NOTES ON THE ODONATA FAUNA OF KAZAKHSTAN, INCLUDING THE FIRST RECORD OF *ISCHNURA EVANSI* MORTON (ZYGOPTERA: COENAGRIONIDAE)

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Abstract – *Ischnura evansi* and *I. fountaineae* are reported from brackish springs in the Ustyurt Nature Reserve, W. Kazakhstan. This is the northernmost record and the first Kazakstan record of the former sp. The Kazakhstan record of *Aeshna cyanea*, by K. REINHARDT & J. SAMIETZ (2003, *Ent. Nachr. Ber.* 47: 71-76), is most probably erroneous. Some corrective notes on the recent review of the Odon. of Kazakhstan by I.A. CHAPLINA et al. (2007, *Odonatologica* 36: 339-364) are provided.

***Ischnura evansi* Morton, in Kazakhstan**

In 2008-2009 the second author undertook expeditions to West Kazakhstan, Mangystau province, mostly to the Ustyurt Nature Reserve. In particular, he visited very specific localities: salty springs situated at margins of Kenderli Sor, a depression (70 × 8-10 km) extending from SW to NE and laying mostly below sea level (with the minimum altitude of - 70 m), temporarily filled with shallow salty water (the Turcic word 'sor' is used for temporary water bodies formed in deserts where depressions open the horizon of mineralized ground water). About two dozens of such springs are scattered over the margin of Kenderli Sor, their salinity being close to that of the Caspian Sea, which is ~130 km W of this site (and 90 km S there is its bay Kara-Bogaz, with more salty water). Three springs were visited:

- Onere (42°36' N, 54°08' E), the largest natural spring (salinity ~14 g/l) at the border of a saline and gypsum desert at 12 m above sea level. It produces a brook, 6-8 km long, entering Kendyrli-Sor from the South. Visited on 16/18-V-2008; 26/27-IV, 13/14-V and 13/15-X-2009.
- Tosotkel (42°59' N, 54°22' E), a 30-40 years old well, left from oil prospecting, situated

at 50 m below sea level at the border of the Cretaceous chalk outcrops, forming the depression bottom, and the eastern outposts of the Karynzharyk sands bordering Kendyrli-Sor on the West. The well produces a spring, about 1 km long, with water rich in iron and containing some dissolved hydrogen sulphate; with cyanobacteria mats; it enters the central part of Kendyrli Sor from the West. Visited on 14-V-2008 and 24-IV and 17-V-2009.

- Kendyrli (42°57' N, 54°38' E) natural spring, 20 km E of Tosotkel, at the eastern margin of Kendyrli Sor, flowing for 4 km in a chalk gorge at 90 m above sea level. Visited on 29-IV and 10-V-2008 and 29-IV, 10/11-V and 10-X-2009 (no odonates recorded).

All the springs are margined with reeds and bushes of *Tamarix laxa* and surrounded with sparce fruticose and fruticulose vegetation where *Anabasis salsa* predominates.

I. evansi and *I. fountaineae* Morton were found in at the Toskotel well but none at the two natural springs visited. They were quite abundant (but no more than 1-2 in view simultaneously) at the bank, no more than 1 m off the water. *I. evansi* specimens differed from *I. fountaineae* by the pronotum structure in both sexes (a rectangular projection in *evansi* versus a slight knob in *fountainei*), appendages superiores in males (pointed in *evansi*), coloration of pt in males (dark in centre in *evansi*, dark in proximal half in *fountainei*), prothorax pattern in males (antehumeral stripes reduced in *fountaineae*), size in both sexes(in *evansi*: hindwing 14 mm in males and 16 mm in females, adbomen 20 mm in males, 21-22 mm in females; in *fountaineae*: hindwing 15 mm in males, 18-19 mm in females, abdomen 22-23 mm in males, 22-24 mm in females). This is the northernmost record of *I. evansi* which has been previously reported from Uzbekistan as far North as about 41°N by BORISOV & HARITONOV (2007), although they stated that it may be expected somewhat more northerly.

The following collections were done at Tosotkel well: 14-V-2008: *Ischnura evansi* 1 ♂, 1 ♀ andromorph, 1 ♀ rufescens; – *I. fountaineae* 1 ♀ rufescens; – 17-V-2009: *I. evansi* 1 ♂; – *I. fountaineae* 2 ♂, 1 ♀ rufescens, 1 ♀ andromorph (female morph classification according to PARR (1999)). Specimens collected at Onere spring were as follows: 15-V-2009: *Hemianax ephippiger* (Burm.) 1 ♂; – 15-X-2009: *Sympetrum fonscolombii* (Sel.) 2 ♂; – *S. meridionale* (Sel.) 1 ♂; – also on 13-X-2009: ♂ *Crocothemis s. servilia* (Dru.) was photographed (identified by having 10.5 antenodals).

