

## Some interesting Odonata Anisoptera from the Tarn, France

by

JEAN BELLE

ABSTRACT. — The author reports on some Odonata collected at the river Tarn in France and provides data on *Macromia splendens* (Pictet) and other noteworthy Anisoptera.

In the beginning of the summer of 1982, from June 29 to July 16, I made an excursion to the valley of the river Tarn in France for dragonfly collecting. Twenty-two species were assembled and of these the Anisoptera of special interest are discussed in this paper. The area visited is situated between the towns of Millau and Albi, a picturesque part of this well-wooded valley with the appropriate name "La Vallée de l'Amitié". My special hope was placed on the large stream-haunting dragonfly *Macromia splendens* (Pictet), a species which is considered a rarity and which had already been reported from the Tarn (Dommanget, 1981). The results of this excursion show that the Tarn is a rather unexplored river, at least with regard to collecting Odonata.

First of all I succeeded in catching *Macromia splendens*, and surprisingly enough without considerable effort. Because this dragonfly proved to be not rare at the Tarn! The species was encountered at nearly every suitable place of the river. Many hunting males were observed, sometimes two or three together. In total, eleven males were collected. With regard to the females, only ovipositing ones were seen. They stayed a very short time above the water, tapping the surface four to five times with the end of the abdomen (cf. Lieftinck, 1965), and then they disappeared into the trees along the banks of the river. No female was collected.

In my opinion collecting cannot produce the extermination of this species (so-called over-collecting) because its habitats are distributed over many rivers with a total length of several hundreds of kilometers. Moreover the males are difficult to capture because of their swift meandering flight while the females can be caught only by pure chance. Nevertheless the habitats of this *Macromia* are constant in danger of becoming destroyed. As to the Tarn, many habitats have been annihilated by alterations of the river. In particular the weirs for the hydro electric stations (Barrage de Jourdanie, etc.) make the river unsuitable as a breeding place for *Macromia* over many kilometers, and the constructions of recreation sites, in particular such as in Lincou, spoil the habitats for *Macromia* over hundreds of meters by the lack of suitable bank vegetation. But the greatest danger seems to me pollution of the rivers by effluent, especially from the expending towns situated on the river concerned.

*Cordulegaster* was represented by two species. Of these, *Cordulegaster boltoni* (Donovan) was common. It was found along all narrow tributaries and at the rivulets more remote from the river. The specimens belong to the darkest representatives of the race *boltoni*.

More or less unexpected was the discovery of the second species *Cordulegaster bidentatus* Selys. This peculiar dragonfly was found in a ditch along a road where water oozing from the soil of the mountain-side created a very small stream. It is hardly to believe that a dragonfly of such a great size breeds in such a minute stream which is not longer than 50 meters. On July 11, at about 17.00 hrs, I detected a male of this species resting against a branch, about 1 meter above the ditch. The insect was easily netted. The following day, at midday, I retraced my steps to the same spot and saw another male. It was flying some meters above the road and it rested afterwards against a bare branch of a tree. Unfortunately the stick of my collecting net was too short to capture the specimen. On July 16 I was again on the same limited part of the road. At midday I was so lucky to collect a female which was ovipositing in the bottom of the ditch where the minute stream flowed. In the late afternoon, between 17.00 and 18.00 hrs, four to five males were seen flying to and fro over a distance of 80 meters, 1 meter to 2 meters above the road. Two of these males were captured in full flight. A female flying close along the border of the road was also observed but escaped.

The little stream in the ditch may temporarily disappear in longer periods of dryness. This means that the larvae of *Cordulegaster bidentatus* are able to survive in the moist soil of the ditch (cf. Selys & Hagen, 1858: footnote on page 602 (342 sep.)). Down in the valley to the road where the species was found flying is a narrow tributary of the Tarn. I have spent many hours at this stream to collect *Cordulegaster* specimens. More than twenty males of this genus were secured but all proved to be *boltoni*. Apparently the two species *bidentatus* and *boltoni* do not fly together.

Two Aeshnid species were seen and collected. Many males of the conspicuous dragonfly *Boyeria irene* (Fonscolombe) were flying close along the banks of the river and its tributaries. Apparently they were searching for a female. One female ovipositing against the bank of the river was collected. A mature female larva taken at the bank of the Tarn in the evening of the 3rd July emerged to adulthood in the early morning of the following day. Both females belong to the form with short cerci (Navás's *brachycerca*). In 1976 I collected at the streams of the French Pyrenees and in Languedoc eight females with long cerci (5.5-7 mm long) and six females with short cerci (2 mm long). This indicates that the two forms occur in similar numbers (cf. Wenger, 1959). Males exhibit differences in the coloration of the wings. Fully mature males have the tips of the wings brown; these tips are clear in not quite matured males. *Boyeria irene* is also active at dusk (cf. Wenger, 1955). In almost darkness several males hunting above the roads nearby the Tarn were collected together with hunting females of the normally diurnal Aeshnid *Anax imperator* Leach.

Finally the Gomphidae which were represented by five species. Numerous specimens of *Gomphus graslini* Rambur were found but predominantly males. On a certain spot of the Tarn I took 43 males against only four females. *Gomphus graslini* has a long time been known from France only but in 1970 Overbeek stated its occurrence in (southern) Spain for the first time.

