

## A COLLECTION OF ODONATA FROM THE ARGUN' (HAILAR) RIVER BASIN IN TRANSBAIKALIA, EAST SIBERIA, RUSSIA

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**Abstract** – B.F. BELYSHEV (1973, *Strekozy (Odonata) Sibiri*, Vol. 1, pts 1 & 2, Nauka, Novosibirsk) noted 25 spp. for PriArgun'ye, that is the western catchment basin of the Argun' (Hailar) River within Chita province of Russia, E Transbaikalia. Additional material, especially that collected by the first author in 1997, increased the list to 32 spp. The absence of any records of *Calopteryx* and *Orthetrum* from Transbaikalia is discussed. *Coenagrion bifurcatum* Zhu & Ou-yan, 2000 is synonymized with *C. johanssoni* (Wallengren, 1894).

### Introduction

The Argun' (Hailar) River descends westwards from the Great Hingan Mts (Da Hinggan Ling)

in the Autonomous Region of Inner Mongolia, China. At the border with Russia it turns North-East and, from this point, divides the Region of Inner Mongolia, China from Chita province, Russia, being known in Russia as the River Argun'. It then joins the Shilka River to form the great Amur River, known in China as the River Heilongjiang, which immediately leaves Chita province and forms the border between Amur province, Russia and China. Thus, the southeasternmost part of Russian Transbaikalia is the western catchment basin of the Argun' (Hailar) River and is known in Russia as the PriArgun'ye.

This area was quite intensively explored in the 19<sup>th</sup> century due to intensive mining (and

was the main place of exile), but in the 20<sup>th</sup> century, especially after the Second World War, the access was greatly restricted due to the severe regime of the Chinese frontier. The situation changed in the '90s, whereupon a considerable number of researchers repeatedly visited this very interesting area of mixed Siberian and Manchurian (palaeartic) flora and fauna. The first author, Oleg Kosterin, had an opportunity to make a journey through PriArgun'ye in July-August 1997, participating in a complex expedition arranged by Valerii Brinikh, Director of the Daurkii State Nature Biosphere Reserve, and strongly supported by Dr Vladimir Dubatolov, Institute of Animal Systematics and Ecology, Novosibirsk, who aimed to study the lepidopteran fauna of the easternmost isolate of the Mongolian oak, and partly sponsored by Prof. Tomoo Fujioka (Tokyo, Japan) and T.A. Strizhova (Baikal Foundation). These collections form the basis of this communication. One year earlier, Dr Dubatolov made a shorter trip to the same area and collected some Odonata. Also, some material was collected by the second author, Oleg Korsun, and his student, Galina Akulova, in 2005. The earlier reports for this area were indirectly summarised by BELYSHEV (1973), as dots on the species distribution maps, and we have referred to this for information. The resulting list represents our present knowledge of the fauna of PriArgun'ye.

#### The region considered

It consists of the western catchment basin of the Argun' River approximately within 49°30'-53°30' N and 117°30'-120°30' E. Its southern part has a steppe vegetation, which is partly replaced with agricultural or fallow land in the plains, while the rather low mountains are covered with a luxuriantly flowering meadow steppe of a Dahurian type, with *Filifolium sibiricum* (L.) Kitam, among the dominants. Proceeding northwards, the meadow steppe is retained on southern slopes, occupying a gradually reducing area, while northern slopes are progressively occupied with birch and, still more northerly, larch forests, so that the land acquires features of a typical taiga landscape. Thus a larch taiga predominates in northern

