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Odonata collected in 2023 in Azerbaijan, including the confirmation of *Cordulia aenea* Linnaeus, 1758 for Azerbaijan

Nataly Yu. Snegovaya
Zoological Institute NAS of Azerbaijan, proezd 1128, kvartal 504,
Baku, AZ 1073, Azerbaijan.
Email: snegovaya@yahoo.com

Abstract
This paper presents the results of a study conducted on the odonate fauna in Azerbaijan, held in 2023 and covering 40 localities in 19 districts. A total of 42 species from 9 families was recorded.

**Keywords:** Odonata, fauna, Azerbaijan, *Crocothemis servilia*, *Cordulia aenea*, *Somatochlora flavomaculata*.

Introduction
In 2023, we continued to investigate the dragonfly fauna of Azerbaijan. 19 districts (Lenkoran, Lerik, Masalli, Jalilabad, Bilasuvar, Agdash, Shabran, Khachmaz, Evlakh, Agjabedi, Fizuli, Imishli, Beylagan, Siyazan, Balaken, Ismailli, Shakhbuz, Babek, Shemakha) were surveyed, making a total of 40 localities (Figure 1).

Material and Methods
Collection of odonate specimens was carried out from April to November. All photos were taken by the author using Canon EOS 5D Mark III, with Tamron SP 90mm, F/2.8 Macro lens and telephone Samsung Galaxy A53, under natural conditions. The identification of some species (in particular *Gomphus schneiderii* Selys, 1850) was based on Dijkstra & Lewington (2006). Specimens are deposited in the Laboratory of Terrestrial Invertebrates of the Zoological Institute (Ministry of Science and Education of Azerbaijan), Baku.

Sampling sites (Fig. 1)

**Lenkoran district**

**Loc. 1.** Istisu village (N38°47'26.5" E48°44'8.4"; 9 m a.s.l.). A small pond in the vicinity of the village, clayey banks overgrown with grass and trees close on one side (Figure 2).

**Loc. 2.** Dashtatyuk village. (N38°40'33.21" E48°45'37.36"; 106 m a.s.l.). A pond near the village of Dashtatyuk. We have already given a detailed description of this reservoir earlier (Snegovaya, 2022), so now we will briefly list some relevant habitat factors to characterise the reservoir: it is surrounded by forest, along the edges there are reed-beds, hawthorn (*Crataegus* sp.) and blackberry bushes (*Rubus* sp.) (Figure 3).
Loc. 3. Azfilial settlement. (N38°40’54.29” E48°47’12.48”; 20 m a.s.l.). This place has also already been described by us earlier (Snegovaya, 2022) (Figure 4).

Loc. 4. Narimanobad settlement, the seashore area (N38°53’2.8” E48°53’29.4”; -28 m a.s.l.) with small spills, mostly without water, sandy soil with thickets of saltwort (Sal-sola sp.), rush (Juncus sp.) and wheatgrass (Elytrigia repens) (Figure 5).

Loc. 5. Narimanobad settlement, freshwater spills along the road (N38°52’12.5” E48°50’35.3”; -26 m a.s.l.). A shallow spill, with a bottom covered with herbaceous vegetation, with
dense vegetation of rush; along the banks there are dense thickets of blackberries and rush (Figure 6).

**Lerik district**

**Loc. 6.** Gosmalyan village. (N38°40'12.6" E48°22'29.1"; 1456 m a.s.l.). A small river Mistan passing through the village, the banks are overgrown with grass, in addition, large willow trees (*Salix* sp.) grow along the river (Figure 7).

**Jalilabad district**

**Loc. 7.** Privolnoe village. (N39°07'29.4" E48°31'07.7"; 37 m a.s.l.). A small reservoir near a village. The clayey banks and a part of the coast are occupied by a concrete dam. Along the banks there is grassy vegetation, small areas with thickets of silver oleaster (*Elaeagnus commutata*) and blackberries (*Rubus creticus*) (Figure 8).
Figure 5. Lenkoran district, Narimanobad settlement, area on the seashore (Loc. 4).

Figure 6. Lenkoran district, Narimanobad settlement, freshwater spills along the road (Loc. 5).

