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**Research Article****Exploring dragonflies (Anisoptera: Odonata) fauna from district Skardu, Gilgit Baltistan, Pakistan**Zulqarnain Haider Ali¹, Khadija Fatima², Ahsan Ali Bukhari², Farheen Ali¹, Aliya Batool¹, Saeed Ur Rehman¹, Barkat Ali¹, Ehsan Ali²¹Department of Zoology, University of Baltistan, Skardu, Gilgit Baltistan, Pakistan.²Department of Zoology, University of Poonch Rawalakot, Azad Jammu and Kashmir, Pakistan.**ABSTRACT**

The Current study was conducted to record the fauna of dragonflies in district Skardu, Gilgit Baltistan. As a whole, 183 adult specimens were collected belonging to 14 species under 10 genera and three families. Among families, Libellulidae was dominant with 11 species, Aeshnidae 02 species and Cordulegasteridae with single species. Detailed information for each species i.e., habitat, valid names, dispersal and collection dates for all collected specimens are provided. The current study revealed Skardu as a diverse hub for dragonflies. Similar surveys and research is needed to be conducted for Zygoptera fauna.

Keywords: Odonata; Anisoptera; Skardu; Gilgit Baltistan; Pakistan.**INTRODUCTION**

Odonates are an important group of class Insecta with versatile qualities and are a diverse group of flying insects that exist today (Islam et al., 2021). Odonata are further categorized into three distinct suborders: Anisoptera (strongly flying dragonflies), Zygoptera (delicately flying damselflies), and Anisozygoptera (extinct primitive dragonflies) (Khan et al., 2024). Dragonflies are vital bio-indicators of ecosystems and watersheds (Sidra et al., 2022). Odonata traces its phylogenetic lineage many million years ago and exist as the most primitive flying insect group (Sayeb et al., 2015). The Odonata order includes 8 Superfamilies, 29 families, about 58 subfamilies, and encompasses approximately 600 genera with 6500 described species worldwide (Zia et al., 2019 and Zia et al., 2024). Due to their predatory nature, odonates are considered beneficial insects and play a vital role in pest management (Attaullah et al., 2021). Dragonfly larvae attack mosquito larvae, which usually carry wide range diseases like malaria and dengue fever and filariasis and are responsible for healthy environments and good ecological conditions (Rashied et al., 2024). Both stages of dragonflies depend on aquatic environments, as dragonflies' larvae are aquatic, while adults are terrestrial yet need clean water to continue their biological life cycle (Nisar et al., 2021). Dragonflies are usually predictable by their stretched, round abdomen, big spherical eyes, large portion of the head, small antennae and large wings (Bibi et al., 2020). Dragonflies and damselflies can be used as operative prototypical organisms for freshwater biodiversity, which is conceivable because of their easy identification, diversity and fast development (Cadena et al., 2023). At present, approximately 128 species of Anisoptera and Zygoptera are recognized from Pakistan (Kalkman et al., 2020). There are almost 500 odonates species have been reported from India; similarly, from Srilanka 120 species while from Nepal 180 species of odonates have been reported (Rashied et al., 2024). They have been fluently used as perfect animals in numerous parts of the world and play a central role in the trophic network of

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freshwater bodies (Koroiva et al., 2022). According to Ghahari et al. (2009) there are several natural predators (dragonflies and damselflies) in the rice fields that if conserved, can play an effective role in minimizing the pest population. In Asian countries like Japan and China, people believed that odonates have medicinal properties, especially *Sympetrum* species, which are mostly used in fever treatments (Usman et al., 2017).

MATERIALS AND METHODS

Study Area

District Skardu is located at 35°17'31.34" N latitude, 75°41'10.53" E longitude and has an elevation of 7408 ft from sea level. The Northern area of Pakistan covers 72,496 sq. km (Zia et al., 2009) and shares a significant topography. Skardu has Himalayas, Karakorum and Hindukush mountainous region. These mountain ranges have favorable climate and habitats that support Odonata fauna in the form of many lakes, marshy areas, small ponds and rivers that receive water from glaciers. In summer, the temperature reaches almost 35°C, which supports a great diversity of Odonata. The localities surveyed for the collection of odonates fauna are given within figure (1).

