

Short note | Nota breve

Dragonflies (Insecta, Odonata) of São Vicente, Cape Verde Islands: 10 species on a desert island

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The island of São Vicente, Cape Verde Islands, has no natural and permanent surface fresh water habitats. Surprisingly, with records of 10 species of dragonflies, the island is the most species-rich in the archipelago so far (cf. Aistleitner *et al.* 2008, this study). Knowledge of Odonata from São Vicente is based on a small number of reports, mostly including single records only (Calvert 1893, Kirby 1897, Lobin 1982, Aistleitner *et al.* 2008). During a visit to the island in August 2009, AM recorded four species as single adults. Two species were recorded on 26 August 2009, after two days of heavy rainfall

which caused extensive temporary waterflows and pools in the main courses of river beds, on the plains, as well as on roads and sports grounds in and around the town of Mindelo. In March and April 2010, CJH observed numerous odonates at the basins of the local sewage cleaning plant (Estação de Tratamento de Águas Residuais – ETAR) at Ribeira da Vinha, *ca.* 3 km southwest of Mindelo. The sewage plant (in operation since 1986) consists of six basins, each containing successively cleaner water (Fig. 1-2). Species observed in August 2009 and March-April 2010 were:

Anax imperator Leach, 1815 – One adult in feeding flight between buildings and under trees at hotel Foya Branca, west of São Pedro (16°49,83'N, 25°04,27'W), alt. 9 m, 10 August 2009. A female at Clube Nautico, an open air bar and restaurant in Mindelo (16°53,24'N, 24°59,33'W), alt. 5 m, 8 March 2010. One male and one female at the sewage plant (16°52,12'N, 25°00,29'W), alt. 4 m, 30 March and 1 April 2010. These are the first records for São Vicente.

Crocothemis erythraea (Brullé, 1832) – One male at an ephemeral pool south of Mindelo (16°51,33'N, 25°00,33'W), alt. 31 m, 26 August 2009. About 25 imagines at the sewage plant (16°52,12'N, 25°00,29'W), alt. 4 m, 26 & 30 March and 1 April 2010. The only previous record for São Vicente is of two males and two females collected at a water hole east of Monte Verde, 19 December 1978 (Lobin 1982).

Orthetrum trinacria (Selys, 1841) – About 150 imagines at the sewage plant (16°52,12'N, 25°00,29'W), alt. 4 m, 26 & 30 March and 1 April 2010. The only previous record for São Vicente is of a male collected at a water hole east of Monte Verde, 19 December 1978 (Lobin 1982).

Pantala flavescens (Fabricius, 1798) – One male patrolling over swimming pool at hotel Foya Branca, west of São Pedro (16°49,83'N, 25°04,27'W), alt. 9 m, 7 & 10 August 2009. The only previous record for São Vicente is of a male collected, 26 December 1895 (Kirby 1897).

Sympetrum fonscolombii (Selys, 1840) – One male at the sewage plant (16°52,12'N, 25°00,29'W), alt. 4 m, 30 March, and three males there, 1 April 2010. These are the first records for São Vicente.

Trithemis annulata (Palisot de Beauvois, 1807) – One female at a dry river bed near

Madeiral (16°49,30'N, 24°56,04'W), alt. 191 m, 26 August 2009. Previous records were by Leonardo Fea in November 1898 and by

Werner Barkemeyer at the golf course at the southwestern outskirts of Mindelo, 19 March 2001 (Aistleitner *et al.* 2008).

At present, the sewage plant is being expanded, with eight new basins currently under construction. Presumably as a result of these works, the ditches at ETAR's entrance, normally dry, were unindated and, judging from the state of the vegetation, had apparently been so for a considerable period of time (Fig. 3). In March-April 2010, *C. erythraea* was more numerous at these ditches than at the main basins, where *O. trinacria* was the dominant species. Larvae of *O. trinacria* are known to be tolerant of ionic stress (Suhling *et al.* 2003) and thus may be able to survive the adverse conditions of the sewage basins. Apart from the sewage plant, the only near-permanent surface fresh water sources in São Vicente are a number of wells and tanks near human habitation in the interior of the island.

We consider the presence of *Brachythemis leucosticta* (Burmeister, 1839) and *Pseudagrion glaucescens* Selys, 1876 on São Vicente to be unconfirmed. Both were reported from Porto Grande (Mindelo) during the late 19th century (Calvert 1893), when it

was an important port of call for steam ships. Dijkstra & Matushkina (2009) found '*Brachythemis leucosticta*' to include a cryptic species, *B. impartita* (Karsch, 1890). Both forms occur in West Africa and are possible candidates for the old record from São Vicente, although *B. impartita* seems more likely as it is much more common in the adjacent African mainland and has demonstrated more wandering habits, with *B. leucosticta* being rather local, mainly at large rivers. *P. glaucescens* belongs to a large African genus, which has been subject to many taxonomic changes during the past 100 years (cf. Dijkstra 2003). In addition, there is an incomplete male *Pseudagrion* specimen that remained unidentified at the species level (Calvert 1893). A re-examination of these specimens seems warranted.

Apart from these standing questions, an overview of phenological data (Table 1) shows that knowledge of the spatial and temporal distribution of Odonata in São Vicente (and indeed in the Cape Verde archipelago as a whole) remains poor.

	J	F	M	A	M	J	J	A	S	O	N	D
<i>Lestes pallidus</i>												
<i>Ischnura senegalensis</i>												
<i>Anax ephippiger</i>												
<i>Anax imperator</i>												
<i>Crocothemis erythraea</i>												
<i>Orthetrum trinacria</i>												
<i>Pantala flavescens</i>												
<i>Sympetrum fonscolombii</i>												
<i>Tramea limbata</i>												
<i>Trithemis annulata</i>												
<i>Zygonyx torridus</i>												

Table 1. Known flight season of 11 Odonata species from the Cape Verde Islands (light grey fields; records from São Vicente in dark grey). Data from Lobin (1982), Aistleitner *et al.* (2008), Vieira (2008), Martens (2010), Richard Ek (*in litt.*) and this study. Only known from specimens collected during the late 19th century, no seasonal data are available for *Brachythemis leucosticta*, *Pseudagrion glaucescens* and *Trithemis arteriosa*.



Fig. 1-2. Basins at the sewage plant, São Vicente, 26 March 2010 (Cornelis J. Hazevoet)



Fig. 3. Ditch at the sewage plant's entrance, São Vicente, 26 March 2010. Fig. 4. *Orthetrum trinacria*, sewage plant, São Vicente, 26 March 2010 (Cornelis J. Hazevoet)

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