Figure 7. Lerik district, Gosmalyan village, a small river Mistan (Loc. 6).
Loc. 8. Misharchay river near Jalilabad city. (N39°12’31.4" E48°31’42.1"; 14 m a.s.l.). A river flowing near the city. The banks are covered with grass interspersed with quite tall plants such as thistles (*Carduus* sp.). Along the river there are areas with *Tamarix* (Figure 9).

Masalli district

Loc. 9. Gamo and Miyanku village. (N38°53’47.4" E48°32’6"; 537 m a.s.l.). A small river flowing through a section of the Hyrcanian forest. There are clearings in front of the forest part. Below is a hiking rest area (Figure 10).

Loc. 10. Reservoirs near Nazaroba village (N38°53’23" E48°40’5.7"; 27 m a.s.l.). Two fairly large reservoirs are located near the village. The banks are clayey, overgrown with grassy vegetation and thickets of oleaster and blackberries (Figure 11).
Loc. 11. A pond near Arkivan village (N39°0'45" E48°38'24.9"; 22 m a.s.l.), along the banks there are reedbeds, various trees, mainly willow and blackberry thickets (Figure 12).

Loc. 12. Shallow pond near the Garibler village (N38°59'59.7" E48°35'59.6"; 79 m a.s.l.). A shallow reservoir and a spill with clayey banks and bottom, with grassy vegetation along the banks (Figure 13).

Loc. 13. Section of the Vilyashchay River (N38°58'48.6" E48°33'47.2"; 89 m a.s.l.). A river with a rocky bottom, partly passing through a forested area, partly open, with thickets of tall grasses and shrubs (Figure 14).

Figure 10. Masalli district, Gamo, a small river flowing through a section of the Hrycanian forest (Loc. 9).

Figure 11. Masalli district, reservoir near Nazaroba village (Loc. 10).
Figure 12. Masalli district, a pond near Arkivan village (Loc. 11).

Figure 13. Masalli district, shallow pond near the Garibler village (Loc. 12).

Figure 14. Masalli district, section of the Vilyashchay River (Loc. 13).
Figure 15. Masalli district, section of the Vilyashchay water reservoir (Loc. 14).

Figure 16. Masalli district, section of the Boladichay River (Loc. 15).

Figure 17. Khachmaz district, plot on the seashore near Mukhtadir village (Loc. 16).
Figure 18. Khachmaz district, coastal zone near the Nabran village (Loc. 17).

Figure 19. Khachmaz district, coastal zone near the Nabran village (Loc. 17).

Figure 20. Khachmaz district, A plot of forest and a river near the Nabran village (Loc. 18).
Loc. 14. Section of the Vilyashchay reservoir and various reservoirs and spills near the reservoir (N39°0'33.3" E48°35'28.8"; 57 m a.s.l.). The banks of the reservoir are rocky and virtually barren. Smaller reservoirs located near the main water reservoir mainly with grassy vegetation along the banks, sometimes with small areas of cattails (*Typha* sp.) and reeds (Figure 15).

Loc. 15. Section of the Boladichay River near the village of Boradigah (N38°52’18.8” E48°43’9.2”; -9 m a.s.l.). A small river with rocky banks and bottom, in some places the banks bear only tall grasses, in some places there are dense thickets of tamarisk, blackberry and willow trees (Figure 16).
Khachmaz district

Loc. 16. Plot of the seashore near Mukhtadir village (N41°40’14.1" E48°46’48.2"; -24 m a.s.l.). An area with small spills, densely overgrown with reeds, cattails, and many tall grasses and shrubs. Closer to the shore there are areas with sandy soil, covered with saltwort and rush grass, and a small river flows nearby (Figure 17).

Loc. 17. Coastal zone near the Nabran village (N41°48’54.9" E48°38’12.3"; -25 m a.s.l.). Areas on the coast with various freshwater spills and small rivers and streams flowing into the sea. The spills are densely overgrown with cattails and reeds. In dry areas, rush tussocks and various herbs grow in abundance (Figure 18-19).