The two Selysian species *Gomphus pulchellus* and *Gomphus simillimus* were also encountered in numbers along the whole river, but again predominantly males. Only two females of the first and three females of the second species were collected.

*Gomphus vulgatissimus* (Linnaeus) was poorly represented. Apparently because the Tarn lies at the southern limits of the range of this species. Only two males and one female of this species were seen; one of the males and the female could be collected.

I found also numerous males of *Onychogomphus forcipatus* (Linnaeus), the majority on roads and paths close to the river. Females were extremely seldom discovered. Only two females could be secured, one female during ovipositing in a narrow tributary (the Alrance) and one newly hatched female on the river bank. Most of the specimens of this species belong distinctly to the Mediterranean form *forcipatus unguiculatus* (Vander Linden) having the black mid-lateral stripe of the pterothorax interrupted at mid-height, but some males have this stripe only narrowed at mid-height and come close to the northern form *forcipatus forcipatus*. In the female from the Alrance this stripe is almost absent. Many exuviae of this species were found along the banks of the river.

It is somewhat surprising that the near relative of this species, *Onychogomphus uncatus* (Charpentier), was not found in the valley of the Tarn. During my collecting trip of 1976 in France the latter species was encountered in numbers at the streams and rivulets which have their sources in the Pyrenees, and it was also collected by me in Gard at the Crieulon near Quissac. The width of the black mid-lateral thoracic stripe is also notably variable in *Onychogomphus uncatus*.

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CRAWFORD, C. S., 1981. BIOLOGY OF DESERT INVERTEBRATES. pp XVI, 314; 181 figs., ca 700 refs, index 44 kolommen. Springer Verlag, Berlin etc., ISBN 3-540-10807-6. Prijs (gebonden) \$ 40,50.

De tijd dat woestijnen werden beschreven als plaatsen waar je als bioloog beter weg kon blijven is al lang achter de rug. Het blijkt dat gericht onderzoek en verzamelen een relatief soorten- en individuenrijke fauna aan de dag brengt. De gevarieerdheid van aanpassingen die men er aantreft, samenhangend met een langdurige evolutie onder omstandigheden van extreme temperatuur, droogte, en instabiliteit maken woestijnen biologisch hoogst interessante gebieden. Een boek dat althans de oecologische aspecten hiervan samenbrengt kan alleen al daarom een „warme” ontvangst verwachten.

Crawford's boek begint met een korte inleiding over de verschillende typen woestijnen, over desertificatie en ontstaan en uitbreiding van woestijnen in het geologisch verleden, en een hoofdstuk over de verschillende evertrebratengroepen in dit milieu. Deze hoofdstukken stellen teleur — geen vlees en geen vis omdat ze niet veel meer geven dan oppervlakkig aanstippen. Het tweede deel is veel interessanter: aanpassingen aan droogtemilieus (rhythmiek, water-balans, temperatuur-relaties en energie-budget). Een afzonderlijk deel is gewijd aan „life history”-patronen (kortlevende uni- en multivoltinen, langlevende herbivoren, detritivoren en carnivoren).

Het vierde deel is het meest omvangrijk. Het bespreekt samenstelling en dynamiek van (evertrebraten-) gemeenschappen in woestijnmilieus. De titels van de hoofdstukken illustreren goed het relatieve belang van de onderscheiden milieus: bodemnematoden en micro-arthropoden, sociale bodem-arthropoden, tijdelijke bodembewoners, kortlevende vegetatie-gemeenschappen, permanent struikgewas bewonende gemeenschappen, en de evertrebraten van kortlevende plasjes. Een vijfde deel tenslotte vat de voorgaanden samen. Vergeleken met het derde deel had overigens het vierde weinig verrassingen in petto. Niet alleen is de informatie tamelijk anecdotisch, maar heel vaak komt Crawford niet verder dan het opsommen van families, of genera die „iets doen” dat — gegeven het feit van hun voorkomen in dit milieu — van hen mocht worden verwacht. Werkelijke patronen, die lijn brengen in de veelheid van disparate details zijn er maar weinig. Op p. 252 van het boek staat een van de weinige samenvattende schema's, een diagram van het woestijn oecosysteem. Het had ook van een Nederlands bos kunnen zijn!

Hoewel de auteur literatuur verwerkt over alle woestijnen, is hij duidelijk het meest thuis in de woestijnen van zuidelijk Noord Amerika en Mexico, en de Israelische Negev. De Sahara, de Palaearctische koudewoestijnen, de Australische woestijn, en vooral Kalahari en Namib worden relatief onderbedeeld.

Bijna al de 181 illustraties zijn foto's, en de helft daarvan is overbodig (bijv. foto's van een „ongedetermineerde Notonectide”, een *Vannessa cardui*, een *Hyles lineata*-rups, vliegenmaden op een rundercadaver. . . .). Die overbodigheid, en de nogal wijldopige schrijftrant van het boek, irriteren des te meer in het licht van de — zeker naar Springer-maatstaven gemeten — zeer hoge prijs van het boek. Het biedt wat de titel belooft, maar is minder inspirerend dan het onderwerp suggereert. — W. N. Ellis.