parts of the region, meadow steppe patches being scattered only on rather steep southern slopes at low altitudes. The dominant tree species, the Dahurian larch (*Larix gmelinii* (Rupr.) Rupr.), is everywhere mixed with the silver birch (*Betula pendula* Roth., = *B. verrucosa* Ehrh., = *B. platyphylla* Sukaczew), in varying proportions, the latter sometimes even excluding the larch. The pine (*Pinus sylvestris* L.) is common everywhere, preferring hill crests and forest edges neighbouring open places, where it forms open stands. River banks are frequented by different willows (*Salix*) and also bird cherry (*Padus avium* Miller) and alder (*Alnus hirsuta* (Spach) Turcz. ex Rupr.). The last of these hybridizes with *A. fruticosa* Rupr. The resulting hybrid, *Alnus* × *sibirica* (Spach) Turcz. ex Kom., replaces *A. hirsuta* at higher altitudes. *A. fruticosa* is abundant high in the mountains and even forms pure elfin woods on major summits exceeding 1000 m above sea level. The trees mentioned give the landscape a typical Siberian appearance. However, this is the transition zone between Siberian and Manchurian vegetation. At a first glance at the dot maps of plant species distribution in the *Flora of central Siberia* (1979) one is impressed with the numerous Manchurian species which are found in Transbaikalia only in the Argun' River valley and its close vicinity. Physiognomically the main change concerns the appearance of the Dahurian birch (*Betula davurica* Pallas). Its branching and spreading crown resembles that of many broad-leaved tree species and differs strikingly from the majority of Siberian trees which are of a clearly expressed monopodial growth type. In the northern areas of the region the Dahurian birch grows in small groves on ledges and small gullies on open southern slopes and is mixed with silver birch and larch on gentle slopes. In the vicinity of the settlement of Nerchinskii Zavod it forms pure forests. In the upper herb layer attention is attracted first of all by large and numerous clumps of *Dictamnus dasycarpus* Turcz. and *Paeonia lactiflora* Pallas. Noteworthy is the fact that these plants are still absent in the West of the region, say, in Kurleya village on the Gazimur River, but are very abundant in very diverse biotopes (from steppe on the slopes to open mixed forests) in the

East, e.g. at the Uryupino village on the Argun' River. Among less robust herbs there appear or become abundant many eastern species, including *Convallaria keiskei* Moq., *Smilacina dahurica* Turcz. ex Ledeb., *Cimicifuga dahurica* (Turcz. ex Fischer et Meyer) Maxim., *Cimicifuga simplex* Wormsk., *Lychnis fulgens* Fischer, *Viola variegata* Fischer ex Link., *Campanula punctata* Lam., *Platycodon grandiflorus* (Jacq.) A.; DC., *Senecio flammus* Turcz. ex DC. On the mountain slopes to the west of the Argun' valley, between its tributaries the Budyumkan and Uryumkan Rivers (and also on the left bank of the Budyumkan River valley 5-7 km upstream from its mouth), the Mongolian oak (*Quercus mongolica* Fischer ex Ledeb.) appears. It is in pure stands or mixed with larch and silver and Dahurian birches and pines, and is confined to southern slopes above 500 m above sea level. The oak is obviously depressed here as the trees are low, rarely exceeding 10 m (in mixed stands the oak is always in the second layer), and trees with acorns are rare. Nevertheless, the oak actively occupies new areas, as its young growth is constantly present in mixed birch/larch or pine/larch forests and in meadow glades, including those situated many kilometres away from the main oak stands. Also, in the low Budyumkan River valley, up to 7 km from its mouth, we found two small stands of another eastern broad-leaved tree species, *Ulmus japonica* (Rehder) Sarg.

#### Collection sites

The boldfaced words below are used in the text as conventional names of localities.

- The environs of **Kailastui** town, 49°50'N 118°24'E
- The **Duroi** lakes at Duroi village, 50°00'N 118°50'E
- 14 km NW of **Starotsurukhaitui** village, 50°08'N 119°14'E
- The environs of **PriArgun'sk** town, 50°22'N 119°05'E
- The environs of **Aleksandrovsii Zavod** village, 50°55'N 117°56'E
- 15 km S of **Kalga** village, 50°47'N 118°56'E
- 5 km S of **Nerchinskii Zavod** town, 51°10'N 119°43'E
- The upper reaches of the Urov River at

