

An annotated checklist of the Odonata of Namibia

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This paper presents an annotated checklist of the Odonata of Namibia, which provides information for each recorded species on: World distribution, previous published records, detailed distribution within Namibia and specific notes where appropriate. To date, 102 species of Odonata have been recorded from Namibia. Additionally, 9 species have been recorded from Botswana and Zambia at stretches of the Chobe/Linyanti and the Zambezi Rivers forming the Namibian borders. These species are also taken into account in the checklist. As many other species are recorded in Angola, in close proximity to the Namibian border further species are to be expected. In addition to the checklist, we further present some general distributional patterns of Namibian Odonata, being: (a) tropical running water species, mainly restricted to the northern or northeastern perennial rivers, (b) tropical species not restricted to running waters, but adapted to more humid environmental conditions, (c) species adapted to arid conditions; being mobile, having opportunistic habitat selection and rapid development, and being widespread in Namibia, (d) species of permanent waters occurring at isolated spots within Namibia, and (e) southern, sub-tropical species, restricted to the south.

INTRODUCTION

Adult dragonflies (Odonata) are large powerful flying insects with enlarged wings and compound eyes, enabling them to chiefly prey upon other flying insects. The larval stages are aquatic and prey on a variety of aquatic organisms. Approximately, 5 100 species occur worldwide (Bridges 1994), of which approximately 850 species occur in the Afrotropical Region (Dijkstra 2003). A comprehensive review of the biology and ecology of Odonata is provided by Corbet (1999).

The Odonata fauna of Namibia remains poorly known, but a number of published records have previously appeared, chiefly in the odonatological papers of Barnard (1937), Brinck (1955), Longfield (1936), Pinhey (1951, 1976, 1984a, 1984b, 1985), and Ris (1908, 1910, 1911, 1912, 1913a, 1913b, 1919, 1921, 1931). Some further records have been published in works with a more general entomo-

logical approach (e.g. Prinsloo 1990), as well as those with a hydrobiological focus (e.g. Curtis 1991; Day 1990; Steffan 1997). Several taxonomic monographs on African Odonata groups (*vide* Pinhey 1974, 1980) also include Namibian records, but do not offer additional data.

Previously published checklists of the Odonata of Namibia are included in other lists, by Brinck (1955), Curtis (1991), and Pinhey (1984b, 1985). Brinck's (1955) list of Namibian Odonata (32 species), based on published and unpublished data, was the first, and was part of a comparison of the faunas of different areas of southern Africa. Pinhey's South African Odonata checklist (Zygoptera (Pinhey 1984b)), Anisoptera (Pinhey 1985)) refers to museum material that he checked personally, and this includes 56 species for Namibia. Most of these records had previously appeared in Pinhey's (1976) dragonflies of Botswana. Pinhey (1984b, 1985) further re-analysed

part of the material previously studied by Brinck (1955), Longfield (1936), Pinhey (1951), and Ris (1921), but sadly without giving reference to these and without including all available label information. Pinhey (1984b, 1985) did, however, provide more detailed information on date and locality of records than was provided in some of the primary references.

Curtis (1991) included dragonflies in a checklist of freshwater macro-invertebrates of Namibia. Several records that were new for the country are based on unpublished data from the *Namibian National Insect Collection* of the National Museum of Namibia, Windhoek (NMNW), some being already marked as doubtful.

MATERIAL

The checklist presented here is based on previously published checklists and some additional new sources, which are as follows:

- *Namibian National Collection of Insects*, National Museum of Namibia, Windhoek (NMNW). The National Odonata collection includes material collected by: L. Coetzee, S.V. Green, J. Irish, A.H. Kirk-Spriggs, E. Marais, C.S. Roberts and H. & W. Rust. Virtually all the specimens dating from the period 1936-1963 lack a collector's name on the attached labels, but due to the correspondence between date of collection and collecting locality with those data published by Irish (1995), most of these must have been collected by the early Namibian collector Fritz Gaerdes (1892-1975). The collection also includes material collected by R. Jödicke in 1999. For this study, the writers re-identified the majority of adult Odonata material held in the collection. Some adult specimens remain unidentified, mostly due to damage, and only part of the material from the larval collection could be identified with certainty, as larvae of many species, particularly the Libellulidae and Coenagrionidae, remain undescribed.

- The collection of the Museum für Naturkunde, Humboldt-Universität, Berlin (ZMHB). Odonata were collected by: J. Deckert, U. Göllner, F. Koch, and G. Peters. This is the main source of material, particularly from the Caprivi Region. For details of localities sampled during ZMHB expeditions, *vide* Koch *et al.* (1995).
- Anisoptera of the General Entomology Collection of the Transvaal Museum, Gauteng (TMSA). B.I. Balinsky, F. Gaerdes, C. Koch, H. Strydom and others collected the specimens.
- The photographic records of H.-M. Koch (Reutlingen, Germany), who visited Namibia in 2000/2001.
- The records of J. Kipping (Altenburg, Germany), from 2000, 2001 and 2002.
- Observations and specimens generated from an extensive survey of the western ephemeral river catchments of Namibia and the upper Fish River catchment 2001, 2002 and 2003, and additional collecting trips to the Kunene in 2002 and the Okavango in 2003, by A. Martens and F. Suhling. All collected material shall be deposited in the NMNW collection.

Material and localities from the Caprivi Region shall be published in detail elsewhere (Jödicke & Martens in prep.). In this paper we only indicate the occurrence of species in the Caprivi, without providing detailed locality information, except in the case of first records for the area, based on specimens deposited in NMNW.

THE CHECKLIST

GENERAL REMARKS

Each species entry is divided into a number of sections, as follows:

DISTRIBUTION: This section includes a broad outline of the geographical range of a species, with remarks on other subspecies occurring outside of Namibia. New records for Namibia are marked with an asterisk (*). General

distribution patterns are presented here, e.g. afro-tropical Africa or southern Africa, rather than lists of countries in which the species is known to occur (for this information, although incomplete, *vide* Davies & Tobin 1984, 1985; Pinhey 1984b, 1985).

PREVIOUS RECORDS: Citations included in this section are the principal published references only, except in the case of Pinhey (1984b, 1985), in which more detailed information are provided on date and locality.

NAMIBIAN DISTRIBUTION: In the case of widespread Namibian species, a general distribution pattern is provided. For rare species, important individual records are cited in full, including number and sex of specimen(s), locality, date of collection, collector's name, and repository. In other cases, these data are reduced to locality. Localities are listed in the gazetteer (*vide* Appendix). All records from 2001, 2002 and 2003, unless otherwise noted, are from F. Suhling and A. Martens observations, and in these cases are based on adults captured for the purpose of identification and later released. Collecting was kept to a minimum, but all retained specimens are now deposited in NMNW. Additional information on species from the Caprivi Region (principally from ZMHB expeditions) shall be published elsewhere (*vide supra*).

NOTES: This section includes remarks on specific habitat preferences and other biological characteristics, based on our experience. Notes are also included on related species and other taxonomic comments.

The nomenclature used in this paper follows Bridges (1994). Hedge & Crouch (2000), however, suggested several corrections of Pinhey's (1994) usage, and these are taken into consideration, with the notable exception of the generic name *Tramea* Hagen, 1861, which is here retained, rather than the use of *Trapezostigma* Hagen, 1849. The order of taxa listed in the paper is as follows: families are ordered according to Davies & Tobin (1984, 1985) and Bridges (1994). Taxa below the family rank are ordered alphabetically.

ZYGOPTERA

CALOPTERYGIDAE

Phaon iridipennis (Burmeister, 1839).

DISTRIBUTION: Continental tropical Africa and Madagascar.

PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: The Caprivi.

NOTES: The species prefers shaded waters.

CHLOROCYPHIDAE

Platycypha caligata caligata (Selys, 1853).

DISTRIBUTION: Continental Africa, from Guinea Bissau and Somalia to Namibia and South Africa (Eastern Cape).

The subspecies *P. c. angolensis* Longfield, 1959, is known from southwest Angola (Pinhey, 1975) (*vide* Table 3).

PREVIOUS RECORDS: Pinhey (1976, 1984a, 1984b).

NAMIBIAN DISTRIBUTION: Okavango River in the Caprivi, records from Andara and Popa Falls.

NOTES: Inhabits fast-flowing stretches of permanent rivers and streams. Males are territorial and have a conspicuous courtship display, which involves exposing the white legs. Females oviposit in driftwood (Robertson 1982).

LESTIDAE

Lestes dissimulans Fraser, 1955.

DISTRIBUTION: Widespread in tropical Africa. Namibia*.

NAMIBIAN DISTRIBUTION: Two records from the northeast:

1♂, Kaudom Game Reserve, Leeupan, 25.ii.1992, G. Peters; 1♀, Askavold Farm, 18.ii.1992, G. Peters (all ZMHB).

Lestes pallidus Rambur, 1842.

DISTRIBUTION: Sub-Saharan Africa and southern Arabia.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1980, 1984b); Ris (1921).

NAMIBIAN DISTRIBUTION: Widespread, but uncommon.

NOTES: Occurs at temporary waters with reed-like vegetation. All specimens reported by Ris (1921) as *Lestes ictericus* Gerstacker, 1869, belong to *L. pallidus* (*vide* Pinhey 1980). *Lestes wahlbergi* Ris, 1921 (*vide* Brinck 1955; Pinhey 1951) is a form of *L. pallidus* (*vide* Pinhey 1980).

Lestes pinheyi Fraser, 1955.

DISTRIBUTION: From Nigeria and Somalia to South Africa (Natal). Namibia*.

NAMIBIAN DISTRIBUTION: Several records from the Caprivi.

NOTES: Previously reported (as *Lestes uncifer* Karsch, 1899) by Curtis (1991). A specimen in the NMNW collection (Andara, 03.xi.1960) is labelled both as *L. uncifer* and *L. pinheyi*. The specific identity of this specimen could not be clarified as the abdomen is missing.

COENAGRIONIDAE

Africallagma glaucum (Burmeister, 1839).

DISTRIBUTION: Equatorial Africa to South Africa (Cape). Not recorded from the Indian Ocean islands, except Réunion.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1984b); Ris (1921).

NAMIBIAN DISTRIBUTION: Several records from highland and adjacent area: Otavi Mountains, Khomas Hochland and Naukluft area. Single individuals recorded at Kamanjab and Tsaobis. Not recorded from the Caprivi.

NOTES: This species has previously been placed in the genus *Enallagma* Charpentier, 1840 (May 2002).

Africallagma subtile Ris, 1921.

DISTRIBUTION: From Ethiopia to Namibia and Botswana.

PREVIOUS RECORDS: Pinhey (1951, 1984b).

NAMIBIAN DISTRIBUTION: Only known from one locality: Otjikango, vii.1948, C. Koch. No new records.

NOTES: This species has previously been placed in the genus *Enallagma* Charpentier, 1840 (May 2002).

Agrioncnemis angolensis angolensis Longfield, 1947.

DISTRIBUTION: Southern Angola and the Caprivi. The subspecies *A. a. spatulae* Pinhey, 1974, further occurs in northwest Zambia.

PREVIOUS RECORDS: Pinhey (1974, 1976, 1984b).

NAMIBIAN DISTRIBUTION: Okavango & Kwando Rivers in the Caprivi.

Agrioncnemis exilis Selys, 1872.

DISTRIBUTION: Madagascar and the Mascarene islands, sub-Saharan Africa from Senegal and Ethiopia to South Africa (Natal).

PREVIOUS RECORDS: Pinhey (1976, 1984a, 1984b).

