International Dragonfly Fund - Report

A Journal of the International Dragonfly Fund

Nataly Yu. Snegovaya

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

published: 02.04.2024

186

ISSN 1435-3393

The International Dragonfly Fund (IDF) is a scientific society founded in 1996 for the improvement of odonatological knowledge and the protection of species.
Internet: http://www.dragonflyfund.org/

This series intends to publish studies promoted by IDF and to facilitate cost-efficient and rapid dissemination of odonatological data.

Editorial Work:	Martin Schorr, Milen Marinov, Rory A. Dow, Holger Hunger
Layout:	Martin Schorr
IDF-home page:	Holger Hunger
Printing:	Colour Connection GmbH, Frankfurt
Impressum:	Publisher: International Dragonfly Fund e.V., Schulstr. 7B, 54314 Zerf, Germany. E-mail: oestlap@online.de
Responsible editor:	Martin Schorr

Cover picture:	*Gomphus schneiderii*
Photographer:	Nataly Snegovaya

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 reedbeds, hawthorn (*Crataegus* sp.) and blackberry bushes (*Rubus* sp.) (Figure 3).

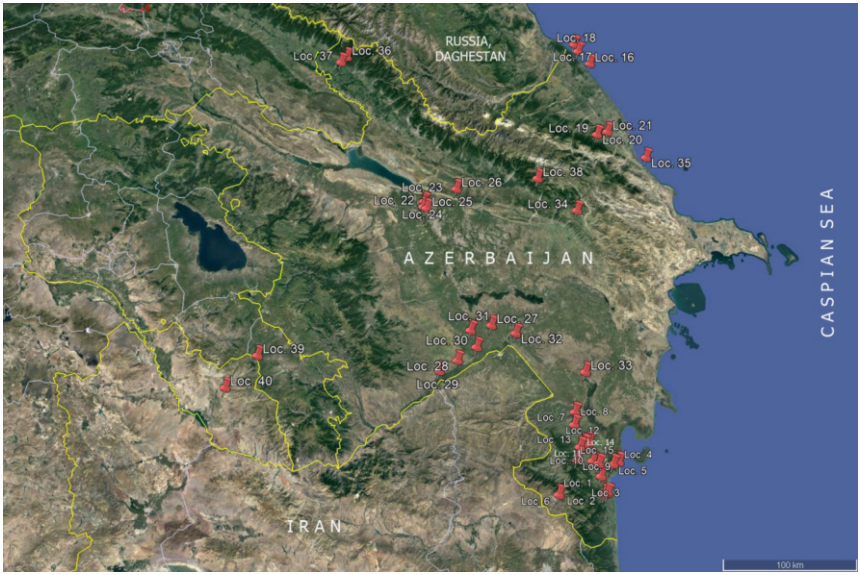

Figure 1. Map of localities.

Figure 2. Lenkoran district, Istitu village, a small pond in the vicinity of the village (Loc. 1).

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 (*Salsola* 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 3. Lenkoran district, a pond near Dashtatyuk village (Loc. 2).

Figure 4. Lenkoran district, Azfilial settlement (Loc. 3).

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).

Figure 8. Jalilabad district, Privolnoe village, a small water reservoir (loc. 7).

Figure 9. Jalilabad district, Misharchay river (Loc. 8).

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 Hyrcanian 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).

Fig. 21. Shabran district, river in the vicinity of the Zagly village (Loc. 19).

Fig. 22. Shabran district, a small pond in the vicinity of the Zagly village (Loc. 20).

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).

L**oc. 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).

Agjabedi 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 stoneworts (*Chara* sp.) at the bottom (Figure 29).

Fig. 23. Shabran district, section of the Shabranchay River (Loc. 21).

Fig. 24. Evlakh district, Yetim Kur akhmazi (Loc. 22).

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°590'4.9"; 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).

Bilasuvar 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 Kyalakhana 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).

Ismailli disctrict

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).