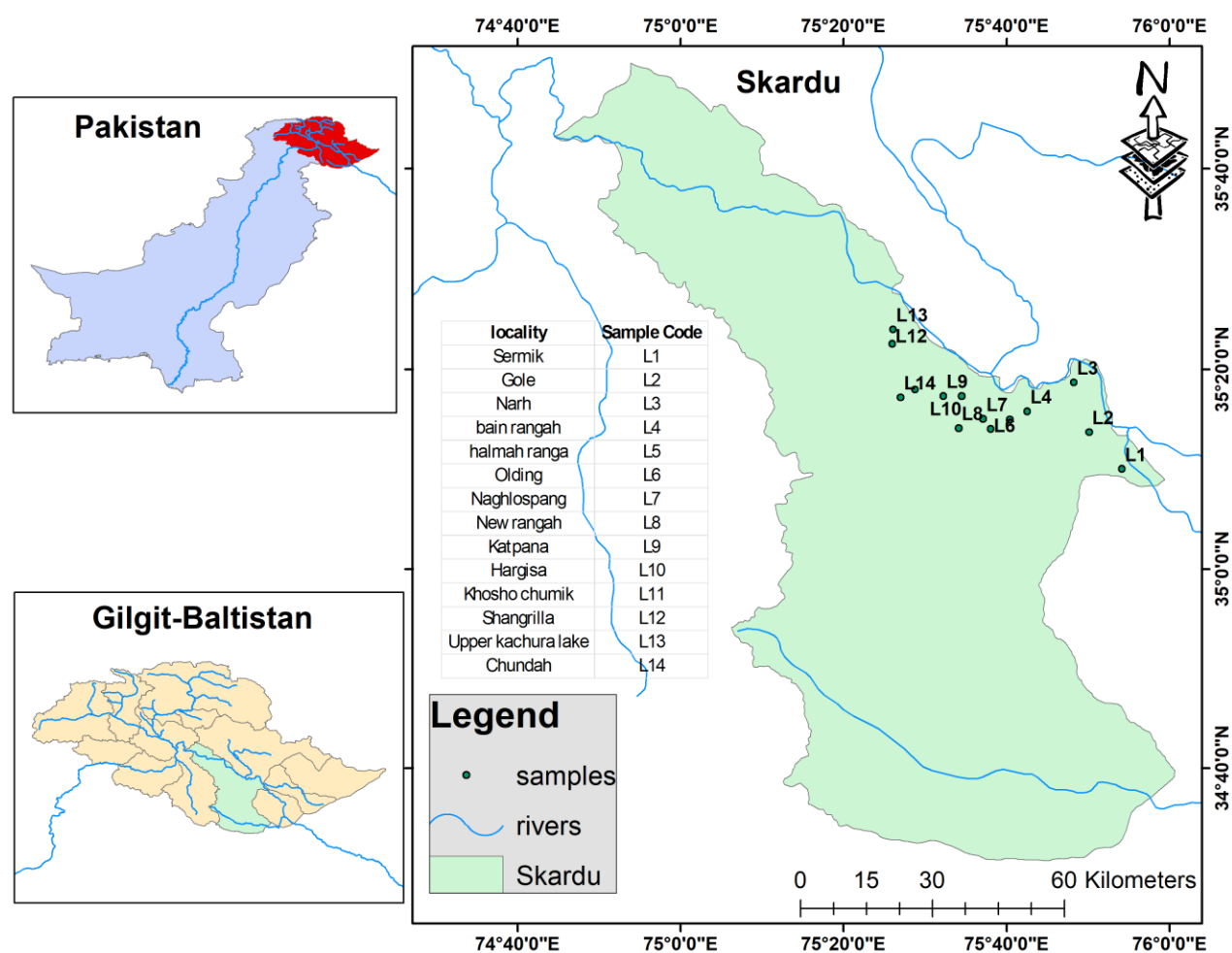


Figure 1. Map showing surveyed areas of district Skardu G.B Pakistan.

Specimen Collection

Adult dragonflies were collected from aquatic spots of the Skardu during clear and sunny days with the help of an insect aerial net during 2022-2023. The adults were mainly collected from 10:00 am to 4:00 pm.

Killing and Preservation

The collected adult samples were killed in a jar having ethyl acetate. After killing, the specimens were pinned on boards, different information regarding the field and specimens was labelled, and they were mounted in the wooden boxes. In order to protect from ants and other pests, naphthalene balls were placed in each box.