NAMIBIAN DISTRIBUTION: Spring W Swartbooisdrift, 12.vii.2002; Mokuti Lodge 15-17.v.1999, R. Jödicke; Muramba Bushman Trails, E Tsintsabis, 18-19.v.1999, R. Jödicke; Palmwag, 19.iii.2003; Otavifontein (farm-dam), 04.iv.2003; Gross Barmen, 20.v.2001; below Von Bach Dam, 05.iv.2002; Neuras 06.iii.2003. Several additional records from the Caprivi.

Agrioncnemis gratiosa Gerstäcker, 1891.

DISTRIBUTION: Continental Africa from southern Sudan and Democratic Republic of Congo to Namibia, Botswana and South Africa (Natal), and Madagascar.

PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: The Caprivi.

Azuragrion nigradorsum (Selys, 1876).

DISTRIBUTION: Equatorial Africa to Namibia and South Africa (Natal), southern Arabia and Socotra.

PREVIOUS RECORD: Steffan (1997).

NAMIBIAN DISTRIBUTION: Most records are from Ongongo, the previously recorded locality. Sesfontein, 11-

14.iii.1990, C.S. Roberts; Ongongo, 11-14.iii.1990, C.S. Roberts (NMNW); Ongongo, 19.ii.1995 & 20.iii.1997, F. Koch (ZMHB); Ongongo, 07.x.2001 & 03-04.vii.2002; Palmwag, 01.iii.2002; Otavifontein Dam, 04.iv.2003.

NOTES: This species has previously been placed in the genus *Enallagma* Charpentier, 1840 (May 2002).

Ceriagrion corallinum Campion, 1914.

= *C. bidentatum* Fraser, 1941.

DISTRIBUTION: West Africa to Namibia.

PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: Kwando River, Caprivi.

NOTES: No recent records.

Ceriagrion glabrum glabrum (Burmeister, 1839).

DISTRIBUTION: Sub-Saharan Africa, Arabian Peninsula, African Indian Ocean islands. The subspecies *C. g. longispinum* Pinhey, 1963, occurs in the Democratic Republic of Congo.

PREVIOUS RECORDS: Pinhey (1984b); Ris (1921).

NAMIBIAN DISTRIBUTION: Only known from distinct localities outside the Caprivi: Namutoni, 14.vi.1958; Mokuti Lodge, 15-17.v.1999, R. Jödicke (both NMNW); Palmwag, 01.iii.2002; Mariabronn 01.iv.2003, Grootfontein, vi.1911 (Pinhey 1984b; Ris 1921); Otjisongombe, 22.iii.2003; Gross Barmen, 20.v.2001; below Von Bach Dam, 27.xii.1977 (Pinhey 1984b), also 13.i.2001, 20.i.2001, 10.iv.2001, 13.x.2001, 05.iv.2002, 22.vi.2002, 23.iii.2003, 06.iv.2003 & 08.v.2003; below Oanob Dam, 23.iv.2003; Hardap, 20.ii.1971 (NMNW) [no confirmation of the last mentioned locality in 2001].

Ceriagrion suave Ris, 1921.

DISTRIBUTION: Tropical continental Africa.

PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: 4♂♂, Kavango Lodge, 27-29.iii.2003, A.H. Kirk-Spriggs & W. Mey, light trap sample; records from the Caprivi.

NOTES: Our assignment of the Caprivi specimens to *C. suave* is provisional. The *suave* species-group which also includes e.g. *C. moorei* Longfield, 1952, *C. hamoni* Fraser, 1955 and *C. sakejii* Pinhey, 1963, is in urgent need of critical revision.

Ichnura senegalensis (Rambur, 1842).

DISTRIBUTION: Sub-Saharan Africa, including the Nile River catchment; Asia from the Levant to Japan and the Philippines; western Indian Ocean islands.

PREVIOUS RECORDS: Barnard (1937); Brinck (1955); Longfield (1936); Pinhey (1976, 1984b); Ris (1908, 1921); Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread and common in all Namibian biomes.

NOTES: Occurs at virtually all type of water, including extremely brackish sites, large impoundments, rivers and temporary pools.

Pseudagrion acaciae Förster, 1906.

DISTRIBUTION: From Ethiopia to Angola, Namibia and South Africa (Eastern Cape).

PREVIOUS RECORD: Curtis (1991).

NAMIBIAN DISTRIBUTION: Kunene River, all rivers in the Caprivi and the Orange River.

Pseudagrion assegaai Pinhey, 1950.

DISTRIBUTION: From Zambia to Botswana and South Africa (Transvaal). Namibia*.

NAMIBIAN DISTRIBUTION: The Caprivi.

Pseudagrion coeleste Longfield, 1947.

DISTRIBUTION: Eastern Angola, Zambia, Botswana, Zimbabwe, Namibia*.

NAMIBIAN DISTRIBUTION: The Caprivi.

Pseudagrion deningi Pinhey, 1961.

DISTRIBUTION: Zambia, Botswana, Democratic Republic of Congo (Shaba), Namibia*.

NAMIBIAN DISTRIBUTION: One record from Caprivi: 1♂ Andara, 19-24.viii.1971 (NMNW).

Pseudagrion hamoni Fraser, 1955.

DISTRIBUTION: Africa from central Sahara to Namibia and South Africa (Transvaal), southern Arabia.

PREVIOUS RECORDS: Curtis (1991); Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: Cunene (Curtis 1991); spring W Swartbooisdrift, 12.vii.2002; Caprivi, Andara (Pinhey 1976, 1984b).

Pseudagrion glaucescens Selys, 1876.

DISTRIBUTION: From Sierra Leone and Kenya to Botswana and Mozambique. Namibia*.

NAMIBIAN DISTRIBUTION: 1♂, Back swamp of the Okavango, S Popa Falls, 18.iii.2002, J. Kipping (private coll.).

Pseudagrion kersteni (Gerstäcker, 1869).

DISTRIBUTION: Sub-Saharan continental Africa, southern Arabia.

PREVIOUS RECORDS: Pinhey (1984b); Ris (1921: as *P. praelectatum* Selys, 1876); Steffan (1997).

NAMIBIAN DISTRIBUTION: Restricted to isolated localities in Namibia. Recorded from: Baynes Mountains, 08-09.vii.2002; Namutoni, 15-17.ii.1994, U. Göllner, (ZMHB); Ongongo (Steffan 1997), 19.ii.1995 & 20.iii.1997, F. Koch, 20.iii.1997, J. Deckert (ZMHB), 07.x.2001 A. Martens; Grootfontein (Pinhey 1984b); below the Waterberg 16.i.1993, F. Koch, 22-23.ix.1993, J. Deckert (all ZMHB); Naukluft Mountains: Naukluft River, 07-08.i.2001, 07.iii.2001, 17.xi.2001, 04.iv.2002, 09.iii.2003 & 20.iv.2003; Gororosib River, 05.iv.2001 & 18.xi.2001.

NOTES: The closely related *P. inconspicuum* Ris, 1931, is recorded from southern Angola and South Africa (Cape) and should be expected to occur in Namibia.

Pseudagrion massaicum Sjöstedt, 1909.

DISTRIBUTION: Equatorial Africa to South Africa (Cape).

PREVIOUS RECORD: Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread in the western river catchments. Recorded in 2001 & 2002 at, e.g. Ongongo, Aub, Palmwag, Tsaobis, Von Bach, Daan Viljoen and Friedenau. Also in the Fish River catchment, e.g. from Hardap Dam and Fish River below Hardap and near Mariental. No records from the Caprivi.

NOTES: The only Namibian *Pseudagrion* species known to occur at lentic waters.

Pseudagrion nubicum Selys, 1871.

DISTRIBUTION: From equatorial Africa to Namibia, Botswana and Zimbabwe, northwards to Mali and Egypt.

PREVIOUS RECORD: Curtis (1991)

NAMIBIAN DISTRIBUTION: 1♂, Etosha, Starkberg, 06.v.1987, E. Marais & J. Irish (NMNW); 1♂, Palmwag, 30.vi.2002; 2♂♂, Von Bach Dam, 10.iv.2001 & in large numbers 20.v.2001.

NOTES: Curtis (1991) erroneously cited Balinsky (1963) as the cited record from the Okavango River.

Pseudagrion salisburyense Ris, 1921.

DISTRIBUTION: Southern to eastern Africa, including Ethiopia.

PREVIOUS RECORD: Barnard (1937).

NAMIBIAN DISTRIBUTION: In the subtropical parts of the country: Tsauchab catchment, Fish and Orange Rivers. Records from: Naukluft River, 30.ix.2001; Gororosib, 01.x.2001 & 18.xi.2001; Urikos, 19.xi.2001, 05.ii.2002 & 08.iii.2003; Hardap Dam, 08.iv.2001 & 03.x.2001; Fish River below Hardap Dam, 09.iii.2001, 08.iv.2001 & 03.x.2001; Fish River near Mariental, 02.x.2001 & 08.iv.2001; in the Fish River canyon, 08.xi.1993 & 09.xi.1993, F. Koch (ZMHB); Fish River near Ai-Ais, xi.1936, A.J. Hesse & C.W. Thorne (Barnard 1937), 09.iii.1996 & 20.xi.1993, F. Koch (ZMHB); Orange River at: 28°02'S, 17°04'E, 15-16.iv.1986, J. Irish (NMNW).

Pseudagrion sjoestedti jacksoni Pinhey, 1961.

DISTRIBUTION: Uganda, Democratic Republic of Congo, Zambia, Botswana, Namibia*. The subspecies *P. s. sjoestedti* Förster, 1906, is known from East Africa; *P. s. pseudosjoestedti* Pinhey, 1964, from Mozambique and Zimbabwe; *P. s. nigeriense* Gambles, 1975, from western Africa and *P. s. wittei* Fraser, 1949, from the Democratic Republic of Congo.

NAMIBIAN DISTRIBUTION: Zambezi River, Caprivi.

Pseudagrion sublacteum sublacteum (Karsch, 1893).

= *Pseudagrion pseudomassaicum* Pinhey, 1951.

DISTRIBUTION: Continental Africa, Arabian Peninsula. The subspecies *P. s. mortoni* Schmidt, 1936, is restricted to the Levant and Arabia.

PREVIOUS RECORDS: Curtis (1991); Pinhey (1984b).

NAMIBIAN DISTRIBUTION: Baynes Mountains; Epupa; spring W Swartbooisdrift; Kunene; Hoarusib below Purros; Lake Otjikoto; Ongongo; Tsaobis; below Von Bach Dam; Daan Viljoen. Additional records from the Caprivi.

Pseudagrion sudanicum rubroviride Pinhey, 1955.

DISTRIBUTION: From the Limpopo River to the Congo basin. The nominotypical form, *P. s. sudanicum* Le Roi, 1915, occurs from southern Sudan to the Gambia. PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: Caprivi, Andara. Recently confirmed in the Caprivi by J. Kipping (private coll.).

PLATYCNEMIDIDAE

Mesocnemis singularis Karsch, 1891.

DISTRIBUTION: East and west equatorial Africa to South Africa (Natal).

PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: At the northern perennial rivers, with records from the Kunene and Okavango Rivers. Epupa, 11.vii.2002; Kunene River at: 23°26'E, 12.vii.2002; Kaokoland, Ondorusu, 18.i.1993, E. Marais; Rundu, 14.i.1950 (both NMNW).

NOTES: Inhabits fast-flowing stretches of rivers and streams. The ♂ from Rundu in the NMNW is labelled as *Metacnemis valida* (vide infra).

PROTONEURIDAE

Elattonneura glauca (Selys, 1860).

DISTRIBUTION: From equatorial Africa to South Africa (Cape). PREVIOUS RECORDS: Pinhey (1976, 1984b).

NAMIBIAN DISTRIBUTION: At the northern perennial rivers, with records from the Kunene and Okavango Rivers. Epupa, 11.vii.2002; Kunene River at 23°26'E, 12.vii.2002. Records from the Okavango at Andara, and from between Mohembo and Andara.

