

ANNOTATED ODONATA INVENTORY OF THE ASAN RESERVOIR, DEHRA DUN, INDIA

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Abstract – 44 spp. are listed, of which *Anax p. parthenope* (Sel.) is new for the Doon Valley. 13 spp. have been found to breed exclusively in the Reservoir, 8 spp. breed in the adjacent streams, while the remaining 23 spp. are common in both the habitats.

Introduction

SINGH & PRASAD (1976) and PRASAD & SINGH (1976) collectively recorded 69 odonate species and subspecies from the Doon Valley. Later, TYAGI et al. (1986) reported over 90 species, though they listed only 80 of these in their

catalogue. HÄMÄLÄINEN (1989) listed 32 taxa, brought together during his short tour, and synonymized some of them. KUMAR & MITRA (1998) recorded 42 species from the Sahastradhura region of Doon Valley, and added 3 new records. Recently, MITRA (1999) published 2 new records, which are new for the Western Himalaya as well.

The present report is based on 5-yr observations and collections around a man-made reservoir at the West of Doon Valley. A total of 44 species and subspecies are recorded. *Anax p. parthenope* is new for the Valley.

Study area

LOCATION. — The Asan Reservoir is a man-made waterbody of ca 3.2 sq. km, constructed for implementing Yamuna Hydel Scheme Stage-IV during the years 1970 to 1975. It is situated in the West of Doon Valley on the Dehra Dun – Paonta road, near the confluence of tail race Channel of Yamuna Stage I (Dakpathar Barrage) with river Asan, between latitude 30°24'–30°28'N and longitude 77°40'–77°44'E. The barrage is 287.5 m in length. The river bed being 398.4 m above sea level, with 403.3 m ASL and 402.4 m ASL as maximum and minimum water levels (MITRA, 1996).

The Asan Reservoir exists throughout the year (although the water level may vary) and thus forms a congenial habitat for a large number of aquatic insects. It is also a site for migrant and resident waterbirds from Himalaya and Eurasia. Recently TAK et al. (1997) recorded 125 bird species, including 46 species of waterbirds, of which 20 are winter visitors, one summer visitor, 12 local migrants and 13 residents.

BIOGEOGRAPHIC PROVINCE AND WETLAND TYPE. — According to the biogeographical classification of Indian wetlands (HUSSAIN & DE ROY, 1993), The Asan Reservoir is included in the biogeographical province 4.8.4 (Indo-Ganges Monsoon Forest) and this wetland belongs to Type 17 (Water-storage reservoirs, dams) (TAK et al., 1997).

CLIMATE. — The prevailing climatic condition is Northindian monsoon type, with distinct summer and winter months. The temperature varies between max. 38°C and min. 14°C in summer, and between max. 21°C and min. 2°C during winter. The average rainfall is 250 cm. The South-West

monsoon arrives during June and remains till September.

PRINCIPAL VEGETATION. — The floral diversity of Asan Reservoir and its environs has already been studied briefly by the author (MITRA, 1996) and in detail by GUPTA & UNIYAL (1998). Among the microphytes, 39 species of algae, belonging to 24 genera, have so far been identified (GUPTA & UNIYAL, 1998). The aquatic vegetation of the reservoir consists of *Eichhornia crassipes* (Water-hyacinth), *Potamogeton crispus* and *Ceratophyllum demersum* (MITRA, 1996; GUPTA & UNIYAL, 1998), though upstream (towards the Asan river) *Vallisneria spiralis*, *Hydrilla verticillata* and *Lemna paucicostata* are also present (GUPTA & UNIYAL, 1998). *Scirpus mucronatus* and *Cyperus digitatus* are the two sedges which frequent here and there within the reservoir and also at the periphery together with some flowering plants like *Typha elephantina*, *Ipomoea carnea fistulosa*, *Polygonum lanigerum* and *Ludwigia adscendens*. Among the peripheral grasses there are *Panicum paludosum*, *Caesulia axillaris*, *Oenanthe javanica*, *Bacopa hamiltonii*, *Apium leptophyllum*, *Ranunculus muricatus*, *Alternanthera sessilis*, *Polygonum barbatum*, *Justicia quinqueangularis*, *Adenostemma lavenia*, *Equisetum* sp., *Kyllinga* sp. etc. the surrounding bushes include *Eupatorium adenophorum*, *Lantana camara*, *Parthenium hysterophorus*, *Aeschynomene indica*, *Mosla dianthera*, *Asclepias curassavica*, *Anisomeles indica*, *Eclipta prostrata*, *Ocimum sanctum*, *Euphorbia* sp., *Achiranthus aspera*, *Rumex hastatus*, *Boerhaavia diffusa*, *Portulaca pilosa*, *Sonchus wightianus*, *Cassia obtusifolia*, *Adiantum incisum*, *Scoparia dulcis*, *Polygonum plebejum*, *Setaria glauca*, *Solanum torvum* etc. (MITRA, 1996; GUPTA & UNIYAL, 1998).