Identification of Specimen

All the collected specimens were identified up to species level by using taxonomic literature of Fraser (1933) and Chaudhry (2010). Identified specimens were preserved in the Biosystematics Lab, Department of Zoology, University of Baltistan, and Skardu for future studies.

RESULTS AND DISCUSSION

A total of 183 adult specimens of dragonflies (Anisoptera: Odonata) were collected. The data revealed 14 species of dragonflies belonging to 10 genera under 03 subfamilies. Among 03 families, Libellulidae family was recorded highest with 11 species, followed by family Aeshnidae with 02 species and family Cordulegasteridae with only one species, (Figure 2). It is worth mentioning that *Pantala flavescens* and *Traemea virginia* were recorded first time from district Skardu.

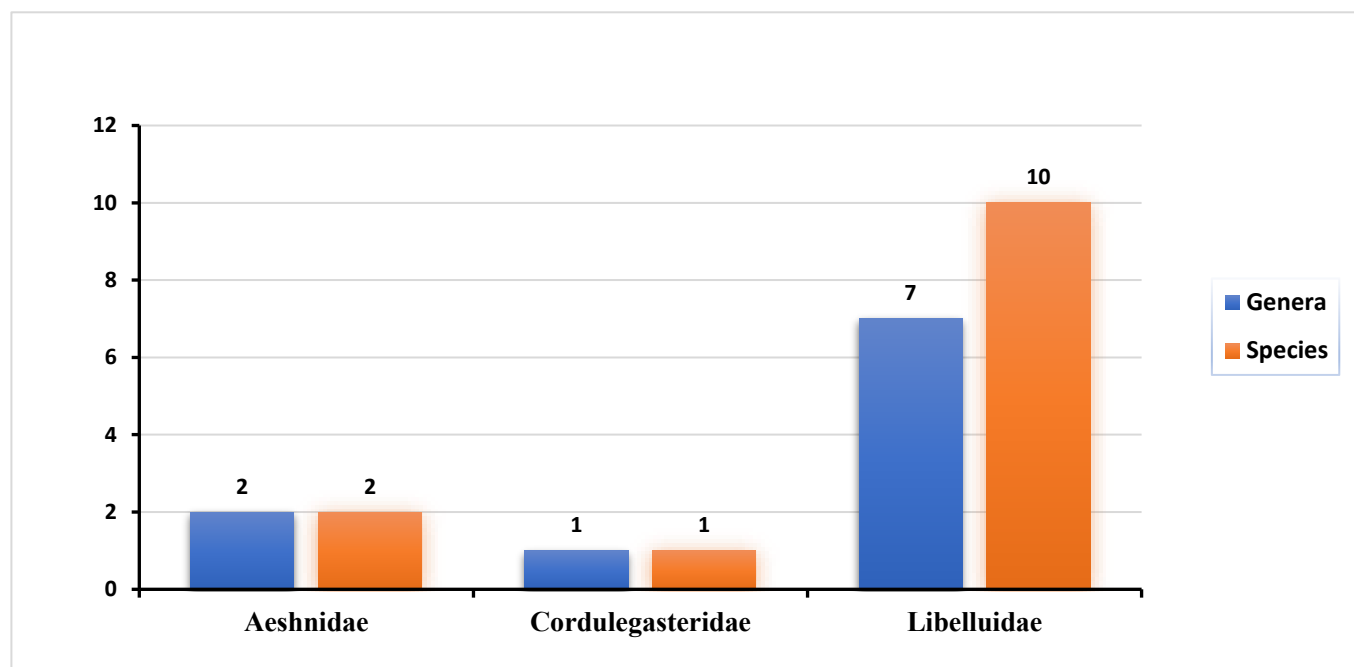


Figure 2. Number of genera and species under various families recorded from district Skardu

Family Libellulidae

1- *Orthetrum anceps* (Schneider, 1845)



Figure 3. *Orthetrum anceps*.

Material Examined

L9 (35°19'30.53"N. 75°34'3d8.10"E. 7285 ft), 1♀4♂, 21. vi. 2022, leg. Ali; L10 (35°18'43"N. 75°36'10"E. 7210 ft), 1♀2♂, 29. vi. 2022, leg. Ali; L8 (35°18'6.07"N. 75°36'51.49"E. 7343 ft), 2♂, 07. vii. 2022, leg. Ali; L14 (35°19'31"N. 75°29'56"E. 9001 Ft), 1♂, 02. vii. 2023, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 01♂04♀, 01. viii. 2023, leg. Ali; L5 (35°17'16.14"N. 75°39'53.53"E. 7349 ft), 01♂, 08. viii. 2023, leg. Ali.

