Between 2000 and 2006 100 species of Odonata have been recorded mainly from northern Botswana. Together with other published and unpublished records this increases the checklist of the Odonata of Botswana to 125 species, of which 20 species were recorded for the first time in Botswana and one species is new to science. This updated checklist provides new information for each recorded species on distribution, phenology, preferred habitats and specific notes, where appropriate. Distribution patterns of the Odonata species referring to African freshwater ecoregions are discussed.

INTRODUCTION

Freshwater systems across much of Madagascar and the African continent are under increasing pressure from the combined onslaught of introduced species, pollution from burgeoning populations and industries, dams and water withdrawals and overall land use change (Thieme et al. 2005). This multitude of threats on a wide front requires conservationists to establish priorities and to set goals and targets for the conservation of aquatic systems and their rich biodiversity. Such conservation action needs a base of knowledge about the occurrence of major freshwater groups, preferably groups like dragonflies, which can be used as indicators for freshwater ecosystem health (Clausnitzer & Jödicke 2004, Samways 1999). With this paper I contribute to a better insight of the Odonata fauna of southern Africa and their distribution pattern with an updated checklist of the Odonata of Botswana.

The Odonata fauna of Botswana is still poorly known, only a few papers have been published in the past. The first verifiable records are provided by Ris (1908), who referred to some localities in the southern part of the country. Some specific papers, dealing with special issues in Botswanan Odonata, followed (Balinsky 1963, 1967). Pinhey (1967a) carried out his first expedition to the Okavango Delta in 1967 and provided some remarkable new records. The first checklist of the Odonata of Botswana was published by Pinhey (1976) and summarized all the records from expeditions to Botswana known at this time. Several taxonomic monographs on different Odonata groups (Pinhey 1970a, 1970b, 1974, 1980) or checklists of neighbouring countries (Pinhey 1981, 1984) also include Botswanan records, but do not offer additional data. In the past and until the recent days mainly the northern part of the country with its vast wetlands and perennial rivers was in the focus of odonatological interest and the Okavango Delta’s Odonata fauna is one of the best known on the sub-saharan African continent. Until 1976 approximately 20 expeditions with focus on odonates have been directed to the Okavango Delta, Linyanti swamps and Chobe River (Pinhey 1976), whereas only five took place at all afterwards till 2000, which includes some holiday trips of odonatologists. The very promising southeastern part got little attention but most parts of the Kalahari, which covers about two third of the country, remains underresearched. In neighbouring Namibia the arid landscape receded much more in the focus of odonatological research, but even there the southern Kalahari basin is underrepresented (Martens et al. 2003, Suhling et al. 2006).

The paper presented here deals mainly with material gathered in 2000 to 2006 in the framework of a practical course, a diploma thesis (Kipping 2003a) and a currently running PhD-study of the author. This was initiated by a partnership of the Anhalt University of Applied Sciences, Bernburg, Germany and the Harry Oppenheimer Okavango Research Centre (HOORC) in Maun, Botswana. Additional it includes some unpublished records taken by other odonatologists during the last decades and material collected by several natural museums.

STUDY AREA

Botswana is a large landlocked country in southern Africa with an arid to semi-arid climate. Much of the country is flat, with gentle undulations and occasional rocky outcrops in the northwest and southeast. The mean altitude a. s. l. is about 1000 m and rises above 1350 m in the east. Two thirds of the territory is covered by Kalahari sandveld, which is almost free of permanent surface-water. Evergreen forests are restricted to occur along perennial rivers in the north and high mountains are completely absent. Mean annual rainfall ranges from over 650 mm in the northeast to less than 250 mm in the southwest. Almost all the rainfall occurs during the summer months, from October to April; the period from May to September is generally dry. Evaporation rates are high, ranging from 1800 mm to over 2200 mm annually for surface-water. The only perennial rivers are the Kwando, Linyanti and Chobe, which belong to the Zambezi River catchment in the more humid northeast and the Okavango River, which forms the famous Okavango Delta in the northwest. Apart from the vast Okavango Delta, the north contains extensive swamps, like the Savuti marsh and Linyanti swamps with Lake Liambezi at the border to the Namibian Caprivi. The Okavango and the Chobe are temporarily connected via the Selinda Spillway after intense rainfall and flood. A detailed
overview on the hydrology of this region is given by Allanson et al. (1990). The outstanding importance of the Okavango Delta not only for its Odonata is the permanent presence of water under arid conditions due to the special flood regime. For the ecology and flooding of the Okavango Delta, see Wilson & Dincer (1976), Ellery & Ellery (1997), McCarthy et al. (2000) and Mendelsohn & el Obeid (2004). The Limpopo River forms the border to South Africa in the southeast, but is ephemeral in this area. A few permanent springs and streams are to be found at the Tsodilo Hills (1375 m a.s.l.) in the northwest and much more at the Tswapong Hills and others near Palapye in the southeast. Parts of Botswana are characterized by extensive saltflats, which are temporarily filled mainly by rainwater. The Magkadikgadi Pan seldom gets a discharge from the Okavango Delta via the Boteti River after a high flood level. Large artificial dams are to be found mainly in the southeastern part of Botswana around Gaborone, Palapye, Selebi-Phikwe and Francistown.

According to Thieme et al. (2005) Botswana includes larger parts of six of the 93 African freshwater ecoregions (vide Figure 1), which are:

Upper Zambezi Floodplains – the extreme northern part of the country, it contains the Savuti area and Chobe-Linyanti floodplains, in the Namibian Caprivi also the Kwando and Zambezi Rivers. Major habitat types are floodplains, swamps and lakes. In the Botswanan part the average annual precipitation is about 550-650 mm, which is the highest for the country. Chobe-Linyanti floodplains form a mosaic of freshwater habitats and woodland.

Okavango Floodplains – its major part in Botswana is the Okavango Delta, a highly diverse mosaic of freshwater and terrestrial habitats forming one of the most important wetlands in southern Africa and world heritage site. The swamps vary in character mainly according to the perennial or intermittent occurrence of floodwaters. Mean annual precipitation is about 450-550 mm. Around the Delta and east of it the terrestrial habitats are dominated by Mopane woodland (Colophospermum mopane) or thorn scrub.

Kalahari – this xeric region covers most of the country. It is semi-arid and has no perennial natural surface water. It includes the large endorheic Nxai and Magkadikgadi saltflats, which is one of the major pan systems in southern Africa. It is fed by the episodic Boteti and Nata Rivers or rainfall. After rainfall or flood a large area can be inundated for weeks or months. Outside the pans the region is covered by Kalahari sand and characterized by grassland and more or less dry thorn scrub. Annual average rainfall is about 250-450 mm.

Southern Kalahari – in the southwestern part of the country is also a xeric system with the lowest annual rainfall from less than 230 to 250 mm. It is free of natural perennial surface water. Few waterholes and scattered small pans provide water after the irregular rainfall.

Zambezi Lowveld – Tuli Block and the southeastern part of the country belong to this region. Whereas the most of the country is flat, this part is characterized by hills, like the Tswapong or Shoshong Hills. These hills house some deep gorges with permanent springbrooks and even waterfalls. Rivers in dry forest, like the ephemeral Limpopo River on the border to South Africa, are major habitat type. In the region some larger dams are important for the freshwater fauna. Rainfall is irregular and in the Botswanan part around 400 mm per year.

Southern Temperate Highveld - only a very small part of it reaches into Botswana. It is located south of Gaborone around Lobatse and here very similar to the Zambezi Lowveld.

In the northeast, between Kasane and Mpandamatenga, the Middle Zambezi Luangwa region scratches Botswanan territory with a few square kilometers, but it is not considered here.
MATERIAL AND METHODS

OWN RECORDS


I collected ragonflies altogether at 90 study sites mainly in northern and eastern Botswana, most of them were visited several times. A list of these localities, the dates of visits, coordination and a short habitat description is provided in the Appendix I. In this list these localities are encoded and grouped in four blocks: OP - Okavango Delta-north, panhandle and Permanently flooded part of the Delta; OS - Okavango Delta-south, Seasonally flooded part of the Delta; CL - Chobe/Linyanti River system and OL - Other Localities outside the first three groups.

Names of localities and coordination are according to the maps “Okavango Delta 1:350.000” and “Chobe 1:350.000”, (Department of Surveys and Lands, Gaborone), the very excellent “Botswana 1:1.000.000” (Reise-Know-How Verlag, Bielefeld, Germany) and additionally the “Botswana , 1:1.750.000” (Freytag & Berndt, Wien, Austria). In case of unclear historical locality citation the names were cross checked with Irish (1988). Coordination was taken with a “Garmin etrex legend” GPS device and is given in WGS84 format.

A simple handnet was used to collect Odonata imagoes. With making progress in identification additionally a close-focus binocular (8x32) was used to record Odonata. In 2000, some larvae were netted, kept in small basins and were bred to adults. Exuviae were collected wherever it was possible, some were identified with the keys of Chelmick.
(1999, 2001) and Samways & Wilmot (2003), but most of them are still unidentified. About 1500 adult specimens were collected and additionally 100 exuviae. At the moment the material is deposited in the author’s own collection, some in the National Nature Historical Museum Naturalis, Leiden (RMNH), and in the collection of the NMNW. In the future the largest amount will be deposited in the BNMG.

OTHER SOURCES OF MATERIAL

Sources of other records included to the list are:
- the collection of the Botswana National Museum, Monuments & Art Gallery, Gaborone, Botswana (BNMG). The different collectors are unknown;
- the collection of the Museum für Naturkunde, Humboldt-Universität, Berlin, Germany (ZMHB). Odonata were collected by J. Deckert, U. Gollner, F. Koch and G. Peters;
- the Namibian National Collection of Insects, National Museum of Namibia, Windhoek, Namibia (NMNW), the collector was E. Marais;
- the collection of the Northern Flagship-Transvaal Museum, Gauteng, R.S.A. (TMSA). collector was mainly B.I. Balinsky, but also M. Scoble and R. Toms;
- the collection of the Albany Museum Grahamstown, R.S.A. (AMGS), collector was M. Chutter;
- the collection of the Natural History Museum Bulawayo, Zimbabwe (NMNZ), collectors were J., N., V. and W. Goodwin;
- the private collection of D.R. Paulson (Seattle, U.S.A.), collectors were E.C.G. Pinhey and R. Buskirk;
- the unpublished records of J. Silsby (Purlington, GB), of M. Parr (Stembridge, GB), P. Hancock (Maun, Botswana) and M. J. Samways (Stellenbosch University, R.S.A.);
- the mostly photographic records of W. Kappes and others (Kappes & Nehls 2004);
- the unpublished records of E. Schuran (Anhalt University of Applied Sciences, Bernburg, Germany).

The entire database of this paper contains about 4100 entries. The previous records mentioned here are taken from published lists and papers, mainly from Pinhey (1967a, 1976).

RESULTS

Within the time period from 2000 to 2006 own records of 100 species from Botswana were collected (~3500 datasets in total). Several other collectors provided data with further species (~300 datasets). Of these 21 species have been recorded for the first time in Botswana, among them seven Zygoptera: *Lestes tridens*, *L. virgatus*, *Africallagma subtile*, *Agriocnemis angolensis*, *A. forcipata*, *Pseudagrion bagenii tropicanum* and *P. kersteni*; and 14 Anisoptera: *Gynacantha manderica*, *Lestinogomphus silkeae*, *Neurogromphus cocytius*, *N. zambeziensis*, *Bradinopyga cornuta*, *Crocothemis divisa*, *Orthetrum abbotti*, *O. guineense*, *O. julia falsum*, *O. stemmale*, *Palpopleura portia*, *Trithemis donaldsoni*, *T. furva* and *Trithemis sp. nov.*

THE CHECKLIST

The updated checklist of the Odonata of Botswana contains now 125 species. The general distribution of these species in the different type of freshwater ecoregions occurring in Botswana was found to be quite different. Whereas in the Upper Zambezi Floodplain and the Okavango Floodplains the species number exceeded 80 the diversity particularly in the Kalahari was below 30 species (Table 1). The number of species well reflect the humidity gradient from NE to SW. An overview about the occurrence of the species in the different freshwater ecoregions is given in Table 1. In the current stage I don’t present distribution maps here, this will be done later with a better base of records.