Odonata checklist of the Asan Reservoir

The below list is based upon the weekly collections during September 1994 – August 1999. Each species is represented in my private collection by more than 5 specimens of each sex. The nomenclature adopted is that used by PRASAD & VARSHNEY (1995).

Coenagrionidae

- *Ceriatrion cerinorubellum* (Br.)
- *C. coromandelianum* (Fabr.)

- *Pseudagrion r. rubriceps* Sel.
- *P. decorum* (Ramb.)
- *P. laidlawi* Fr.
- *Cercion calamorum* (Ris)
- *Enallagma parvum* Sel.
- *Ischnura a. aurora* (Br.)
- *I. forcipata* Morton
- *Rhodischnura nursei* (Morton)
- *Agriocnemis pygmaea* (Ramb.)
- *A. clauseni* Fraser
- Platycnemididae
- *Calicnemia eximia* (Sel.)
- Lestidae
- *Lestes p. praemorsus* (Sel.)
- Calopterygidae
- *Neurobasis c. chinensis* (L.)
- Gomphidae
- *Burmagomphus sivalikensis* Laidlaw
- *Onychogomphus duaricus* Fr.
- *Paragomphus lineatus* (Sel.)
- *Ictinogomphus rapax* (Ramb.)
- Aeshnidae
- *Anax guttatus* (Burm.)
- *A. p. parthenope* (Sel.); new for the Doon Valley
- Libellulidae
- *Brachydiplax sobrina* (Ramb.)

- *Orthetrum luzonicum* (Br.)
- *O. pruinosum neglectum* (Ramb.)
- *O. s. sabina* (Dru.)
- *O. taeniolatum* (Schn.)
- *O. t. triangulare* (Sel.)
- *Acisoma p. panorpoides* Ramb.
- *Brachythemis contaminata* (Fabr.)
- *Crocothemis s. servilia* (Dru.)
- *Diplacodes lefebvrei* (Ramb.)
- *D. nebulosa* (Fabr.)
- *D. trivialis* (Ramb.)
- *Neurothemis fulvia* (Dru.)
- *N. t. tullia* (Dru.)
- *Trithemis aurora* (Burm.)
- *T. festiva* (Ramb.)
- *T. pallidinervis* (Kirby)
- *Palpopleura s. sexmaculata* (Fabr.)
- *Rhyothemis v. variegata* (L.)
- *Pantala flavescens* (Fabr.)
- *Tramea virginia* (Ramb.)
- *Tholymis tillarga* (Fabr.)
- *Urothemis s. signata* (Ramb.)

Discussion

It is interesting to note that both stream and standing water species breed within the study area. This suggests good management of the appropriate

habitats. The running water species *Calicnemia eximia* and *Neurobasis c. chinensis* were much more abundant at the confluence of the Asan river with the Reservoir.

Hardly any dragonfly species breed in the inlet channel coming from Dakpathar Barrage. This may be due to the fact the channel is deep or perhaps to other unknown ecological factors. *Crocothemis s. servilia* and *Ischnura a. aurora* were observed over both still and running water habitats. *Pseudagrion rubriceps* preferred *Potamogeton* sp. for egg-laying purposes.

