

Water Dancers of South Africa's National Botanical Gardens



An illustrated dragonfly
and damselfly
checklist

Compiled by
Christopher Willis
& Michael Samways



South Africa's National Botanical Gardens

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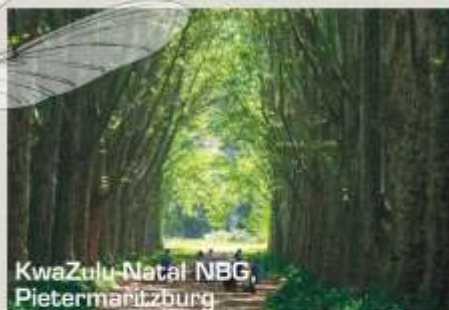
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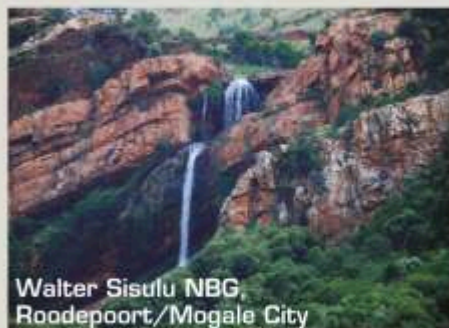
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SANBI Biodiversity Series 21

**Water Dancers
of
South Africa's
National Botanical Gardens**

An illustrated dragonfly and damselfly checklist

compiled by

Christopher K. Willis & Michael J. Samways



Pretoria
2011



SANBI Biodiversity Series

The South African National Biodiversity Institute (SANBI) was established on 1 September 2004 through the signing into force of the National Environmental Management: Biodiversity Act (NEMBA) No. 10 of 2004 by President Thabo Mbeki. The Act expands the mandate of the former National Botanical Institute to include responsibilities relating to the full diversity of South Africa's fauna and flora, and builds on the internationally respected programmes in conservation, research, education and visitor services developed by the National Botanical Institute and its predecessors over the past century.

The vision of SANBI: Biodiversity richness for all South Africans.

SANBI's mission is to champion the exploration, conservation, sustainable use, appreciation and enjoyment of South Africa's exceptionally rich biodiversity for all people.

SANBI Biodiversity Series publishes occasional reports on projects, technologies, workshops, symposia and other activities initiated by or executed in partnership with SANBI.

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Back, top: Dancing Jewel (*Platycypha caligata*) (Christopher Willis)

Back, centre: Red-veined Dropwing (*Trithemis arteriosa*) (Christopher Willis)

Back, bottom: Portia Widow (*Palpopleura portia*) (Christopher Willis)

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Introduction

After birds, butterflies and bees, dragonflies and damselflies are among the most conspicuous groups of animals observed in South Africa's National Botanical Gardens. They are particularly prevalent around rivers, streams, dams and other aquatic habitats. Following the publication of illustrated checklists on birds (Willis *et al.* 2008) and butterflies (Willis & Woodhall 2010), this book represents the third in a series of Sappi-sponsored illustrated checklists of biodiversity recorded in South Africa's National Botanical Gardens. The title of this book—water dancers—is a literal translation of the Zulu word 'jigamanzi' that has been used to describe dragonflies, an apt description as adults swirl about water bodies engaged in their daily business.

Comprehensive field guides providing more detailed information, keys, photographs and illustrations of all South Africa's known dragonflies and damselflies have previously been published by Tarboton & Tarboton (2002, 2005, 2009) and Samways (2008a), and serve as excellent references for the general public.

Part of the reason for publishing this illustrated checklist is to create greater public awareness and appreciation of the importance and value of conserving dragonfly diversity as a valuable component of our natural habitats and ecosystems, as dragonflies serve as excellent indicators of terrestrial and aquatic environmental change. Not only are dragonflies good indicators of environmental health and ecological integrity, they also act as flagship species for other aquatic invertebrates in the biodiversity debate. Adult dragonflies are frequently identified as bioindicators for several reasons:

- (a) They are well known taxonomically.
- (b) Most are readily identifiable in the field.
- (c) They occupy a range of habitats.
- (d) They are sensitive to changes in water quality and the ecological conditions of their habitats.
- (e) Their species assemblages are large enough for assessments (Simaika & Samways 2009a, 2011). Adult dragonflies therefore serve as valuable candidates for environmental monitoring programmes.