GENERAL REMARKS

New recorded species for Botswana are marked with an asterisk (*). A double asterisk (**) mark species which are not found on Botswanan territory, but at rivers bordering the country. This mainly concerns records of other collectors from the Kwando and Chobe Rivers.

Each species entry is divided into sections, as follows:

AFRICAN DISTRIBUTION: To avoid double work and repetition, this section only appears, when a species is a Botswana special and does not occur in Namibia, in all other cases I refer to Suhling et al. (2006), where this information is already detailed given.

BOTSWANAN DISTRIBUTION: This main section gives information about the current knowledge of the species occurrence in Botswana. It is three-divided: first a short summary provides an overview about the occurrence in the country with reference to the previous checklist where necessary. This is followed by records gathered by other collectors/observers, these records have their origin mainly in the time period between Pinhey’s work in the 70s and the beginning of the writer’s collecting period. It also contain some few old records which were not
included into Pinhey (1976) for some reasons. The third part contains exclusively the own records collected by
the author, here the locality code according to the locality list (vide Appendix I) is used. Some of the localities
were visited several times. In such cases, the code of the locality is combined with the month and year of
collection/observation. The term ‘v.-vii.’ means May till July, but ‘v.,vii.’ means May and July. Further
abbreviations are: abun – abundant/en masse; loc – locality; mfl – maiden flight; juv – juvenile/freshly
emerged; ovip – oviposition. Special locality abbreviations are: MGR – Moremi Game Reserve (Okavango
Delta); WCI – West Chiefs Island (Okavango Delta); MWS – Maun Wildlife Sanctuary. The term panhandle
means the northern, narrow part of the Okavango Delta.

FLIGHT PERIOD: Here the phenology information is given. It does only consider Botswanan records. For some
species with few records this deficit is generally marked.

HABITAT: A short summary of the habitat preference of a species is provided here, this is also based exclusively on
the knowledge gathered at Botswanan localities.

NOTES: This is a discussion part with special remarks or taxonomic comments to a species, when necessary it gives
information about distribution in neighbouring territories.

The nomenclature used in this paper follows Bridges (1994). I consider the revisions of May (2002), Cammaerts
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).

**BOTSWANAN DISTRIBUTION:** Upper panhandle of the Delta at Shakawe, Chobe Rapids at Kasane and Notwane

**FLIGHT PERIOD:** Recorded from September to May.

**HABITAT:** Associated with fast flowing water and shady woodland.

**NOTES:** Probably absent from most parts of the Okavango Delta, where stagnant or sluggish water dominates.

**CHLOROCYPHIDAE**

*Platycypha caligata caligata* (Selys, 1853).

**BOTSWANAN DISTRIBUTION:** Chobe River and southeastern Botswana. Tswapong Hills, Moremi Gorge, 29.iii.2002,
15.xii.2002, W. Goodwin (NMBZ); Chobe River at Kubu Lodge, nr. Kasane, 10.xi.2003 (Kappes & Nehls

**FLIGHT PERIOD:** Records between September and end of March.

**HABITAT:** Permanent and shady rivers and streams with turbulent current.

**NOTES:** Restricted to few isolated localities due to absence of its habitat in most parts of Botswana.

**LESTIDAE**

*Lestes dissimulans* Fraser, 1955.

**BOTSWANAN DISTRIBUTION:** Two records from the Okavango Delta at Mohembo and Khwai River and a third from

**FLIGHT PERIOD:** Records from December to March, but more information needed.

**HABITAT:** Temporary or permanent waters with rich vegetation.

**NOTES:** More common in West Caprivi, Namibia (e.g. floodplains of Okavango and Kwando Rivers), close to the
Botswana border (Suhling et al. 2006).

*Lestes pallidus* Rambur, 1842.

**BOTSWANAN DISTRIBUTION:** From all over Botswana, mainly in the north but few records from the Kalahari and the
southeastern part (Ris 1908, Pinhey 1976, 1980). Serowe, v.1988 (BNMG). Own records: OP30-ii.2006; OP31-

**FLIGHT PERIOD:** Depending from rainfall. Mainly recorded during the rainy season from December to May, but less
numerous throughout the wintermonths.

**HABITAT:** At rainfilled temporary pans and pools. Mainly in the Delta only found at seasonal pans and pools.

**NOTES:** Locally common even in parts of the Kalahari after intense and extended rainy seasons. It was absent from
most parts of the central Okavango Delta, where *L. pinheyi* was abundant.
**Lestes pinheyi** Fraser, 1955.


**Flight Period:** Highest abundances in April/May with emerging individuals, the lowest in June. At end of July, few individuals started again emerging in the Okavango Delta floodplains. Rare in February and March. In the Okavango Delta obviously on the wing throughout the year in variable numbers.

**Habitat:** Most common at temporary floodplains and backswamps with dense sedges which dry up only a few months per annum.

**Notes:** The one record of a male from a waterhole in the Central Kalahari Game Reserve indicates the ability of long-distance dispersal.

---

**Lestes plagiatus** (Burmeister, 1839).


**Flight Period:** Records from September to May.

**Habitat:** More information needed.

---

*Lestes tridens* McLachlan, 1895.

**Botswanan Distribution:** New to Botswana. – Okavango Delta. Khwai River, Okavango Delta, 23.xii.1963, 1 [M], B.I. Balinsky (TMSA), specimen identification was kindly confirmed by W. Tarboton (pers. comm.). No own records.

**Flight Period and Habitat:** More information needed.

**Habitat:** At grassy ponds and pools.

**Notes:** Several South African records in the Limpopo River basin close to the border (Tarboton & Tarboton 2005) makes also the occurrence in southeastern Botswana very likely.

---

*Lestes virgatus* (Burmeister, 1839).


**Flight Period:** Data deficient, more information needed.

**Habitat:** In submerged grass along small rivers.

**Notes:** Known from several localities in neighbouring Zimbabwe (Pinhey 1984), e.g. from Tuli River; so it may occur also in the southeastern Botswana Tuli Block.

---

**COENAGRIONIDAE**

*Aciagrion gracile* (Sjöstedt, 1909).


**Flight Period:** Data deficient, only the one record from April.

**Habitat:** Data deficient, more information needed.

**Notes:** The status of this species in Botswana remains unclear. The Botswana record lies about 800 km south of the known distribution area (Pinhey 1972).

---

*Aciagrion steeleae* Kimmins, 1955.

**African Distribution:** North and central Zambia (Pinhey 1967b), Malawi, DC Congo and Botswana (Pinhey 1972).

**Botswanan Distribution:** Common around Four Rivers and Khwai River, northern MGR, one record from the lower panhandle at Sepopa. Last recorded 1975 (Pinhey 1972, 1976). No recent records.

**Flight Period:** Records from December to February.

**Habitat:** Probably swampy rivers and pools, research action needed.

**Notes:** The only recent records of this species at all in southern Africa come from northern Malawi (coll. K.-D.B. Dijkstra, pers. comm.).

---

*Africalagama glaucum* (Burmeister, 1839).

**Botswanan Distribution:** Southern Botswana. Only three historical Botswanan records so far. As *Enallagma schultzei* from Severelela-Kooa (Kalahari) in southern Botswana (Ris 1908). One from the Notwane River near Gaborone (Pinhey 1976). Kolobeng Dam, near Gaborone, 1 [M], 12.xi.1983, M. Parr. No own records.

**Flight Period:** Data deficient, records from October to May.

**Habitat:** Obviously temporary water bodies.
NOTES: Brinck (1955) recorded it in South Africa “en masse” from a brackish lake in the Molopo river bed, which partly forms the border to Botswana. In Namibia mainly found higher than 1200 m a.s.l. (Suhling et al. 2006), which could be an explanation for its absence from large parts of Botswana, where it seems to be restricted to the south. This species has previously been placed in the genus *Enallagma* Charpentier, 1840 (May 2002).

* Africallagma subtile* (Ris, 1921).


**Flight Period**: More information needed.

**Habitat**: This one specimen was caught in a shallow and short-time inundated floodplain close to the river main channel.

**Notes**: Pinhey (1976) expected it to occur at the Chobe River, since it was common around Victoria Falls. So far there are no records from the Caprivi but a recent record is from the middle Okavango River (Suhling et al. 2006). Formerly this species has also been placed in the genus *Enallagma* Charpentier, 1840 (May 2002).


**Habitat**: Rivers and channels with submerged grass at the bank.

**Notes**: Pinhey (1976) supposed the occurrence in the region, since it was found in the Namibian Caprivi in 1960 and 1974. The new Botswanan finding is situated only 15 km down stream of the next known locality in the West Caprivi, it surely occurs also at the Kwando River where it has been recorded in Namibia (vide Suhling et al. 2006).

* Agriocnemis exilis* Selys, 1872.


**Flight Period**: Probably throughout the year. Present in the Okavango Delta during all the time from January till July, with highest numbers in mid-April/mid-May, only a few in mid-June.

**Habitat**: Pools, backswamps and floodplains with submerged grass and reed-like vegetation.

**Agriocnemis forcipata** Le Roi, 1915.

**Botswanan Distribution**: New to Botswana. – In the Namibian Caprivi at Kwando River bank near Lianshulu Lodge at the Botswana border, 13.xii.2004, F. Suhling (vide Suhling et al. 2006).

**Notes**: The Kwando records made on Namibian side are also counted as Botswana records, since the river is only 20 m wide with the boundary in the middle of it. The species should be expected at other localities along the Kwando and Linyanti Rivers.

* Agriocnemis gratiosa* Gerstäcker, 1891.


**Flight Season**: Mainly during the rainy season from January till April, but one individual freshly emerged in July.

**Habitat**: Grassy fringes of open flowing watercourses.

**Agriocnemis ruberrima albifrons** Balinsky, 1947


**Flight Season**: Most common in December till April, one record from July.

**Habitat**: At swampy verges of rivers and channels in dense submerged grass and sedges or in the lower stratum of Papyrus close to the waterline.
NOTES: The status of this ssp. is not certainly clear. Nominal race A. r. ruberrima is currently known only from a small area at Richards Bay in South Africa and differs strongly in coloration and habitat but is similar in the male appendages (M. Samways pers. comm.). A male from Mongu, Barotse Floodplain in Zambia looks like the albifrons males from the Okavango Delta and indicates a larger distribution area as known so far (in coll. Stellenbosch University, R.S.A.).

_Agrionocnemis victoria_ Fraser, 1928.


FLIGHT SEASON: Phenology is most likely similar to that of _A. exilis_ and it is expected to be found throughout the year in variable numbers.

HABITAT: Extended swamps and floodplains with highly diverse vegetation close to rivers.

_Azuragrion nigridorsum_ (Selys, 1876).

BOTSWANAN DISTRIBUTION: Pinhey (1976) gives only one record as _Enallagma nigridorsum_ from the Gomane River, NW of Francistown. Own records: OS23-i.2006; OL7-ii.2006; OL11-ii.2006.

FLIGHT SEASON: So far known from January and February, but more information needed.

HABITAT: At well-vegetated temporary rain ponds with floating leaved plants.

_Ceriagrion corallinum_ Campion, 1914.