Loc. 9. 1♂, 24.07.2023; Loc. 17. 2♂♂, 1♀, 5-6.10.2023; Loc. 19. 5♂♂, 3♀♀, 31.07.2023; Loc. 25. 1♂, 5.07.2023.

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 (Firgure 48)

Loc. 39.1♂, 22.08.2023.

Figure 48. *Lestes virens* Rambur, 1842, male (Loc. 39).

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.

Figure 49. *Ischnura elegans* (Vander Linden, 1820), male (Loc. 17).

Coenagrion australocaspicum Dumont & Heidari, 1995 (Figure 50).

Loc. 2. 2♂♂, 28.04.2023; Loc. 17. 2♂♂, 19.06.2023.

Figure 50. *Coenagrion australocaspicum* Dumont & Heidari, 1995, male (Loc. 17).

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.

Figure 51. *Coenagrion ornatum* (Selys, 1850), male (Loc. 17).

Figure 52. *Coenagrion ornatum* (Selys, 1850), male (Loc. 34).

Erythromma viridulum (Charpentier, 1840)

Loc. 27. 2♂♂, 5.07.2023; Loc. 30. 1♂, 7.07.2023.

Platycnemididae

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).

Loc. 19. 1♂, 31.08.2023.

Fig. 55. *Anax parthenope* (Selys, 1839), male (Loc. 19).

Aeshna vercanica Schneider, Schneider, Schneider, Vierstraete & Dumont, 2015 (Figure 56).

Loc. 9. 1♀, 24.-7.2023.

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).

Loc. 26. 1♂, 19-20.05. 2023.

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.

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

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. 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

Loc. 1. 1♀, 30.04.2023.

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)

Loc. 17. 2♂♂, 5-6.10.2023; Loc. 35. 1♂, 21.07.2023.

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♂, 1♀, 31.08. 2023; Loc. 26. 1♂, 19-20. 05.2023; Loc. 34. 1♀, 31.05.2023; Loc. 36. 1♂, 1♀, 13.09.2023.

Fig. 66. *Sympetrum* meridionale (Selys, 1841), male (Loc. 19).

Figure 67. *Sympetrum meridionale* (Selys, 1841), female (Loc. 34).

Sympetrum flaveolum (Linnaeus, 1758) (Figure 68).

Loc. 9. 1♂, 24.07.2023;
Loc. 39. 2♂♂, 2♀♀, 22. 08.2023.

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).

Loc. 13. 1♀, 25.07.2023; Loc. 15. 1♂, 26.07.2023.

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.

Selysiothemis 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 Asserbaijan 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 Fakhrakush and Guliyeva (2021) from lake Nakhalikhchala.

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.

Acknowledgements

I thank my friend Dr. Ilhama Kerimova (Institute of Zoology, Baku, Azerbaijan) for her help in expeditions and Dr. Oleg E. Kosterin (Novosibirsk, Russia) for help in confirming the identification of some species and data on some species. Thanks also to the Interna-

tional Dragonfly Fund and especially the „Arbeitskreis Libellen - Hessische Gesellschaft für Ornithologie und Naturschutz“ for supporting this study.

References

Dijkstra, K-D.B. & Lewington, R. 2006. Field guide to the Dragonflies of Britain and Europe. British Wildlife Publishing. 320 pp.

Guliyeva, S. 2021. Generalized condition of dragonfly (Odonata) larvae of lakes around Kura. Advances in Biology & Earth Sciences Vol.6, No.2, pp.184-190.

Kasymov, A.G. 1972. Presnovodnaya fauna Kavkaza. Otryad Odonata. Baku, Elm: 97–102. [Russian].

Skvortsov, V.E. & Snegovaya, N.Y. 2014. Additions to the knowledge of the Odonata fauna of Azerbaijan, with six new records. Notulae Odonatologicae 8: 67–76.

Skvortsov, V.E. & Snegovaya, N.Y. 2015. A second addition to the Odonata fauna of Azerbaijan. International Dragonfly Fund Report 87: 1–38.

