10. PREDATION OF DRAGONFLY *ICTINOGOMPHUS RAPAX* (RAMBUR) (ODONATA: ANISOPTERA) BY ROBBERFLY *STENOPOGON PRADHANI* JOSEPH & PARUI (DIPTERA: ASILIDAE)

While on a faunistic survey in Sanjay Gandhi National Park (SGNP), Mumbai, at around 1000 hrs, on March 20, 2001, we observed a dragonfly being chased by a robberfly at a height of at least one metre above the ground, in the vicinity of the BNHS Conservation Education Centre, Goregaon. After a brief chase, the robberfly succeeded in catching the odonate by its neck, and within moments, the prey, along with the predator, fell to the ground. By this time, the prey was moribund. We collected both the specimens and identified the prey as *Ictinogomphus rapax*, a dragonfly, and the predator as *Stenopogon pradhani*, a robberfly. The strength of the robberfly, considering the comparative size of the prey, was amazing.

Robberflies are well known aerial hunters, and are known to be agile in capturing prey. Birds, lizards, fishes, frogs and spiders are among the best known predators of dragonflies. Birds take a heavy toll on these insects during their emergence, when their weak flight makes them easy prey. Fishes and frogs feed on larvae and early imaginal stages of dragonflies (Fraser 1933).

Several workers in the past have recorded the predation of dragonflies by spiders, from different parts of the country (Kumar and Prasad 1977, Ram and Prasad 1978, Mitra 1994, Kulkarni *et al.* 1999).

Robberflies are known to prey chiefly on Hymenoptera, Diptera, Coleoptera and Lepidoptera, and less frequently on Orthoptera, Neuroptera, Hemiptera and Odonata.

ACKNOWLEDGEMENTS

We are thankful to the Director, ZSI Kolkata, and the Officer-in-charge, ZSI Pune, for facilities and encouragement. We are extremely thankful to Shri P. Parui, Scientist (Retd), ZSI Kolkata, for identifying the robberfly.

December 18, 2001

R.M. SHARMA
Zoological Survey of India,
High Altitude Zoology Field Station,
Opp. Saproon Gurudwara,
Solan 173 211,
Himachal Pradesh, India.

S.S. TALMALE
Zoological Survey of India,
Western Regional Station,
Vidyanagar, Sector 29, PCNT P.O.,
Pune 411 044, Maharashtra, India.

REFERENCES

FRASER, F.C. (1933): Fauna of British India including Ceylon and Burma. Odonata. Vol. 1, Taylor and Francis Ltd., London. 423 pp.

KULKARNI, P.P., D.B. BASTAWADE & S.S. TALMALE (1999): Predation of dragonflies, *Ictinogomphus rapax* (Rambur) and *Pantala flavescens* (Fab.) (Odonata: Anisoptera) by the Giant wood spider, *Nephila maculata* (Fab.). *Bionotes 1*: 84.

KUMAR, A. & M. PRASAD (1977): A note on dragonflies caught in spider webs. *Odonatologica 6*: 19-20.

MITRA, T.R. (1994): Observations on the habits and habitats of adult dragonflies of Eastern India with special reference to fauna of West Bengal. *Rec. zool. Surv. India, Occ. Pap. 166*: 1-40.

RAM, R. & M. PRASAD (1978): Some field observations on odonate predation by spiders. *Notul. Odonatol. 1(2)*: 25.

11. CONGREGATIONS OF COMMON CROW BUTTERFLIES *EUPLOEA CORE* CRAMER AT ARALAM WILDLIFE SANCTUARY, KERALA

Males of many Danaine butterflies are known to be attracted to the withered or damaged parts of plants belonging to Family Asteraceae, Papilionaceae, and Boraginaceae. They usually

apply a fluid by means of the proboscis, and reimbibe the fluid along with the dissolved pyrrolizidine alkaloids (PAs), which are used as male pheromone precursors and as protective chemicals.