Loc. 18. A plot of forest and a river and a clearing near the Nabran village (N41°45’48.5" E48°40’20.5"; 0 m a.s.l.). A section of forest of mixed type – oak, alder, etc., various shrubs and grass cover. The banks of a river with grass tufts and bush thicklet. The clearing has thickets of tall grasses, including a lot of Eryngium sp.) on which dragonflies often land (Figure 20 & 62).

Shabran district

Loc. 19. River in the vicinity of the Zagly village (N41°8’24.1" E48°49’1.7"; 628 m a.s.l.). A small river flowing through a forest, stone and pebble banks, along the banks there are thickets of herbaceous vegetation (horsetail, gillyflower [Brassicaceae], etc.), blackberries, etc. (Figure 21).

Loc. 20. A small pond in the vicinity of the Zagly village (N41°8’28.1" E48°49’10.7"; 637 m a.s.l.), in the forest near the road. The banks and bottom are clayey, along the banks there are thickets of blackberries, reeds and various grasses (Figure 22).

Loc. 21. Section of the Shabranchay River (N41°9’40.9" E48°54’59.6"; 211 m a.s.l.), with a rocky-pebble bottom and various bushes along the banks (Figure 23).

Evlakh district

Loc. 22. Yetim Kur akhmazi (N40°35’29.6" E47°12’12.9"; 12 m a.s.l.). A reservoir, very densely overgrown along the banks with silver oleaster, reeds and blackberry bushes. In the clearings near the reservoir there are thickets of various grasses and camel thorns (Alhagi sp.) (Figure 24).

Loc. 23. A pond along the Arabsheki-Eymur road (N40°37’51.9" E47°12’35.2"; 14 m a.s.l.), overgrown on the surface with duckweed (Lemna sp.) along the banks with silver oleaster, rush beds, and various herbs (Figure 25).

Loc. 24. Reservoirs near the Garibler village (N40°37’44.8" E47°12’38"; 14 m a.s.l.). Near the village there are several water bodies: a canal, overflows in the meadows, a small lake. Grasses grow along the banks of the canal and spills, and there are oleaster trees and blackberry bushes nearby. Mostly reedbeds grow along the shores of the lake (Figure 26).

Agdash district

Loc. 25. Reservoirs near Arabsheki village (N40°34’54.4" E47°14’7.7"; 14 m a.s.l.). Around the village there are different types of reservoirs - lakes, with thickets of reeds and cattails, the water surface covered with pondweed (Potamogeton sp.); channels with water,
with reeds and blackberry thickets along the banks and various small spills, also with reeds and various herbs. Near the reservoirs there are open areas with camel thorn and various herbs (Figure 27).

**Loc. 26.** Turianchay State Reserve (N40°43'28.7" E47°30'13.8"; 200 m a.s.l.). The area of the reserve consists of clayey hills with glades of various sizes with small shrubs, trees and grasses; below there are clayey gorges and small streams flowing (Figure 28).

**Agjubedi district**

**Loc. 27.** Kohne damba (N39°46'48.5" E47°48'47.5"; 16 m a.s.l.). A large reservoir with reedbeds along the banks and tamarisk bushes with clear water and thickets of stone-worts (Chara sp.) at the bottom (Figure 29).
Fig. 25. Evlakh district, lake along the Arabsheki-Eymur road (Loc. 23).

Fig. 26. Evlakh district, reservoirs near the Garibler village (Loc. 24).

Fig. 27. Agdash district, reservoirs near Arabsheki village (Loc. 25).
Fig. 28. Agdash district, Turianchay State Reserve (Loc. 26).

Fig. 29. Agjabedi district, Kohne damba reservoir (Loc. 27).

Fig. 30. Fizuli district, freshwater spills along the road (Loc. 28).
Fig. 31. Fizuli district, spills, ditches near the village of Mollamageramli (Loc. 29).

Fig. 32. Beylagan district, freshwater lake along the road (Loc. 30).

Fig. 33. Imishli district, shallow pond near Bahramtepe village (Loc. 31).
Fizuli district

Loc. 28. Freshwater spills along the road Hajigabul-Bahramtapa-Minjivan (N39°32'21.4" E47°30'57.7"; 119 m a.s.l.). Small spills in meadows with thickets of tall reeds and cattails (Figure 30).