NOTES: The related *E. tropicalis* Pinhey, 1974, is recorded on the Botswana side of the Chobe River (Table 2; Pinhey 1976), and *E. frenulata* (Hagen in Selys, 1860), is known from South Africa (southwest Cape) and southern Angola (Table 3). There are no Namibian records of both species until now.

ANISOPTERA

AESHNIDAE

Aeshna minuscula McLachlan, 1896.

DISTRIBUTION: Namibia, South Africa.

PREVIOUS RECORDS: Pinhey (1985); Ris (1921).

NAMIBIAN DISTRIBUTION: Historical records from Nurugas, Otjiwarongo and Tsintsabis, all by R.E. Tucker, i.1920 (Pinhey 1985; Ris 1921). Recent records from the Naukluft River (2 exuviae, 08.i.2001 & 2 larvae, 10.v.2001).

NOTES: Supposedly restricted to isolated permanent springs in Namibia. Another species of the genus, *A. rileyi* Calvert, 1892, is recorded from southern Angola (Table 3) and should be expected to occur in the north.

Anax ephippiger (Burmeister, 1839).

DISTRIBUTION: Africa; western Asia; India; Indian Ocean islands; migrates regularly into Europe.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1985).

NAMIBIAN DISTRIBUTION: Widespread during the rainy season. Single records from the Caprivi.

NOTES: Widespread in Africa, occurring in temporary waters. The species regularly migrates to Europe.

Anax imperator Leach, 1815.

DISTRIBUTION: Africa; Europe; western Asia. The form south of the Sahara is often regarded as the subspecies *A. i. mauricianns* Rambur, 1842.

PREVIOUS RECORDS: Brinck (1955); Longfield (1936); Pinhey (1985); Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread and common in all Namibian biomes.

Anax speratus Hagen, 1867.

DISTRIBUTION: South Africa (Cape) to Ethiopia, Somalia and the Arabian Peninsula.

PREVIOUS RECORD: Curtis (1991) with reference to the NMNW collection.

NAMIBIAN DISTRIBUTION: Restricted to isolated localities, the majority of records being from the Naukluft area. Baynes Mountains, 08-09.vii.2002; Halali, 15-16.iii.1992, G. Peters, (ZMHB); 1♂, Huab at Kröne 721, 23-26.x.1998, E. Marais; 'Naukluft', 30.ix.1939 (vide Curtis 1991); 1♂, Tsams Ost Spring, 28.xi.1997, A.H. Kirk-Spriggs & E. Marais; 2♂♂, Naukluft spring, 28-30.xi.1997, A.H. Kirk-Spriggs & E. Marais (all NMNW); Naukluft River, 07-08.i.2001, 04.iv.2001, 30.ix.2001, 17.xi.2001, 09.iii.2003 & 20.iv.2003; Gororosib, 01.x.2001 & 18.xi.2001; Urikos, 05.ii.2002, 08.iii.2003 & 21.iv.2003, 08.iii.2003 & 21.iv.2003; Zebra River Lodge, 07.iii.2003.

Anax tristis Hagen, 1867.

DISTRIBUTION: Southern to equatorial Africa, Madagascar, Comoros & southern Arabia.

PREVIOUS RECORDS: Pinhey (1951, 1985).

NAMIBIAN DISTRIBUTION: Grootfontein (Pinhey 1951, 1985); Etosha, Nuamses, 19.i.1987, J. Irish & E. Marais (NMNW); exuviae, Muramba Bushman Trails, E Tsintsabis, 19.v.1999, R. Jödicke; Waterberg, 31.xii.1936, (NMNW); Waterberg, Bernabé de la Bat Restcamp, 12.xi.2001; Otjisongombe, 03.iii.2002.

Gynacantha manderica Grünberg, 1902.

DISTRIBUTION: From Sierra Leone and Somalia to South Africa (Eastern Cape). Namibia*.

NAMIBIAN DISTRIBUTION: The Caprivi.

GOMPHIDAE

Ceratogomphus pictus Selys, 1854.

DISTRIBUTION: South Africa to Zimbabwe, Botswana and Namibia*.

NAMIBIAN DISTRIBUTION: Records from large impoundments. Daan Viljoen at Augeigas Dam [photograph], 15.ii.1992, det. G. Peters, also 02.iii.2001, H.-M. Koch and 04.i.2001; Von Bach Dam, 14.i.2001; Hardap, 09.iii.2001 and 08.iv.2001; Avis, 11.iii.2001; 1 larva, Oanob Dam, iii.2003.

NOTES: The species benefits from the construction of reservoirs (Samways 1999).

Crenigomphus cornutus Pinhey, 1956.

DISTRIBUTION: Zambia, Botswana, Namibia, Zimbabwe & South Africa (Transvaal). Catchments of the Zambezi, Okavango and Limpopo Rivers.

PREVIOUS RECORDS: (Pinhey 1976, 1985).

NAMIBIAN DISTRIBUTION: Caprivi, Andara.

NOTES: One larva of a *Crenigomphus* sp. from Ruacana, x.1971, M. J. Penrith (NMNW).

Gomphidia quarrei quarrei Schouteden, 1934.

DISTRIBUTION: Democratic Republic of Congo to South Africa (Transvaal). Namibia*.

NAMIBIAN DISTRIBUTION: 1♀, Okavango, Schambura, 29.xii.1954 (NMNW).

NOTES: A melanic form from Mozambique is described as *G. q. confinii* Pinhey, 1974.

Ictinogomphus ferox (Rambur, 1842).

DISTRIBUTION: Equatorial continental Africa to Namibia and South Africa (Natal).

PREVIOUS RECORDS: Pinhey (1984b, 1985).

NAMIBIAN DISTRIBUTION: Records from the tropical north, south to Windhoek: 1 larva, Takwasa, Okavango, viii.1971 (NMNW); Von Bach Dam; Augeigas dam in Daan Viljoen; Avis Dam; Oanob Dam. Adults recorded from November to April. Additional records from the Caprivi.

NOTES: At lakes, perennial rivers and large impoundments.

Lestinogomphus angustus Martin, 1911.

DISTRIBUTION: Equatorial continental Africa to Namibia and South Africa (Natal).

PREVIOUS RECORD: Curtis (1991).

NAMIBIAN DISTRIBUTION: Kunene and Okavango Rivers: 1♂, Kunene, 9 km W Ruacana Falls, 14.iii.1997, F. Koch (ZMHB); 1 larva, Okavango, Takwasa, viii.1971 (NMNW). Caprivi records from all river systems.

Notogomphus praetorius (Selys, 1878).

DISTRIBUTION: Angola, Democratic Republic of Congo, Zambia, Zimbabwe, South Africa. Namibia*.

NAMIBIAN DISTRIBUTION: 1 exuvia, Otjivero Lake, 11.v.2003, F. Suhling; 1♂, Hardap, 10.v.1972, H. Strydom & Jones (TMSA).

Paragomphus cognatus (Rambur, 1842).

DISTRIBUTION: Equatorial Africa to South Africa (Cape).

PREVIOUS RECORD: Ris (1921).

NAMIBIAN DISTRIBUTION: Ghaub [farm]; Otjitujo; 1♂, Kavango Lodge, 27-29.iii.2003, A.H. Kirk-Spriggs & W. Mey, light trap sample.

Paragomphus elpidius (Ris, 1921).

DISTRIBUTION: From the Democratic Republic of Congo and Kenya to South Africa (Cape).

PREVIOUS RECORD: Curtis (1991).

NAMIBIAN DISTRIBUTION: Kunene and Okavango Rivers: larvae, Epupa, 11.vii.2002; 1♂, Ruacana, 16.x.1963 (*vide* Curtis 1991); 2♂♂, 1♀, Kunene, 9 km W Ruacana Falls, 14.iii.1997, F. Koch (ZMHB); and additional records from the Okavango River in the Caprivi.

Paragomphus genei (Selys, 1841).

= *Paragomphus hageni* (Selys, 1871).

DISTRIBUTION: Continental Africa, southern Europe, Levant, Arabian Peninsula and Socotra.

PREVIOUS RECORDS: Pinhey (1985); Prinsloo (1990).

NAMIBIAN DISTRIBUTION: Widespread and common in all sampled Namibian biomes. No records from the Caprivi.

NOTES: Occurs at lotic and lentic waters, including ephemeral river courses.

Paragomphus sabicus Pinhey, 1950.

DISTRIBUTION: Namibia, Zimbabwe & Zambia.

PREVIOUS RECORD: Curtis (1991).

NAMIBIAN DISTRIBUTION: One record: 1♂, 'Okavango', 30.xii.1954 (NMNW) (*vide* Curtis 1991). No additional records.

NOTES: The species appears to be restricted to the catchments of the Limpopo, Okavango, and Zambezi Rivers. Pinhey (1984a) notes that the specific relationship to *P. fritillarius* (Selys, 1892) and *P. acuminatus* Fraser, 1949, requires confirmation.

Phyllogomphus brunneus Pinhey, 1976.

DISTRIBUTION: Zambia, Botswana, Zimbabwe, South Africa (Transvaal), Namibia*. Known from the catchments of Okavango, Limpopo, and the middle Zambezi Rivers.

NAMIBIAN DISTRIBUTION: 1♂, 1♀, Kavango, Rundu, iv.1982, E.W. Pretorius (NMNW).

NOTES: The ♀ specimen in NMNW has foliations on the 8th abdominal segment as large as in the ♂.

CORDULIIDAE

Phyllomacromia bifasciata Martin, 1912.

DISTRIBUTION: From Senegal and Kenya to South Africa (Cape).

PREVIOUS RECORDS: Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Several records from the Caprivi; Otjiwarongo, 16.ii.1992, G. Peters, an observation of one adult from the town.

Phyllomacromia picta (Selys, 1871).

DISTRIBUTION: Equatorial Africa to South Africa (Cape).
Namibia*.

NAMIBIAN DISTRIBUTION: Other than records from the Caprivi, only known from the winter rainfall area: 1♂, Lüderitz [District], Obib Waters, 19.ix.1997, A.H. Kirk-Spriggs (NMNW).

LIBELLULIDAE

Acisoma panorpoides ascalaphoides Rambur, 1842.

DISTRIBUTION: Afrotropical Africa including Madagascar, Egypt to Sinai and southern Arabia. The nominotypical subspecies *A. p. panorpoides* Rambur, 1842, occurs in the Oriental Region.

PREVIOUS RECORDS: Pinhey (1951, 1985); Ris (1921).

NAMIBIAN DISTRIBUTION: Appears to be restricted to the north. Historical records from Otiembora (Otymora), Ovamboland and Otjikango. Recent records from below Von Bach Dam (05.iv.2002) and the Caprivi. NOTES: The congeneric *A. trifidum* Kirby, 1899, is known from southern Angola and should be expected to occur in Namibia.

Aethiothemis discrepans Lieftinck, 1969.

DISTRIBUTION: Angola, Botswana, Democratic Republic of Congo, Namibia*, Malaŵi, Zambia.

NAMIBIAN DISTRIBUTION: Several records from the Caprivi. NOTES: *Aethiothemis mediofasciata* Ris, 1931, known from the ♀ holotype only, is described from Chimporo River, southern Angola, and should thus be expected to occur in Namibia.

Aethriamanta rezia Kirby, 1889.

DISTRIBUTION: Tropical continental Africa & Madagascar. PREVIOUS RECORD: Curtis (1991) erroneously regarded Pinhey (1985) as reference for occurrence in Namibia; however, there is a specimen in NMNW: 1♀, Andara, 03.x.1960, det. B.I. Balinsky. NAMIBIAN DISTRIBUTION: Okavango and Kwando Rivers in the Caprivi.

Brachythemis lacustris (Kirby, 1889).