Dragonflies and damselflies both belong to the scientific order Odonata which means 'toothed ones', referring to their strong mouthparts or mandibles. True dragonflies are grouped within the sub-order Anisoptera, whereas the daintier and more delicate damselflies are grouped

within the sub-order Zygoptera. The term 'dragonflies' is often used as an umbrella term to describe both dragonflies and damselflies, although they are quite different in appearance. The differences between dragonflies and damselflies, as well as the exceptions to the general rules of recognition, are summarised in Table 1.

Table 1. Summary of distinguishing features of dragonflies and damselflies

Feature	Dragonfly (sub-order Anisoptera)	Damselfly (sub-order Zygoptera)
Body structure	Robust	Mostly delicate, slim-bodied Exception: family Chlorocyphidae (Jewels), which are stocky damselflies
Wing shape	Fore- and hindwings differ in shape; hindwing much broader at the base compared to the forewing	Similar fore- and hindwings; wings narrow at the base
Flight	Strong, agile flyers	Comparatively weak flyers
Wing position when settled or perched	Wings held at right-angles to the body (Figure 1)	Wings folded parallel to the abdomen (Figure 3) Exceptions: families Synlestidae (Malachites) and Lestidae (Spreadwings), which rest with their wings open (Figure 4)
Eye structure	Eyes joined together on top of the head Exception: family Gomphidae (Clubtails) whose eyes do not join in the centre of their heads (Figure 2)	Eyes widely separated on the head
Larvae	Stout, robust body; gills not visible externally	Slender, fragile body; three (sometimes two) gills at the end of the abdomen, visible externally



Figure 1. Dragonfly wings, here represented by a female Banded Groundling (*Brachythemis leucosticta*), are typically held at right angles to their bodies. Note how the large compound eyes are joined together at the top of the head. This is characteristic of all dragonflies except species of Clubtails (Gomphidae); see Figure 2. The rectangular pigmented patches on the forewings are known as pterostigmas.



Figure 2. Exception to the general rule—the eyes of dragonflies in the Clubtail family Gomphidae, here illustrated by a Boulder Hooktail (*Paragomphus cognatus*), do not join on top of the head.



Figure 3. Damselfly wings are typically held parallel to the abdomen, here seen in a female Goldtail (*Allocnemis leucosticta*). Note that the eyes are widely separated, unlike most dragonflies whose eyes are joined on top of the head.



Figure 4. Damselfies in the families Synlestidae (Malachites) and Lestidae (Spreadwings), here illustrated by a female Mountain Malachite (*Chlorolestes fasciatus*), rest with their similar-shaped fore- and hindwings open. The buff-coloured, chitinised pterostigmas are clearly visible on the leading edges of the wings.

Together with the mayflies (order Ephemeroptera), the Odonata are among the oldest and most primitive of insects, dating back at least to the Upper Carboniferous, some 300 million years ago, before flowering plants or dinosaurs. The largest extinct dragonflies from the fossil record are known to achieve a wingspan of up to 700 mm, and were among the very first animals to evolve the ability of flight. The largest member (in terms of wingspan) of the Odonata known in the world today is a damselfly, the South American *Megaloprepus caerulatus* (referred to locally as ‘helicopters’), with a wingspan of up to 190 mm. The largest dragonfly in South Africa is the Black Emperor (*Anax tristis*), with a wingspan reaching 130 mm.

Classification

Odonata in South Africa to date comprise a total of 159 species, including 93 dragonfly species and 66 damselfly species. This represents almost 20% of sub-Saharan Africa’s (defined as an area that includes the Indian Ocean Islands of Comoros, Madagascar, Mascarenes and Seychelles) 850 species of Odonata (Dijkstra 2003). South Africa’s true dragonflies include four families and 44 genera within the sub-order Anisoptera, whereas damselflies in the sub-order Zygoptera include seven families and 17 genera. A summary of South Africa’s dragonfly and damselfly families, genera and species are shown in Tables 2 and 3, respectively. South Africa’s largest odonate family is the Libellulidae (dragonflies; 59 species), followed by the Coenagrionidae (damselflies; 40 species). Being best adapted to change, these are recognised globally as the largest odonate families on Earth (Dijkstra 2003).