BOTSWANAN DISTRIBUTION: Recorded as _C. bidentatum_ from a single locality at the Linyanti Swamps in iii.1976 (Pinhey 1976). This is the only Botswanan record so far.

FLIGHT SEASON: Only this record from March, at the Kwando River recorded in December, February and March (Suhling et al. 2006).

HABITAT: Swampy river sections.

NOTES: Next known localities are the Kwando River in the Namibian Caprivi (Suhling et al. 2006), and further north the upper Zambezi, Zambia (Pinhey 1984).

_Ceriagrion glabrum_ (Burmeister, 1839).


FLIGHT SEASON: Recorded from September till early June. It is likely that _C. glabrum_ is to be found throughout the year, perhaps with a short winter break in July-August.

HABITAT: In backswamps, floodplains and swampy areas with diverse vegetation. Females and teneral males often in adjacent shady woodland.


FLIGHT SEASON: Recorded from September till early June. It is likely that _C. katamborae_ is to be found throughout the year, perhaps with a short winter break in July-August.

HABITAT: In backswamps, floodplains and swampy areas with diverse vegetation. Females and teneral males often in adjacent shady woodland.

_Ceriagrion suave_ Ris, 1921.
Ischnura senegalensis (Rambur, 1842).


Pinheyagrion angolicum (Pinhey, 1966).

**AFRICAN DISTRIBUTION:** Shows a disjunct distribution pattern and is very local. Only known from two localities in Angola, two in northeastern Zambia near Lake Bangweulu and Lake Chila (Pinhey 1967b, 1984), and eight in northern Botswana. BOTSWANAN DISTRIBUTION: Okavango Delta and Savuti. Balinsky (1967) recorded it in 1964 from the Moremi Game Reserve without further local specification. In Pinhey (1976) mentioned as Enallagma angolicum at four localities of the northeastern Okavango Delta and one in the Savuti area. Own records: OP29-i.-ii.2006; OP30-ii.2006. FLIGHT PERIOD: Rainy season from November till March. HABITAT: Swampy rivers with adjacent floodplains. NOTES: The species caused a lot of taxonomic confusion. Described by Ris (1931) as Enallagma minutum, it was renamed and redescribed several times (vide Balinsky 1967, Pinhey 1962, 1966, 1976). Recently May (2002) placed it in the genus Pinheyagrion.

Pseudagrion acaciae Förster, 1906.


Pseudagrion assegaii Pinhey, 1950.

**BOTSWANAN DISTRIBUTION:** Okavango Delta, Savuti area and Chobe River (Pinhey 1976). Ngamiland Game Reserve, Okavango Delta, xii.1963, B.I. Balinsky (TMSA); Third Bridge Lodge, MGR, 10.xii.1993, J. Deckert (ZMHB); MGR, Okavango Delta, v.2003, [M], (Perkins & Ramberg 2004). Own records: OS6-ii.2000, mfl; OS7-v.2000, mfl; OS9-vii.2000, juv, exuviae. FLIGHT PERIOD: Records from November till May, and with freshly emerged individuals from July. In the Okavango Delta probably throughout the year with a winter break in June. HABITAT: Extended swamps along rivers.

Pseudagrion coeleste Longfield, 1947.


**FLIGHT PERIOD:** In the Okavango Delta on the wing throughout the year. Emergence observed in February to May and in large numbers at end of July.

**HABITAT:** Quiet and swampy rivers with rich vegetation of sedges, submerged grass and floating leafed plants. One of the species which I observed following the incoming flood in the southern Okavango Delta.

*Pseudagrion commoniae nigerrimum* Pinhey, 1950.

**BOTSWANAN DISTRIBUTION:** Mainly the drier parts of Botswana in the east and south. Records from the Chobe River and its rapids and one from the Notwane River in the south (Pinhey 1976). Matakota, Limpopo River, 25.iv.1957, 2 [M], B.I. Balinsky (TMSA); Serowe, x.1984 (BNMG). No own records.

**FLIGHT PERIOD:** Records from March, April and October, more information needed.

**HABITAT:** Probably riverine, not enough information.

*Pseudagrion deningi* Pinhey, 1961.


**FLIGHT PERIOD:** Records from December till August. In the Okavango Delta the highest numbers from April till June, emergence started again in mid July. Probably throughout the year.

**HABITAT:** At large lagoons as well as on swampy rivers with highly diverse vegetation, floating leafed plants are essential.

**NOTES:** An interesting melanic form was found in January 2006 at Kaparota channel. Instead of geen in the lower half of the eyes it was faded brownish, the blue coloration at the thorax and the last abdominal segments was almost absent. From a distance it seemed to be completely black. Two individuals were found, both males and clearly *P. deningi* by their appendages.


**AFRICAN DISTRIBUTION:** Angola, northern Zambia and Okavango Delta, Botswana.

**BOTSWANAN DISTRIBUTION:** Recorded from two localities around Xugana Lagoon in the northeastern Okavango Delta in 1973 and 1975 (Pinhey 1976). No further records.

**FLIGHT PERIOD:** Records from December, no more information.

**HABITAT:** Likely swamps and swampy rivers, more information needed.

**NOTES:** The only species of the *Pseudagrion* Group A complex from the Okavango Delta. So far this species is only known from the upper Zambezi catchment and the Okavango Delta, where it was last recorded in 1975. There are no recent records at all from the continent. The IUCN global red list status is Data Deficient.

*Pseudagrion glaucescens* Selys, 1876.


**FLIGHT PERIOD:** Records from December till April.

**HABITAT:** Rivers and streams with fast current.

*Pseudagrion hageni tropicanum* Karsch, 1893.

**AFRICAN DISTRIBUTION:** South Africa north to Tanzania, Kenya, Uganda and also Angola.


**FLIGHT PERIOD:** Records in February and July, more data needed.

**HABITAT:** Well-vegetated edges of shady streams in forested and mountainous area.

**NOTES:** Seems to be very local in southeastern Botswana with its hills and rocky outcrops. Next known localities are Matopo National Park, Zimbabwe (Pinhey 1984) and Southpansberg, R.S.A. (Tarboton & Tarboton 2005).

*Pseudagrion hamoni* Fraser, 1955.

**BOTSWANAN DISTRIBUTION:** Recorded both from the north, e.g. Okavango Delta and Chobe River, and eastern Botswana. Motloutse River, Selebi-Phikwe, 16.vii.2001, 9.ix.2001, V., N. & W. Goodwin (NMBZ); Chitabe
Habitat: Rivers, both perennial and ephemeral, but also seasonal pools with diverse vegetation.

**Pseudagrion helenae** Balinsky, 1964.
**African Distribution:** Only known from Botswana, Malawi and northeastern Zambia.
**Botswana Distribution:** Found only in the Okavango Delta with a clear preference for the seasonal flooded part of it. Surroundings of Maun and Moremi Game Reserve, also Four Rivers (Pinhey 1976). 17.viii.1966, Maun, 1 [M], M. Chutter (AMGS). Not recorded since December 1975.
**Flight Period:** Mainly from December till February, two records from August.
**Habitat:** Probably large swamps and swampy rivers.
**Notes:** The only new record of this species in southern Africa is from Luwomba River, Kasanka National Park, central Zambia from v.2003 (Geschke 2003). Due to the lack of data the regional southern Africa red list status is Data Deficient (IUCN 2006).

* Pseudagrion kersteni (Gerstäcker, 1869).
**Flight Period:** December till March, July and September.
**Habitat:** Vegetated streams in mountainous areas.
**Notes:** Like *P. hageni* this species is expect to be more widespread in the southeast and the Tuli Block.

**Pseudagrion massaicum** Sjöstedt, 1909.
**Flight Period:** Records from August till April, probably present throughout the whole year.
**Habitat:** Perennial and ephemeral stagnant water bodies and rivers.
**Notes:** This species seems to prefer the more arid parts of Botswana and the drier edges of the large northern swamps and rivers.

**Pseudagrion nubicum** Selys, 1876.
**Botswana Distribution:** A single record from the Boteti River in April 1975 (Pinhey 1976). No new record.
**Flight Period:** Only this record from April.
**Habitat:** Probably ephemeral and perennial rivers and streams. In Namibia at well-vegetated and slow running waters (Suhling et al. 2006).

**Pseudagrion rufigaster** Longfield, 1947.
**Flight Period:** Records from December till March, one from June and August respectively. Emergence was observed in January/February.
**Habitat:** Perennial slow flowing rivers with swampy margins and nearby woodland.
**Notes:** This was the most common *Pseudagrion* species around Vumbura and Kaparota in January/ February 2006. Suhling et al. (2006) recently recorded it from the Kwando River.

**Pseudagrion salisburyense** Ris, 1921.
**Botswana Distribution:** Only known from southeastern Botswana (*vide* Pinhey 1976). Kolobeng Dam, near Gaborone, 12.xi.1983, 2 [F/M], M. Parr. No new records.
**Flight Period:** Records from February to May, and November.
**Habitat:** In Botswana only known from ephemeral rivers and a reservoir, in neighbouring Namibia at running water and springbrooks (Suhling et al. 2006).

**Pseudagrion sjoestedti jacksoni** Pinhey, 1961.
FLIGHT PERIOD: Records from December till September, probably throughout the whole year. In the Delta panhandle most common in June and almost absent in January and February when the similar P. acaciae had its seasonal peak.

**HABITAT:** Perennial large rivers with swampy margins and nearby woodland.

**Pseudagrion sublacteum sublacteum** (Karsch, 1893).

**BOTSWANAN DISTRIBUTION:** Mainly northern Botswana with the large perennial rivers, rare in the southeast.


**FLIGHT PERIOD:** Probably throughout the year, records from all months except October/November.

**HABITAT:** Small or large rivers, most common where woodland lines the banks.

**Pseudagrion sudanicum rubroviride** Pinhey, 1955.

**BOTSWANAN DISTRIBUTION:** Mainly from the more humid north with the large perennial rivers, rare in the southeast.


**FLIGHT PERIOD:** Records from January till April, June and September.

**HABITAT:** In Botswana only at large to medium sized rivers with riverine woodland.

**PLATYCNEMIDIDAE**

**Mesorcnemis singularis** Karsch, 1891.


**FLIGHT PERIOD:** Records from January to April, one from September.

**HABITAT:** At large and swiftly flowing rivers, most common where woodland lines the banks.

**NOTES:** Despite similar ecological conditions M. singularis is surprisingly rare in the Okavango Delta panhandle south of Mohembo, whereas at the Chobe River it is sometimes the most common zygopteran species.

**PROTONEURIDAE**

**Elattoneura cellularis** (Grüneberg, 1902).

(= *Elattoneura tropicalis* Pinhey, 1974)


**FLIGHT PERIOD:** Records from February, March and September.

**HABITAT:** At large and swiftly flowing rivers with intact shady riverine woodland.

**NOTES:** The confirmation of the historical locality by the finding of a single male in 2005 and many individuals in 2006 remains the only records from Botswana and the Caprivi (vide Suhling et al. 2006). It seems likely that, on Botswanan territory, the species is restricted to the Chobe Rapids with its turbulent water current.

**Elattoneura glauca** (Selys, 1860).


**FLIGHT PERIOD:** Records from February till April, more information needed.

**HABITAT:** At swiftly flowing rivers and streams with shady sections.

**NOTES:** So far not known from the Kwando (Suhling et al. 2006) and the Chobe Rivers, despite it was common at the Zambezi River around Katima Mulilo in February 2006. The species is probably more widespread in southeastern Botswana in hilly areas with springs and streams.