DISTRIBUTION: Tropical continental Africa. PREVIOUS RECORDS: Pinhey (1976, 1984a, 1985). NAMIBIAN DISTRIBUTION: Occurs in the extreme north. Records from the Kunene River and the Caprivi. Epupa, 11.vii.2002; Kunene River at: 23°26'E, 12.vii.2002; Kaokoland, Ondorusu, 18.i.1993, E. Marais (NMNW); Rundu, 01.i.1966 (B.I. Balinsky) (TMSA).

NOTES: Inhabits perennial rivers.

Brachythemis leucosticta (Burmeister, 1839).

DISTRIBUTION: Continental Africa; southern Europe; western Asia. PREVIOUS RECORDS: Pinhey (1985); Ris (1911, 1921). NAMIBIAN DISTRIBUTION: Museum material (NMNW, ZMHB,

TMSA) from the Kunene, Marienfluss, Okavango and Orange Rivers, also from the Cuvélai wetlands, Etosha pan and Tsumkwe. Recorded in large populations in 2001 and 2003 from Omatako, Von Bach, Friedenau, Avis, Otjivero, Oanob and Hardap Dams (including nearby waters).

NOTES: At large rivers and lakes, especially at large impoundments in Namibia.

Bradinopyga cornuta Ris, 1911.

DISTRIBUTION: From Kenya & Cameroon, to South Africa (Natal) and Namibia.

PREVIOUS RECORDS: Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Recorded from Etosha, Kaokoveld, Waterberg and also the Okavango River in the Caprivi. Andowa, 27.iv.1970, H.D. Brown (Pinhey 1976, 1985); Fontein by Epembe, 20.x.1963; Aikab, 16.i.1987, J. Irish & E. Marais (both NMNW); Etosha Pan, 17.ii.1994, F. Koch (ZMHB); rockpools on the Waterberg, 11.iv.2001.

NOTES: Breeds in small rock pools lacking vegetation.

Crocothemis erythraea (Brullé, 1832).

DISTRIBUTION: Common throughout Africa, Arabia Peninsula and the Mediterranean. Northwards to central Europe and eastwards to Pakistan and India.

PREVIOUS RECORDS: Brinck (1955); Longfield (1936); Pinhey (1985); Ris (1908, 1919).

NAMIBIAN DISTRIBUTION: Widespread and common in all Namibian biomes.

Crocothemis sanguinolenta (Burmeister, 1839).

DISTRIBUTION: Throughout tropical Africa & Madagascar to southern Arabia. A relict population in the Dead Sea basin is referred to the contentious subspecies *C. s. arabica* Schneider, 1982.

PREVIOUS RECORDS: Brinck (1955); Longfield (1936); Pinhey (1985); Ris (1919, 1921).

NAMIBIAN DISTRIBUTION: Recorded from isolated locations. Historical, published records from: Grootfontein; Okosongomingo (both Ris 1919); Otavi (Ris 1921); Sissekab (Longfield 1936); Kaokoveld, Sanitanas (Brinck 1955). New records from: Ongongo, 19.ii.1995 & 20.iii.1997, F. Koch & 20.iii.1997, J. Deckert; below Waterberg, 15-17.i.1993, F. Koch (all ZMHB); Tsams Ost 2, 27.viii.1989, E. Marais & J. Irish (NMNW). Recorded in 2001 from Ongongo; Aub; Palmwag; and Naukluft River, in 2002 from: Baynes Mountains; spring W Swartbooisdrift; Ongongo; Palmwag; Gorosib; and Naukluft River and in 2003 from Ongongo; and Naukluft River.

NOTES: In Namibia the species occurs at permanent habitats under xeric conditions. All habitats are characterised by small, rocky, swift-flowing waters.

Diplacodes lefebvrii (Rambur, 1842).

DISTRIBUTION: Common throughout Africa and the Indian Ocean islands; southern Europe and the Middle East to India.

PREVIOUS RECORDS: Brinck (1955); Longfield (1936); Pinhey (1976, 1985); Ris (1919, 1921).

NAMIBIAN DISTRIBUTION: Widespread but uncommon.

NOTES: Occurs at waters with grass-like vegetation and mats of floating algae.

Diplacodes okavangoensis Pinhey, 1976.

DISTRIBUTION: Botswana, Zambia & Namibia.

PREVIOUS RECORD: Pinhey (1976).

NAMIBIAN DISTRIBUTION: W Caprivi, 25 km S Kongola, 27.ix.1970 (Pinhey 1976). No recent records.

Hemistigma albipunctum (Rambur, 1842).

DISTRIBUTION: Sub-Saharan Africa.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1976, 1984a, 1985).

NAMIBIAN DISTRIBUTION: Several records from the Caprivi. Historical records from Otiembora, Sissekab. Recent records: Omatako at B2, 04.iv.2003; below Von Bach Dam, 20.v.2001 & 08.v.2003.

NOTES: The wording in the description of *Libellula albipuncta* "... pterostigmate intus puncto albo ..." (Rambur 1842) confirms the adjectival character of the specific name. It therefore has to agree in gender with the neuter-generic name (ICZN Art. 31.2; *vide* Anon 1999).

Nesciothemis farinosa (Förster, 1898).

DISTRIBUTION: Widespread and locally abundant in Africa from South Africa (Natal), to Egypt and southern Arabia.

PREVIOUS RECORD: Steffan (1997: as *Orthetrum farinosum*).

NAMIBIAN DISTRIBUTION: Ongongo, 02.vii.2002 & 21.iii.2003; Palmwag (Steffan 1997), also 03.iii.2001, 14.iv.2001, 01.iii.2002, 19.iii.2003; Aub, 13.iv.2001. Additional records from the Caprivi.

Olpogastra fuelleborni Grünberg, 1902.

DISTRIBUTION: From South Africa (Transvaal) and Namibia, to Nigeria and Sudan.

PREVIOUS RECORDS: Pinhey (1984a, 1985).

NAMIBIAN DISTRIBUTION: 1♀, Kavango, Tuguva, 18.i.1993, E. Marais; Andara, 03-04.xi.1960 (both NMNW); Lake Liambezi, Caprivi (Pinhey 1984a, 1985).

Olpogastra lugubris Karsch, 1895.

DISTRIBUTION: From Namibia and Botswana to the Gambia and Somalia.

PREVIOUS RECORDS: Pinhey (1976, 1985); Ris (1919, 1921).

NAMIBIAN DISTRIBUTION: Kaokoland, Ondorusu, 18.i.1993, E. Marais (NMNW); Kunene 9 km W Ruacana Falls, 17.iv.1998, J. Deckert (ZMHB); Ovamboland (Pinhey 1985; Ris 1919, 1921); Rundu, 01.i.1966, B.I. Balinsky (TMSA); Tsaobis, 23.ii-07.iii.2002. Additional records from the Caprivi.

NOTES: At large perennial rivers.

Orthetrum abbotti abbotti Calvert, 1892.

DISTRIBUTION: Continental Africa south of the Sahara, to Namibia and South Africa (Natal). The subspecies *O. a. malgassicum* Pinhey, 1970, is known from Madagascar.

PREVIOUS RECORD: Pinhey (1985).

NAMIBIAN DISTRIBUTION: Below Waterberg, 15-17.i.1993, F. Koch (ZMHB); Ongongo, 07.x.2001; Palmwag, 05.x.2001; below Von Bach Dam, 13.x.2001.

NOTES: Occurs at waters with low emergent vegetation.

Orthetrum brachiale brachiale (Palisot de Beauvois, 1817).

DISTRIBUTION: From South Africa (Natal) and Namibia to the Gambia and Somalia, Madagascar and Mascarene islands. The subspecies *O. b. wrighti* (Selys, 1896) is known from the Seychelles.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Several published records from the north: Otavifontein; Otjosongombe; Sissekab; Waterberg (Longfield 1936); Andara, Tsumeb (Pinhey 1976, 1985). Museum material: Okavango, Ndonga, 29.xii.1954; Grootfontein District, Askavold 316: Combat, ii.1989, V. Eggert (both NMNW); Kaudom Camp, 22-25.ii.1992, G. Peters (ZMHB); Tsumkwe, ii.1958, C. Koch (TMSA). Recently recorded below Waterberg and below Von Bach Dam. Several additional records from the Caprivi.

Orthetrum caffrum caffrum (Burmeister, 1839).

DISTRIBUTION: From South Africa (Cape) to Sudan and southern Arabia & Madagascar. The subspecies *O. c. camerunense* Gambles, 1959, is known from the Gambia to Central African Republic.

PREVIOUS RECORDS: Pinhey (1985); Ris (1910, 1921).

NAMIBIAN DISTRIBUTION: 'Damaras' (Ris 1910); Grootfontein; Otjiu (Pinhey 1985; Ris 1921). No recent records.

Orthetrum chryso stigma chryso stigma (Burmeister, 1839).

DISTRIBUTION: Africa; Arabian Peninsula; southernmost Europe. The subspecies *O. c. toddii* Pinhey, 1970, is known from Sierra Leone.

PREVIOUS RECORDS: Brinck (1955); Pinhey (1976, 1985); Ris (1919); Steffan (1997).

NAMIBIAN DISTRIBUTION: The most widespread and common *Orthetrum* species in Namibia.

NOTES: Occurs at all habitat types.

Orthetrum guineense Ris, 1910.

DISTRIBUTION: From Sierra Leone and Somalia to Namibia and South Africa (Natal).

PREVIOUS RECORDS: Pinhey (1951, 1985).

NAMIBIAN DISTRIBUTION: Otjikango, iv.1948, C. Koch. No additional records.

Orthetrum hintzi Schmidt, 1951.

DISTRIBUTION: From Senegal and Kenya to South Africa (Natal). Namibia*.

NAMIBIAN DISTRIBUTION: 1♂ Otjikango, 04.vi.1948, C. Koch (TMSA).

Orthetrum icteromelas cinctifrons Pinhey, 1970.

DISTRIBUTION: From Uganda to Botswana and South Africa (Natal). Namibia*. The nominotypical form *O. i. icteromelas* Ris, 1910, is known from Madagascar.
NAMIBIAN DISTRIBUTION: Okavango River, Caprivi.

Orthetrum julia falsum Longfield, 1955.

DISTRIBUTION: From southeast to northeast continental sub-Saharan Africa, mainly in the eastern half, with a single record from Yemen. The nominotypical subspecies *O. j. julia* Kirby, 1900, mainly occurs in the western half of Africa; the subspecies *O. j. capicola* Kimmins, 1957, is confined to South Africa (Cape).

PREVIOUS RECORD: Longfield (1936: as *Orthetrum stemmale capense*).

NAMIBIAN DISTRIBUTION: At isolated locations with permanent running water habitats in the Otavi Mountains, at the Waterberg, and the Naukluft Mountains. Sissekab; Otjisingombe; Waterberg (Longfield 1936); Grootfontein, 18.i.1938; Waterberg, Waterberg Plato Park, 29.iv.1985, H. Rust & C. Meyer; Otjisingombe, 12.vii.2002 & 22.iii.2003, E. Marais & F. Suhling; Okatjikonda Education Center, 12.vii.2002, E. Marais & F. Suhling; Tsams Ost spring, 28.xi.1997, A.H. Kirk-Spriggs & E. Marais; Blässkranz 7, 12-14.x.1984, J. Irish (all NMNW); Waterberg, 06.vi.1937, F. Gaerdes (TMSA); below Waterberg, 15-17.i.1993, F. Koch (ZMHB); also 12.xi.2001; Naukluft River 07-08.i.2001, 04.iv.2001 & 30.ix.2001; Gororosib 18.xi.2001; Urikos, 08.iii.2003 & 21.iv.2003; Neuras, 06.iii.2003; Zebra River Lodge, 07.iii.2003.

NOTES: The nomenclatural confusion with this taxon has been clarified by Hedge & Crouch (1999).