Loc. 29. Spills, ditches near the village of Mollamageramli (N39°27'56.8" E47°21'33.7"; 147 m a.s.l.). Ditches along the road overgrown with grass, as well as spills in the fields (Figure 31).

Beylagan district

Loc. 30. Freshwater lake along the road Hajigabul-Bahramtapa-Minjivan (N39°37'52.9" E47°40'58.6"; 91 m a.s.l.). A small lake with small areas of reeds and tamarisk bushes, at the bottom there is a large amount of stoneworts (Figure 32).

Fig. 34. Bilasuvar district, section of the bank of the Araz River (Loc. 32).

Fig. 35. Bilasuvar district, lakes, canals, spills along the road (Loc. 33).
Fig. 36. Shemakha district, pond and spills in the vicinity of the Kyalakhana village (Loc. 34).

Fig. 37. Siyazan district, Caspian Sea coast line (Loc. 35).

Fig. 38. Balaken district, Beshbulag (Loc. 36).
Imishli district

**Loc. 31.** Shallow pond near Bahramtepe village (N39°44'38.5" E47°59'04.9"; 62 m a.s.l.). A pond with dense carpets of *Chara* sp. along the shallow shore zone, small areas with cattails, as well as tamarix along the banks (Figure 33).

Bilasuvvar district

**Loc. 32.** Section of the bank of the Araz River (N39°43'47" E48°1'33.2"; 9 m a.s.l.), with banks densely overgrown with tamarisk and reeds, the surface of the water near the banks is covered with duckweed (Figure 34).

**Loc. 33.** Reservoirs - lakes, canals, spills along the road, near the village of Khirmandaly (N39°28'31" E48°37'39.9"; -20 m a.s.l.). Reservoirs along the banks with thickets of reeds, in areas with thickets of tamarisk, rush grass, and camel thorn. In the shallow waters the water is overgrown with duckweed (Figure 35).

Shamakha district

**Loc. 34.** Pond and spills in the vicinity of the Kyalakhanav village (N40°35'16.8" E48°36'6.6"; 629 m a.s.l.). The banks of the pond are partly overgrown with reeds, partly with grasses, and the bottom is clayey. Spills with thickets of cattails and reeds (Figure 36).

Siyazan district

**Loc. 35.** Caspian Sea coast line (N40°58'34.08" E49°15'53.15" ; -28 m a.s.l.) (Figure 37).

Balaken district

**Loc. 36.** Beshbulag (N41°40'30.1" E46°27'52.2"; 285 m a.s.l.). A spring and a pond flowing between herbaceous vegetation. Clearings in an area between trees and blackberry thickets (Figure 38).

**Loc. 37.** Pond and spill along the road to the Ititala village (N41°38'1.5" E46°24'40.5"; 227 m a.s.l.). A pond with dense thickets of reeds and cattails, clearings with a flowing small river and grass spills (Figure 39).

Ismaili district

**Loc. 38.** Garanokhur lake (N40°48'46.11" E48°15'00.97"; 1534 m a.s.l.). A mountain lake surrounded by forest, along the banks there are areas with reeds (Figure 40).

Nakhichevan MR:

Shakhbuz district

**Loc. 39.** Forest part along the road to Batabat (N39°31'51.2" E45°46'50.7"; 2269 m a.s.l.), with small streams flowing along glades and forests and forming some floods (Figure 41).

Babek district

**Loc. 40.** Mineral river near the Sirab village (N39°18'29.72" E45°31'01.02"; 1111 m a.s.l.), flowing from a mineral spring, the banks are clayey, occasionally with reed thickets (Figure 42).
Fig. 39. Balaken district, pond and spill along the road to the Ititala village Loc. 37).

Fig. 40. Ismailli district, Garanokhur lake (Loc. 38).

Fig. 41. Shakhbuz district, forest part along the road to Batabat (Loc. 39).
Fig. 42. Babek district, Mineral river near the Sirab village (Loc. 40).

Results

Recorded species

Calopterygidae

*Calopteryx splendens orientalis* (Selys, 1887) (Figure 43).

Loc. 3. 1♂, 27.07.2023; Loc. 6. 1♂, 6.06.2023; Loc. 9. 2♂♂, 24.07.2016; Loc. 13. 1♀, 25.07.2023; Loc. 15. 1♂, 26.07.2023.