Barnes (1939) recorded the attraction of Danaine butterflies to *Cynoglossum denticulatum* (Boraginaceae) at Biligirirangan Hills, Karnataka. Wynter-Blyth (1957) recorded Danaine butterflies attracted to *Crotalaria* in south India and to thistles in the Himalaya. Subsequently, plants like *Heliotropium indicum* (Boraginaceae) (Amladi 1975) and *Crotalaria retusa* (Papilionaceae) (Chaturvedi and Satheesan 1979) were recorded as attractants. Larsen (1986b) observed Danaine butterflies attracted to *Ageratum conyzoides* (Asteraceae) at New Delhi. Later, Haribal (1992) noted these insects being attracted to *Paracaryum coelistinum* (Boraginaceae), and Chaturvedi (1994) observed them on *Trichodesma indicum* (Boraginaceae). Jafer Palot *et al.* (1997) reported an aggregation of these butterflies on *Crotalaria peduncularis* and *Heliotropium indicum* in the Periyar Tiger Reserve, Kerala. Karthikeyan (1999) reported a congregation of Common Crows on the dry roots of *Chromolaena odorata* (Asteraceae) at Bannerghatta National Park, Karnataka. Larsen (1986a) observed an aggregation of Danaine butterflies at Corbett National Park, and Jafer Palot (2000) reported an aggregation of these butterflies at the Nehru Zoological Park, Hyderabad. Both the latter were dry season aggregations and are not connected with pyrrolizidine alkaloids.

Aralam Wildlife Sanctuary is 75 km away from Kannur city and is situated in the southern Western Ghats, located between 11° 49' - 11° 50' N and 75° 49' - 75° 57' E. During a stay at the Sanctuary from February to April 2001, I recorded these observations at Narikadavu (100 m above msl), on the banks of the River Cheenkannipuzha, which is the major river in the Sanctuary. Narikadavu is *c.* 14 km east of the Asst Wildlife Warden's Office at Valayamchal.

On March 15, 2001, at 0830 hrs (28 °C, 42% RH) I saw a large tree that had fallen into the river, partially submerged, with exposed and withered roots on the shore. On the roots there were, in congregation, approximately 13 Common Crow *Euploea core* Cramer butterflies and a Blue Tiger butterfly *Tirumala limniace* Cramer. The tree was identified as *Hopea parviflora* Bedd. (Dipterocarpaceae). The butterflies seemed to rub their proboscids against the withered roots and appeared to be imbibing some substances, possibly alkaloids, from these exposed and withered roots.

The next day at 0930 hrs, I observed 14 Common Crow butterflies at the same spot on the tree. On March 17, at 0900 hrs, I saw about 12 Common Crow. By 0930 hrs, the number increased to 20 (28 °C, 46.5% RH). All seemed to be imbibing material from the exposed and withered roots of the tree. At 1030 hrs (29.5 °C, 35% RH) a Blue Tiger butterfly also appeared. While the temperature rose progressively, the butterflies began to leave, and by 1130 hrs (32.5 °C, 19% RH) there were none. On the previous days, at 1300 hrs, no butterflies were seen at the site.

On March 18, at 0800 hrs, I observed 25 Common Crows and a Blue Tiger at the same site. After 2 days, no butterfly congregation was seen. The congregation and imbibing of substances was observed in the morning, mainly before 1130 hrs. In this particular area, Dark Blue Tiger *Tirumala septentrionis* Butler were abundant, and some were seen mud puddling nearby. But not a single Dark Blue Tiger participated in the congregation.

ACKNOWLEDGEMENTS

I thank Mr. A. Padmanabhan, Wildlife Warden, Aralam Sanctuary for research permission and T.V. Govindan Nambiar (Forester) and family for hospitality. I am grateful to Mr. Mahesh M. (Research Fellow, KFRI) for his help. Dr. C. Radhakrishnan (Jt Director, ZSI, Kozhikode),

Dr. P.M. Sureshan and Md. Jafer Palot (ZSI, Kozhikode) provided encouragement and facilities, and Dr. Sabu P. Mathai, Ecologist, Kerala Forest Dept identified the tree species. I also thank the reviewer for suggestions to improve this paper.