Eastern and southern Africa generally have lower species numbers than in western and central Africa—national diversity generally lies between 100 and 200 species—but regional endemism is greater. South Africa is one of the most significant centres of dragonfly endemism on the African continent harbouring the most relict species. Almost a fifth of the national fauna of South Africa’s 159 species is endemic to the country. The 30 or so endemics are split equally between the relict endemic genera *Chlorolestes*, *Metacnemis*, *Ceratogomphus* and *Syncordulia*, and genera with an Afromontane character, namely *Platycephala*, *Africallagma*, *Pseudagrion*, *Proischnura*, *Allocnemis*, *Elattoneura*, *Pinheyschna*, *Zosteraeschna* and *Orthetrum* (Dijkstra 2007).

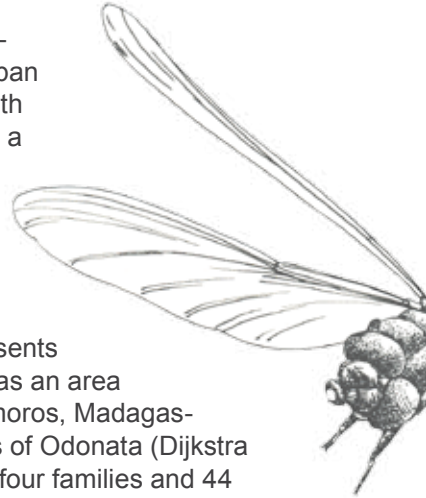


Table 2. Summary of South Africa's dragonfly families, genera and species

Dragonfly families	Genera	Species
Aeshnidae (Hawkers)	<i>Anaciaeschna</i> (Hawker)	1
	<i>Anax</i> (Emperors)	4
	<i>Gynacantha</i> (Duskhawkers)	3
	<i>Pinheyschna</i> (Hawker)	1
	<i>Zosteraeschna</i> (Hawker)	2
Gomphidae (Clubtails)	<i>Ictinogomphus</i> (Tigertail)	1
	<i>Gomphidia</i> (Fingertail)	1
	<i>Lestinogomphus</i> (Fairytail)	1
	<i>Notogomphus</i> (Yellowjack)	1
	<i>Neurogomphus</i> (Siphontail)	1
	<i>Phyllogomphus</i> (Leaf-tail)	1
	<i>Crenigomphus</i> (Talontails)	2
	<i>Ceratogomphus</i> (Thorntails)	2
	<i>Paragomphus</i> (Hooktails)	4
	<i>Onychogomphus</i> (Claspertail)	1
	Corduliidae (Cruisers, Emeralds)	<i>Syncordulia</i> (Presbas)
<i>Hemicordulia</i> (Emerald)		1
<i>Phyllomacromia</i> (Cruisers)		3
Libellulidae (Skimmers, Dropwings)	<i>Tetrathemis</i> (Elf)	1
	<i>Notiothemis</i> (Forestwatcher)	1
	<i>Orthetrum</i> (Skimmers)	12
	<i>Nesciothemis</i> (Skimmer)	1
	<i>Palpopleura</i> (Widows)	4
	<i>Chalcostephia</i> (Inspector)	1
	<i>Hemistigma</i> (Pied-spot)	1
	<i>Acisoma</i> (Pintail)	1
	<i>Diplacodes</i> (Perchers)	3
	<i>Crocothemis</i> (Scarlets)	3
	<i>Bradinygya</i> (Rockdwellers)	1
<i>Brachythemis</i> (Groundlings)	2	
<i>Sympetrum</i> (Nomad)	1	

	<i>Trithemis</i> (Dropwings)	11
	<i>Zygonyx</i> (Cascaders)	2
	<i>Zygonoides</i> (Riverking)	1
	<i>Olpogastra</i> (Bottletail)	1
	<i>Rhyothemis</i> (Flutterer)	1
	<i>Zyxomma</i> (Duskdarter)	1
	<i>Parazyxomma</i> (Duskdarter)	1
	<i>Tholymis</i> (Twister)	1
	<i>Pantala</i> (Pantala)	1
	<i>Tramea</i> (Gliders)	2
	<i>Urothemis</i> (Baskers)	3
	<i>Aethriamanta</i> (Basker)	1
	<i>Macrodiplax</i> (Pennant)	1