Figure 43. *Calopteryx splendens orientalis* (Selys, 1887), male (Loc. 3).

*Calopteryx splendens intermedia* (Selys, 1887) (Figure 44).

Loc. 16. 1♂, 16.06.2023; Loc. 17. 5♀♀, 19.06.2023; Loc. 18. 1♂, 22.06.2023; Loc. 19. 1♂, 30.06.2023; Loc. 36. 1♂, 13.09.2023.

Figure 44. *Calopteryx splendens intermedia* (Selys, 1887), male (Loc. 18).
Euphaeidae

*Epallage fatime* Charpentier, 1840 (Figure 45).

Loc. 9. 1♂, 1♀, 24.07.2023; Loc. 19. 2♀, 30.06.2023.

Figure 45. *Epallage fatime* Charpentier, 1840, female (Loc. 19).

Lestidae

*Chalcolestes parvidens* (Artobolevsky, 1929) (Figure 46).


Figure 46. *Chalcolestes parvidens* (Artobolevsky, 1929), male (Loc. 19).

*Lestes barbarus* (Fabricius, 1798)

Loc. 4. 1♀, 26.07.2023; Loc. 17. 1♂, 2♀♀, 22.06.2023; Loc. 24. 1♀, 5.07.2023; Loc. 33. 1♀, 9.06.2023; Loc. 34. 2♂♂, 31.05.2023; Loc. 39. 6♂♂, 22.08.2023.

*Lestes dryas* Kirby, 1890 (Figure 47).

Loc. 19. 3♂♂, 30.06.2023; Loc. 20. 3♂♂, 30.05.2023, Loc. 39.1♂♂, 22.08.2023.

Fig. 47. *Lestes dryas* Kirby, 1890, male (Loc. 20).
*Lestes virens* Rambur, 1842 (Figure 48)
Loc. 39. 1♂, 22.08.2023.

*Sympecma fusca* (Vander Linden, 1820)
Loc. 17. 1♀, 22.06.2023; Loc. 19. 1♂, 3♀, 29.09.2023; Loc. 39. 1♀, 22.08.2023.

**Coenagrionidae**

*Ischnura pumilio* (Charpentier, 1825)
Loc. 13. 1♂, 25.07.2023; Loc. 17. 2♂♂, 1♀, 5-6.10.2023; Loc. 35. 1♂, 21.07.2023;
Loc. 40. 2♂♂, 1♀, 21.08.2023

*Ischnura elegans* (Vander Linden, 1820) (Figure 49).
Loc. 1. 1♂, 30.04.2023; Loc. 4. 1♂, 26.07.2023; Loc. 5. 2♂♂, 1♀, 26.07.2023;
Loc. 7. 2♂♂, 8.06.2023; Loc. 8. 2♂♂, 9.06.2023; Loc. 9. 1♂, 24.07.2023; Loc.
10. 1♂, 24.07.2023; Loc. 11. 1♀, 25.07.2023; Loc. 15. 1♂, 26.07.2023; Loc.
16. 1♂, 16.06.2023; Loc. 17. 1♀, 19.06.2023; Loc. 24. 1♂, 1♀, 5.07.2023; Loc.
25. 1♂, 1♀, 5.07.2023; Loc. 27. 2♂♂, 5.07.2023; Loc. 30. 1♂, 2♀♀, 7.07.2023;
Loc. 33. 2♂♂, 9.06.2023.
Coenagrion australocaspicum Dumont & Heidari, 1995 (Figure 50).
Loc. 2. 2♂♂, 28.04.2023; Loc. 17. 2♂♂, 19.06.2023.

Coenagrion puella (Linnaeus, 1758)
Loc. 17. 2♂♂, 20.06.2023; Loc. 20. 1♂, 30.05.2023.

Coenagrion ornatum (Selys, 1850) (Figures 51-52).
Loc. 6. 5♂♂, 6.06.2023; Loc. 17, 20.06.2023, photo; Loc. 34. 3♂♂, 2♀♀, 31.05.2023.

