consecutive years, 2005-2007 (Table 1). Specimens were collected using aerial nets, sweep nets and dip nets when catching over water. The specimens were killed in cyanide bottles and transferred to paper bags for transportation to the laboratory. In the laboratory they were softened and rehydrated

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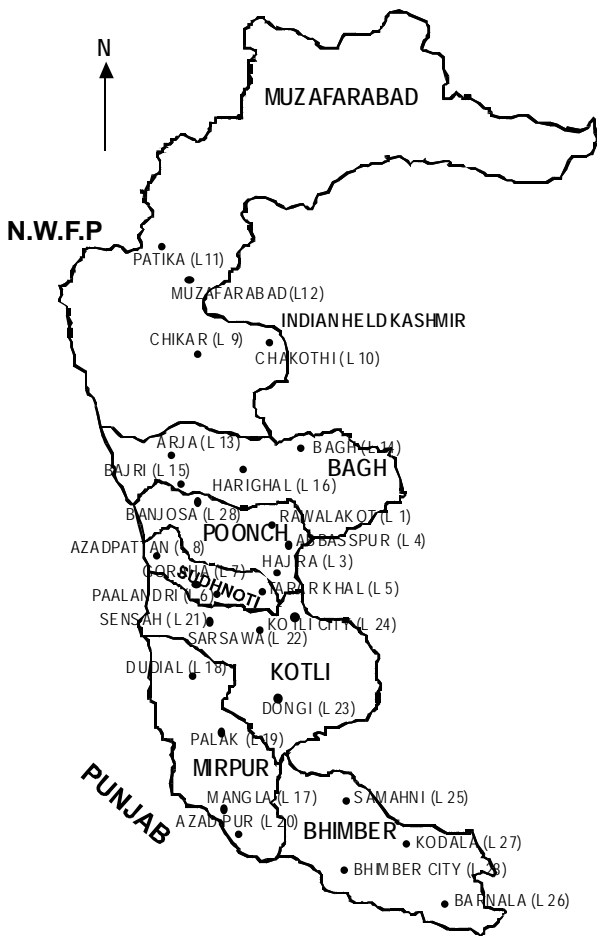


Fig. 1. Map of Azad Jammu and Kashmir showing damselfly collection sites. Note that four surveys and collection sites per district were included in this study.

by keeping them in a desiccator and by use of water baths. Once the specimens became soft enough they were set over appropriate setting boards to facilitate their identification. All the specimens were identified to species level using keys and following Fraser (1933-1936), Subramanian (2005) and Triplehorn and Johnson (2005). The nomenclature used in this paper follows that of Fraser (1933-36).

Results and Discussion

A total of 31 zygopterous species belonging to 15 genera of 8 families were collected and identified during this study (Table 1). It was observed that some species are widely distributed in AJ&K. The most widely distributed species was *Agriocnemis pygmaea* (Ramb.) followed by *Ischnura forcipata* (Morton) collected from 21 and 17 localities, respectively, out of 28 collection sites. However, certain taxa were found to be very rare and were collected from a few

localities such as: *Rhinocypha hiliarye* (F.), *Aciagrion hisopa* (S.), *Agriocnemis dabreui* (F.) and *Agriocnemis splendidissima*, which were collected from a single locality only. Followed by these were *Lestes viridulus* (Ramb.), *Pseudagrion spencei* (F.), *Coeliccia renifera* (S.), *Ellatoneura nigerrima* (L.) and *Bayadera longicauda* (F.) which were collected from two localities. More field surveys as well as systematic research is needed to reveal additional species and gain a more complete understanding of their distribution.

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