Table 3. Summary of South Africa's damselfly families, genera and species

Damselfly families	Genera	Species
Calopterygidae (Demoiselles)	<i>Phaon</i> (Demoiselle)	1
Chlorocyphidae (Jewels)	<i>Chlorocypha</i> (Jewel)	1
	<i>Platycypha</i> (Jewels)	2
Synlestidae (Malachites)	<i>Chlorolestes</i> (Malachites)	9
Lestidae (Spreadwings)	<i>Lestes</i> (Spreadwings)	7
Platycnemididae (Stream-damsels)	<i>Allocnemis</i> (Goldtail)	1
	<i>Metacnemis</i> (Streamjacks)	2
	<i>Mesocnemis</i> (Riverjack)	1
Protoneuridae (Threadtails)	<i>Elatoneura</i> (Threadtails)	2
Coenagrionidae (Sprites)	<i>Ceriagrion</i> (Citrils)	2
	<i>Pseudagrion</i> (Sprites)	22
	<i>Aciagrion</i> (Slims)	2
	<i>Ischnura</i> (Bluetail)	1
	<i>Proischnura</i> (Bluets)	3
	<i>Africallagma</i> (Bluets)	4
	<i>Azuragrion</i> (Bluet)	1
<i>Agriocnemis</i> (Wisps)	5	

Body structure

The body structure of Odonata, like other insects, is divided into a head, thorax and abdomen (Figure 5). The thorax is the central, widest part of the body. Both the wings and legs are attached to the thorax. Between the head and the thorax is the neck (prothorax), which is actually the first segment of the thorax, the other two (meso- and metathorax) being fused into the large synthorax. The prothorax bears the front pair of legs whereas the synthorax bears the two posterior pairs of legs and the wings. The prothorax is small and separated from the synthorax by a flexible joint.

The spiny or bristly legs are used for grasping prey. One of the distinguishing features of the forewings is a small, chitinous, roughly rectangular pigmented patch known as a pterostigma (Figure 1). The pterostigma is absent in very primitive species (often absent in the Glistening Demoiselle). It gradually developed to cover one wing cell and later elongated to cover several cells (Pinhey 1951), and plays an important role in flight dynamics. Size, shape and colour of the pter-

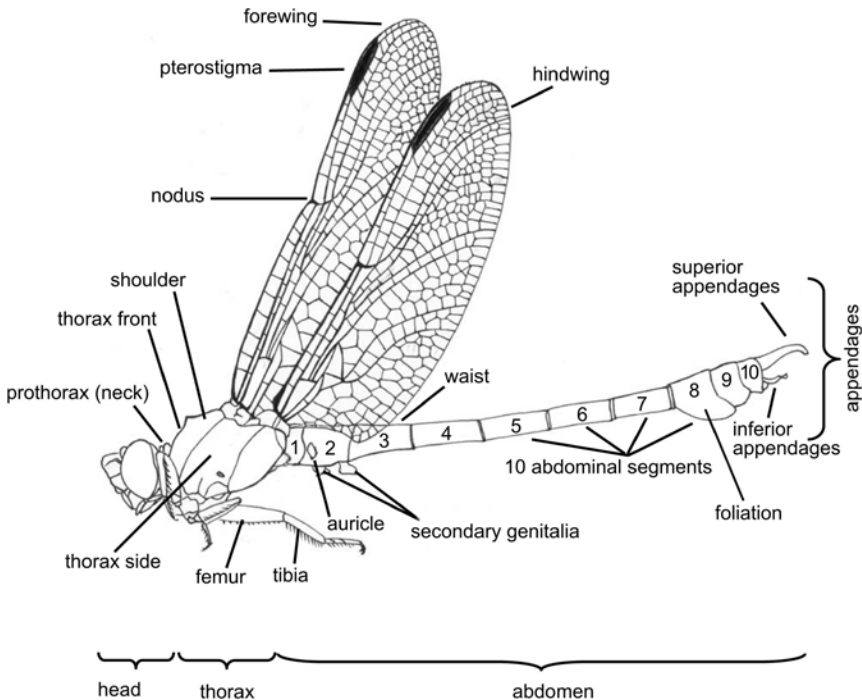


Figure 5. Overall body plan of a dragonfly (a male clubtail is illustrated here).

ostigma are important identification features. Wing venation and arrangement is complex, and one of the most useful characteristics used for overall dragonfly classification (see Pinhey 1951).