Erythromma viridulum (Charpentier, 1840)
Loc. 27. 2♂♂, 5.07.2023; Loc. 30. 1♂, 7.07.2023.
Platycnemidae

*Platycnemis pennipes* (Pallas, 1771) (Figure 53).

Loc. 16. 1 ♀, 16.06.2023; Loc. 17. 3 ♂♂, 3 ♀♀, 19.06.2023; Loc. 18. 1 ♂, 22.06.2023.

Fig. 53. Figure 53. *Platycnemis pennipes* (Pallas, 1771), male (Loc. 17).

*Platycnemis dealbata* Selys in Selys and Hagen, 1850 (Figure 54).

Loc. 9. 1 ♂, 1 ♀, 24.07.2023; Loc. 13. 1 ♂, 2 ♀♀, 25.07.2023; Loc. 15. 1 ♂, 1 ♀, 26.07.2023; Loc. 16. 1 ♂, 16.06.2023; Loc. 19. 2 ♂♂, 30.06.2023; Loc. 25. 3 ♂♂, 1 ♀, 5.07.2023; Loc. 27. 1 ♂, 1 ♀, 5.07.2023; Loc. 29. 3 ♂♂, 5.07.2023; Loc. 30. 1 ♀, 7.07.2023; Loc. 33. 2 ♂♂, 9.06.2023; Loc. 36. 1 ♂, 1 ♀, 13.09.2023.

Fig. 54. *Platycnemis dealbata* Selys in Selys and Hagen, 1850, male (Loc. 3).

Aeshnidae

*Anax imperator* Leach, 1815

Loc. 26. 1 ♂, 10-20.05.2023; Loc. 34. 31.05.2023, visually.

*Anax parthenope* (Selys, 1839) (Figure 55).


Fig. 55. *Anax parthenope* (Selys, 1839), male (Loc. 19).
Aeshna vercanica Schneider, Schneider, Schneider, Vierstraete & Dumont, 2015 (Figure 56).

Figure 56. Aeshna vercanica Schneider, et al., 2015, female (Loc. 9) and structure of the ovipositor (ventral view).

Aeshna mixta Latreille, 1805 (Figure 57).
Loc. 17, 2♂♂, 5-6.10.2023; Loc. 19. 2♂♂, 30.06.2023; Loc. 36. 1♀, 13.05.2023

Fig. 57. Figure 57. Aeshna mixta Latreille, 1805, male (Loc. 17).
Aeshna affinis Vander Linden, 1820 (Figure 58).
Loc. 17. 3 ♂♂, 22.06.2023;
Loc. 19. 1 ♂, 1 ♀, 30.06.2023

Fig. 58. Aeshna affinis Vander Linden, 1820, male (Loc. 17).

Aeshna cyanea (Müller, 1764) (Figure 59).
Loc. 38. 1 ♂, 22.10.2023.

Fig. 59. Aeshna cyanea (Müller, 1764), male (Loc. 38).

Isoaeschna isoceles (Müller, 1764) (Figure 60).

Fig. 60. Isoaeschna isoceles (Müller, 1764), male (Loc. 26).
Gomphidae

*Lindenia tetraphylla* (Vander Linden, 1825) (Figure 61).

Loc. 17. 22.06.2023, visually; Loc. 27. 5.07.2023, visually.

*Onychogomphus forcipatus albotibialis* Schmidt, 1954

Loc. 3. 1♂, 1♀, 27.07.2023; Loc. 9. 24.07.2023, visually; Loc. 15. 1♂, 26.07.2023; Loc. 16. 1♂, 16.06.2023; Loc. 19. 2♂♂, 30.06.2023

*Gomphus schneiderii* Selys, 1850 (Figure 62).

Loc. 16. 3♂♂, 16.06.2023; Loc. 17. 2♂♂, 19.06.2023; Loc. 18. 1♀, 22.05.2023.

**Fig. 61. Lindenia tetraphylla** (Vander Linden, 1825), male (Loc. 17).

**Fig. 62. Gomphus schneiderii** Selys, 1850, male (Loc. 18).
Corduliidae

*Cordulia aenea* Linnaeus, 1758 (Figure 63).

Loc. 1. 1♂, 30.04.2023; Loc. 2. 28.04.2023, visually.