The habitat preference study revealed 13 reservoir (standing water) breeding species and 8 stream breeding species whereas 23 species were common in both

Table I – Odonate occurrence at the Asan Reservoir

Only reservoir	Only stream	In both
<i>Cercion calamorum</i>	<i>Ceriagrion cerinorubellum</i>	<i>Ceriagrion coromandelianum</i>
<i>Rhodischnura nursei</i>	<i>Pseudagrion laidlawi</i>	<i>Pseudagrion r. rubriceps</i>
<i>Agriocnemis clauseni</i>	<i>Calicnemia eximia</i>	<i>P. decorum</i>
<i>Lestes p. praemorsus</i>	<i>Neurobasis c. chinensis</i>	<i>Enallagma parvum</i>
<i>Ictinogomphus rapax</i>	<i>Burmagomphus sivalikensis</i>	<i>Ischnura a. aurora</i>
<i>Diplacodes lefebvrei</i>	<i>Brachydiplax sobrina</i>	<i>I. forcipata</i>
<i>D. nebulosa</i>	<i>Orthetrum taeniolatum</i>	<i>Agriocnemis pygmaea</i>
<i>D. trivialis</i>	<i>Urothemis s. signata</i>	<i>Onychogomphus duaricus</i>
<i>Neurothemis fulvia</i>		<i>Paragomphus lineatus</i>
<i>N. t. tullia</i>		<i>Anax guttatus</i>
<i>Rhyothemis v. variegata</i>		<i>A. p. parthenope</i>
<i>Tramea virginia</i>		<i>Orthetrum luzonicum</i>
<i>Tholymis tillarga</i>		<i>O. pruinosum neglectum</i>
		<i>O. s. sabina</i>
		<i>O. t. triangulare</i>
		<i>Acisoma p. panorpoides</i>
		<i>Brachythemis contaminata</i>
		<i>Crocothemis s. servilia</i>
		<i>Trithemis aurora</i>
		<i>T. festiva</i>
		<i>T. pallidinervis</i>
		<i>Palpopleura s. sexmaculata</i>
		<i>Pantala flavescens</i>

the habitats (Tab. I).

Lestes p. praemorsus, although categorized as a reservoir breeding species, were mainly found to breed in the surrounding patches of water. *Ceriagrion cerinorubellum* and *Urothemis s. signata* occurred only along the slow running marshy streams. *Pantala flavescens* were seen to fly over both, the reservoir as well as the stream, but oviposition occurred only in the seasonal monsoon ponds and in the standing water of the reservoir.

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References – GUPTA, R.K. & B.P. UNIYAL, 1998, *Ann. Forestry, Dehra Dun* 6(1): 31-38; – HÄMÄLÄINEN, M., 1989, *Odonatologica* 18(1): 13-20; – HUSSAIN, S.A. & R. DE ROY, 1993, *Directory of Indian wetlands*, WWF, New Delhi – AWB, Kuala Lumpur; – KUMAR, A. & A. MITRA, 1998, *Fraseria* (N.S.) 5(1/2): 37-45; – KUMAR, A. & M. PRASAD, 1981, *Occ. Pap. zool. Surv. India* 20: 1-118; – MITRA, A., 1996, *Ann. Forestry, Dehra Dun* 4(2): 139-144, 1 col. pl. excl.; – 1999, *Notul. odonatol.* 5(3): 39; – PRASAD, M. & R.K. VARSHNEY, 1995, *Oriental Insects* 29: 385-428; – SINGH, A. & M. PRASAD, 1976, *Rec. zool. Surv. India* 70: 21-38; – TAK, P.C., J.P. SATI & A. KUMAR, 1997, *Zoology* 5(2): 111-132; – TYAGI, B.K., A. TYAGI & S.K. SANGAL, 1986, *Occ. Publ. SIO natn Off. India* 2: 1-14.

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