Nota faunística

Coenagrion lunulatum (Charpentier, 1840) & *Sympetrum flaveolum* (L., 1758) in Lake Tabatskuri, Georgia (Caucasus)

Tabatskuri is a subalpine lake sited in the highlands of Javakheti, in southern Georgia, at 1,991 mosl. It's located between Trialeti and Abul-Samsari ranges. Tabatskuri is one of the six great lakes of Javakheti Plateau, where also are many minor lagoons. All the lake areas of this plateau are included in the Ramsar List of Wetlands of International Importance. Tabatskuri Lake has an area of 14.2 square kilometres and an average depth of 15.6 m, with a maximum of 40.2 m. It has a roughly rectangular shape, measuring 6.5 km long and 4 km wide. Its origin is volcanic like the entire plateau. It is fed primarily by subterranean waters, and the outflow is subterranean as well. The annual range of fluctuation of the water level is as much as 1.1m. The volcanic plateau of Javakheti supports an alpine climate of continental influence, with short, cool summers and long, severe winters, when temperatures may drop below -40ºC. During winter Javakheti lakes remain frozen, allowing road traffic over its surface.

Although this lake is part of the Ktsia-Tabatskuri Managed Reserve, which also includes basin of the near Ktsia River, the effectiveness of this protection is doubtful, as the uncontrolled introductions of crayfishes in recent years for commercial purposes and the bird hunting indicates.

Several water birds and birds of prey were observed during the day of sampling in the lake and its surroundings: ruddy shelduck *Tadorna ferruginea* (Pallas, 1764), western marsh harrier *Circus aeruginosus* (Linnaeus, 1758), purple heron *Ardea purpurea* L. 1766, and red-necked grebe *Podiceps grisegena* (Boddaert, 1783), among others. In the shores is very common the Caucasian brown frog *Rana macrocnemis* Boulenger, 1885. The ichthyofauna consists of trouts, barbels and carps, all introduced by man. Since the lake is above the treeline, most of its shores are covered only by annual grasses, although there are some plantations of *Pinus sylvestris*, L., maintaining a low height.

The day of sampling took place on July 6, 2014, and focused on the northeastern shore of the lake, where there is a greater variety of suitable habitats for dragonflies. In this area the lake overflows creating a marshy area of flooded grasslands and various arms of shallow water where reed beds thrive (FIG.1). The day started sunny and windless, with air temperature around 14ºC at midday, and changed to very windy and finally stormy and rainy as the hours passed.

ODONATA SPECIES FOUND IN TABATSKURI LAKE

Coenagrion lunulatum (Charpentier, 1840).
This damselfly has a general distribution that covers much of the Eurasian continent, from Ireland

to Mongolia, resulting progressively rarer towards Western Europe, where it became extinct in the area of the Alps. Their populations in this zone seem to concentrate on lakes and ponds with oligotrophic and acidic waters (DIJKSTRA, 2006). In Georgia it has been registered on several occasions, most records corresponding to the lakes and ponds of the volcanic plateau of Javakheti, where is located the Lake Tabatskuri. Crescent bluet has been recorded in several bodies of water nearby to the town of Ninotsminda (this place appears with its original name of Bogdanovka in the previous literature to 1991). The upper altitudinal limit known for the species in Georgian territory is Madatapa Lake with 2100 mosl, also belonging to the plateau of Javakheti and again near Ninotsminda. Outside the plateau are records in the Lake Tsundi (BARTENEV, 1906) and in Dmanisi (BARTENEV, 1930), both around 1300 meters, and one in Kobuleti, at sea level, on the Black Sea coast (BARTENEV, 1912).

Sympetrum flaveolum (Linnaeus, 1758).
Like the previous species, yellow-winged darter also has a paleoboreal distribution and is progressively more abundant towards the east. It's present from the Iberian Peninsula to the Japanese Archipelago (DIJKSTRA, 2006). *S. flaveolum* breeds in still and shallow waters, like marshy depressions with extensive vegetation cover and waterlogged pastures that become dry during summer (SHENGUELIA, 1975; DIJKSTRA, 2006). This description matches perfectly with the observed habitat in Tabatskuri. *S. flaveolum* has been recorded in twelve occasions in Georgia (SHENGUELIA, 1975), 6 records belonging to the volcanic plateau of Javakheti: three of them around Ninotsminda (BARTENEV, 1909 & 1919), two in the Lake Sakochavi of Bakuriani (BARTENEV, 1925; SHENGUELIA, 1966) and another one in the Rekha River, which joins the river Ktsia downstream (SHENGUELIA, 1966).

In Lake Tabatskuri, according to the available literature, neither of the two species had been previously recorded (SHENGELIA, 1975; KALKMAN, 2006).

Sympetrum flaveolum seems to preferentially occupy the flooded meadows that at the sampling date were in process of drying. Altogether 2 males and 3 females of this species were observed in these pastures (FIG. 2 & 3). Sampling coincided with the beginning of the flight period indicated for this species in neighboring Turkey (KALKMAN & VAN PELT, 2006).