- Solontsy** village, 51°27'N 118°50'E
- 2 km SW of **Dogye** village, edges of birch woods, 51°29'N 118°12'E
- 3 km downstream of **Argun'sk** town, 51°34'N 120°03'E
- The Gazimur River at the bridge at **Kurleya** village, 52°11'N 119°07'E
- Artificial ponds in an old **pit** in a valley of a right tributary of Budyumkan 30 km Upstream of Budyumkan village, 52°24'N 119°35'E
- The **Polovinnaya Pad'** valley falling into the Argun' River valley about 10 km S of Uryupino, 52°40'N 120°00'E
- The **Argun' right bank** about 10 km S of Uryupino, 52°40'N 120°02'E
- A mixed oak/birch/larch forest on the **Argun' valley** right bank about 7 km S of Uryupino, 52°41'N 120°01'E
- The **Budyumkan** River valley 5-7 km upstream of its entry into the Argun' River, 5 km S of Uryupino; 52°42'N 120°00'E
- A small lake in the Argun' River left westbank floodland at **Uryupino** village. 52°45'N 120°02'E
- The Argun' and Shilka River junction at **Pokrovka** village, 53°20'N 121°32'E

#### Records

The collection year is omitted for 1997 and the collector in case of the first author.

- *Lestes sponsa* (Hansemann, 1823) (BELYSHEV, 1973). Aleksandrovsii Zavod: 22/VII – 3♀; Kurleya: 24/VII – 2♀; Uryupino: 31/VII – 11♂, 2♀; Budyumkan: 26/VII – 1♀, 1/VIII – 1♂; Pit: 4/VIII – 4♂ (1 teneral), 2♀
- *Lestes dryas* Kirby, 1890 (BELYSHEV, 1973). Aleksandrovsii Zavod: 22/VII – 1♀; Kurleya: 24/VII – 1♂; pit: 5♂, 2♀; Solontsy: 9/VIII 1♂
- *Symplectma paedisca* (Brauer, 1877) (BELYSHEV, 1973). Duroi: 2 and 3/IX 2005 – 2♂ (O. Korsun leg.); PriArgun'sk: 2/IX 2005 – 1♂ (O. Korsun leg.); Uryupino: 31/VII – 1♀ teneral; Nerchinskii Zavod: 9/VIII 1996 – 1♀
- *Coenagrion johanssoni* (Wallengren, 1894) Uryupino: 31/VII – 1♂. – Note: From Heilongjiang province of China, which