**ANISOPTERA**

**GOMPHIDAE**

**Ceratogomphus pictus** Selys, 1854.

FLIGHT PERIOD: Only November records, more data needed.
HABITAT: As in Namibia, where this species was recorded only at large impoundments (Martens et al. 2002).

*Crenigomphus cornutus* Pinhey, 1956.
**Botswana** Distribution: The single record comes from the Chobe Rapids near Kasane in September 1974 (Pinhey 1976). No new records from Botswanan territory.
FLIGHT PERIOD: More information needed.
HABITAT: Probably rocky river sections.
NOTES: One historical record (the paratype) from the Okavango River near Andara (Pinhey 1984). Other records from the Okavango cited by Martens et al. (2003) belong to the new species *C. kavangoensis* (Suhling & Marais 2006).

*Gomphidia quarrei quarrei* (Schouteden, 1934).
FLIGHT PERIOD: All records from December till March.
HABITAT: At perennial rivers.
NOTES: Recently recorded also at the Kwando River in the Namibian Caprivi (Suhling et al. 2006) opposite the Botswanan river bank.

(=* Gomphidia guyi* Pinhey, 1976)
FLIGHT PERIOD: Rainy season, records from December till April.
HABITAT: At perennial swampy rivers and large lagoons with tall sedges.
NOTES: Also recorded at the Kwando River and Popa Falls, Namibian Caprivi (Suhling et al. 2006).

*Ictinogomphus ferox* (Rambur, 1842).
FLIGHT PERIOD: Rainy season, records from December till May.
HABITAT: At small or medium sized rivers with turbulent or calm current.

*Lestinogomphus angustus* Martin, 1911.
FLIGHT PERIOD: Records from January to March, one from September.
HABITATS: Fast to slow flowing rivers, lined by riverine forest.
NOTES: The genus is in urgent need of revision (Dijkstra 2003). Pinhey often confused this species with *L. africanus* (e.g. Pinhey 1961, Plate 4) and the damaged type specimen of *L. africanus*, lacking the last abdominal segments caused many confusion. One of Pinhey’s illustrations (Pinhey 1981, p.578) is titled with *L. angustus* (Botswana), but shows probably another species. Dijkstra recently inspected the NMBZ collection and confirmed all specimens collected by Pinhey in Botswana belong to *L. angustus* (K.-D.B. Dijkstra pers. comm.). *L. angustus* has recently been redescribed by Legrand & Lachaise (2001). Suhling et al. (2006) mention recent records from the Kwando River, opposite Botswana border, but so far there are no records from the Linyanti. Surprisingly this species was rare in the Delta panhandle in February to March, when it was very common at the Chobe River.

**African** Distribution: So far known only from the type locality in the Okavango Delta panhandle and from Victoria Falls in Zimbabwe (in NMBZ).
**Botswana** Distribution: New to Botswana. – Okavango Delta panhandle only at one locality so far. Own record: OP9-v.2000, 2 [M].
FLIGHT PERIOD: The Botswana record from beginning of June, the NMBZ record is from May. In February only *L. angustus* has been found at the type locality.
HABITATS: At a slow flowing river, lined by dense riverine forest. The males of this species were caught in dense forest close to the Okavango main channel. These and others (also females) were seen sun basking on broadleafed trees and shrubs at the edge of small clearings (vide Kipping 2006).

NOTES: One male from Victoria Falls, Zimbabwe, collected by E.C.G. Pinhey in May 1961 (in NMBZ), belongs to this species. In the collection of NMBZ is a further male, which is poorly preserved and possibly this species, it was collected 5.iv.1991 at Musengezi River, Mzarabani, Zimbabwe (K.-D.B. Dijkstra, pers. comm.). Correction: the record mentioned in Kipping (2003b) as *L. angustus* is in fact this species.


FLIGHT SEASON: Only records from March, often of freshly emerged individuals, more information needed.

HABITAT: Large Rivers with riverine forest.

NOTES: Suhling *et al.* (2006) provide recent records from the Okavango River. The species was also recorded from several localities at the Zambezi River, close to the Chobe River (Pinhey 1984, Cammaerts 2004).


FLIGHT SEASON: More information needed.

HABITAT: Large Rivers with riverine forest.

NOTES: Also recorded from several localities at the Zambezi River, close to the Chobe River (Pinhey 1984, Cammaerts 2004).

* Paragomphus elpidius* (Ris, 1921).


FLIGHT PERIOD: Records from September to June, probably throughout the year. Some larvae were collected in June 2000, the adults emerged in August/September.

HABITAT: Small to large rivers in the north, in southern Botswana also at large reservoirs.

* Phyllogomphus selysi* Schouteden, 1933.

(=*P. brunneus* Pinhey, 1976)

BOTSWANAN DISTRIBUTION: Perennial rivers in northern Botswana. Four Rivers in the Maunachira River system of the northeastern Okavango Delta and Chobe River near Kasane (Pinhey 1976). No own records so far.

FLIGHT PERIOD: Only December records, more information needed.

HABITAT: Perennial, medium sized to large rivers.

NOTES: Recently recorded from several localities in the Namibian Caprivi, e.g. Okavango and Kwando Rivers (Suhling *et al.* 2006). Dijkstra *et al.* (2006) recently reviewed the taxonomic status of this species.

**Aeshnidae**


BOTSWANAN DISTRIBUTION: Northern Okavango Delta and Kwando/Linyanti region. The only historical Botswana records come from the Four Rivers area at the Maunachira channel system in the northeastern Okavango Delta (Pinhey 1976). Own records: OP32-ii.2006, 10 [M]; OP33-ii.2006, 1 [F].

FLIGHT PERIOD: Records from December till February. Obviously restricted to the rainy season.

HABITAT: Small channels through dense Papyrus swamps, close to riverine woodland.

NOTES: Suhling *et al.* (2006) mention two sight records from the Okavango and the Kwando in the Namibian Caprivi from December 2004. The species seems to be very local and rare in the Okavango Delta. So far only known from the localities mentioned here and the Lake Bangweulu swamps in northern Zambia (Pinhey 1984). It might occur also at the Barotse Floodplains and Kafue Flats in western Zambia. Due to poor data the species is Data Deficient in the regional southern Africa red list (IUCN 2006).
Anax ephippiger (Burmeister, 1839).

**BOTSWANAN DISTRIBUTION:** All over Botswana. Pinhey (1976) listed findings from the surroundings of the Okavango Delta and from arid regions of northern Botswana. Serowe, i.1986, 1 [M], (BNMG); Letsibogo Dam, Mmadinare, 26.i.2003, J. Goodwin (NMBZ). Own records: OP31-ii.2006; OS20-i.2006; OS21-i.2006; OL11-i.2006; OL7; OL8; OL9; OL10; OL13; OL16; OL18 ovip, all ii.2006.

**FLIGHT PERIOD:** Records from December to July, probably throughout the year.

**HABITAT:** A wide variety of freshwater habitats, most common at temporary pools.

**NOTES:** I observed remarkable annual fluctuations depending from length and intensity of rainy season. One can suppose that *A. ephippiger,* as a migrant, does occur widely distributed in Botswana, especially in years with exceptionally intense rain and large rainfilled pans.

Anax imperator Leach, 1815


**FLIGHT SEASON:** Throughout the year. Emergence was observed from February to May.

**HABITAT:** Breeds in perennial and seldom in temporary stagnant water bodies. I recorded one exuvia from a rain pool (OL7), which has been flooded for about four months.

Anax tristis Hagen, 1867.


**FLIGHT SEASON:** Records from the rainy season, December to May.

**HABITAT:** Both perennial and temporary water bodies, pools and river backswamps. In very wet years, like 2006, it expanded into the Kalahari with its scattered rainpools.

**Gynacantha manderica Grünberg, 1902.**

**BOTSWANAN DISTRIBUTION:** Linyanti area. No records from Botswanan territory, but Suhling et al. (2006) mention it from few localities at the Kwando River in Namibian Caprivi, opposite the Botswanan river bank.

**FLIGHT SEASON:** Data deficient, Namibian records from December and March (Suhling et al. 2006).

**HABITAT:** Forested river margins.

**NOTES:** I found one dead male at Victoria Falls National Park, Zimbabwe, in May 2000, only 80 km away from the Chobe River.

Gynacantha villosa Grünberg, 1902.

**BOTSWANAN DISTRIBUTION:** A single record from Chobe Rapids near Kasane in September 1974 (Pinhey 1976) is the only record of the species so far.

**FLIGHT SEASON:** One record from September, one own Zimbabwe record from May, more information needed.

**HABITAT:** Rivers with dense forest.

**NOTES:** I observed this species as very common at Victoria Falls National Park, Zimbabwe, in May 2000. Due to their crespuscular activity species of this genus are likely underrepresented in surveys.

CORDULIIDAE

**Phyllomacromia contumax** Selys, 1879.

(= *Phyllomacromia bifasciata* Martin, 1912)


**FLIGHT SEASON:** Mainly rainy season, November to April, one record from June.

**HABITAT:** Rivers with moderate current and nearby woodland.

**NOTES:** Pinhey (1976) recorded it from the Boteti River at two localities in 1967. This is interesting, since in recent years this river was almost dry. But the species seems to disperse in some years as revealed by a record in central Namibia far from larger perennial rivers (Suhling et al. 2006). Dijkstra (2005) recently revised this genus.

**Phyllomacromia kimminsi** Fraser, 1954.

**AFRICAN DISTRIBUTION:** Sierra Leone, Uganda, Kenya, upper Zambezi catchment in Zambia and Botswana.

**BOTSWANAN DISTRIBUTION:** Five December records from the Maunachira River system in the northeastern Okavango Delta (Pinhey 1976). No recent records of this species.

**FLIGHT SEASON:** Only records from December.

**HABITAT:** Probably like other members of the genus at rivers in woodland.

**NOTES:** A poorly known species, on the southern subcontinent only recorded from the mentioned localities and from Ikilelge near the Zambezi River source (Pinhey 1984). The IUCN regional southern Africa red list status is Data Deficient.

**Phyllomacromia overlaeti** (Schouteden, 1934).

(=**Phyllomacromia paludosa** (Pinhey, 1976))

**BOTSWANAN DISTRIBUTION:** Northern Okavango Delta and Chobe River. Pinhey (1976) described *Macromia (Phyllomacromia) paludosa* from Shakawe, which is in fact this species (Dijkstra 2005). Own records: CL11-iii.2005, 1 [F].

**FLIGHT SEASON:** Not enough data, the record is from March.

**HABITAT:** Rivers with moderate current and nearby woodland.

**NOTES:** Next known records are from Victoria Falls, Zimbabwe and Maramba River, Zambia (Pinhey 1984). Suhling et al. (2006) mention it from Popa Falls, Kwando and Zambezi Rivers in the Namibian Caprivi. The own record is from a dead female individual.

**Phyllomacromia picta** (Selys, 1871).


**FLIGHT SEASON:** Mostly rainy season, records from January to May, one from September. In some regions like Chobe River probably throughout the whole year.

**HABITAT:** Rivers with moderate current and nearby woodland.

**LIBELLULIDAE**

**Acisoma panorpoides aiscalaphoides** Rambur, 1842.


**FLIGHT SEASON:** Records from all months, except June and July. In some regions probably throughout the whole year.

**HABITAT:** Quiet waterbodies, such as pools, backswamps and swampy river margins with floating leaved plants.

**Aethiothemis discrepans** Lieftinck, 1969.


**FLIGHT SEASON:** Records from February to June. Emergence took place in February and March, oviposition in June.

**HABITAT:** Rivers with moderate current, that have submerged grass at the bank and riverine forest.

**NOTES:** *A. discrepans* is probably synonym to *Aethiothemis solitaria* Martin, 1908 (K.-D.B. Dijkstra pers. comm.).

**Aethriamanta rezia** Kirby, 1889
Brachythemis lacustris

* Bradinopyga cornuta

**NOTES:** Maybe more widespread in hilly terrain in the southeastern part of Botswana or at Tsodilo Hills in the north.

**HABITAT:** Swampy rivers with dense vegetation and woodland.

**FLIGHT SEASON:** Rainy season, records from December to April. Teneral were only seen in January and February.

**HABITAT:** Rainfed temporary pools and puddles in rocky area.

**FLIGHT SEASON:** Data deficient, more information needed.

**BOTSWANAN DISTRIBUTION:**

**African Distribution:** A wide variety of freshwater habitats, from temporary pools to dams and rivers, even to brackish waters.