Orthetrum machadoi Longfield, 1955.

DISTRIBUTION: From Angola and Zambia to South Africa (Natal), Botswana and Namibia*.

NAMIBIAN DISTRIBUTION: Below Von Bach Dam, 20 i.2001 & 22.ii.2002.

Orthetrum robustum Balinsky, 1965.

DISTRIBUTION: Botswana, Namibia*, South Africa (Natal), Zambia.

NAMIBIAN DISTRIBUTION: 1♂ Mahango Park, 03.iv.2003 A. Martens & F. Suhling.

Orthetrum trinacria trinacria (Selys, 1841).

DISTRIBUTION: South Africa (Natal) to North Africa, mainly in the eastern half. Extends to the Maghreb, southernmost Europe and Arabia. A record from Kuwait may belong to the little-known subspecies *O. t. igarashii* Asahina, 1973, described from southern Iraq.

PREVIOUS RECORDS: Longfield (1936); Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread, with a preference for larger water bodies.

NOTES: Occurs also at very brackish waters.

Palpopleura deceptor (Calvert, 1899).

DISTRIBUTION: From the Gambia and Somalia to South Africa (Transvaal) and Namibia*.

NAMIBIAN DISTRIBUTION: Other than Caprivan records from single localities south to the Swakop River. Epupa, 11.vii.2002; Otjousa Farm, 17.ii.1992, G. Peters (ZMHB); Tsaobis, 22.ii.2002; pond at the B1 60 km N Windhoek, 28.ii.2001, H.-M. Koch, also 27.iii.2001.

Palpopleura jucunda jucunda Rambur, 1842.

DISTRIBUTION: Equatorial Africa to South Africa (Cape). The subspecies *P. j. radiata* Pinhey, 1982, is known from Ethiopia and Sudan.

PREVIOUS RECORDS: Brinck (1955); Pinhey (1985); Ris (1919, 1921).

NAMIBIAN DISTRIBUTION: Sanitanas (Brinck 1955; Pinhey 1985); Okosongomingo am kleinen Waterberg & Waterberg (Ris 1921); Owamboland, Onesi, 14-31.vii.1989, E. Marais; Kalidona, 31.xii.1957 (both NMNW). New records from Baynes Mountains, 08-09.vii.2002; spring E Swartboisdrift, 12.vii.2002; Arandis, 18.v.2001; Ongongo, 07.x.2001; Palmwag, 01.iii.2002 & 30.vi.2002; below Von Bach Dam, 05.iv.2002.

Palpopleura lucia (Drury, 1773).

DISTRIBUTION: From Senegal and Sudan to South Africa, Comoros & Madagascar.

PREVIOUS RECORD: Ris (1921).

NAMIBIAN DISTRIBUTION: 1♂, Otavi (Ris 1921); ditch in Tsumeb, 17.v.1999, R. Jödicke; 1♂, Mariabronn, 01.iv.2003; 1♂, Grootfontein, 12.i.1947; 1♂, Ongombeanavita, 08.i.1953, (all NMNW); 1♂, Huab, 08.x.2001; 1♂, Tsaobis, 13-16.v.2001 & 01.iii.2002

NOTES: All specimens recorded here represent the form *lucia*, except the material from Otavi which represents the form *portia*, and the material from Tsumeb which includes both forms.

Pantala flavescens (Fabricius, 1798).

DISTRIBUTION: Circumtropical.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1985); Prinsloo (1990); Ris (1908, 1913a, 1921).

NAMIBIAN DISTRIBUTION: Occurs throughout the country.

NOTES: A migratory species mainly breeding in temporary pools.

Parazyxomma flavicans (Martin, 1908).

DISTRIBUTION: From Senegal and Uganda to South Africa (Natal), Zambia and Namibia*.

NAMIBIAN DISTRIBUTION: One record from the Caprivi: 1♀, Kwando River, Susuwe, 28.ix-02.x.1998, A.H. Kirk-Spriggs, light trap sample (NMNW).

NOTES: A crepuscular species.

Philonomon luminans (Karsch, 1893).

DISTRIBUTION: From the Gambia and Somalia to Namibia and South Africa (Natal).

PREVIOUS RECORDS: Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Okakundu, 03.iii.1994, E. Marais; Ovamboland, Iikango, 03.iii.1994, E. Marais; Ovambo, Ohamwaala, 21.i.1993, E. Marais; 2 larvae, Kaokoland, Ojondunda Fountain, x.1987, B. Curtis (all NMNW); Etosha, 27.xii.1965, B.I. Balinsky (TMSA); Kaudom Camp, 22-25.ii.1992, G. Peters; Kaudom Game Reserve, Leeupan, 25.ii.1992, G. Peters (all ZMHB); Muramba Bushman Trails, E Tsintsabis, 19.v.1999, R. Jödicke; Tsumkwe, ii.1958, C. Koch (TMSA); Palmwag, 01.iii.2002; Otjison-gombe, 22.iii.03, F. Suhling; Gross Barmen 23.ii-27.ii.2002; below Von Bach, 01.ii.2002 & 05.iv.2002; Tsaobis, 03.ii-07.iii.2002; Urikos 05.ii.2002. Several additional records from the Caprivi.

NOTES: A supposed migratory species with permanent occurrence in the humid north.

Rhyothemis mariposa Ris, 1913.

DISTRIBUTION: Zambia and neighbouring areas in Democratic Republic of Congo (Shaba), Angola, Namibia, Botswana and Zimbabwe.

PREVIOUS RECORDS: Pinhey (1985); Ris (1913a, 1921).

NAMIBIAN DISTRIBUTION: 'Otiembora, northern Ovamboland' (Ris 1921). No recent records.

NOTES: *Rhyothemis mariposa* is the only dragonfly species described from Namibia, with the type locality 'Otiembora, Süd Afrika' (Ris 1913a). The species is described on 2♂♂ collected by Axel W. Eriksson in xi.1887 (Ris 1913a). A third ♂ of the same date and locality, which is not the type (contrary to Pinhey 1984b), is housed in the South African Museum, Cape Town (*vide* Pinhey 1984b; Ris 1921). Based on the number of published records (*vide* Pinhey 1984a), the species appears to be distributed mainly in Zambia.

Rhyothemis notata fenestrina (Rambur, 1842).

DISTRIBUTION: Uganda to the Okavango Delta. The nominotypical subspecies *R. n. notata* (Fabricius, 1787) is known from western to central Africa.

PREVIOUS RECORDS: Pinhey (1985); Ris (1921).

NAMIBIAN DISTRIBUTION: Kavango (Otiembora) and Caprivi.

Rhyothemis semihyalina (Desjardins, 1832).

DISTRIBUTION: Continental Africa south of the Sahara, Madagascar and Mascarene islands, Seychelles, Socotra, southern Arabia and a relict population in northern Algeria.

PREVIOUS RECORD: 'Namibia' (Brinck 1955).

NAMIBIAN DISTRIBUTION: Several records from the Caprivi. One historic record from: Hardap, 20.ii.1971 (NMNW). Recent records from: Palmwag, 05.x.2001; below Von Bach Dam, 20.i.2001, 13.x.2001, 01.xi.2001 & 05.iv.2002; Daan Viljoen, 12.x.2001.

NOTES: Occurs at waters with vegetation and mats of floating algae.

Sympetrum fonscolombii (Selys, 1840).

DISTRIBUTION: Widespread in Africa, Europe and western Asia.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1985); Prinsloo (1990); Ris (1908, 1911, 1919); Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread and common during the rainy season.

NOTES: A migratory species, occurring at all types of waters, especially temporary habitats.

Sympetrum navasi Lacroix, 1921.

DISTRIBUTION: Tropical continental Africa from the Gambia and Kenya to Botswana.

PREVIOUS RECORDS: (Pinhey 1976, 1984a).

NAMIBIAN DISTRIBUTION: Caprivi, Lake Liambezi (Pinhey 1984a). No additional records.

NOTES: A second locality listed for Namibia, Sesheki (=Sesheke) (Pinhey 1976, 1985), is situated at the Zambian border of the Zambezi.

Tholymis tillarga (Fabricius, 1798).

DISTRIBUTION: Sub-Saharan Africa, southern and eastern Asia, northern Australia, western Pacific islands.

PREVIOUS RECORDS: Pinhey (1976, 1985); Prinsloo (1990).

NAMIBIAN DISTRIBUTION: Several records from the Caprivi.

Records from the lower Kuiseb River in the vicinity of Gobabeb (Prinsloo, 1990); Kaokoveld, Ondorusu, 18.i.1993, E. Marais; Etosha, Tweekoppies, 19-20.i.1987, J. Irish & E. Marais, (all NMNW); below the Waterberg, 15-17.i.1993, F. Koch; Daan Viljoen, 15.ii.1992, G. Peters (both ZMHB); Palmwag, 19.i.2001 & 01.iii.2002; Tsaobis, ii-iv.2002 & iii-iv.2003; below von Bach Dam, 22.iii.2002; Urikos, 05.ii.2002.

NOTES: Adults are chiefly active at dusk and dawn (Miller & Miller 1985). The species is a migrant with permanent presence in the humid parts of the tropics.

Tramea basilaris (Palisot de Beauvois, 1807).

DISTRIBUTION: Sub-Saharan Africa and Madagascar, to Vietnam and Japan.

PREVIOUS RECORDS: Pinhey (1951, 1985); Ris (1921).

NAMIBIAN DISTRIBUTION: Several records from: Caprivi, Etosha, Kaokoveld, Kavango, Ovamboland and Waterberg. Southernmost records: Gobabis District, Meyerville 325, 10.xi.1994, E. Marais (NMNW), Outja Farm, 17.iii.1992, G. Peters (ZMHB); Gross Barmen, 23.ii.2002; Tsaobis, 23.ii.2002.

NOTES: Migrant.

Tramea limbata (Desjardins, 1832).

DISTRIBUTION: From Senegal and Somalia to South Africa (Natal) and Namibia*, southern Arabia, Comoros, Madagascar, Seychelles & Mascarene Islands.

NAMIBIAN DISTRIBUTION: Observation of 1♂, at the dam NW Kamanjab, 12.iv.2001, A. Martens.

NOTES: African populations sometimes considered as *continentalis* Selys, 1878, with specific or subspecific rank.

Trithemis aconita Lief tinck, 1969.

DISTRIBUTION: From Ivory Coast and Kenya to South Africa (Natal) and Namibia*.

NAMIBIAN DISTRIBUTION: Two records from the Caprivi: 1♀, West Caprivi Park, Gelukkie, 06.iv.1990, E. Marais; 1♀, West Caprivi Park, Sifuma, 08.iv.1990, E. Marais (both NMNW).

Trithemis aequalis Lief tinck, 1969.

DISTRIBUTION: Zambia, Botswana & Namibia*.

NAMIBIAN DISTRIBUTION: The Caprivi.

NOTES: The studied specimen perfectly fits both the description of *T. aequalis* and *T. falconis* Pinhey, 1970. Pinhey (1976) also recognised the similarity of both species descriptions, but he retained the name, regarding *falconis* as a probable subspecies of *T. aequalis*. However, the slight differences in the descriptions of *aequalis* and *falconis* do not appear to reflect any reliable taxonomic character. We therefore consider the latter to [probably] represent a synonym rather than a subspecies.

Trithemis annulata annulata (Palisot de Beauvois, 1807).

DISTRIBUTION: Throughout Africa and Arabia, to southern Europe, Levant and Mesopotamia. The subspecies *T. a. haematina* (Rambur, 1842) is known from Madagascar and Mascarene islands.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Widespread, but less common than *T. kirbyi ardens*.

Trithemis arteriosa arteriosa (Burmeister, 1839).

DISTRIBUTION: Throughout Africa, including Madagascar, together with southern Europe and western Asia. The subspecies *T. a. ennediensis* Pinhey, 1970, is described from the Ennedi Mountains, Sudan.