The long, terminal portion of the body is known as the abdomen. It comprises ten segments and labelled S1 to S10, starting next to the thorax (Figure 5 and 6). In the Gomphidae, S8 is often widened by so-called foliations (Figure 7). The first two and last two or three segments of the abdomen are often reduced in size compared with the remainder. Colours and patterns on these segments are often used for identification of the species.

Dragonflies may sometimes be confused with antlions (order Neuroptera), but the main distinguishing feature that separates these two groups of insects is that antlions have large antennae on their heads whereas dragonflies and damselflies have minute (<2 mm), barely visible antennae (Figure 8). Adult antlions also have a



Figure 6. A Stream Hawker (*Pinheyschna subpupillata*) showing the distinct segments on the abdomen with their repeating pattern.



Photo: Christopher Willis

Figure 7. A dragonfly in the Clubtail family Gomphidae, here the Boulder Hooktail (*Paragomphus cognatus*), shows foliations in this species on segments 8 and 9 of the abdomen.



Photo: Christopher Willis

Figure 8. Adult long-horned antlions or owlflies (Neuroptera: Ascalaphidae), here represented by *Ascalaphus festivus*, characterised by their very long clubbed antennae, are sometimes mistaken for dragonflies and damselflies. Adults are crepuscular and hunt prey, including damselflies, at dusk.

comparatively weak flight capacity compared with dragonflies and are mostly active at night. Dragonflies, in comparison, are largely diurnal insects and are strong flyers. The area of the head behind the eyes is an important diagnostic area in damselflies as it may have two coloured spots known as 'postocular spots' (Figure 9 and 10). These spots are sometimes linked by a bar (see Figure 9). Interestingly, the first African 'dragonfly' named by Linnaeus in 1767 was in fact later shown to represent an antlion of the genus *Palpares* (Dijkstra *et al.* 2003).

In most dragonflies and damselflies, males and females are similar in size. They usually differ in their colour, markings or wing patterning. Males are generally the more vividly coloured sex, with striking wing markings used to attract females and to maintain territories. Females range from duller-coloured versions of the males to being cryptically coloured in various shades of yellow, olive or brown. The dull, camouflaged colours afford females greater protection in their natural surroundings.

Life cycle

Dragonflies and damselflies often form an important and prominent part of the aquatic food chain. The familiar dragonfly or damselfly seen flying near rivers or streams is the mature adult phase of the life cycle that starts with an egg, progresses through a larval stage, and ends with a flying adult. Whereas the eggs and larval stages are entirely dependent on water, the adults do not necessarily require water for finding food. They do require water, however, for laying eggs, and breeding adults are usually found around water. Dragonflies and damselflies are often highly territorial, the size of the territory varying with insect size and male density.

During mating, the male dragonfly or damselfly grasps the female using appendages at the end of his abdomen. The male dragonfly holds the female at the back of her head (Figure 11), whereas the male damselfly holds the female on her neck or prothorax (Figure 12 and 13). Some species couple while in the air, whereas others couple while perching. Mating may last from a few seconds (Scarlets *Crocothemis*, and Pintail *Acisoma*) to several hours (Hawkers Aeshnidae, most Clubtails Gomphidae, and Bluetail *Ischnura* in Zygoptera). It is a complicated process and unique in the animal world. Before mating, males transfer sperm from the abdomen (ninth segment) to secondary accessory genitalia positioned below the second and third abdominal segments. This happens in flight or while perching. Once the sperm has been transferred, males are ready for making contact with the female's genital apparatus,



Figure 9. Some damselflies, such as this Painted Sprite (*Pseudagrion hageni*), have conspicuous postocular spots (red here) that, as in the case of this species, may be linked (also red here).