**FLIGHT SEASON:** Maybe throughout the year, records from August to mid June.

**HABITAT:** Rare and local in the Okavango Delta. I expect this species to occur also in similar large swamps like the Barotse Floodplain or Kafue Flats in Zambia, but so far there are no records from these areas. Southern Africa regional red list status: Data Deficient (IUCN 2006).

**NOTES:** Very rare and local in the Okavango Delta and habitat destruction in and around Maun, where it was found in the 70th (Pinhey 1976) but is absent today. Suhling et al. (2006) list records from the Kwando River in the Namibian Caprivi strip.

Brachythemis lacustris (Kirby, 1889).

**BOTSWANAN DISTRIBUTION:**


**FLIGHT SEASON:** Rainy season, records from September to April. Definitely absent from the northern Okavango Delta localities in early June.

**HABITAT:** Rivers with moderate current and submerged grass at the bank.

**Brachythemis wilsoni** Pinhey, 1952.

**AFRICAN DISTRIBUTION:**


**FLIGHT SEASON:** Rainy season, records from August to mid June.

**HABITAT:** A wide variety of freshwater habitats, from temporary pools to dams and rivers, even to brackish waters.

**Brachythemis leucoptera** Burmeister, 1839.

**AFRICAN DISTRIBUTION:** Sudan, Nigeria, Uganda, DR Congo and Botswana.


**FLIGHT SEASON:** Rainy season, records from December to March.

**HABITAT:** Swampy river margins and backswamps with diverse submerged and emerged vegetation.

**NOTES:** Very rare and local in the Okavango Delta. I expect this species to occur also in similar large swamps like the Barotse Floodplain or Kafue Flats in Zambia, but so far there are no records from these areas. Southern Africa regional red list status: Data Deficient (IUCN 2006).

* Bradinopyga cornuta* Ris, 1911.

**BOTSWANAN DISTRIBUTION:** New to Botswana. – Northern and southeastern Botswana. Selebi-Phikwe, 1.i.2003, 1 [M], W. Goodwin (NMBZ). Own records: CL4-v.2000, 1 [M], iii.2002, 2 [F,M].

**FLIGHT SEASON:** Data deficient, more information needed.

**HABITAT:** Rainfed temporary pools and puddles in rocky area.

**NOTES:** Maybe more widespread in hilly terrain in the southeastern part of Botswana or at Tsodilo Hills in the north.
**Chalcostephia flavifrons** Kirby, 1889.


**FLIGHT SEASON:** Rainy season, records from December to April.

**HABITAT:** Swamps close to rivers, surrounded by dense riverine forest.

**NOTES:** Noteworthy is the Chitabe record, which is the only from the seasonal flooded part of the Okavango Delta, the Chobe record is the first for this river. Suhling et al. (2006) mention two records in xii.2004 from the Kwando River at the Botswanan border.

---

* Crocothemis divisa* Baumann, 1898.

**BOTSWANAN DISTRIBUTION:** New to Botswana. – Tswapong Hills, Moremi Gorge, 29.iii.2002, 1 [M], N. Goodwin (NMBZ). No own records.

**FLIGHT SEASON:** Data deficient, more information needed.

**HABITAT:** Probably springbrooks and streams on rocky ground.

---

**Crocothemis erythraea** (Brullé, 1832).


**FLIGHT SEASON:** Probably throughout the year, but no records from October, November so far.

**HABITAT:** A wide variety of freshwater habitats, with a preference for stagnant water bodies.

---

**Crocothemis sanguinolenta** (Burmeister, 1839).


**FLIGHT SEASON:** Records from December to June, and one from September.

**HABITAT:** Streams and small rivers, preferably those with fast current and on rocky ground.

**NOTES:** The status of the species in the Okavango Delta is unclear. In recent years I only found *C. erythraea* there, whereas *C. sanguinolenta* I only recorded under xeric conditions in rocky regions. Also in Namibia the species has only been found at springs in rocky areas (Suhling et al. 2006).

---

**Diplacodes deminuta** Lieftinck, 1969.

(= *Diplacodes okavangoensis* Pinhey, 1976)


**FLIGHT SEASON:** Records from November to May, and one from August.

**HABITAT:** Swamps and extended floodplains with dense sedges.

**NOTES:** The status of specimens from the Zambezi (and Chobe) is not clear. According to Dijkstra (2006) individuals from South Africa, Zimbabwe and parts of Zambia belong to *D. pumilis*, whereas those from Okavango Delta are clearly *deminuta*. An overlapping zone exist at Lake Bangweulu and probably at the middle Zambezi River section.

---

**Diplacodes lefebvrii** (Rambur, 1842).

**FLIGHT SEASON:** Throughout the year, records from all months.

**HABITAT:** All kind of stagnant waters, swamps, floodplains and artificial pools, preferably those with floating leafed plants.

---

**Diplacodes luminans** (Karsch, 1893).

(= *Philonomon luminans* Karsch, 1893)


**FLIGHT SEASON:** Records from December to May. Most individuals till April.

**HABITAT:** Mostly at stagnant waters. In dry years I observed it mainly at the fringe of the Okavango Delta, in wet years the species spreaded widely into the Kalahari and dwelled temporary pools and pans, where it was often the dominating libellulid species.

**NOTES:** Dijkstra (2006) recently revised the genus *Diplacodes* and included *Philonomon.*

---

**Hemistigma albipunctum** (Rambur, 1842).


**FLIGHT SEASON:** Maybe throughout the year with a winter break from mid June to early September.

**HABITAT:** Swampy river margins with dense and diverse vegetation.

---

**Nesiothemis farinosa** (Förster, 1898).


**FLIGHT SEASON:** Rainy season, records from November to May.

**HABITAT:** Large or medium sized permanent rivers and streams.

---

**Nesiothemis minor** Gamble, 1966.

**AFRICAN DISTRIBUTION:** West Africa, Ghana, Guinea, Ivory Coast, Liberia, Nigeria and Sierra Leone.

**BOTSWANAN DISTRIBUTION:** Only a single historical record: Four Rivers, northeastern Okavango Delta, in December 1975 (Pinhey 1976). No recent records.

**FLIGHT SEASON:** Data deficient.

**HABITAT:** Data deficient.
NOTES: The status of this species in Botswana is absolutely unclear. The Botswana record doesn’t fit into the distribution pattern of this species and might be a misidentification.

* Olpogastra lugubris Karsch, 1895.


FLIGHT SEASON: Rainy season, without exceptions records from December to April.

HABITAT: Swiftly flowing streams and rivers. In the Okavango Delta typical at small and fast flowing channels through the Papyrus swamps. In copula at an artificial stream on a golf course in Kasane.

NOTES: Also recently recorded from the Kwanza River in Namibian Caprivi (Suhling et al. 2006). Remarkable is a male individual, which I found perching at a swimming pool of Leroo la Tau Lodge (OS2) far from any suitable habitat; long-distance dispersal is also recorded from Namibia (Suhling et al. 2006).

* Orthetrum abbotti abbotti Calvert, 1892.


FLIGHT SEASON: Data deficient.

HABITAT: Data deficient, in Namibia at well-vegetated springs (Suhling et al. 2006).

NOTES: Probably more widespread at Tswapong Hills and other rocky area in southeastern Botswana.

* Orthetrum brachiale (Palisot de Beauvois, 1817).


FLIGHT SEASON: Records from November to June.

HABITAT: Rivers, streams and pools, mostly in open savannah situations.

NOTES: During dry years only to be found close to the Okavango Delta and perennial waters, in wet years with extended rainy seasons it was able to spread into the Kalahari and settle temporary pools, where it was the dominating Orthetrum species.

* Orthetrum chrysostigma chrysostigma (Burmeister, 1839).


FLIGHT SEASON: Probably throughout the year, records from all months except June.

HABITAT: All kind of freshwater habitats, but most common at temporary waters in xeric and rocky surroundings.

NOTES: More distributed, I found it very seldom in the humid north. Obviously not able to settle permanent water bodies, like O. brachiale or O. machadoi do. O. chrysostigma is independent from perennial water due to rapid larval development (Suhling et al. 2004, Johansson & Suhling 2004).

* Orthetrum guineense Ris, 1910.


FLIGHT SEASON: More information needed.

HABITAT: At a small stream in rocky terrain with shady sections.

* Orthetrum icteromelas cinctifrons Pinhey, 1970.


FLIGHT SEASON: Mostly rainy season, records from December to early June, and one record from September.

HABITAT: Extended swamps and floodplains with rich vegetation.
NOTES: It was the most common Orthetrum species in the central Okavango Delta.

FLIGHT SEASON: Records from February and March, more information needed.
HABITAT: Perennial rivers and streams with shady forest.

Orthetrum machadoi Longfield, 1955.
FLIGHT SEASON: Rainy season, records without exception from December to March.
HABITAT: Well vegetated swampy rivers or lagoons with dense riverine forest.
NOTES: Since Suhling et al. (2006) list some records from Kwando an Zambezi Rivers in Namibian Caprivi I expect this species to occur also at Linyanti and Chobe Rivers.

FLIGHT SEASON: Records from December to early June.
HABITAT: Swampy rivers and floodplains with rich vegetation and open woodland.
NOTES: Also recorded from Kwando an Okavango Rivers in Namibian Caprivi (Suhling et al. 2006).

* Orthetrum stemmale stemmale (Burmeister, 1839).
FLIGHT SEASON: Data deficient, records only from February and March.
HABITAT: I found it in dense riverine forest with small clearings along the Chobe River.
NOTES: Next known localities of this species are also eastern Caprivi on Namibian side of the Chobe River (Suhling et al. 2006) and Victoria Falls in neighbouring Zimbabwe (Lehmann & Wendler 1996).

Orthetrum trinacria trinacria (Selys, 1841).
FLIGHT SEASON: Probably throughout the year, records from all months except August.
HABITAT: Mainly at temporary water bodies, also brackish pools. Rare or absent in the northern Okavango Delta at perennial water courses.
NOTES: During extended rainy seasons as in 2000 it was able to disperse into arid biomes and bred in rainfed waters.

Palpopleura deceptor (Calvert, 1899).
FLIGHT SEASON: Records only from March, more information needed.
HABITAT: I observed it at small shallow pools along the river courses.

Palpopleura jucunda jucunda Rambur, 1842.
FLIGHT SEASON: Data deficient, records from dry season in April, May, July and September.
HABITAT: Probably also at well-vegetated springbrooks as in Namibia (Suhling et al. 2006), more data needed.

Palpopleura lucia (Drury, 1773).
FLIGHT SEASON: Records from dry season, April, May and September.
HABITAT: Data deficient, probably at shallow pools.
NOTES: This and the following species only recently separated by DNA-analysis (Mitchell & Samways 2005). All the historical Botswana records of Pinhey (1976) definitely belong to *P. lucia*.

*Palpopleura portia* (Drury, 1773).

**Botswanan Distribution:** New to Botswana. – Moeng College, northeastern Tswapong Hills, i.1992, 2[M], (BNMG). No own records.