Habitat

Small pond, slowing moving streams with thick vegetation.

2- *Orthetrum brunneum brunneum* (Fonscolombe, 1837)

Figure 4. *Orthetrum brunneum brunneum*.

Material Examined

L6 (35°16'50.44"N. 75°39'11.83"E. 7500 ft), 01♂, 07.vii.2022, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 09♂06♀, 25.vii.2022, leg. Ali; L5 (35°17'16.14"N. 75°39'53.53"E. 7349 ft), 03♂02♀, 02.viii.2022, leg. Ali; L7 (35°17'33.92"N. 75°37'51.57"E. 7433 ft), 01♂, 12.v.2023, leg. Ali; L8 (35°19'30.53"N. 75°34'38.10"E. 7285 ft), 03♂01♀, 06.vi.2023, leg. Ali; L10 (35°18'43"N. 75°36'10"E. 7210 ft), 01♂03♀, 27.vii.2023, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 12♂07♀, 01.viii.2023, leg. Ali; L5 (35°17'16.14"N. 75°39'53.53"E. 7349 ft), 02♂, 08.viii.2023, leg. Ali; L11 (35°19'56.21"N. 75°31'13.97"E. 7377 ft), 02♂01♀, 22.viii.2023, leg. Ali; L6 (35°16'50.44"N. 75°39'11.83"E. 7500 ft), 01♂03♀, 23.viii.2023, leg. Ali.

Habitat

Small pond having moderate grasses and wetlands with tall grasses.

3-*Orthetrum chrysostigma luzonicum*

Figure 5. *Orthetrum chrysostigma luzonicum*.

Material Examined

L12 (35°25'34.93"N. 75°27'22.14"E. 7617 ft), 01♂, 06.viii.2023, leg. Ali; L11 (35°19'56.21"N. 75°31'13.97"E. 7377 ft), 01♂, 22.viii.2023, leg. Ali.

Habitat

Slow moving streams with moderate vegetation.

4- *Orthetrum triangulare triangulare* (Selys, 1878)**Material Examined**

L3 (35°20'29.88"N. 75°49'58.34"E. 7603 ft), 01♂01♀, 10.vi.2023, leg. Ali.

Habitat

Ponds with well-established vegetation.



Figure 6. *Orthetrum triangulare triangulare*.

5- *Libellula quadrimaculata* (Linnaeus, 1758)



Figure 7. *Libellula quadrimaculata*.

Material Examined

L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 04♂, 05. vi.2022, leg. Ali; L6 (35°16'50.44"N. 75°39'11.83"E. 7500 ft), 05♂, 12. vi.2022, leg. Ali; L7 (35°17'33.92"N. 75°37'51.57"E. 7433 ft), 01♂, 12. v.2023, leg. Ali; L10 (35°18'43"N. 75°36'10"E. 7210 ft), 02♂, 27.vii.2023, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 04♂, 01.viii.2023, leg. Ali; L6 (35°16'50.44"N. 75°39'11.83"E. 7500 ft), 03♂, 23.viii.2023, leg. Ali.

Habitat

Slow moving water, small ponds and wheat fields.

6- *Sympetrum meridionale* (Selys, 1841)



Figure 8. *Sympetrum meridionale*.

7- *Pantala flavescens* (Fabricius, 1798)



Figure 9. *Pantala flavescens*.

Material Examined

L5 (35°17'16.14"N. 75°39'53.53"E. 7349 ft), 05♂, 02.viii.2022, leg. Ali; L7 (35°17'33.92"N. 75°37'51.57"E. 7433 ft), 02♂, 12. v .2023, leg. Ali; L1 (35°10'47.52"N. 75°54'23.16"E. 7,671 ft), 01♂, 19. vi .2023, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 01♂, 01.viii.2023, leg. Ali; L11 (35°19'56.21"N. 75°31'13.97"E. 7377 ft), 01♂, 22.viii.2023, leg. Ali; L6 (35°16'50.44"N. 75°39'11.83"E. 7500 ft), 01♂, 23.viii.2023, leg. Ali.