Figure 10. Small blue postocular spots visible on the head, on the inner side of the eyes, of this damselfly, a male Kersten's Sprite (*Pseudagrion kersteni*).



Figure 11. Mating Two-striped Skimmers (*Orthetrum caffrum*) in the so-called 'wheel' position. The reddish brown female is below the pale blue male.

located beneath the eighth segment of her abdomen. After the male has grasped the female, the female bends her abdomen around and under to lock with the male's secondary accessory genitalia below the second or third abdominal segments (Figure 11). Copulation takes place in this position with transfer of sperm in this 'wheel' position (Figure 11 and 13). The male's accessory genitalia have a small sac for sperm storage and a penis. During mating, the penis has an interesting double function. Before sperm transmission, the penis cleans out any sperm from a previous mating by another male. This ensures that his sperm does the fertilising and not the sperm of a previous, rival male. The tandem pair flies together, and is a common sight at ponds or at the edges of streams and rivers.

Eggs are laid (during which time fertilisation takes place) shortly after copulation. In some dragonflies (Cruisers *Phyllomacromia* and in most Clubtails and Hawkers), the pair separates and the female lays eggs on her own. Sometimes the female is guarded against rivals by the male,

who either hovers above or remains close to her. This non-contact guarding is common behaviour in many dragonflies such as species in the families Calopterygidae (Demoiselle), Chlorocyphidae (Jewels), Aeshnidae (Hawkers) and Libellulidae (Skimmers, Darters etc.). In many species, the partners do not split up after copulating. The male stays connected to the female by holding her with his appendages at the end of the abdomen, and the pair remains in tandem. This behaviour is common in many Coenagrionidae (Sprites, Bluets etc.) as well as in Aeshnidae and Libellulidae. This long-lasting tandem formation is advantageous to both partners in that:

- (a) During the egg-deposition phase she is well protected from harassment by other males.
- (b) The male can guarantee his fatherhood.

Egg-laying occurs in one of two ways, depending on where the eggs are laid. Exophytic species, such as the Skimmers (in the family Libellu-



Figure 12. Mating damselflies, seen here in the Common Citril (*Ceriagrion glabrum*). The female is greener and below the orange male.

lidae), scatter their eggs by dipping the water surface with the tip of their abdomens, releasing an egg at each stroke. A special type of exophytic oviposition is termed epiphytic, whereby females deposit their eggs by gluing them onto the surface of plants. Endophytic species, which include the Hawkers (Aeshnidae) and all the damselflies, insert their eggs into plants associated with fresh water (Figure 14). Endophytic females use a specially designed stem-slicer (known as an ovipositor) to slit open the plant stem into which eggs are deposited. This form of deposition is of long duration, and only occurs when the female is settled. In several damselflies, the females or even the whole tandem pair submerges totally under water during oviposition (Figure 15). Under water, the pair is covered by a fine layer of air that allows for respiration. Eggs then develop into larvae (formerly termed nymphs or naiads) under water.



Figure 13. Mating damselflies, Slate Sprite (*Pseudagrion salisburyense*), in the typical 'wheel' position, although heart-shaped in this case. They can fly while still attached in this position. The female is greenish and striped, below the male.



Figure 14. Female Orange Emperor (*Anax speratus*) ovipositing in vegetation just below the water surface.



Figure 15. A pair of Slate Sprites (*Pseudagrion salisburyense*) under water, with the female laying eggs in the submerged vegetation. Surprisingly they manage to obtain enough oxygen to survive perfectly well, by using the hairs on their bodies to form an air bubble around them, which acts as a lung.

Dragonfly larvae differ greatly from the adults. They have no wings and their bodies are compact to survive the aquatic habitat. Dragonfly larvae breathe through gills in the rectum whereas gas exchange in damselfly larvae occurs mainly via three, sometimes two, rectal leaf-like appendages or lamellae, through which gas is transported to the internal organs (Figure 16 and 17). The lamellae, which vary in shape according to different species, also serve as paddles for swimming. While in the water, the larvae undergo a series of moults (gradual metamorphosis)



Figure 16. Dragonfly larva, here a Red-veined Dropwing (*Trithemis arteriosa*), with characteristic stout build. These larvae breathe by taking water in and out through their anus with gills in the rectum able to extract the oxygen.