**Flight Season:** Data deficient, only this record from January.

**Habitat:** At the locality Moeng College I recently found springs and shallow pools.

**Notes:** *Vide supra*. Pinhey (1976) mentioned only the form *lucia* from Botswana, so the new species *portia* is a real addition to the Botswana checklist.

*Pantala flavescens* (Fabricius, 1798).


**Flight Season:** Most common during rainy season, records from October to June.

**Habitat:** A wide variety of temporary freshwater habitats, also brackish water. Obviously weak in competition at permanent water, since it was absent from large parts of the permanent rivers and swamps. Very common during extended rainy seasons like in 2006, when it dispersed deep into the Kalahari and bred in all kinds of rainfed pans and pools.

**Notes:** Probably the Odonata species with the widest distribution in Botswana, I often found it en masse dead in radiator grills of cars after long overland tours without local specification.

*Parazyxomma flavicans* (Martin, 1908)


**Flight Season:** Rainy season, all available records from December to April.

**Habitat:** At medium sized to large well-vegetated rivers with dense woodland. The crepuscular species has only been seen during the day, hidden in the shade of trees. I collected one individual at light during night.

**Notes:** For taxonomic discussion and Kwando River records *vide Suhling et al.* (2006).

*Rhyothemis fenestrina* (Rambur, 1842).


**Flight Season:** Rainy season from September to March, it was rare from February onwards and definitely absent from suitable habitats in early June.

**Habitat:** Swampy perennial rivers and adjacent floodplains.

**Notes:** Despite intense surveys I was not able to confirm the historical record from Maun, probably due to habitat degradation by land use change in this area.

*Rhyothemis semihyalina* (Desjardins, 1832).


**Flight Season:** Rainy season from September to March, it was rare from February onwards and definitely absent from suitable habitats in early June.

**Habitat:** Swampy perennial rivers and adjacent floodplains.

**Notes:** Despite intense surveys I was not able to confirm the historical record from Maun, probably due to habitat degradation by land use change in this area.

*Rhyothemis sombillyana* (Desjardins, 1832).


**Flight Season:** Rainy season from October to May.
**Habitat:** River backswamps, temporary pools and well vegetated pans, in southern Botswana also at dams. I found it as typical in the southern temporary flooded part of the Okavango Delta, it was rare in the panhandle.

*Sympetrum fonscolombii* (Selys, 1840).


**Flight season:** Probably throughout the year, records from all months except September.

**Habitat:** Mostly temporary water bodies, like pools and pans, also brackish waters.

**Notes:** A species which depends on rainfall and obviously follows the floodwater in the Okavango Delta. In May 2000 I have seen thousands of mating pairs appearing with the incoming flood of the Boro and Thamalakane Rivers in Maun to oviposit there.

*Sympetrum navasi* Lacroix, 1921.

**Botswanan distribution:** Okavango Delta and adjacent areas. Historical records only between Maun and Magkadigkadi Pan (Pinhey 1976).

**Own records:** OP7-ii.2002.

**Flight season:** Records between December and February, one from August.

**Habitat:** Probably rivers and their floodplains and oxbows. One male perching on submerged grass along a river.

**Notes:** Also recorded in the Caprivi from Kwando and Zambezi Rivers (Suhling et al. 2006), and therefore the species might also occur in Linyanti swamps and at the Chobe River.

*Tholymis tillarga* (Fabricius, 1798).


**Flight season:** Rainy season, records between December and May, tenerals throughout the year, exuviae in March.

**Habitat:** Swampy rivers with diverse vegetation and dense intact riverine forest. Exuviae were found in backswamps of a large river.

**Notes:** Sometimes I found huge aggregations hunting at dusk in the forests of the Okavango Delta panhandle, during the day they rested in dense shrubs and trees.

*Tramea basilaris* (Palisot de Beauvois, 1807).


**Flight season:** Mainly rainy season, records from November to May.

**Habitat:** At many types of freshwater habitats, mainly temporary pools and pans with grassy vegetation.

**Notes:** In wet years like 2000 and 2006 it was extremely common together with *Pantala flavescens* in mixed swarms and dispersed far into the Kalahari.

*Tramea limbata* (Desjardins, 1832).

**Botswanan distribution:** As *T. continentalis* Selys, 1878 recorded from a single locality: Mosu (Nathane), S of Magkadigkadi Pans, 1.1974 (Pinhey 1976). No more records so far.

**Flight season:** More information needed.

**Habitat:** Probably ponds and dams.

* *Trithemis aconita* Lieftinck, 1969.


**Flight season:** More information needed.

**Habitat:** Probably ponds and dams.

* *Trithemis aequalis* Lieftinck, 1969.

**Botswanan distribution:** Only Okavango Delta. Recorded as *T. aequalis falconis* from Khwai River and Four Rivers area in northeastern Okavango Delta (Pinhey 1976). No new records.

**Flight season:** Only December records, more information needed.
**Trithemis annulata annulata** (Palisot de Beauvois, 1807).

**HABITAT:** Probably swampy rivers, more information needed.

**NOTES:** A record from Popa Falls, Okavango River, Namibia (Suhling et al. 2006) makes the occurrence in the northern panhandle likely. The species is only known from Okavango River and from Lake Bangweulu in Zambia (Pinhey 1984). More research action urgently necessary.

**Trithemis arteriosa arteriosa** (Burmeister, 1839).


**FLIGHT SEASON:** Maybe throughout the year in variable numbers, records from September to July, most common in January to March.

**HABITAT:** At perennial waters, like streams to large rivers, their backswamps and floodplains. Not at temporary pans.


**AFRICAN DISTRIBUTION:** Known from Kasama in northern Zambia, where the species was originally described (Pinhey 1970a), and from the Okavango Delta with the allotypes. Furthermore, an additional sight-record from Lake Bangweulu, Zambia exist (Pinhey 1984).


**FLIGHT SEASON:** Data deficient. From Botswana only December records, Zambia in March (Pinhey 1970a, 1984).

**HABITAT:** Probably swamps or swampy waters.

* **Trithemis donaldsoni** (Calvert, 1899).

**BOTSWANAN DISTRIBUTION:** New to Botswana. – Chobe River and southeastern Botswana. Nnywane Dam, 15 km N of Lobatse, 5.xii.1983, 1 [M], M. Parr; Letsibogo Dam, Mmadinare, 1.i.2002, 1[F], Lestibogo Dam spillway, Mmadinare, 26.i.2003, 2 [M], V., J. & W. Goodwin (NMBZ). Own records: CL4-iii.2002.

**FLIGHT SEASON:** Records from November, January and March.

**HABITAT:** Large swiftly flowing rivers, dams and streams in the south.

**NOTES:** I expect it to occur also in the northern panhandle of the Delta, since Suhling et al. (2006) recorded it from the Okavango in western Caprivi.

* **Trithemis furva** Karsch, 1899.


**FLIGHT SEASON:** Data deficient.

**HABITAT:** Only known from a stream in a shady gorge.

**NOTES:** Likely to be more widespread in Tswapong and other neighbouring hills.

* **Trithemis hecate** Ris, 1912.


**FLIGHT SEASON:** In the Okavango Delta throughout the year, records from all months except August.

**HABITAT:** Swampy rivers and their adjacent floodplains. I found it as one of the most common *Trithemis* in the central Okavango Delta. Teneral were often seen resting in scrubland.

*Trithemis kirby ardens* (Gerstäcker, 1891).


**FLIGHT SEASON:** In some regions probably throughout the year.

**HABITAT:** Mainly temporary rivers and pools.

*Trithemis monardi monardi* Ris, 1931.


**FLIGHT SEASON:** Mainly rainy season with the highest numbers, but records from all months except July.

**HABITAT:** Well-vegetated rivers and channels with extended swampy margins.

**NOTES:** The subspecies *T. m. insuffusa* Pinhey, 1970, occurs in eastern Angola, Zambia, Malawi, Zimbabwe & Mozambique and might occur at the Chobe River. Next known locality is Katambora at the Zambezi River (Pinhey 1984).

*Trithemis* sp.nov. (undescribed).


**FLIGHT SEASON:** Most common during the rainy season, but records available between August and June. Many tenerals in January to March.

**HABITAT:** Swampy margins of medium sized to large rivers with adjacent woodland. Not found at ephemeral habitats. At several places this was the dominating libellulid species in the Okavango Delta. Teneral were often found in woodland.

**NOTES:** According to DNA sequencing recently undertaken by Giere (2004) the Okavango and Caprivi population belong to a new species, close to *T. stictica*. Description is in preparation by S. Giere. Real *T. stictica* is known e.g. from Naukluft region, Namibia (Martens et al. 2003, Suhling et al. 2006) and other arid regions in southern Africa. As I only have Botswanan records from the northern rivers, these likely all belong to this new taxon. There might be an overlapping zone between the both species at the Chobe River, but all individuals I have seen there belong to this new species. I expect the real *T. stictica* to occur at streams in the arid southeastern part of the country in the Limpopo River basin, but so far we don’t have any records from Botswanan territory. Next known localities of *T. stictica* are in South Africa opposite Martins Drift close to the Limpopo River. A useful distinguishing feature in the field is the eye coloration. In the new species the adult eyes show a maroon-brown cap, eyes of adult *T. stictica* are petrol-green-blue above.

*Urothemis asciugata* (Selys, 1872).


**FLIGHT SEASON:** Records between February and May, more information needed.

**HABITAT:** Slow flowing rivers with rich vegetation.

*Urothemis edwardsii* (Selys, 1849).

FLIGHT SEASON: Mainly rainy season, records between September and May.

HABITAT: Mainly at swampy rivers and their floodplains. It was one of the most common libellulid species in the southern Okavango Delta.

Zygonoides fuelleborni Grünberg, 1902.


FLIGHT SEASON: Recorded from February till April, but more information needed.

HABITAT: Fast flowing stretches of large rivers or at rapids and waterfalls.

NOTES: These are the first records for the Okavango Delta. Until the revision (Dijkstra et al. 2006) this species has been placed in the genus Olpogastra.

Zygonyx natalensis (Martin, 1900).

BOTSWANAN DISTRIBUTION: Chobe River. One historical record from Chobe Rapids near Kasane (Pinhey 1976).

Own records: CL4-iii.2002.

FLIGHT PERIOD: More information needed.

HABITAT: Restricted to waterfalls and rapids with turbulent water.

Zygonyx torridus (Kirby, 1899).


FLIGHT SEASON: Records from December till May, but not enough data.

HABITAT: Perennial rocky streams or rivers with turbulent current and waterfalls.

NOTE: Since fast-flowing and perennial water is a rare habitat type in Botswana, both species of Zygonyx seems to be very local here.

Table I. Checklist of the Odonata species recorded from Botswana with special reference to their known occurrence in the different freshwater ecoregions within the border of Botswana: UZF – Upper Zambezi Floodplains; OF – Okavango Floodplains; K – Kalahari; SK – Southern Kalahari; STH – Southern Temperate Highveld; ZL – Zambezi Lowveld (according to Thieme et al. 2005), + = presence.