Besides the springs, Karynzharyk sands, being a hilly sand desert with a rich herbaceous and bush vegetation, were examined 20-30 km from Onere, at Al'ke hut, on 15 and 19-V-2008, 16/17-V and 16/17-X-2009. There were only some temporary pools and concrete water tanks. On 16-X-2009, 1 ♀ *Pantala flavescens* (Fabr.) and 1 ♀ *Sympetrum flaveolum* (L.) (with the basal amber reduced) were collected, 10-20 dragonfly individuals were observed on 16/17-X.

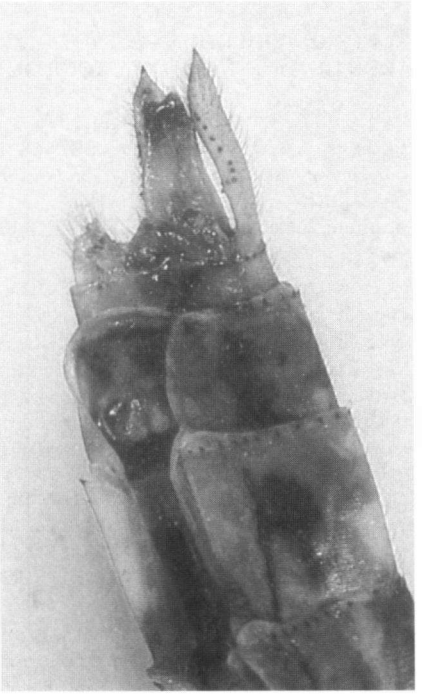

Fig. 1. Teratologically developed end of abdomen in a *Sympetrum fonscolombii* male, collected at Onere spring on 15-X-2009. For a better resolution of structures, the image was taken from the red channel of RGB mode.

One of the above mentioned ♂ *S. fonscolombii* had a teratologically developed abdominal tip (Fig. 1): the right side of S10 extended and at the right of the normal appendage an additional abnormal short appendage, most probably 'the second epiproct', added; right side of S8-9 somewhat flattened and extended laterally.

Record of *Aeshna cyanea* (Müll.) from Kazakhstan is erroneous

A. cyanea is a West Palaearctic species ranging East to the Black Sea coast of Turkey (KALKMAN & VAN PELT, 2006), the Caucasus (KETENCHIEV & HARITONOV, 1998) and Ural (YANYBAEVA et al., 2006). REINHARDT & SAMIETZ (2003) reported this species for a much easterly locality in the Altai Mts within East Kazakhstan. They mentioned only coordinates (49°03' N, 85°55' E,), from which it may be located at the Sarymsakty Range eastern spurs, 16 km SSE from Shyngystay (formerly Chingistay) village, Katon-Karagay district, East Kazakhstan province. The species was reported based on two medium-instar larvae, found in a pool of ancient glacial origin, with dense aquatic vegetation including *Sphagnum*. Klaus Reinhard kindly informed us that the pool was situated in open alpine meadows. In the paper, elevation of 1800 m a. s. l. was given, while GooglEarth shows ~2500 m for these coordinates, which better fits alpine meadows. The larvae were identified using an unpublished key by Richard Seidenbusch (REINHARDT & SAMIETZ, 2003) and sent to him (pers. comm.).

Although *A. cyanea* is confined to mountains in the Mediterranean region (pers. comm. by Klaus Reinhardt), in the cold and moist Altai Mts (more or less corresponding to North Europe in conditions) such a highland habitat would be unusual for this species. The only aeshnid species which as a rule develops above the tree line in the Altai Mts and even prefers highlands, and moreover is a sphagnophylic species, is *Aeshna caerulea* Ström. Its larva is characterised by the lateral spine on S9 not exceeding half the length of S10, a relatively short epiproct being 2/3 as long as the paraprocts (but these characters may not work in early instars) and the palpus missing the terminal hook (not the movable hook implied) (BELYSHEV, 1973; MALIKOVA, 1995). Richard Seidenbusch informed us that he examined these larvae and found them to be of medium instars so his identification as *A. cyanea* was very provisional and he did not consider an option of *A. caerulea*. He kindly sent us the photographs where all three mentioned characters of *A. caerulea* could be recognised (also the two projections on either side of the prothorax are of equal size). Hence, with a caution due to the larvae being young and only photographs being examined, we may conclude that the larvae indeed belonged to the expectable *A. caerulea* and that record of *A. cyanea* for Kazakhstan was erroneous.