July 15, 2002

VINAYAN P. NAIR
3/IV College Quarters,
P.O. Madappally College,
Vatakara 673 102, Kozhikode District,
Kerala, India.

REFERENCES

AMLADI, S.R. (1975): Danaid butterflies attracted to *Heliotropium indicum* (Boraginaceae) an alkaloid containing plant. *J. Bombay nat. Hist. Soc. 72(2)*: 585-587.

BARNES, E. (1939): A curious habit of a Danaid butterfly. *J. Bombay nat. Hist. Soc. 41(2)*: 443.

CHATURVEDI, N. & S.M. SATHEESAN (1979): Attraction of butterflies to *Crotalaria retusa* (Papilionaceae) at Khandala, Western Ghats. *J. Bombay nat. Hist. Soc. 76(3)*: 534-535.

CHATURVEDI, N. (1994): New male attractants of Danaid butterflies. *J. Bombay nat. Hist. Soc. 91(3)*: 466.

HARIBAL, MEENA (1992): The Butterflies of Sikkim Himalaya and their natural history. Sikkim Nature Conservation Foundation (SNCF), Gangtok, Sikkim. 217 pp. + 60 pl.

JAFAR PALOT, M., G. MATHEW & V.J. ZACHARIAS (1997): Butterflies of Periyar Tiger Reserve, Kerala, India. Pp. 108-204. *In*: Advances in Forestry Research in India (Ed.: Prakash, Ram). International Book Distributors, Dehra Dun.

JAFAR PALOT, M. (2000): An aggregation of butterflies at Hyderabad, Andhra Pradesh. *J. Bombay nat Hist. Soc. 97(3)*: 450-452.

KARTHIKEYAN, S. (1999): Congregation of Common Crow *Euploea core* butterflies at Bannerghatta National Park. *J. Bombay nat Hist. Soc. 96(3)*: 486.

LARSEN, T.B. (1986a): A dry season aggregation of Danaine butterflies in Corbett National Park (Lepidoptera, Nymphalidae, Danainae). *J. Bombay nat Hist. Soc. 83(2)*: 456-458.

LARSEN, T.B. (1986b): *Ageratum conyzoides* (Compositae) indirectly confirmed as a source for pyrrolizidine alkaloids. *J. Bombay nat Hist. Soc. 83(2)*: 458-459.

WYNTER-BLYTH, M.A. (1957): Butterflies of the Indian Region. Bombay Natural History Society, Bombay. 523 pp.

12. OBSERVATIONS ON THE ECOLOGY OF RAFT SPIDERS (ARANEAE: PISAURIDAE) IN MADHYA PRADESH

The majority of spiders are terrestrial in habit, but those belonging to the genus *Dolomedes*, commonly known as raft spiders, are exceptional. These spiders are of semi-aquatic habit, and are found only in aquatic habitats near the edges of ponds and marshes (Levi and Levi 1968). These spiders are called raft spiders, due to the erroneous belief that they construct rafts. They are classified under Family Pisauridae, which is closely related to Family Lycosidae, the wolf spiders.

In December 2001, while collecting insects and spiders near the bank of a large water body called Dudhiya Talab along the Jabalpur-Nagpur Highway in Seoni district, Madhya Pradesh, some interesting brownish green spiders were noticed scurrying around the rotting leaves, vegetation and algal bloom at the edge of the water body. At first glance, they appeared like wolf spiders, but on closer inspection, they were identified as raft spiders. On recognising these rare and unusual spiders, their behaviour was closely observed.

The spiders were medium sized (*c.* 10 mm long) and were mostly observed sitting on floating leaves, twigs and rotting vegetation near the edge of the pond, with 3 pairs of posterior legs on the substratum and one pair of front legs spread out, touching the water and waiting patiently to detect a prey. Whenever a spider felt threatened by the author, it would run forward rapidly on the surface of the water, just like a water strider, and sit on a floating leaf about 2-3 m away from the edge of the pond. On many occasions, when an attempt was made to catch a spider, it would run forward