*Fig. 63. Cordulia aenea* Linnaeus, 1758, male (Loc. 1).

*Somatochlora flavomaculata* (Vander Linden, 1825) (Figure 64).

Loc. 16. 1♂, 22.06.2023.

*Fig. 64. Somatochlora flavomaculata* (Vander Linden, 1825), male (Loc. 16).

Libellulidae

*Libellula depressa* Linnaeus, 1758


*Orthetrum brunneum* (Fonscolombe, 1837)

Loc. 8. 1♂, 906.2023; Loc. 17. 1♀, 19.06.2023; Loc. 19. 1♂, 30.06.2023; Loc. 26. 1♀, 19-20.05.2023.

*Orthetrum coerulescens* (Fabricius, 1798)

Loc. 3. 1♂, 27.07.2023; Loc. 9. 1♂, 24.07.2023; Loc. 13. 1♂, 1♀, 25.07.2023; Loc. 17. 1♂, 3♀, 19.06.2023; Loc. 18. 1♂, 22.06.2023; Loc. 22. 1♀, 4.07.2023; Loc. 24. 1♀, 5.07.2023; Loc. 25. 1♂, 1♀, 5.07.2023; Loc. 27. 1♂, 1♀, 5.07.2023; Loc. 29. 2♂, 1♀, 5.07.2023; Loc. 30 1♂, 7.07.2023; Loc. 36. 1♂, 13.09.2023; Loc. 39. 1♂, 1♀, 22.08.2023; Loc. 40. 1♂, 21.08.2023.
Orthetrum albistylum (Selys 1848)
 Loc. 8. 1♀, 9.06.2023; Loc. 9. 1♂, 24.07.2023; Loc. 10. 1♀, 24.07.2023; Loc. 11. 1♂, 25.07.2023; Loc. 24. 1♂, 1♀, 5.07.2023; Loc. 25. 2♀♀, 5.07.2023; Loc. 33. 9.06.2023, visually.

Orthetrum sabina (Drury, 1773)
 Loc. 3. 1♂, 27.07.2023; Loc. 7. 1♂, 1♀, 8.06.2023; Loc. 8. 1♂, 9.06.2023; Loc. 10. 1♀, 24.07.2023; Loc. 11. 2♂♂, 25.07.2023; Loc. 13. 1♀, 25.07.2023; Loc. 15. 1♂, 26.07.2023; Loc. 24. 1♀, 5.07.2023; Loc. 25. 1♂, 1♀, 5.07.2023; Loc. 31. 1♀, 7.07.2023; Loc. 33. 1♂, 9.06.2023.

Sympetrum fonscolombii (Selys, 1840)

Sympetrum sanguineum (Müller, 1764) (Figure 65).
 Loc. 2. 1♂, 27.07.2023; Loc. 10. 1♂, 24.07.2023; Loc. 19. 2♀♀, 31.08.2023.

Fig. 65. Sympetrum sanguineum (Müller, 1764), male (Loc. 19).

Sympetrum striolatum (Charpentier, 1840)
 Loc. 3. 1♂, 27.07.2023; Loc. 8. 1♀, 9.06.2023; Loc. 17. 1♀, 19.06.2023, 1♀, 5-6.10.2023; Loc. 19. 2♂♂, 1♀, 29.09.2023, 1♀, 30.06.2023, visually 1.11.2023; Loc. 26. 1♀, 19-20.05.2023; Loc. 33. 1♂, 9.06.2023.

Sympetrum meridionale (Selys, 1841) (Figure 66, 67).
 Loc. 9. 1♂, 1♀, 24.07.2023; Loc. 16. 1♀, 6.06.2023; Loc. 17. 1♀, 22.06.2023; Loc. 19. 3♂♂, 30.06.2023, 1♂, 31.07.2023, 1♂, 31.08.2023; Loc. 26. 1♂, 19-20.05.2023; Loc. 34. 1♀, 31.05.2023; Loc. 36. 1♂, 1♀, 13.09.2023.
Sympetrum flaveolum (Linnaeus, 1758) (Figure 68).
Loc. 9. 1♂, 24.07.2023;

Figure 68. Sympetrum flaveolum (Linnaeus, 1758), female (Loc. 39).