FIGURE 1. Northeastern shore of Lake Tabatskuri. In the foreground the temporarily waterlogged pastures occupied by *Sympetrum flavescens*; behind them the reed beds growing around water arms where *Coenagrion lunulatum* appeared. (Photo: Diego Rodríguez)

FIGURE 2. *Sympetrum flaveolum* (male) in the flooded pastures of Lake Tabatskuri. (Photo: Diego Rodríguez)

Coenagrion lunulatum occupies the bordering marshland, where waters of the lake reach beyond its banks and flood an adjacent depression, creating a surface waters area where grow reeds and tall grasses. The species seems locally abundant. Despite the strong wind, 26 males, 19 females and 3 tandems of crescent bluet were counted along 150 meters in the volcanic sand strip that separates the lakeside from the surrounding wetlands (FIG.3).

FIGURE 3. Habitat of *Coenagrion lunulatum* in Lake Tabatskuri. (Photo: Diego Rodríguez)

The sampling date coincided with the peak of activity indicated for *C. lunulatum* in nearby regions of northeastern Turkey (Kalkman & Van Pelt, 2006). Two specimens, male and female, were captured for identification by binocular loupe Leica S3, confirming the species (FIG. 6-11).

FIGURE 4. *Sympetrum flaveolum* (female), Lake Tabatskuri, Georgia. (Photo: Diego Rodríguez)

FIGURE 5. *Coenagrion lunulatum* (male), Lake Tabatskuri, Georgia. (Photo: Diego Rodríguez)

FIGURE 6. Dorsal view of S2 in a *Coenagrion lunulatum* male from Tabatskuri Lake.
FIGURE 7. Dorsal view of the appendages and segments S7-S10 in a *Coenagrion lunulatum* male from Tabatskuri Lake. (Photos: Miguel Conesa)

FIGURE 8. Side view of appendages and segments S10-S8 on a *Coenagrion lunulatum* male from Lake Tabatskuri. (Photo: Miguel Conesa)

FIGURE 9. Dorsal view of head and pronotum in *Coenagrion lunulatum* female from Tabatskuri Lake. (Photo: Miguel Conesa)

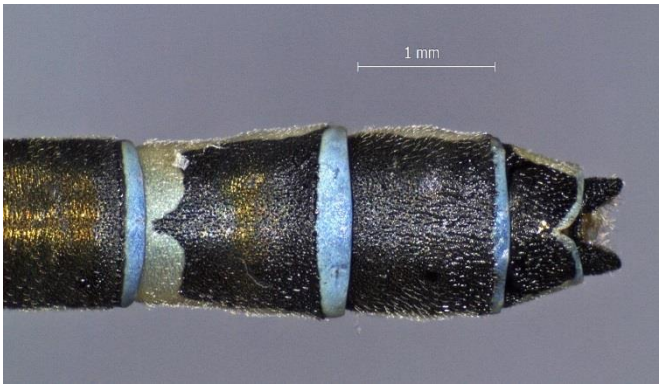

FIGURE 10. Dorsal view showing the typical blue tones in S7-S10 of *Coenagrion lunulatum*females, specimen from Tabatskuri Lake. (Photo: Miguel Conesa)

Figure 11. Side view of ovipositor and S8-S10 segments of a *Coenagrion lunulatum* female from Tabatskuri Lake. (Photo: Miguel Conesa)

Recibido y aceptado: 09-09-2014

Diego Rodríguez Martínez[1] (faixerua@gmail.com),
Miguel A. Conesa García[1] (mconesa@libelulas.org)

[1] Sociedad Odonatológica de Andalucía. (www.libelulas.org)

ACKNOWLEDGEMENTS

The authors wish to thank Vasil Ananian for his invaluable and substantial help in completing the literature consulted during the drafting of this document.

REFERENCES

BARTENEV, A. N. 1909. Труды Студенческого Кружка для исследований русской природы при Московском университете [Proceedings of the student groups to research the nature of Russia at Moscow University], 4. [In Russian] • BARTENEV, A. N. 1913. Ежегодник Зоологического музея, [Yearbook of the Zoological Museum] XVII. [In Russian] • BARTENEV, A. N. 1915. Фауна России и сопредельных стран. Насекомые ложносетчатокрылые [Fauna of Russia and adjacent countries. Pseudoneuroptera insects] I, I. [In Russian] •BARTENEV, A. N. 1919. Известия Кавказского Музея [Proceedings of the Caucasian Museum], XII. [In Russian] • BARTENEV, A.N. 1925. Известия Музея Грузии [Proceedings of the Museum of Georgia], II. [In Russian] •BARTENEV, A. N. 1930. Известия Музея Грузии [Proceedings of the Museum of Georgia], V (1929). [In Russian] • DIJKSTRA, K. B. 2006. Field Guide to the Dragonflies of Britain and Europe including western Turkey and north-western Africa. British Wildlife Publishing • KALKMAN, V. J. 2006. Key to the dragonflies of Turkey including species known from Greece, Bulgaria, Lebanon, Syria, the Trans-Caucasus and Iran. Brachytron 10(1): 3-82 • KALKMAN, V. J. & G. J. VAN PELT, 2006. The distribution and flight period of the dragonflies in Turkey. Brachytron 10 (1):83-153 • SHENGELIA, E. S. 1966. В сборн.: Фауна Безпозвоночных Триалетского хребта. Институт Зоологии АН ГССР [In the collection: Invertebrate Fauna of Trialeti Range. Institute of Zoology. Academy of Sciences of the GSSR] [In Russian] • SHENGELIA, E. S. 1975. Материалы к фауне грузии. [Materials for the fauna of Georgia] 5: 61-81. [In Russian].