<table>
<thead>
<tr>
<th>no.</th>
<th>species</th>
<th>UZF</th>
<th>OF</th>
<th>K</th>
<th>SK</th>
<th>STH</th>
<th>ZL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><em>Phaon iridipennis</em> (Burmeister, 1839)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>2</td>
<td><em>Platycypha caligata</em> (Selys, 1853)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><em>Lestes dissimulans</em> Fraser, 1955</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><em>Lestes pallidus</em> Rambur, 1842</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>5</td>
<td><em>Lestes pinheyi</em> Fraser, 1955</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><em>Lestes plagiiatus</em> (Burmeister, 1839)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td><em>Lestes tridens</em> McLachlan, 1895</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><em>Lestes virgatus</em> (Burmeister, 1893)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td><em>Aciagrion gracile</em> (Sjöstedt, 1910)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td><em>Aciagrion tenebria</em> Kimmins, 1955</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td><em>Africalagma glaucum</em> (Burmeister, 1839)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td><em>Africalagma subtile</em> (Ris, 1921)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Species Name</td>
<td>Author</td>
<td>Additional Info</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------</td>
<td>--------------------------------</td>
<td>-----------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td><em>Agriocnemis angolensis</em> Longfield, 1947</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td><em>Agriocnemis excis</em> Selys, 1872</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td><em>Agriocnemis forcipata</em> Le Roi, 1915</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><em>Agriocnemis gratiosa</em> Gerstäcker, 1891</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td><em>Agriocnemis ruberrima albifrons</em> Balinsky, 1963</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td><em>Agriocnemis victoria</em> Fraser, 1928</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td><em>Azuragrion nigrisorium</em> (Selys, 1876)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td><em>Ceriagrion corallinum</em> Campion, 1914</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td><em>Ceriagrion glabrum</em> (Burmeister, 1839)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td><em>Ceriagrion katamborae</em> Pinhey, 1961</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td><em>Ceriagrion suave</em> Ris, 1921</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td><em>Ichnura nigrofasciata</em> (Rambur, 1842)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td><em>Pinheycnemis angolensis</em> Longfield, 1947</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td><em>Pseudagrion acaecia</em> Förster, 1906</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td><em>Pseudagrion assegaii</em> Pinhey, 1950</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td><em>Pseudagrion coeleste</em> Longfield, 1947</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td><em>Pseudagrion commontia nigerrimum</em> Pinhey, 1950</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30</td>
<td><em>Pseudagrion deningi</em> Pinhey, 1961</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>31</td>
<td><em>Pseudagrion fisheii</em> Pinhey, 1961</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>32</td>
<td><em>Pseudagrion glaucens</em> Selys, 1876</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>33</td>
<td><em>Pseudagrion hageniae</em> Karsch, 1893</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>34</td>
<td><em>Pseudagrion hamoni</em> Fraser, 1955</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td><em>Pseudagrion helena</em> Balinsky, 1964</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>36</td>
<td><em>Pseudagrion kerstii</em> (Gerstäcker, 1889)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td><em>Pseudagrion massaicae</em> Sjöstedt, 1909</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38</td>
<td><em>Pseudagrion nubicum</em> Selys, 1876</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>39</td>
<td><em>Pseudagrion rufostigma</em> Longfield, 1947</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>40</td>
<td><em>Pseudagrion salisburyense</em> Ris, 1921</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td><em>Pseudagrion geestladii jacksonii</em> Pinhey, 1961</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>42</td>
<td><em>Pseudagrion sublacteum</em> (Karsch, 1893)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>43</td>
<td><em>Pseudagrion sudanicum</em> Pinhey, 1955</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>44</td>
<td><em>Metcnemis singularis</em> Karsch, 1891</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45</td>
<td><em>Elattoneura alata</em> (Grünsberg, 1902)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>46</td>
<td><em>Elattoneura glauca</em> (Selys, 1860)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>47</td>
<td><em>Ceratogomphus pictus</em> Selys, 1854</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>48</td>
<td><em>Crenogomphus cornutus</em> Pinhey, 1956</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49</td>
<td><em>Gomphidius quareii</em> (Schouteden, 1934)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>50</td>
<td><em>Ictinogomphus dundeei</em> Pinhey, 1961</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51</td>
<td><em>Ictinogomphus ferox</em> (Rambur, 1842)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>52</td>
<td><em>Lestinogomphus angustus</em> Martin, 1911</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>53</td>
<td><em>Lestinogomphus silkses</em> Kipping, 2006</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>54</td>
<td><em>Neurogomphus coeius</em> Cammaerts, 2004</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55</td>
<td><em>Neurogomphus zambezensis</em> Cammaerts, 2004</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td><em>Paragomphus elpidius</em> (Ris, 1921)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>57</td>
<td><em>Paragomphus genei</em> Selys, 1841</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58</td>
<td><em>Ptyllagomphus schoutedeni</em> Schouteden, 1933</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59</td>
<td><em>Anax bangweuluensis</em> Kimmins, 1955</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td><em>Anax ephippiger</em> (Burmeister, 1839)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td><em>Anax imperator</em> Leach, 1815</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td><em>Anax tristis</em> Hagen, 1867</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Scientific Name</td>
<td>Author and Year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------</td>
<td>----------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>Gynacantha manderica</td>
<td>Grünberg, 1902</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>Gynacantha villosa</td>
<td>Grünberg, 1902</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>Phyllomacromia contumax</td>
<td>Selys, 1879</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>Phyllomacromia kimmini</td>
<td>Fraser, 1954</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>Phyllomacromia overtacti</td>
<td>(Schouteden, 1934)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>Phyllomacromia picta</td>
<td>(Selys, 1871)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>Aziona panpurpoides axalaphoides</td>
<td>Rambur, 1842</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>Aethiothemis discrepans</td>
<td>Lief tinck, 1969</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>Aethriamanta reza</td>
<td>Kirby, 1889</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>Brachythemis lacastris</td>
<td>(Kirby, 1889)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>Brachythemis leucosticta</td>
<td>(Burmeister, 1839)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>Brachythemis wilsoni</td>
<td>Pinhey, 1952</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>Bradinopyga ornata</td>
<td>Ris, 1911</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>76</td>
<td>Chalostephia flavifrons</td>
<td>Kirby, 1889</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>77</td>
<td>Croothonemis divisa</td>
<td>Baumann, 1898</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>78</td>
<td>Croothonemis erythraca</td>
<td>(Brullé, 1832)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>79</td>
<td>Croothonemis sanguinolenta</td>
<td>(Burmeister, 1839)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>80</td>
<td>Diplacodes deminuta</td>
<td>Lief tinck, 1969</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>81</td>
<td>Diplacodes lefebrii</td>
<td>Rambur, 1842</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>82</td>
<td>Diplacodes luminans</td>
<td>Karsch, 1893</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>83</td>
<td>Hemistigma albipunctum</td>
<td>(Rambur, 1842)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>Nesiothemis farinae</td>
<td>(Förster, 1898)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>85</td>
<td>Nesiothemis minor</td>
<td>Gambles, 1966</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>Olpogastra lugubris</td>
<td>Karsch, 1895</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>87</td>
<td>Orthetrum abboti</td>
<td>Calvert, 1892</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>88</td>
<td>Orthetrum brachiale</td>
<td>(Palisot de Beauvois, 1817)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>89</td>
<td>Orthetrum chrysostigma</td>
<td>(Burmeister, 1839)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>90</td>
<td>Orthetrum guineense</td>
<td>Ris, 1910</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>91</td>
<td>Orthetrum ictromelas cinctifrons</td>
<td>Pinhey, 1970</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>92</td>
<td>Orthetrum julia falsum</td>
<td>Longfield, 1955</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93</td>
<td>Orthetrum machadoi</td>
<td>Longfield, 1955</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94</td>
<td>Orthetrum robustum</td>
<td>Balinsky, 1965</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95</td>
<td>Orthetrum sternale</td>
<td>(Burmeister, 1839)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96</td>
<td>Orthetrum trinacria</td>
<td>(Selys, 1841)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97</td>
<td>Palpopleura deceptor</td>
<td>(Calvert, 1899)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>98</td>
<td>Palpopleura jacunda</td>
<td>Rambur, 1842</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99</td>
<td>Palpopleura lucia</td>
<td>(Drury, 1773)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100</td>
<td>Palpopleura portia</td>
<td>(Drury, 1773)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101</td>
<td>Pantala flavescens</td>
<td>(Fabricius, 1798)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102</td>
<td>Parazygomma flavicans</td>
<td>(Martin, 1908)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103</td>
<td>Rhyothemis fenestrina</td>
<td>Rambur, 1842</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>104</td>
<td>Rhyothemis sombyalina</td>
<td>(Desjardins, 1832)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>105</td>
<td>Sympetrum fonscolombii</td>
<td>(Selys, 1840)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>106</td>
<td>Sympetrum navari</td>
<td>Lacroix, 1921</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>107</td>
<td>Thydinis tillarge</td>
<td>(Fabricius, 1798)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>108</td>
<td>Trama basilaris</td>
<td>(Palisot de Beauvois, 1807)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>109</td>
<td>Trama limbata</td>
<td>(Desjardins, 1832)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110</td>
<td>Trichemis aconita</td>
<td>Lief tinck, 1969</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111</td>
<td>Trichemis aequalis</td>
<td>Lief tinck, 1969</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112</td>
<td>Trichemis annulata</td>
<td>(Palisot de Beauvois, 1807)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
DISCUSSION

The updated checklist of the Odonata of Botswana contains currently 125 species. This results of the addition of 21 species, which are new for the national fauna and the substraction of species of the previous checklist. The addition of the new species is an increase of 20 % to the national Odonata biodiversity. The previous list (Pinhey 1976) includes 104 species which were actually recorded and 10 species which Pinhey expected to occur in Botswana. Half of Pinhey’s expectations could be confirmed, as: *Africalagma nubile*, *Agrionemis angolensis*, *Neurogomphus octius*, *Bradinopyga cornuta* and *Trithemis aconita*. One species has to be deleted from the checklist, as shown above *Trithemis stictica* is not part of the Botswanan fauna so far known. All the records listed in Pinhey (1976) under this name belong to a new undescribed taxon (Giere 2004, *vide supra*).

In Botswana no endemic species occur, the new *Lestwingomphus sikhs*, Kipping 2006, also has been found at the Zambezi River and may also occur further north in Namibia and Angola at the middle Okavango River section. Of the following species no Botswanan record exist since 1975: *Aciagrion gracile*, *A. steeleae*, *Ceriagrion corallinum*, *Pseudagrion fisheri*, *P. helena*, *Phyllomacromia villosa*, *Gynacantha villosa*, *Phyllogomphus selysi*, *Phyllocara kimminsi*, *Nesiothemis minor*, *Tramea limbata*, *Trithemis aequalis* and *T. brydeni* (*vide Pinhey 1976*). This is about 11 % of the national fauna. Whereas the most species of this compartment has been recently recorded in neighbouring countries (*vide Tarboton & Tarboton 2002, 2005; Suhling et al. 2006*), of a few species no new record exist at all and their current status in southern Africa remains unclear. These are *Aciagrion steeleae*, *Pseudagrion fisheri*, *Phyllocara kimminsi*, *Nesiothemis minor* and *Trithemis brydeni*. Of *Trithemis aequalis* only a single recent record exist from the Okavango River at Popa Falls in 1993 (Suhling et al. 2006). All of these species show a disjunct distribution pattern, they occur further north e.g. near Lake Bangweulu and have their southermost occurrence in the Okavango Delta. Here the question is whether they appear only irregularly, which I suppose for *N. minor*, or whether they are a regular part of the fauna. Probably most of them are only overlooked or not recorded, due to their very local distribution and/ or their very restricted flying period. Pinhey (1976) recorded most of these species only in December 1973 and 1975 at Four Rivers and Xugana Lagoon in the northeastern Okavango Delta. Unfortunately I had no opportunity to visit this area, the next sampled locality is Vumbura area, which is about 50 km west and was visited end of January. Here further research is needed.