Habitat

Standing water bodies, dry branch of dwarf plantation and moving water spots with thick vegetation.

8- *Crocothemis erythraea* (Brulle, 1832)



Figure 10. *Crocothemis erythraea*.

Material Examined

L10 (35°18'43"N. 75°36'10"E. 7210 ft), 04♂01♀, 27.vii.2023, leg. Ali; L5 (35°17'16.14"N. 75°39'53.53"E. 7349 ft), 11♂, 08.viii.2023, leg. Ali; L11 (35°19'56.21"N. 75°31'13.97"E. 7377 ft), 02♂, 22.viii.2023, leg. Ali.

Habitat

Stagnant water bodies and slow-moving streams.

9- *Crocothemis servilla* (Drury, 1770)

Material Examined

L5 (35°26'48.10"N. 75°27'22.14"E. 7579 ft), 01♀02♂, 21.vii.2023, leg. Ali; L11 (35°25'34.93"N. 75°27'22.14"E. 7617 ft), 03♂01♀, 21.vii.2023, leg. Ali.

Habitat

Streams, ponds and slowing running water with moderate grasses.



Figure 11. *Crocothemis servilla*.

10- *Tramea virginia* (Rambur, 1842)



Figure 12. *Tramea virginia*.

Material Examined

L14 (35°19'31"N. 75°29'56"E. 9001 ft), 1♂, 02.vii.2023, leg. Ali.

Habitat

Grassy ponds.

11- *Diplacodes lefebvrei* (Rambur, 1842)



Figure 13. *Diplacodes lefebvrei*.

Material Examined

L11 (35°19'56.21"N. 75°31'13.97"E. 7377 ft), 01♂, 22.viii.2023, leg. Ali; L9 (35°19'30.53"N. 75°34'38.10"E. 7285 ft),

01♂01♀, 06. vi. 2023, leg. Ali.

Habitat

Wetlands with weedy plants.

Family Aeshnidae

12- *Aeshna juncea* (Linnaeus, 1758)



Figure 14. *Aeshna juncea*.

Material Examined

L11 (35°19'56.21"N. 75°31'13.97"E. 7377 ft), 03♂, 22.viii.2023, leg. Ali; L12 (35°25'34.93"N. 75°27'22.14"E. 7617 ft), 02♂, 21.vii.2023, leg. Ali; L14 (35°19'31"N. 75°29'56"E. 9001 ft), 1♂, 02.vii.2023, leg. Ali.

Habitat

Slow running streams with thick vegetation and water bodies having grasses.

13- *Anax parthenope* (Selys, 1839)



Figure 15. *Anax Parthenope*.

Material Examined

L10 (35°18'43"N. 75°36'10"E. 7210 ft), 02♂01♀, 29. vi. 2022, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 02♂01♀, 25. v. 2023, leg. Ali; L9 (35°19'30.53"N. 75°34'38.10"E. 7285 ft), 02♂02♀, 06. vi. 2023, leg. Ali; L10 (35°18'43"N. 75°36'10"E. 7210 ft), 02♂01♀, 27. vii. 2023, leg. Ali; L4 (35°18'29.16"N. 75°41'52.04"E. 7400 ft), 01♂01♂, 01. viii. 2023, leg. Ali.

Habitat

Fast running water, grasses land, stagnant water bodies and slow moving streams.

Family Cordulegasteridae

14- *Cordulegaster brevistigma* (Selys, 1854)

Material Examined

L2 (35°15'17"N. 75°51'56"E. 7740 ft), 01♂, 19. vi. 2023, leg. Ali.

Habitat

Thick and long grasses near the streams.