- is quite near to the region in question, *C. bifurcatum* Zhu & Ou-Yan, 2000 has been described recently, but is compared only with *C. hylas*. From the drawings, description and dimensions provided it is clear that this taxon is in fact *C. johannsoni*; hence *C. johannsoni* (Wallengren, 1894) = *C. bifurcatum* Zhu & Ou-Yan, 2000, syn. n.
- *Coenagrion hylas* (Trybom, 1889) (BELYSHEV, 1973). Pit: 4/VII – 1♂, 1♀
  - *Coenagrion ecornutum* (Selys, 1872) (BELYSHEV, 1973). Starotsurukhaitui: 2/VII 2005 – 1♂, 6♀ (O. Korsun leg.)
  - *Coenagrion lanceolatum* (Selys, 1872) (BELYSHEV, 1973)
  - *Coenagrion lunulatum* (Charpentier, 1840) (BELYSHEV, 1973)
  - *Coenagrion glaciale* (Selys, 1872) (BELYSHEV, 1973). Kurleya: 24/VII – 1♀
  - *Coenagrion armatum* (Charpentier, 1840) (BELYSHEV, 1973)
  - *Erythromma najas humerale* Selys, 1887 (BELYSHEV, 1973)
  - *Enallagma cyathigerum risi* Schmidt, 1961 Duroi: 2/VII 2005 – 1♂ (G. Akulova leg.); Pit: 6/VII – 6♂, 2♀
  - *Aeshna mixta* (Latreille, 1805) Duroi: 2/IX 2005 – 1♀ (O. Korsun leg.)
  - *Aeshna crenata* (Hagen, 1856) (BELYSHEV, 1973). Dogye: 24/VII – 1♂; Kurleya: 24/VII – 2♂; Pit: 4/VII – 3♂, 1♀; Uryupino: 31/VII – 1♂, 1♀
  - *Aeshna juncea* (Linnaeus, 1758) (BELYSHEV, 1973). Nerchinskii Zavod, 6/VIII – 1♀; Dogye: 24/VII – 2♂, 2♀; Kurleya: 24/VII – 2♂; Pit: 4/VII – 7♂, 4♀; Uryupino: 31/VII – 1♀
  - *Nihonogomphus raptus* (Selys, 1857) Polovinnaya: 29/VII – 1♂; Argun' valley: 27/VII – 1♂; Argun' right bank: 12/VII 1996 – 1♂ (V. Dubatolov leg.); Budyumkan: 26/VII – 1♀; Pokrovka: 18/VIII 2005 – 1♀ (O. Korsun leg.)
  - *Ophiogomphus obscurus* Bartenev, 1909 Polovinnaya, 28/VII – 1♂; 29/VII – 1♂; the Gazimur River bank 10 km upstream of its mouth: 31/VII 1997 – 4 exuviae (O. Berezina leg.); Pokrovka: 19/VIII 2005 – 1♂; 21/VIII 2005 – 1♀ (O. Korsun leg.)
  - *Anisogomphus maacki* (Selys, 1872) Argun' valley, 30/VII – 1♀ (V. Dubatolov leg.)
  - *Cordulia aenea amurensis* Selys, 1887 (BELYSHEV, 1973)
  - *Somatochlora graeseri* Selys, 1887 (BELYSHEV, 1973). Pit: 4/VIII – 1♂
  - *Somatochlora exuberata* Bartenev, 1910 (BELYSHEV, 1973). Kurleya: 5/VII – 1♂; Budyumkan: 1/VIII – 1♂. – Note: in the region studied this species is rheophilic: the males patrol above rivers, including quite a disturbed river, the Budyumkan
  - *Somatochlora alpestris* (Selys, 1840) (BELYSHEV, 1973)
  - *Epithea bimaculata* (Charpentier, 1825) (BELYSHEV, 1973)
  - *Libellula quadrimaculata* Linnaeus, 1758 (BELYSHEV, 1973)
  - *Sympetrum danae* (Sulzer, 1776) (BELYSHEV, 1973). PriArgun'sk: 2/IX 2005 – 1♂ (O. Korsun leg.); Alexandrovskii Zavod: 22/VII – 1♂ (teneral); Nerchinskii Zavod: 5/VIII – 1♀, 14/VIII 1996 – 1♀ (V. Dubatolov leg.); Solontsy: 5/VIII – 2♀; Kurleya: 24/VII – 1♀ (teneral); – 1♂, 2♀; Pit: 4/VII – 2♂, 3♀; Budyumkan: 1/VIII – 1♂
  - *Sympetrum flaveolum* (Linnaeus, 1758) (BELYSHEV, 1973). Aleksandrovskii Zavod: 22/VII – 3♂, 1♀; Dogye: 24/VII – 1♂, 2♀; Argun'sk, 13/VIII 1996 – 1♀; Kalga: 8/VIII – 1♀; Kurleya: 24/VII – 1♀; Pit: 4/VII – 2♂, 1♀; Argun' valley, 30/VII – 2♀; Budyumkan: 26/VII – 1♀, 1/VIII – 1♂, 2/VIII – 1♂, 1♀; Uryupino: 31/VII – 2♂, 1♀; Pokrovka: 21/VIII 2005 – 1♂ (O. Korsun leg.). – Note: one male of 22/VII has reduced basal amber, all other specimens typical
  - *Sympetrum depressiusculum* (Selys, 1841) (BELYSHEV, 1973). Kailastui: 18/IX 1959 – 2♂, 5♀ (Gagina leg.)
  - *Sympetrum pedemontanum* (Müller in Allioni, 1766) (BELYSHEV, 1973). Duroi: 2/IX 2005 – 1♂ (O. Korsun leg.); PriArgun'sk: 2/IX 2005 – 1♀ (O. Korsun leg.); Pit: 4/VII – 1♂
  - *Sympetrum vulgatum imitans* (Selys, 1886) (BELYSHEV, 1973). Duroi: 2/IX 2005 – 1♀ (O. Korsun leg.); PriArgun'sk, 14/VII 1996 – 1♀; Dogye: 14/VII 1996 – 1♂, 1♀, 6/VIII