Pantala flavescens (Fabricius, 1798) (Figure 69).
Loc. 3. 1♂, 27.07.2023;
Loc. 9. 1♂, 24.07.2023;
Loc. 21. 1♂, 31.08.2023

Figure 69. Pantala flavescens (Fabricius, 1798), male (Loc. 3).
**Crocothemis erythraea** (Brullé, 1832)
Loc. 5. 1♂, 26.07.2023; Loc. 7. 1♀, 8.06.2023; Loc. 10. 1♂, 24.07.2023; Loc. 11. 1♂, 25.07.2023; Loc. 17. 2♂♂, 19.06.2023; Loc. 22. 1♂, 4.07.2023; Loc. 25. 1♂, 5.07.2023; Loc. 27. 1♂, 5.07.2023; Loc. 33. 1♂, 9.06.2023; Loc. 34. 31.05.2023, visually.

**Crocothemis servilia** (Drury, 1773) (Figure 70).

![Image of Crocothemis erythraea](image)

**Figure 70. Crocothemis servilia** (Drury, 1773), A – male, lateral view, B – female, lateral view, C – male secondary genitalia, lateral view, D – male secondary genitalia, view from below, E - vulvar scale.

**Selysiotothemis nigra** (Vander Linden, 1825)
Loc. 4. 1♀, 26.07.2023; Loc. 5. 1♂, 26.07.2023; Loc. 9. 1♀, 24.07.2023; Loc. 13. 1♂, 1♀, 25.07.2023; Loc. 17. 1♀, 19.06.2023; Loc. 27. 1♀, 5.07.2023; Loc. 30. 3♂♂, 7.07.2023; Loc. 33. 2♀♀, 9.06.2023.
Discussion

As mentioned above, we recorded a total of 42 species from 9 families during our surveys in 2023. This year there were several interesting findings in our research, information about which we provide below.

*Coenagrion australocaspicum* was previously recorded at Lenkoran (Skvortsov & Snegovaya, 2015), this year we recorded it at two localities - Lenkoran and on the coast of the Caspian Sea in the Khachmaz region. It should be noted that this species was found on the coast together with *Coenagrion puella* and *C. ornatum*. *C. ornatum* was also rarely recorded in Azerbaijan (Skvortsov & Snegovaya, 2015), this year we additionally recorded it at the Khachmaz region for the first time, and it was also found in the Shemakha region.

*Pantala flavescens* was noted by us quite often in previous studies; this year additional finds were made from the Shabran and Masalli regions.

We had previously only recorded *Crocothemis servilia*, and exclusively females, in the Lenkoran region (Skvortsov & Snegovaya, 2014) and only females were noted. In 2023, we caught both a female and a male in the Masalli region. These specimens were caught at the end of July, while the previous specimens were caught in September-October (Skvortsov & Snegovaya, 2014). *C. servillia* probably arrives in Azerbaijan in late summer and flies until November.

*Sympetrum flaveolum* is a rather rare species, recorded from the Masalli and Shahbuz regions.

We caught imagoes of *Cordulia aenea* for the first time, previously only larvae had been found by Kasymov (1972) from lakes Goygol and Fakhrukush and Guliyeva (2021) from lake Nakhalikchchala.

*Somatochlora flavomaculata* was previously recorded by us (Skvortsov & Snegovaya, 2015) only in the Lenkoran region, but in 2023 it was caught in the Khachmaz region on the Caspian coast.

*Aeshna vercanica* was previously recorded only in the Lenkoran district (Skvortsov & Snegovaya, 2014, as *Aeshna cyanea*); we caught it in Masalli (the female was caught flying into a house).

As already mentioned in our earlier reports, *Aeshna cyanea* was noted by us in the Ismailli, Shabran and Siyazan districts (Snegovaya, 2022). This year, a specimen was also caught on Lake Garanohur in the Ismailli district, but the time of capture was the end of October. This is probably the latest phenological record of this species in Azerbaijan.

It should be noted that we conducted intensive research in the Shabran region from the end of March to the beginning of November. During the study period, 16 species of dragonflies were observed in this area. *Sympetrum striolatum* was recorded in early November at Loc. 19.

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References


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