During current study 14 species were recorded under 10 genera of 03 families of Anisoptera from different localities of district Skardu. It indicates rich Odonata diversity within the area. Among families, Libellulidae was recorded as most dominant group with 11 species. Libellulidae is the largest family of suborder Anisoptera along with its 1000 species

globally (Zia et al., 2019). In many recent studies from Pakistan i.e, (Khan et al., 2024; Seyab et al., 2015; Rehman et al., 2020; Rashied et al., 2024; Zada, 2015 and Zia et al., 2019) family Libellulidae is also recorded as the most dominant group. Dragonflies (Anisoptera) fauna of Gilgit Baltistan remained under explored with only a few records available. There are fewer studies conducted on dragonflies' fauna of Gilgit Baltistan (Yousuf, 1972; Jehangir, 1997; Khaliq et al., 1994; Hussain, 2006; Zia *et al.*, 2009 and Chaudhry, 2010). In all these studies Skardu was badly ignored. In the current study, among new addition to Anisoptera fauna of Skardu, *Pantala flavescens* is a common species of the country. This species has been earlier reported from Punjab (Bhatti et al., 2014; Chaudhry, 2010; Chaudhry et al., 2016; Hafeez et al., 2021; Din et al., 2013; Khan, 2016; Naeem et al., 2022 and Sidra et al., 2022), Azad Jammu and Kashmir (Chaudhry et al., 2016; Rashied et al., 2024; Rafi et al., 2009 and Chaudhry, 2010), Khyber Pakhtunkhwa (Akhtar, 2014; Atallah et al., 2021; Chaudhry et al., 2016; Chaudhry, 2010; Khan et al., 2024; Mehmood et al., 2020; Seyab et al., 2015; Usman et al., 2017; Parveen et al., 2014; Bibi et al., 2020 and Zia et al., 2019), Baluchistan (Ahmed et al., 2023; Chaudhry et al., 2016 and Chaudhry, 2010), Gilgit (Khaliq et al., 1994; Chaudhry, 2010 and Zia et al., 2009) and Sindh (Bhatti et al., 2020; Chaudhry et al., 2016; Chaudhry, 2010 and Iqbal et al., 2013) and therefore can be taken as a prevalent species of the country. *Tramea virginia* is the other new record for the area which is itself a rare species of the area collected only from a single locality with a smaller number of specimens. Earlier in Pakistan, it is known from Azad Jammu and Kashmir (Chaudhry, 2010; Chaudhry et al., 2016), Punjab (Chaudhry et al., 2016; Chaudhry, 2010), Gilgit (Chaudhry, 2010; Chaudhry et al., 2016, Zia et al., 2009), Khyber Pakhtunkhwa (Khan et al., 2024). Current study provides significant information and opens door for more faunistic surveys in district Skardu.



Figure 16. *Cordulegaster brevistigma* (Selys, 1854).

CONCLUSION

After a thorough survey, it is concluded that district Skardu has a rich fauna of dragonflies. The topography, climate and weather pattern of the region with plenty of natural resources and aquatic bodies support Odonata life and biological cycles.

AUTHOR'S CONTRIBUTION

Zulqarnain Haider Ali performed the research, Collected and identified all recorded specimens to lowest possible taxa with Khadija Fatima and Ahsan Ali Bukhari. Ehsan Ali constructed study area map and supports financially. Aliya Batool and Farheen Ali edit and reviewed research paper. Saeed Ur Rehman and Barkat Ali Provide transportation during field surveys and helped in collection of all specimens.

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AVAILABILITY OF DATA AND MATERIAL

Data is available and will be furnished on demand.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

All Authors have consented to participate in the publication.

CONSENT FOR PUBLICATION

All Authors have consented to participate in the publication.

CONFLICT OF INTERESTS

The authors have no conflict of interest.