- 2♀; Kurleya: 24/VII – 1♀; Pit: 4/VII – 1♂, 4♀ (2 teneral); Argun' valley: 30/VII – 1♂; Uryupino: 31/VII – 1♂, 2♀
- *Leucorrhinia (dubia) orientalis* Selys, 1887 (BELYSHEV, 1973). Duroi: 3/IX 2004 – 1♀ (O. Korsun leg.); Kurleya: 24/VII – 1♀; Uryupino: 31/VII – 3♂, 2♀; 31/VII – 4♂, 4♀; (2♂ mature, other teneral), 26/V 2001 (V. Dubatolov, S. Gordeev, T. Vlasova leg.); Pokrovka: 21/VIII 2005 – 1♂, 1♀ (O. Korsun leg.)
- *Leucorrhinia (rubicunda) intermedia* Bartenev, 1910 (BELYSHEV, 1973)
- *Pantala flavescens* (Fabricius, 1798) (SELYS LONGCHAMPS, 1897; for Pokrovka). Kurleya: 24/VII – visually, was flying above the Gazimur River

#### Discussion

BELYSHEV (1973) indicated for the Argun' River basin within Russia 25 species, of which we found 15, and added 7 species hitherto not reported for the region, to update the full list to 32 species. It contains 3 holarctic species (*L. dryas*, *A. juncea*, *S. danae*), 20 transpalaeartic species ranging from Europe to the Pacific (*C. hylas* and both leucorrhinias in a broad sense included), 8 eastern species, of which 2 have isolated populations in the Ural Mts. (*C. ecornutum* and *S. graeseri*), 3 ranging West roughly to the Ob' River basin (*C. lanceolatum*, *O. obscurus*, *N. ruptus*), 1 ranging west to the Yenisei River headwaters (*S. exuberata*), 1 ranging east to Baikal (*C. glaciale*), 1 ranging east to E Transbaikalia (*A. maackii*) (KOSTERIN, 2004); and one pantropical migrant (*P. flavescens*). The list is certainly still incomplete. We should expect here also *Aeshna caerulea*, *Somatochlora sahlbergi* and *S. arctica* in taigous mountains, *Ophiogomphus spinicornis* in the steppe part of the region, *Paracercion v-nigrum* and maybe other palaeartic (Manchurian) elements in the valleys of the Argun' River and its major tributaries (*S. sahlbergi* was found in the Sokhondo Nature Reserve, see DUBATOLOV et al., 2005; *O.*

*spinicornis* and *P. v-nigrum* in the Onon River valley at Nizhnii Tsasuchei, see KOSTERIN, 2004). The absence of some groups is intriguing. So far, from Transbaikalia there is not a single record of any representative of the genus *Orthetrum* (except for an isolated population on hot sources in the Chara Hollow, that strictly speaking is not Transbaikalia but the Baikalian Upland) and the family Calopterygidae. The latter is especially striking, since there exist a great variety of lotic habitats. The actual reason is unknown but might be quite unusual. For instance, in the basins of the rivers of SE Transbaikalia, a human endemic deforming osteoporosis, or Kashin-Beck syndrome, or Urov disease occurs. It is caused by a deficit of calcium and excess of iron, manganese, zinc and silver in the environment and in the body. This peculiar content should characterise the local rivers as well, which collect minerals from their basins, and we do not know how different odonates react to such factors. It is noteworthy that the entire S Transbaikalia is an area rich in various polymetallic deposits.

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**References** – BELYSHEV, B.F., 1973. *Strekozy (Odonata) Sibiri*, Vol. 1. pts. 1-2, Nauka, Novosibirsk; – BELYSHEV, B.F., E.P. BESSOLITSYNA, N.S. KOSTINA & P.E. POLYAKOVA, 1978. *Chlenistonogie Sibiri* 34: 39-46. – DUBATOLOV, V.V., R. Yu. DUDKO, V.G. MORDKOVICH et al. [27 authors], 2004. *Bioraznoobraznye Sokhondinskogo zapovednika: Chlenistonogie*, Novosibirsk, Chita; – DUBATOLOV, V.V. & O.E. KOSTERIN, 1999. *Nasekomye Daurii i sopedel'nykh territorii* 2: 195-221; – KOSTERIN, O.E., 2004. *Odonatologica* 33: 41-71; – SELYS LONGCHAMPS, E. de, 1897, *Annls Soc. ent. Belg.* 31: 1-85; – ZHU, H.-q. & J. OU-YAN, 2000. *Odonatologica* 29: 365-368.

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