PREVIOUS RECORDS: Longfield (1936); Pinhey (1976, 1985); Ris (1919, 1921); Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread, but less common than *T. kirbyi ardens*.

NOTES: Occurs at waters with emergent vegetation. The record of a male with dark basal wing spots from Okosongomingo (i-ii.1913, H. Thomsen) in Ris (1919) is, in fact, *T. monardi* (vide Ris 1931).

Trithemis donaldsoni (Calvert, 1899).

DISTRIBUTION: South Africa (Natal) to Eritrea and southern Arabia. Namibia*.

NAMIBIAN DISTRIBUTION: Epupa, 11.vii.2002; Kunene River at: 23°26'E, 12.vii.2002; Von Bach Dam, 05.iv.2002; below Von Bach Dam, 13.i.2001 & iii.-iv.2003; Oanob Dam, 23.iv.2003. Several additional records from the Caprivi.

Trithemis furva Karsch, 1899.

= *Trithemis risi* Longfield, 1936.

DISTRIBUTION: From South Africa (Cape) to Somalia, southern Arabia, Madagascar. Namibia*.

NAMIBIAN DISTRIBUTION: Orange River and one isolated population in the Naukluft. 1♂, Orange River, 15-16.iv.1986, J. Irish; 1♀, Velloorsdrift 93, 07-08.xi.1992, E. Marais (both NMNW). Recent records from: Naukluft River, 07-08.i.2001, 07.iii.2002, 04.iv.2001 & 09.iii.2003; Urikos, 08.iii.2003. A single male from below Von Bach Dam, 20.i.2001.

Trithemis becate Ris, 1912.

DISTRIBUTION: From Senegal and Kenya to Namibia and South Africa (Transvaal) and Madagascar.

PREVIOUS RECORDS: Pinhey (1984a, 1985).

NAMIBIAN DISTRIBUTION: Several records from the Caprivi. Records from other localities: 1♂, Rundu, 02.i.1966, B.I. Balinsky (TMSA); 1♂, Etosha National Park, Dorsland, 04.v.1987, J. Irish & E. Marais; 1♂, 1♀, Etosha National Park, 10 km NNW of Okondeka, 29.iv.1987, J. Irish & E. Marais; 1♂, Etosha National Park, Otjovasandu, 07.v.1987, J. Irish & E. Marais; 1♀, Hereroland Ost, Epukiro River 30 km NE Steenbok Laagte, 23.xi.1988, E. Marais (all NMNW); Otavifontein Dam, 04.iv.2003; 2♂♂, Tsumkwe, ii.1958, C. Koch (TMSA); 1♂, Tsaobis 03.iv.2001.

Trithemis kirbyi ardens (Gerstacker, 1891).

DISTRIBUTION: Continental Africa, Comoros & Madagascar.

The nominotypical form *T. k. kirbyi* Selys, 1891, occurs in India, and an intermediate form is reported from Oman.

PREVIOUS RECORDS: Barnard (1937); Brinck (1955); Longfield (1936); Pinhey (1985); Ris (1912, 1921); Steffan (1997).

NAMIBIAN DISTRIBUTION: Widespread and common in all parts of the country.

NOTES: In all types of freshwater habitat, and often observed at swimming pools.

Trithemis monardi monardi Ris, 1931.

DISTRIBUTION: Namibia, southern Angola & Botswana. The subspecies *T. m. insuffusa* Pinhey, 1970, occurs in eastern Angola, Zambia, Malawi, Zimbabwe & Mozambique.

PREVIOUS RECORDS: Pinhey (1985); Ris (1919: as *T. arteriosa*; 1931).

NAMIBIAN DISTRIBUTION: One historical record from Okosongomingo (Pinhey 1985; Ris 1919, 1931). Further records from the Okavango River in the Caprivi.

Trithemis stictica (Burmeister, 1839).

DISTRIBUTION: From Ivory Coast and Somalia to Namibia and South Africa (Natal), Madagascar.

PREVIOUS RECORDS: Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Several records from the Caprivi. Two additional records for the north: 1♂, Okavango, Ndonga, 29.xii.1954 (NMNW); 1♀, Otjikoto Lake, 17.v.1999, R. Jodicke; Naukluft River, 07-08.i.2001, 07.iii.2001, 04.iv.2001, 17.xi.2001 & 09.iii.2003; Gororosib, 01.x.2001 & 18.xi.2001; Zebra River, 07.iii.2003.

Urothemis assignata (Selys, 1872).

DISTRIBUTION: Sub-Saharan Africa & Madagascar. Namibia*.

NAMIBIAN DISTRIBUTION: Records from two localities: below Von Bach Dam, 20.i.2001, 13.x.2001 & 01.xi.2001; Urikos 19.xi.2001, 05.ii.2002 & 22.iv.2003.

NOTES: No additional records.

Urothemis edwardsii (Selys in Lucas, 1849).

DISTRIBUTION: From Namibia and South Africa (Natal), to Mauritania and Somalia, southern Arabia, and an isolated population in Algeria.

PREVIOUS RECORDS: Pinhey (1976, 1985); Ris (1913b).

NAMIBIAN DISTRIBUTION: 1♂, Bushmanland, Namapan, 22.i.1984, J. Irish; 1♂, Hardap, 20.ii.1971, J. Irish (both NMNW); 1♂, purification plant Windhoek, 07.ii.2000, H.-M. Koch [photograph]; below Von Bach Dam, 13.i.2001, 20.i.2001, 13.x.2001, 01.xi.2001 & 08.v.2003. Many additional records from the Caprivi.

Zygonyx natalensis (Martin, 1900).

DISTRIBUTION: From eastern and western equatorial Africa to South Africa (Natal). Namibia*

NAMIBIAN DISTRIBUTION: Only known from the Kunene River and Okavango River in the Caprivi. 1♂, Ruacana Falls, 14.iii.1997, F. Koch (ZMHB).

NOTES: Inhabits waterfalls and rapids, but in dry areas only at large perennial rivers.

Zygonyx torridus (Kirby, 1899).DISTRIBUTION: Africa, southwestern Europe, Arabian Peninsula, Réunion, Mauritius, Pakistan. The form on Mauritius is regarded as the subspecies *Z. t. insularis* Pinhey, 1981, the form in Pakistan as the subspecies *Z. t. isis* Fraser, 1924.

PREVIOUS RECORDS: Pinhey (1976, 1985).

NAMIBIAN DISTRIBUTION: Widespread but rare. Historical records from: Zaris (Pinhey 1985); Otaviquelle, 26.ix.1954 (NMNW). Newly recorded from Baynes Mountains; Ongongo; Aub; Palmwag; Huab N C39; Ugab at C35 bridge; Tsaobis; Daan Viljoen; below Von Bach Dam; Naukluft River. Several additional records from the Caprivi.

NOTES: Inhabits waterfalls and rapids in arid and savanna regions.

SPECIES DELETED FROM PREVIOUS CHECKLISTS

Most of the following taxa are listed by Curtis (1991), in which their status was marked as dubious. Other deletions from the Namibian list reflect changes in species status.

Lestes ictericus Gerstäcker, 1862 (Lestidae).

All specimens reported by Ris (1921) belong in fact to *L. pallidus* (Pinhey 1980).

Lestes uncifer Karsch, 1899 (Lestidae).

Listed as doubtful by Curtis (1991). A specimen in the NMNW is labelled as both *L. uncifer* and *L. pinheyi* (*vide supra*: notes for *L. pinheyi*). *Lestes uncifer* is recorded from Zambia, and so may occur in Namibia.

Lestes wahlbergi Ris, 1921 (Lestidae).

This taxon is recorded by Pinhey (1951) and in Brinck's (1955) list. It is in fact a form of *L. pallidus* (Pinhey 1980).

Aciagrion sp. (Coenagrionidae).

Curtis (1991) includes an *Aciagrion* sp. in her Namibian list. A drawer label in the NMNW collection is present, but the specimen is missing, so cannot be verified in this case. Species of this genus may occur in the Caprivi region, or elsewhere in the north of Namibia, as *A. steelae* Kimmins, 1955, is recorded from a number of localities in Botswana (Pinhey 1976). There is also an additional record of a supposed *Aciagrion* sp. from the Chimporo River, southern Angola (Ris 1931).

Metaenemis valida Hagen in Selys, 1863 (Platycnemididae).

A male specimen from Rundu in the NMNW collection, labelled *M. valida*, det. Balinsky, is in fact, a specimen of *Mesocnemis singularis*, Balinsky's identification having been based on Pinhey (1951) (*vide* Balinsky 1958), who erroneously synonymised both taxa. Curtis (1991) listed *M. valida* as doubtful.

Nannothemis sp. (Libellulidae).

Day (1990) reported larvae of a '?*Nannothemis* sp.' from the Namib Desert. *Nannothemis* is, in fact, a North American genus. Larvae belonging to the widespread Namibian species *Crocothemis erythraea* and *Diplacodes lefebvreii* have comparable character states.

Paltothemis sp. (Libellulidae).

Day (1990) reported larvae of a '?*Paltothemis* sp.' from the Namib Desert. *Paltothemis* is, in fact, a North American genus. In general appearance and body shape, larvae of *Paltothemis* spp. resemble *Orthetrum* spp., and these cited larvae probably belonged to *O. chrysostigma*, a widespread species in the Namib Desert.

Table 1. Species of Odonata recorded from Namibia with special reference to those occurring in the Caprivi. Namibian distribution patterns are also illustrated. Abbreviations: + = presence; **N** = restricted to the extreme north, mostly to the Kunene and Okavango Rivers; **a** = tropical running water species; **b** = tropical species not restricted to running waters, but adapted to more humid environmental conditions; **c** = widespread species in Namibia adapted to arid conditions; **d** = species of permanent waters, occurring at isolated locations within Namibia; **e** = southern, subtropical species, restricted to the south; **?** = distribution pattern uncertain.

Taxon	Caprivi	Other parts Namibia	Distribution type
<i>Phaon iridipennis</i> (Burmeister, 1839)	+		a
<i>Platycypha c. caligata</i> (Selys, 1853)	+		a
<i>Lestes dissimulans</i> Fraser, 1955		N	b
<i>Lestes pallidus</i> Rambur, 1842	+	+	c
<i>Lestes pinheyi</i> Fraser, 1955	+		b
<i>Africallagma glaucum</i> (Burmeister, 1839)		+	c
<i>Africallagma subtile</i> (Ris, 1921)		+	a
<i>Agriocnemis a. angolensis</i> Longfield, 1947	+		a
<i>Agriocnemis exilis</i> Selys, 1872	+	+	b
<i>Agriocnemis gratiosa</i> Gerstäcker, 1891	+		a?
<i>Azuragrion nigradorsum</i> (Selys, 1876)		+	d
<i>Ceriagrion corallinum</i> Campion, 1914	+		b?
<i>Ceriagrion g. glabrum</i> (Burmeister, 1839)	+	+	d
<i>Ceriagrion suave</i> Ris, 1921	+	N	a
<i>Ischnura senegalensis</i> (Rambur, 1842)	+	+	c
<i>Pseudagrion acaciae</i> Förster, 1906	+		a
<i>Pseudagrion assegaai</i> Pinhey, 1950	+		a
<i>Pseudagrion coeleste</i> Longfield, 1947	+		a
<i>Pseudagrion deningi</i> Pinhey, 1961	+		a
<i>Pseudagrion glaucescens</i> Selys, 1876	+		a?
<i>Pseudagrion hamoni</i> Fraser, 1955	+	N	a
<i>Pseudagrion kersteni</i> (Gerstäcker, 1869)		+	d
<i>Pseudagrion massaicum</i> Sjöstedt, 1909		+	c
<i>Pseudagrion nubicum</i> Selys, 1871		+	b
<i>Pseudagrion salisburyense</i> Ris, 1921		+	e
<i>Pseudagrion sjoestedti jacksoni</i> Pinhey, 1961	+		a
<i>Pseudagrion s. sublacteum</i> (Karsch, 1893)	+	+	d
<i>Pseudagrion sudanicum rubroviride</i> Pinhey, 1955	+		a
<i>Mesocnemis singularis</i> Karsch, 1891	+	N	a
<i>Elatoneura glauca</i> (Selys, 1860)	+	N	a
<i>Aeshna minuscula</i> McLachlan, 1896		+	d
<i>Anax ephippiger</i> (Burmeister, 1839)	+	+	b
<i>Anax imperator</i> Leach, 1815	+	+	c
<i>Anax speratus</i> Hagen, 1867		+	d
<i>Anax tristis</i> Hagen, 1867		+	b

Table 1. cont. (abbreviation in figure legend).