Based solely on this record, CHAPLINA et al. (2007) included *A. cyanea* in their checklist of odonates of Kazakhstan, but both the locality and the reference were confused (pers. comm. by Klaus Reinhardt): the locality Balkhash lake and the paper (REINHARDT & SEIDENBUSCH, 1999) were cited in error while the correct paper (REINHARDT & SAMIETZ, 2003) was not referenced. So, *A. cyanea* has not yet been reported from the territory of Kazakhstan, although it is quite expectable in NW Kazakhstan, at the Ural Mts southern spurs.

Confusions in the 'Review of Odonata of Kazakhstan' by CHAPLINA et al. (2007)

Unfortunately, besides the mentioned reference confusion, the paper by CHAPLINA et al. (2007), aimed to summarize all the up-to-date information on distribution of Odonata in Kazakhstan, contains other confusions which made it less helpful than intended. The noticed cases are pointed below, others may still hide in the paper.

First, the important REINHARDT & SAMIETZ (2003) paper was not considered. In particular, this led to the claim that CHAPLINA et al. (2007) reported *Macromia amphigena fraenata* for the first time for Kazakshtan. In fact, the species was reported already by REINHARDT & SAMIETZ (2003), although with some doubts as to the identity of Siberian specimens. The claim by CHAPLINA et al. (2007) of the first records for Kazakhstan of *Somatochlora graeseri* (Sel.) is incorrect as well, since

this species had been already reported for localities within Kazakhstan by KOSTERIN (1989), although these localities were not mentioned as Kazakhstanian since the border between Kazakhstan and Russia is rather intricate in the Altai Mts and it was of little importance within USSR in those years. These localities were as follows: the upper reaches of the Belaya Berel' and Yazovaya rivers and Lake Yazovoe (49°33' N 86°18' E) within Katon-Karagai district of East Kazakhstan province (the here given coordinates were not mentioned in KOSTERIN, 1989).

More important are numerous confusions concerning localities of original data in CHAPLINA et al. (2007). For *Coenagrion johanssoni* (Wallengren) and *Onychogomphus forcipatus* (L), collector Kosterin and locality 9 (Pavlodar city) are indicated. In fact, *O. forcipatus* was collected at the Ishim river at 53°01' N 66°41' (5 km SE of Nezhinka village), that would correspond to locality 4 in the discussed paper (Ishim river, 53°301' N 66°38') if the coordinates specified were not far apart from the Ishim river and hence erroneous (nevertheless, it was this locality which was implied under locality 4). *C. johanssoni* was collected 12 km NW of this place, at Lake Zhalandy. In the dates specified, the days and month are correct but the year is wrong: it was not 1989 but 1983. Then, 2 ♂ 1 ♀ of *Aeshna viridis* (Eversmann) indicated for locality 43 and VII 1989 without collector most probably corresponds to the same locality 4 (Ishim), since 1 ♀ (10-VII-1985), 1 ♂ (22-VII-1985) from Ishim river and 1 ♂ (2-VII-1985) from Lake Zhalandy, collected by O.E. Kosterin (the first author of this paper), were mentioned in a list he gave to I. Chaplina for preparation of her work. Anyway, these specimens can by no means refer to locality 43 since it is not in North Kazakhstan, where this species is claimed to be confined (that is correct).

On page 357, there is the following text: "In North-East Kazakhstan, in the South Altai mountains (about 1799 m asl) subspecies (or species?) *S.* [*Somatochlora*] *m.* [*metallica*] *exuberata* Bartenev, 1911 occurs; elsewhere, the nominal subspecies is found". The given elevations of the localities for which *S. metallica* (Vander L.) is specified do not exceed 1446 m a.s.l. In the unpublished Ph.D. thesis by CHAPLINA (2004), the only *exuberata* male is reported for Lake Bolshoe Bukhtarminskoe (49°17' N 86°59' E), which is not mentioned in CHAPLINA et al. (2007). One of us (O.E.K.) did not find this specimen in the Institute of Animal Systematics and Ecology SB RAS, Novosibirsk (where I. Chaplina prepared her thesis); he has some doubts that the range of *S. exuberata* (which is a bona species) extends as far westerly and supposes that it might be in fact an individual of *S. metallica* s. str., with an interrupted yellow stripe across the labrum (such individuals do occur rarely).

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