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REFERENCES

- Ahmed, B., Amin, M., Zia, A., Qasim, M., Khan, M., & Ullah, Z. (2023). Dragonflies fauna (Odonata: Anisoptera) of Kech Balochistan, Pakistan. *Jammu Kashmir Journal of Agriculture*, 3(3), 215-20.
- Akhtar, N., Khan, S., Saeed, K., Khan, B.T., Ahmed, Z., & Shams, W. A. (2014). Dragonflies of Manglawar Swat Khyber Pakhtoonkhwa Pakistan. *European Academic Research*, 2(1), 172-178.
- Attaullah, M., Ullah, I., Ali, M., Maula, F., Ilahi, I., Ahmad, B., & Raheel, S. M. M. (2021). Diversity of the Anisoptera and Zygoptera (Odonata: Insecta) of Swat, Pakistan. *Brazilian Journal of Biology*, 83 (e251958), 1-8.
- Bhatti, A. R., Zia, A., Mastoi, M. I., Din, A. U., Ashfaq, M., Zahid, R. A., & Ali, M. A. (2014). Fenland naiads of Odonata collected from Tehsil Shakargarh, Punjab, Pakistan. *Pakistan Entomologist*, 36(1), 35-38.
- Bhatti, H., Panhwar, W. A., & Zia, S. A. (2020). Study on the dragonfly (Anisoptera: Odonata) fauna of district Larkana Sindh, Pakistan. *Journal of Entomology and Zoological Studies*, 8(2), 619-23.
- Bibi, S., Khan, M. F., & Rehman, A., (2020). Dragonfly fauna of district Haripur, Khyber Pakhtunkhwa, Pakistan. *Arthropods*, 9(3), 98-103.
- Cadena, J. T., Boudot, J. P., Kalkman, V. J., & Marshall, L. (2023). Impacts of climate change on dragonflies and damselflies in West and Central Asia. *Diversity and Distributions*, 29(7), 912-925.
- Chaudhry, M.T. (2010). Biosystematics of dragonflies (Anisoptera: Odonata) of Pakistan. PhD thesis, Department of Agriculture Entomology, Pir Mehr Ali Shah Arid Agricultural University, Rawalpindi, Pakistan.
- Chaudhry, M.T., Mohsin, A., Shaheen, F.A., Arshad, M., & Zia, A. (2016). Dragonflies (Odonata: Anisoptera) of Pakistan. *Pakistan Journal of Zoology*, 48(6), 1957-62.
- Din, A., Zia, A., Bhatti, A. R., & Khan, M. N. (2013). Odonata naiads of Potohar Plateau Punjab, Pakistan. *Pakistan Journal of Zoology*, 45(3), 695-700.
- Fraser, F. C. (1933). *Fauna of British India, Odonata*, Vols. 1–2, Tayler and Francis Ltd.
- Ghahari, H., Tabari, M., Sakenin, H., Ostovan, H., & Imani, S. (2009). Odonata (Insecta) from Northern Iran, with comments on their presence in rice fields. *Munis Entomology & Zoology*, 4(1), 148-154.
- Hafeez, B., Malik, M.F., Asghar, W., Shabbir, R., Latif, I., & Jabeen, A. (2021). Diversity and distribution of Dragonfly in District Sialkot, Punjab, Pakistan. *Pure Applied Biology*, 10(4), 988-94.
- Hussain, Z. 2006. Taxonomic studies of Odonata of district Gilgit and Astor, Northern Areas Pakistan. M.Sc. thesis, University College of Agriculture Rawalakot, Pakistan.
- Iqbal, M. A., Rizvi, S., Ahmed, A. Z., & Akhter, M. A. (2013). A list of Dragonflies (Anisoptera: Odonata) with new records from Pakistan. *International Journal Biology and Biotechnology*, 10(1), 83-90.
- Jehangir, Z. (1997). Taxonomic studies of Odonata of Gilgit and Baltistan areas. Dissertation, University of Agriculture Faisalabad.
- Kalkman, V.J., Babu, R., Bedjanič, M., Conniff, K., Gyeltshen, T., Khan, M.K., Subramanian, K.A., Zia, A., & Orr, A.G. (2020). Checklist of the dragonflies & damselflies (Insecta: Odonata) of Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka. *Zootaxa*, 4849, 1-84.
- Khaliq, A., Ayub, M., Nafees, M.A., & Maula, F. (1994). A collection of Odonata from Gilgit and Baltistan, Kashmir with three new species for Pakistan. *Notule Odonatologiche* 4(4), 68-69.
- Khan, S. A. (2016). Odonata nymphs from Chakwal, Punjab, Pakistan. *International Journal of Zoological Studies*, 1(2), 9-11.
- Khan, S., Bibi, M., Akbar, B., Ahmad, N., Ahmad, W., & Rehman, A. (2024). Faunistic Study of Dragonflies (Anisoptera; Odonata) of Babuzai with Some New Records for District Swat, Pakistan. *Entomology and Applied Science Letters*, 11(1-2024), 23-29.
- Koroiva, R., Gomes, V. G. N., & Vilela, D. S. (2022). DNA Barcoding and New Records of Odonates (Insecta: Odonata) from Paraiba State, Brazil. *Diversity*, 203(3), 2-14.