To this group of tropical swamp and river species also belong *Agrionemis ruberrima albofrons*, *Ceriagrion katamborae*, *Pinheyagrion angolicum*, *Pseudagrion assougai*, *P. deningi*, *P. rufitiguma* or *Anax bangwenensis*, which show a strong similarity between the swamps of the Okavango Floodplain ecoregion and those of the Zambebian Headwaters and Bangweulu-Mweru region. Large parts of the Upper Zambezi Floodplain ecoregion with the Barotse Floodplains or the Kafue ecoregion in Zambia are underresearched with an almost complete lack of Odonata records. Indicated by a recent record of *Agrionemis ruberrima albofrons* from Mongu, Barotse Floodplain (*vide supra*) I assume a very similar Odonata fauna in these areas between Lake Bangweulu and the Okavango Delta. In terms of terrestrial habitat classification they all together are combined to the Zambebian Flooded Grassland and the Kalahari forms a natural barrier in the south. So whereas the northern part of Botswana is highly influenced by the tropical Zambezi River basin, in subtropical southeastern Botswana this rule is probably taken by the Limpopo River system as a colonisation corridor. Species like *Pseudagrion communis*, *P. salisburyense* or *Ceratogomphus pictus* are exclusively to be found here.

The largest amount of the national Odonata species are widespread African savannah species, which widely occur in all or the most of the freshwater ecoregions of Botswana. Such species, like *Anax imperator*, *Brachythemis leucosticta*,

<table>
<thead>
<tr>
<th>recorded species per ecoregion:</th>
<th>89</th>
<th>96</th>
<th>29</th>
<th>11</th>
<th>30</th>
<th>62</th>
</tr>
</thead>
<tbody>
<tr>
<td>113 <em>Trithemis arteriosa</em> (Burmeister, 1839)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>114 <em>Trithemis brydeni</em> Pinhey, 1970</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115 <em>Trithemis donaldsoni</em> (Calvert, 1899) *</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>116 <em>Trithemis furva</em> Karsch, 1899 *</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>117 <em>Trithemis becata</em> Ris, 1912</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>118 <em>Trithemis kirby ardens</em> (Gerstäcker, 1891)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>119 <em>Trithemis monarad</em> Ris, 1931</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>120 *Trithemis sp. nov. (undescribed) *</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>121 <em>Urothemis asignata</em> (Selys, 1872)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>122 <em>Urothemis edwardsii</em> (Selys, 1849)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123 <em>Zygonoides juelloboeri</em> (Grünberg, 1902)</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124 <em>Zygonyx natalensis</em> (Martin, 1900)</td>
<td>+</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125 <em>Zygonyx torridus</em> (Kirby, 1889)</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

...
Diplacodes lefebvrii or members of the genus Palpopleura are able to disperse and breed in temporary water bodies under xeric conditions as well as in more stable and open savannah environments. Thus I observed a preference for more or less perennial habitats, where those species can be very common. Another distinguishable group are migrants, like Lestes pallidus, Anax ephippiger, Pantala flavescens, Sympertrum jonscolobium, Crocothemis erythraea or Diplacodes luminans. At the new filled rainpools in the Kalahari desert near Ghanzi these were the first species which appeared and successfully reproduced. Often those species were seen flying in front of rainstorms far from any permanent water.

Botswana is a flat country with only some isolated hills, Tsodilo Hills as the highest in the northwest, Goha Hills in the north and a concentration of hills in the southeast with Tsawapong Hills as the most famous. These are mainly dry rock formations, which are rising few hundred metres above the ground and are not comparable with e.g. the mountains in eastern Zimbabwe. Only few mountain species are mostly absent from the country. Only few widespread species, which are known from lower elevations, were found in the hills in the southeast. These are Pseudagrion bugnani, P. kersteni or Trithemis furva, so far all of the mentioned species has been only found here.

Odonata species of dense riverine forest are naturally restricted to northern parts of the Okavango Delta and the Chobe River. Mostly here only fragments of those forests exist. From the conservation point of view land use change and habitat degradation or even habitat loss are the most important threats for Odonata (Clausnitzer & Jödicke 2004). In Botswana these threats are cutting of pristine riverine forest for cattle grazing, firewood and human settlements, water extraction in settlements for human needs, growing tourism in parts of the Okavango Delta and pollution by chemicals in order to control tsetse flies.

To get an impression what habitat degradation and habitat loss means a look on the current situation in and around Maun and a comparison with the past some few decades ago is most helpful. Local people from Maun remind the ever flowing Thamalakane River in the mis 70th with dense riverine forest, Hippopotamusises in the river and even lions straying around the huts. Today lions are only fairy tales, most of the forest is cuttet to satisfy the demand for firewood or timber and the Thamalakane River is most of the time dry or only a chain of muddy pools. These results margin can also be observed where roads and settlements are very close to it, e.g. around the panhandle and along the Shakawe-Sehitwa-Maun road.

A serious and often discussed issue is the spraying of the Delta against the tsetse fly with deltamethrin or endosulphan. A campaign of this aerial spraying was undertaken in 2001 and 2002 with deltamethrin and covered the Shakawe-Sehitwa-Maun road. endosulphan. A campaign of this aerial spraying was undertaken in 2001 and 2002 with deltamethrin and covered the Shakawe-Sehitwa-Maun road. These results are not useful to assess long-term impacts on invertebrates and the results are overlapped by natural fluctuations of the population density from year to year. It seems very promising to study the long-term impact of deltamethrin on dragonfly larvae. This is best to be done under semi-natural conditions, e.g. in sprayed and unsprayed ponds. Then reproduction success is simple to assess.

A possible threat of the Okavango Delta ecosystem is the constuction of a dam for an electric power plant in the Namibian Captivi near Popa Falls. Derived from the current knowledge of Odonata distribution it became clear that Botswana has a strong responsibility for the protection of the following species, which have large parts of their known distribution in the country. These are: Aciagrion steelae, Ceriagrion katamborae, Pinheyagrion angolicum, Pseudagrion deningi, P. fisheri, P. helena, P. rufostigma, Lastinogomphus sikoe, Ictinogomphus dundoensis, Anax bangweuluensis, Brachythemis wilsoni, Nesiothemis minor, Trithemis aequalis, T. tigrina and T. spec. nov. (undescribed).

The new checklist of the Odonata of Botswana is only preliminary. Some of the regions are surveyed only few times and much more species are to expect. Gathering of distribution data e.g. from the southern Kalahari and from the Tuli Block in the southeast is only at the beginning. Whereas the first will probably not bring new species to the national list the latter is very promising. Table 2 gives an overview about Odonata species which I expect to occur in Botswana, due to their distribution in neighbouring countries.

**Table 2. Odonata species expected to occur in Botswana due to their regional distribution.**

<table>
<thead>
<tr>
<th>Species</th>
<th>Distribution</th>
<th>where to expect in Botswana, and preferred habitat</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lestes amicus Martin, 1910</td>
<td>Zimbabwe, Zambia to Tanzania, next record from Victoria Falls</td>
<td>Chobe River</td>
<td>Pinhey (1980, 1984)</td>
</tr>
</tbody>
</table>
ACKNOWLEDGEMENTS

Six years of work in Botswana were only possible with a lot of help of many friends. I would like to thank the director, Lars Ramberg, with all the staff members of the Harry Oppenheimer Okavango Research Centre (HOORC) in Maun and Klaus Richter of Anhalt University, Bernburg, Germany, for their trust, help and various supports. Thoralf Meyer was a generous host and is a very good friend in Maun, thank you man! I am grateful to the Worldwide Dragonfly Association (WDA), the International Dragonfly Fund (IDF) and the Heinrich-Böll-Stiftung (HOORC) in Maun and Klaus Richter of Anhalt University, Bernburg, Germany, for their trust, help and various supports. Thoralf Meyer was a generous host and is a very good friend in Maun, thank you man! I am grateful to the Wilderness Safaris, who made my Kaparota time possible, especially to Map Ives, Tony Reumerman, Angela Morgan and Anthony Bennet. Stanza Molodi was an excellent guide and helped in the field with enthusiasm. I thank all my colleagues working on African Odonata. Frank Suhling, Andreas Martens, Reinhard Jödicke and Eugène Marais helped with identification, literature and numerous valuable hints. Jill Silsby, Mike Parr and Elmar Schuran provided records from Botswana. K.-D. Dijkstra provided the records of the National Museum Bulawayo and helped with literature and many things. Moreetsi Bogosi checked the Botswana National Museum collection (BNMG) and Warwick Tarboton provided data from the Transvaal Museum (TMSA). Dennis Paulson provided records of his collection. Pete Hancock of Birdlife Botswana provided private data. Michael J. Samways helped to indentify some tricky specimens and gave helpful comments.

Last but not least I am grateful to my family, which I often left alone, for their love and enthusiasm.

REFERENCES


Appendix I

List of localities sampled by the author.

**Okavango Delta North, panhandle and +/- Permanent flooded part (OP..)**


OP6. Floodplain, left river bank near Drotzky's Cabins, 0.6 m deep, with fast current and dense stands of flooded grass *Vossia cuspidata* (18°24′27″S, 21°53′08″E): 8.vi.2000.


OP12. Large lagoon near Fieldcamp 1, deep stagnant water fringed by *Cyperus papyrus*, surrounded by open woodland (18°27′01″S, 21°58′21″E): 15.ii.2002.


OP18. Main channel to Ngquma Lediba (2 m deep, 10 m wide), lined by flooded grass and *Cyperus papyrus* and partly woodland (18°57′02″S, 22°23′07″E): 19.ii.2002.

OP19. Narrow channel to Ngquma Lediba (2 m deep, 10 m wide), lined by flooded grass and dense *Cyperus papyrus* (18°57′43″S, 22°23′38″E): 19.ii.2002.

OP20. Okavango main channel at Sepopa Swamp Stop, with moderate current, 30 m wide, surrounded by Papyrus and riverine forest (18°45′01″S, 22°11′58″E): 25.-31.iii.2005.


**Okavango Delta South, panhandle (OP..)**


OP6. Floodplain, left river bank near Drotzky's Cabins, 0.6 m deep, with fast current and dense stands of flooded grass *Vossia cuspidata* (18°24′27″S, 21°53′08″E): 8.vi.2000.


OP12. Large lagoon near Fieldcamp 1, deep stagnant water fringed by *Cyperus papyrus*, surrounded by open woodland (18°27′01″S, 21°58′21″E): 15.ii.2002.


OP18. Main channel to Ngquma Lediba (3 m deep, 15 m wide), lined by flooded grass, *Cyperus papyrus* and partly woodland (18°57′02″S, 22°23′07″E): 19.ii.2002.

OP19. Narrow channel to Ngquma Lediba (2 m deep, 10 m wide), lined by flooded grass and dense *Cyperus papyrus* (18°57′43″S, 22°23′38″E): 19.ii.2002.

OP20. Okavango main channel at Sepopa Swamp Stop, with moderate current, 30 m wide, surrounded by Papyrus and riverine forest (18°45′01″S, 22°11′58″E): 25.-31.iii.2005.

OP23. Philippa Channel, 6 km N to 7 km E Sepopa, 20 m wide channel with fast current, lined by Papyrus or Phragmites, surrounded by floodplains and small islands (18°42'08"S, 22°11'42"E): 28.-30.iii.2005.


Okavango Delta South, Seasonal flooded part (OS.)

OS1. Khwai River at North Gate, Moremi Game Reserve (MGR), small river (1.5 m deep, 10 m wide) with moderate current and sandy ground, lined by flooded grass and surrounded by woodland (19°09'31"S, 23°45'00"E): 11.-12.iii.2001.


OS23. Maun, rainpools between Maun and Okavango Delta buffalo fence, medium sized to large shallow pools with rich vegetation like sedges and floating leafed plants (19°52'39", 23°26'10''): i.-ii.2006.

Chobe-/ Linyanti River system (CL...)


Other Localities outside the northern catchments, (OL...)