Snegovaya, N.Y. 2020. A progress study of the Odonata from Azerbaijan in summer 2019. International Dragonfly Fund Report 142: 1–20.

Snegovaya, N. 2021. Odonata collected in summer 2020 in Azerbaijan, including a new record of Stylurus ubadschii (Gomphidae) and the confirmation of *Aeshna cyanea* (Aeshnidae) for Azerbaijan. International Dragonfly Fund Report 156: 1-28.

Snegovaya, N. 2022. Odonata collected in 2021 in Azerbaijan, including new data on *Gomphus schneiderii* Selys, 1850 and *Libellula pontica* Selys, 1887. International Dragonfly Fund Report 168: 1-23.

INSTRUCTION TO AUTHORS

International Dragonfly Fund-Report is a journal of the International Dragonfly Fund (IDF). It is referred to as the journal in the remainder of these instructions. Transfer of copyright to IDF is considered to have taken place implicitly once a paper has been published in the journal.

The journal publishes original papers only. By original is meant papers that: a) have not been published elsewhere before, and b) the scientific results of the paper have not been published in their entirety under a different title and/or with different wording elsewhere. The republishing of any part of a paper published in the journal must be negotiated with the Editorial Board and can only proceed after mutual agreement.

Papers reporting studies financially supported by the IDF will be reviewed with priority, however, authors working with Odonata from the focal area (as defined on the back page of the front cover) are encouraged to submit their manuscripts even if they have not received any funds from IDF.

Manuscripts submitted to the journal should preferably be in English; alternatively German or French will also be accepted. Every manuscript should be checked by a native speaker of the language in which it is written; if it is not possible for the authors to arrange this, they must inform the Editorial Board on submission of the paper. Authors are encouraged, if possible, to include a version of the abstract in the primary language of the country in which their study was made.

Authors can choose the best way for them to submit their manuscripts between these options: a) via e-mail to the publisher, or b) on a CD, DVD or any other IBM-compatible device. Manuscripts should be prepared in Microsoft Word for Windows.
While preparing the manuscript authors should consider that, although the journal gives some freedom in the style and arrangements of the sections, the editors would like to see the following clearly defined sections: Title (with authors names, physical and e-mail addresses), Abstract, Introduction, Material & Methods, Results, Discussion, Acknowledgments and References. This is a widely used scheme by scientists that everyone should be familiar with. No further instructions are given here, but every author should check the style of the journal.

Authors are advised to avoid any formatting of the text. The manuscripts will be stylised according to the font type and size adopted by the journal. However, check for: a) all species names must be given in italic, b) the authority and year of publication are required on the first appearance of a species name in the text, but not thereafter, and c) citations and reference list must be arranged following the format below.

Reference cited in the text should read as follows: Tillyard (1924), (Tillyard 1924), Swezey & Williams (1942).

The reference list should be prepared according to the following standard:
Swezey, O. & F. Williams, 1942. Dragonflies of Guam. Bernice P. Bishop Museum Bulletin 172: 3-6.
Tillyard, R., 1924. The dragonflies (Order Odonata) of Fiji, with special reference to a collection made by Mr. H.W. Simmonds, F.E.S., on the Island of Viti Levu. Transactions of the Entomological Society London 1923 III-IV: 305-346.

Citations of internet sources should include the date of access.

The manuscript should end with a list of captions to the figures and tables. The latter should be submitted separately from the text preferably as graphics made using one of the Microsoft Office products or as a high resolution picture saved as a .jpg .tif or .ps file. Pictures should be at least 11 cm wide and with a minimum 300 dpi resolution, better 360 dpi. Line drawings and graphics could have 1200 dpi for better details. If you compose many pictures to one figure, please submit the original files as well. Please leave some space in the upper left corner of each picture, to insert a letter (a, b, c...) later. Hand-made drawings should be scanned and submitted electronically. Printed figures sent by the post could be damaged, in which case authors will be asked to resubmit them.

Manuscripts not arranged according to these instructions may also be accepted, but in that case their publication will be delayed until the journal's standards are achieved.