- Mehmood, S. A., Zia, A., Ahmed, S., Panhwar, W. A., Khan, W., Shah, M., & Ullah, I. (2020). Seasonal abundance and distribution of dragonflies in upper Siran valley of District Mansehra Pakistan. *Brazilian Journal of Biology*, 81(3), 785-791.
- Naeem, M., Sattar, S., Zia, A., Rehman, A., Iqbal, T., Mehmood, S. A., & Shahjeer, K. (2022). Odonata (dragonflies and damselflies) naiads in sub Himalayan foothills of Pakistan. *Journal of Animal & Plant Sciences*, 32(6), 1616 – 1627.
- Nisar, M. M., Muhammad, K., Mehmood, S. A., Ahmed, S., Murtaza, B. N., & Nadeem, M. S. (2021). Morphological and Phylogenetic Evaluation of Libellulidae Dragonflies from District Attock, Punjab, Pakistan. *International Journal of Agriculture and Biology*, 26(3), 393-400.
- Nur-ul-Islam, H., Zia, A., Khan, K., Ali, H., & Aziz, A. (2021). *Sympetrum hypomelas* (Selys, 1884), an addition to anisoptera fauna of Pakistan. *Pakistan Journal of Agricultural Research*, 34(3), 538-544.
- Perveen, F., Khan, A., & Rauf, S. A. (2014). Key for first recorded dragonfly (Odonata: Anisoptera) fauna of district lower Dir, Khyber Pakhtunkhwa, Pakistan. *International Research Journal of Insect Sciences*, 1(2), 26-35.
- Rafi, M.A., Khan, M.R., Zia, A., & Shehzad, A. (2009). Diversity of Odonata in district Poonch and Sudhnoti of Kashmir Valley-Pakistan, with a new record for the country. *Halteres*, 1(1), 28-35.
- Rashied, S., Zia, A., Minhas, R. A., Aslam, S., Bhatti, A. R., & Ali, G. (2024). Diversity of the Anisoptera and Zygoptera (Odonata: Insecta) of State Biosphere Reserve Neelum of Azad Jammu and Kashmir, Pakistan. *Pakistan Journal of Zoology*, 1-7.
- Rehman, A., Ahmad, S., Zia, A., Ali, A., Shahjeer, K., Latif, A., & Khan, T. (2020). Dragonflies (Anisoptera: Odonata) fauna of district Swabi Khyber Pakhtunkhwa, Pakistan. *Sarhad Journal of Agriculture*, 36(2), 675-684.
- Seyab, M., Mehmood, A., Khan, S., & Jan, A. (2015). Exploring the dragonfly Fauna of Tehsil Tangi District Charsadda, Khyber Pakhtunkhwa, Pakistan. *Journal of Entomology and Zoology Studies*, 3(4), 186-188.
- Sidra, S., Mehmood, A., Moavia, M., & Saadaat, H. B. (2022). Anisopteran diversity in two riverine habitats of Southern Punjab, Pakistan. *Inland Water Biology*, 15(4), 361-367.
- Usman, K., Pervaiz, K., Rehman, H. U., & Mohammad, W. (2017). Exploring of dragonfly fauna in lower region of district Karak KP, Pakistan. *Journal of Entomology and Zoology Studies*, 5(1), 708-710.
- Yousuf, M. (1972). Taxonomic studies on Anisoptera (Odonata) of Pakistan. Ph.D. thesis, Department Entomology, West Pakistan Agricultural University, Lyallpur, Pakistan.
- Zada, N. (2015). Biodiversity of Odonata fauna of district Buner, Khyber Pakhtunkhwa, Pakistan. MSc thesis, University of Haripur, Khyber Pakhtunkhwa, Pakistan.
- Zia, A., Hussain, I., Mehmood, S. A., Ahmad, S., Shah, M., & Bhatti, A. R. (2019). Richness and distribution of Odonata in Kurram district, Khyber Pakhtunkhwa. *Pakistan Journal of Agricultural Research*, 32(4), 589-594.
- Zia, A., Rafi, M. A., Hussain, Z., & Naeem, M. (2009). Occurrence of Odonata in northern area of Pakistan with seven new records. *Halteres*, 1(1), 48-56.
- Zia, A., Shabnem, B., Mehmood, S. A., Mastoi, M. I., Shehzad, A., & Ahmed, S. (2024). *Aeshna mixta* (Latreille, 1805), a new record for the Odonata (Anisoptera: Aeshnidae) fauna of Pakistan. *Arthropods*, 13(2), 87-93.