Taxon	Caprivi	Other parts Namibia	Distribution type
<i>Gynacantha manderica</i> Grünberg, 1902	+		b
<i>Ceratogomphus pictus</i> Selys, 1854		+	e
<i>Crenigomphus cornutus</i> Pinhey, 1956	+		a
<i>Gomphidia q. quarrei</i> Schouteden, 1934	+	N	a
<i>Ictinogomphus ferox</i> (Rambur, 1842)	+	+	b
<i>Lestinogomphus angustus</i> Martin, 1911	+	N	a
<i>Notogomphus praetorius</i> (Selys, 1878)	+		e?
<i>Paragomphus cognatus</i> (Rambur, 1842)		N	a
<i>Paragomphus elpidius</i> (Ris, 1921)	+	N	a
<i>Paragomphus genei</i> (Selys, 1841)		+	c
<i>Paragomphus sabicus</i> Pinhey, 1950	+		a
<i>Phyllogomphus brunneus</i> Pinhey, 1976		N	a
<i>Phyllomacromia bifasciata</i> Martin, 1912	+	+	a
<i>Phyllomacromia picta</i> (Selys, 1871)	+	+	?
<i>Acisoma panorpoides ascalaphoides</i> Rambur, 1842	+	+	b
<i>Aethiothemis discrepans</i> Lieftinck, 1969	+		b
<i>Aethriamanta rezia</i> Kirby, 1889	+		b
<i>Brachythemis lacustris</i> (Kirby, 1889)	+	N	a
<i>Brachythemis leucosticta</i> (Burmeister, 1839)	+	+	c
<i>Bradynopyga cornuta</i> Ris, 1911	+	+	b
<i>Crocothemis erythraea</i> (Brullé, 1832)	+	+	c
<i>Crocothemis sanguinolenta</i> (Burmeister, 1839)		+	d
<i>Diplacodes lefebvrii</i> (Rambur, 1842)	+	+	c
<i>Diplacodes okavangoensis</i> Pinhey, 1976	+		b
<i>Hemistigma albipunctum</i> (Rambur, 1842)	+	+	b
<i>Nesciothemis farinosa</i> (Förster, 1898)	+	+	d?
<i>Olpogastra fuelleborni</i> Grünberg, 1902	+	N	a
<i>Olpogastra lugubris</i> Karsch, 1895	+	+	a
<i>Oribetrum a. abbotti</i> Calvert, 1892		+	d?
<i>Oribetrum brachiale</i> (Palisot de Beauvois, 1817)	+	+	b?
<i>Oribetrum c. caffrum</i> (Burmeister, 1839)	+	+	b
<i>Oribetrum c. chrysostigma</i> (Burmeister, 1839)	+	+	c
<i>Oribetrum guineense</i> Ris, 1910			
<i>Oribetrum hintzj</i> Schmidt, 1951		+	b
<i>Oribetrum icteromelas cinctifrons</i> Pinhey, 1970	+		b
<i>Oribetrum julia falsum</i> Longfield, 1955		+	d
<i>Oribetrum machadoi</i> Longfield, 1955		+	b
<i>Oribetrum robustum</i> Balinsky, 1965	+		b
<i>Oribetrum t. trinacria</i> (Selys, 1841)		+	c
<i>Palpoleura deceptor</i> (Calvert, 1899)	+	+	b
<i>Palpoleura j. jucunda</i> Rambur, 1842		+	d?
<i>Palpoleura lucia</i> (Drury, 1773)		+	b

Table 1. cont. (abbreviation in figure legend).

Taxon	Caprivi	Other parts Namibia	Distribution type
<i>Pantala flavescens</i> (Fabricius, 1798)	+	+	c
<i>Parazygomma flavicans</i> (Martin, 1908)	+		a
<i>Philonomon luminans</i> (Karsch, 1893)	+	+	b
<i>Rhyothemis mariposa</i> Ris, 1913		N	b
<i>Rhyothemis notata fenestrina</i> (Rambur, 1842)	+	+	b
<i>Rhyothemis semihyalina</i> (Desjardins, 1832)	+	+	b
<i>Sympetrum fonscolombii</i> (Selys, 1840)	+	+	c
<i>Sympetrum navasi</i> Lacroix, 1921	+		b
<i>Tholymis tillarga</i> (Fabricius, 1798)	+	+	b
<i>Tramea basilaris</i> (Palisot de Beauvois, 1807)	+	+	b
<i>Tramea limbata</i> (Desjardins, 1832)		+	?
<i>Trithemis aconita</i> Liefstinck, 1969	+		a
<i>Trithemis aequalis</i> Liefstinck, 1969	+		a
<i>Trithemis a. annulata</i> (Palisot de Beauvois, 1807)	+	+	c
<i>Trithemis a. arteriosa</i> (Burmeister, 1839)	+	+	c
<i>Trithemis donaldsoni</i> (Calvert, 1899)	+	+	b
<i>Trithemis furva</i> Karsch, 1899		+	d
<i>Trithemis hecate</i> Ris, 1912	+	+	b
<i>Trithemis kirbyi ardens</i> (Gerstäcker, 1891)	+	+	c
<i>Trithemis m. monardi</i> Ris, 1931	+	N	b
<i>Trithemis stictica</i> (Burmeister, 1839)	+	+	b, d
<i>Urothemis assignata</i> (Selys, 1849)		+	?
<i>Urothemis edwardsii</i> (Selys in Lucas, 1872)	+	+	b, d
<i>Zygonyx natalensis</i> (Martin, 1900)	+	N	a
<i>Zygonyx torridus</i> (Kirby, 1899)	+	+	d
Number of species	74	75	102

Table 2. Species of Odonata recorded from rivers that mark the Caprivi borderline, but from the opposite banks in Botswana or Zambia. All records otherwise noted according to Pinhey (1976). * Pinhey (1984a) reports that these records belong to two different, previously undescribed taxa.

Taxon	Family	Locality and date
<i>Agriocnemis ruberrima albifrons</i> Balinsky, 1963	Coenagrionidae	Linyati Exploration camp, iii.1976
<i>Agriocnemis victoria</i> Fraser, 1928	Coenagrionidae	Linyati Exploration camp, iii.1976
<i>Pseudagrion commoniae nigerrimum</i> Pinhey, 1950	Coenagrionidae	Chobe Rapids (Kasane), iv.1974, i x. 1974
<i>Pseudagrion rufostigma</i> Longfield, 1947	Coenagrionidae	Linyati Exploration camp, iii.1976
<i>Elattonneura tropicalis</i> Pinhey, 1974	Protoneuridae	Chobe Rapids (Kasane), ix.1974
<i>Gynacantha villosa</i> Grünberg, 1902	Aeshnidae	Chobe Rapids (Kasane), ix.1974
<i>Lestinogomphus africanus</i> (Fraser, 1926)	Gomphidae	Chobe River E Kasane, 21-24.iii.2002 (J. Kipping, unpublished)
<i>Neurogomphus</i> cf. <i>vicinus</i> Schouteden, 1934	Gomphidae	both sides of Zambezi near Kazungula and Katambora*, i.1956, v.1961, iv.1962 & ii.1965
<i>Chalcostephia flavifrons</i> Kirby, 1899	Libellulidae	Linyati Exploration camp, iii.1976

Table 3. Odonata taxa known from southern Angola, but not recorded from Namibia.

Taxon	Family	Southernmost locality in Angola	Reference
<i>Umma femina</i> Longfield, 1947	Calopterygidae	Tunda Vala, Serra da Chela	Pinhey (1975)
<i>Chlorocypha croceus bamptoni</i> Pinhey, 1975	Chlorocyphidae	Tunda Vala, Serra da Chela	Pinhey (1975)
<i>Platycypha caligata angolensis</i> Longfield, 1959	Chlorocyphidae	Hungueria	Pinhey (1975)
<i>Pseudagrion angolense</i> Selys, 1876 = <i>P. monardi</i> Longfield, 1947	Coenagrionidae	Hungueria	Pinhey (1975)
<i>Pseudagrion inconspicuum</i> Ris, 1931	Coenagrionidae	St. Amaro	Ris (1931)
<i>Elatoneura frenulata</i> (Hagen <i>in</i> Selys, 1860)	Protoneuridae	Tunda Vala, Serra da Chela	Pinhey (1975)
<i>Aeshna rileyi</i> Calvert, 1892	Aeshnidae	Tunda Vala, Serra da Chela	Pinhey (1975)
<i>Acisoma trifidum</i> Kirby, 1899	Libellulidae	Chimporo river	Ris (1931)
<i>Aethiothemis mediofasciata</i> Ris, 1931	Libellulidae	Chimporo river	Ris (1931)
<i>Monardithemis flava</i> Longfield, 1947	Libellulidae	Kalukembé	Longfield (1947)
<i>Porpax risi</i> Pinhey, 1958	Libellulidae	Tunda Vala, Serra da Chela	Pinhey (1975)
<i>Tritthemis dorsalis</i> (Rambur, 1842) = <i>T. distantii</i> (Kirby, 1898)	Libellulidae	Kapelongo, Kunene	Ris (1931)
<i>Tritthemis pluvialis</i> Förster, 1906	Libellulidae	Kuvango river, S Serpa Pinto	Ris (1931)

DISCUSSION

This checklist of the Odonata of Namibia includes 102 species and subspecies (*vide* Table 1). Nine additional species are recorded from Botswana and Zambia on stretches of the Chobe/Linyanti and the Zambezi Rivers forming the Namibian borders (Table 2), and these species are also discussed in the checklist.

It should be considered, however, that the rivers forming the Namibian borders are still poorly sampled for Odonata, and this, coupled with the fact that many additional species are recorded from southern Angola (*vide* Table 3), infers that an even higher number of species should be expected for Namibia. This is particularly the case for the Kunene River and the Caprivi region, and this checklist should, therefore, be regarded as only preliminary.

Most recorded Namibian dragonflies are widespread African species, and no Namibian endemics

are currently known to occur. Some species from the extreme north and the Caprivi, however, appear to be restricted to the perennial Zambezi and Okavango River catchments, e.g. *Agriocnemis angolensis*, *Pseudagrion deningi*, *Rhyothemis mariposa*, *Tritthemis aequalis*, being also known from Angola, Botswana, Namibia and Zambia.

In terms of the biological diversity for Odonata in Namibia, a number of important habitat types should be noted. Principal among these are the wetland areas of the Caprivi, formed by the Okavango, Kwando/Linjanti/Chobe and Zambezi Rivers. Other perennial rivers forming the borders of Namibia are also significant, and these include the Kunene and Okavango Rivers outside the Caprivi, and the Orange River on the Namibian/South African border.

Significant also are permanent springs and stream sections at isolated locations, especially in arid areas such as the Naukluft Mountains, the Otavi

Mountainland, at the Waterberg and some additional sites within the westerly-flowing river catchments. Many of these sites appear to be under severe anthropogenic pressure, e.g. habitat destruction due to water extraction, and may require special conservation status, which encompasses the habitat requirements of aquatic animals.

Also important are manmade habitats, such as large impoundments and their associated wetlands formed as a result of higher groundwater levels. These subsequently become secondarily important as dragonfly habitats, as they offer excellent opportunities for dragonflies to colonise and breed. A good example is the Von Bach Dam, at which many tropical species formerly only known from the north have been recorded. It is regarded as a new 'cornerstone' and respective 'stepping-stone' for the dispersal of tropical species into the Namib Desert.

DISTRIBUTION PATTERNS

Our current knowledge of the distribution of the Odonata fauna of Namibia indicates distribution patterns that follow two main characteristics. Firstly, a gradient from southwest to northeast, with increasing tropical humidity, and secondly, a distribution more or less restricted to permanent running waters.

The greater part of Namibia is poor in permanent water sources. Only the perennial rivers at the northern borders (the Chobe, Kunene, Okavango, and Zambezi), together with the Orange River at the southern border between Namibia and South Africa, constitute permanent running waters.

The Caprivi is distinctly more humid and tropical than other Namibian regions, with higher annual precipitation, less evaporation and warmer winter months. There is a considerable variation in annual precipitation, but the mean precipitation ranges from approximately 400 mm in the south to 750 mm in the northeast (Mendelsohn & Roberts 1997).

Based on this information, in Namibia the Odonata fauna may be classified into the following distribution types (*vide* Table 1):

- (a) Tropical running water species mainly restricted to the northern or northeastern rivers.
- (b) Tropical species not restricted to running waters, but adapted to more humid environmental conditions. These species occur in the north and northeast, southwest to the Waterberg and the Von Bach Dam respectively.
- (c) Species adapted to arid conditions, being mobile, having opportunistic habitat selection and rapid development (*vide* Pinhey 1978; Suhling *et al.* 2003). These species are widespread in Namibia.
- (d) Species of permanent waters, occurring in isolated locations within Namibia.
- (e) Southern, subtropical species, restricted to the south. This category is not well defined, as some species included here do not occur in northern Namibia, only in southern Angola. Knowledge of species occurring in the south of Namibia is still poor.

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Appendix. Gazetteer of Namibian localities and their coordinates, as cited in the checklist. For coordinates beginning with the prefix 'SE', the quarter degree system is used.

Ai-Ais	27°55'S, 17°29'E
Aikab	19°21'S, 16°59'E
Andara: Andara Mission, Caprivi	SE 1821 Ab
Andowa, Kaokoveld	SE 1713 Ac
Arandis: rain pools near the B2 E Arandis	22°21'S, 15°06'E
Askavold 316: Combat, Grootfontein District	SE 1917 Da
Askavold Farm,	19°40'S, 17°33'E
Aub, above Aub Canyon N Palmwag Lodge	19°43'S, 13°48'E
Augeigas Dam, Daan Viljoen	22°32'S, 16°57'E
Avis, Avis Dam	22°34'S, 17°08'E
Backswamp of the Okavango S Popa Falls	18°09'S, 21°43'E
Baynes Mountains: spring in the valley between the Baynes Mountains and the Otjihipa Mountains	17°14'S, 12°48'E
Below the Waterberg	20°30'S, 17°14'E
Below Von Bach Dam	22°01'S, 16°57'E
Below Waterberg	20°30'S, 17°14'E
Bernabé de la Bat Restcamp, Waterberg Plateau Park	20°30'S, 17°14'E
Blässkranz 7, Maltahöhe District	24°06'S, 16°14'E
Chimporo River, Angola	17°20'S, 17°17'E
Daan Viljoen, Daan Viljoen Game Park	22°33'S, 16°56'E
Dam NW Kamanjab	19°37'S, 14°50'E
De Valle 226, Maltahöhe District	24°08'S, 16°05'E
Dorsland, Etosha National Park	18°43'S, 14°52'E
Epmembe, Fontein by Epmembe, Kaokoveld	SE 1713 Da

Appendix. cont. Gazetteer of Namibian localities and their coordinates, as cited in the checklist. For coordinates beginning with the prefix ‘SE’, the quarter degree system is used.

Epukiro River (30 km NE Steenbok Laagte)	21°13'S, 20°40'E
Epupa, Kunene River at the Epupa Falls	17°00'S, 13°14'E
Etosha pan	18°48'S, 16°56'E
Fish River below Hardap Dam	24°30'S, 17°52'E
Fish River Canyon	27°37'S, 17°36'E
Fish River near Mariental	24°39'S, 17°56'E
Fish River near Mariental	24°39'S, 17°56'E
Friedenau [Dam]	22°42'S, 16°44'E
Gaub (Mission) [=Ghaub (farm)]	SE 1917 Bc/Bd
Gelukkie, Okavango, West Caprivi Park	18°03'S, 21°27'E
Gobabeb, Kuiseb valley	SE 2315 Ca
Gorosib, [Namib-] Naukluft Park	24°17'S, 16°14'E
Grootfontein	SE 1918 Ca
Gross Barmen	22°07'S, 16°45'E
Hardap Dam	SE 2417 Db
Hoarusib below Purros	18°48'S, 12°55'E
Huab River at Krone 721	20°37'S, 13°54'E
Huab River N C 39	20°11'S, 14°04'E
Hungueria, Angola	15°18'S, 13°30'E
Iikango, Ovamboland	17° 51'S, 15°14'E
Kalidona	SE 2118 Ac
Kalukembé, Angola	13°46'S, 14°42'E
Kamanjab, dam NW Kamanjab	19°37'S, 14°50'E
Kapelongo, Kunene, Angola	14°54'S, 15°08'E
Kaudom Camp, Kaudom Game Reserve	18°31'S, 20°43'E
Kaudom Game Reserve, Leeupan	18°40'S, 20°52'E
Kavango Lodge, Rundu	17°54'S, 19°45'E
Kongola, Caprivi	SE 1723 Cd
Kunene, 9 km W Ruacana Falls	17°26'S, 14°09'E
Kuvango river, S Serpa Pinto, Angola	14°41'S, 17°42'E
Lake Liambezi	SE 1724 Cd
Leeupan, Kaudom Game Reserve	18°40'S, 20°52'E
Liambezi, lake	SE 1724 Cd
Mahango Park, at great Baobab tree	18°20'S, 21°45'E
Mariabronn, Otavi Mountains	19°30'S, 18°08'E
Meyerville 325, Gobabis District	21°29'S, 18°36'E
Mokuti Lodge, Namutoni Gate, game watering place	18°48'S, 17°02'E
Muramba Bushman Trails, E Tsintsabis	18°47'S, 18°00'E
Namapan, Bushmanland	19°55'S, 20°43'E
Namutoni	SE 1816 Dd
Naukluft	SE 2416Aa/Ac
Naukluft River, [Namib-] Naukluft Park	24°16'S, 16°14'E
Naukluft Spring, [Namib-] Naukluft Park	24°15'S, 16°14'E
Ndonga, Okavango	SE 1720 Cc
Neuras	24°36'S, 16°18'E
Nuamsees, Etosha National Park	18°58' S, 16°29' E
Nurugas 923	SE 1918 Bb/Bd
Oanob Dam	23°18'S, 17°02'E
Obib waters, Lüderitz [District]	28°00'S, 16°38'E
Ohamwaala, Ovambo	17°25'S, 16°03'E
Ojondunda Fountain, Kaokoland	SE 1913 Ba
Okakundu, Ovambo	17°48'S, 14°57'E
Okadjikonda Education Center	20°18'S, 17°24'E
Okondeka, 10 km NNW of Okondega, Etosha	18°55'S, 15°48'E
Okosongomingo, farm at the Kleiner Waterberg	SE 2017 Ca
Omatoko at B2	17°58'S, 20°28'E
Omatoko dam	21°09'S, 17°11'E
Ondorusu, Kaokoland	17°25'S, 13°57'E

Appendix. cont. Gazetteer of Namibian localities and their coordinates, as cited in the checklist. For coordinates beginning with the prefix 'SE', the quarter degree system is used.

Onesi, Owamboland	17°35'S, 14°41'E
Ongombeanavita	SE 2116 Da
Ongongo	19°08'S, 13°49'E
Ongongo Fall, Kaokoveld	Ongongo
Orange River	28°02'S, 17°04'E
Otavifontein Dam	19°40'S, 17°23'E
Otavifontein, E Otavi	SE 1917 Cb
Otavio	SE 1917 Cb
Otiembora [=Otjiimboro]	SE 1718 Ad
Otjikango	Otjikanga, W Otjiwarango (Ochikango)
Otjikoto Lake	19°12'S, 17°21'E
Otjisongombe	20°28'S, 17°16'E
Otjituwo [=Otjituwo]	SE 2018 Aa
Otjivero Dam	22°17'S, 17°57'E
Otjiwarongo	SE 2016 Bc
Otjovasandu, Etosha National Park	19°15'S, 14°30'E
Outjoua Farm, 30 km NEN Omaruru	21°07'S, 16°04'E
Palmwag [=Palmwag Lodge]	19°53'S, 13°56'E
Pond at the B1 60 km N Windhoek	22°02'S, 16°56'E
Popa Falls, Popa Rapids	18°07'S, 21°35'E
Purification plant, Windhoek	?
Ruacana	SE 1714 Ac
Ruacana Falls	SE 1714 Ac
Rundu, Kavango	SE 1719 Dd
Runtu [=Rundu]	SE 1719 Dd
Sanitanas [=Sanitatas], Kaokoveld	SE 1812 Bc
Schambura, Okavango	SE 1820 Bb
Sesfontein, Damaraland	19°07'S, 13°36'E
Sesheki [=Sesheke], Caprivi	SE 1723 Cd
Sissekab, farm NNW Otavi	SE 1917 Ac
Spring W Swartbooisdrift	17°16'S, 13°42'E
St. Amaro, Angola	12°45'S, 16°05'E
Starkberg, Etosha [National Park]	18° 57' S, 14° 33' E
Susuwe, Kwando River	17°45'S, 23° 21'E
Swartbooisdrift, Spring W Swartbooisdrift	17°16'S, 13°42'E
Takwasa, Okavango	SE 1720 Cd
Tsams Ost 2, Namib-Naukluft Park	24° 14' S, 16° 06' E
Tsams Ost Spring, [Namib-] Naukluft Park	24°14'S, 16°06'E
Tsams Ost Spring, [Namib-] Naukluft Park	24°15'S, 16°06'E
Tsaobis, Tsaobis Leopard Park, artificial ponds	22°23'S, 15°45'E
Tsintsabis	SE 1817 Dd
Tsumeb, ditch near Tsumeb	19°14'S, 17°42'E
Tsumkwe	SE 1920 Da
Tuguva, Kavango	17°26'S, 18°27'E
Tunda Vala, Serra da Chela, Angola	15°00'S, 13°10'E
Tweekoppies, Etosha National Park	19°02'30"S, 16°59'30"E
Ugab at C35 bridge	20°30'E, 14°52'E
Urikos (Tsauchab River Camping)	24°38'E, 16°07'E
Velloorsdrift 93, Karasburg District	28°45'S, 19°15'E
Von Bach Dam	22°01'S, 16°57'E
Von Bach Dam, waters below	22°01'S, 16°57'E
Warmquelle, Kaokoland	Ongongo
Waterberg	SE 2017 Ad/Ac/Ca/Cb
Waterberg Plato Park, Otjiwarongo District	SE 2017 Ad
Waterberg, below Waterberg	20°30'S, 17°14'E
Waterberg, rockpools on	20°23'S, 17°24'E
Zaris, Zaris farm, Zaris [=Tsaris] Mountains	SE 2416 Cd
Zebra River farm	24°37'S, 16°18'E