Figure 17. A damselfly larva, here a Goldtail (*Allocnemis leucosticta*), with feather-like caudal lamellae. These lamellae, which are very thin and delicate, enable damselfly larvae to extract oxygen from the surrounding water.

as they grow and develop. The duration of egg development is mainly governed by the ambient temperature, with development increasing with an increase in temperature. Most species have an egg-development period of between two and four weeks. A key to the larvae of South Africa's dragonfly species is given in Samways & Wilmot (2003).

A unique feature of dragonfly larvae, in which they differ from adults, is their extendible lower jaw or labium (also called a mask), a structure that serves as the principal apparatus for capturing prey. The mask is a hinged structure which can be withdrawn under the head when not required. Larvae feed on mosquito larvae, small tadpoles, water fleas, snails, crustaceans and other small freshwater organisms. Dragonfly larvae generally resemble their immediate surroundings and are therefore well camouflaged. Total embryonic and larval development may last from only 30 to 60 days in tropical temporary water species and up to several years in some temperate species.

Unlike other insects such as butterflies, beetles and mosquitoes, all of which have a pupal stage, there is no pupal stage in dragonflies, and the transition from larva to adult is dramatic. When the larva is ready to transform into an adult, it climbs out of the water onto a reed, rock or



Figure 18. Adult Two-banded Cruiser (*Phyllomacromia contumax*) freshly emerged from its larval skin or 'exuvia'.

sand bank at night. In the morning, the larva's 'skin' splits and the adult emerges (Figure 18). The remaining dry and hollow 'skin' which turns hard in the air is termed the exuvia (plural: exuviae) or shuck, and is a common sight on vegetation or rocks adjacent to water bodies (Figure 19). The emergence of the adult dragonfly from the larval stage is a risky stage of development because the dragonfly is not able to escape predators, such as birds and ants. Newly emerged adults are soft-bodied with compact wings which take up to an hour to expand to full size. After emerging, they usually move away from the water to complete their maturation process. During maturation, the distinctive colour pattern of the adult develops. Young dragonflies and damselflies are known as teneral and often resemble the colour and patterning of the mature females rather than males. Small species (especially damselflies) have a life expectancy as flying adults of 1–2 months, while large, robust species can survive a summer season (Tarboton & Tarboton 2002).



Figure 19. Dry exuvia of the Blue Emperor (*Anax imperator*) left behind on vegetation after the adult has left.

Ecology

As with many other invertebrate species, dragonfly species have particular seasonal patterns of emergence as well as variation between years. Most adult dragonflies in South Africa are observed during the summer season between September and April. On the east coast and in the savanna areas, there are overlapping generations with population levels starting to rise in October, reaching a peak in January to February, and dropping in April to May. Some species even survive through the winter, giving them a head start for breeding in spring (Van Huyssteen & Samways 2009). In the Cape there tends to be two groups of species: those that emerge in spring or early summer (e.g. the Yellow Presba, *Syncordulia gracilis*, and the Stream Hawker, *Pinheyschna subpupillata*) and those that characterise late summer (e.g. the White Malachite, *Chlorolestes umbratus*, and Marbled Malachite, *Chlorolestes peringueyi*) (Samways & Grant 2006a).

Habitat preference among dragonflies vary between species, with some preferring flowing water, others still water or even stagnant standing water bodies. The nature of the fringing vegetation plays an important role in habitat selection (Clark & Samways 1996; Stewart & Samways 1998; Tarboton & Tarboton 2002). According to Niba & Samways (2006), habitat requirements of a dragonfly or damselfly species may



Figure 20. Male Barbet Percher (*Diplacodes luminans*) adopting the upright 'obelisk' position so as not to overheat, which would occur if it presented all its body to the sunlight.

be defined mainly in terms of marginal grasses, floating and submerged vegetation, marginal herbs, sedges and reeds and pH. Additional variables include percentage shade, exposed rock, marginal forest and water flow characteristics.

Dragonflies are mostly diurnal and generally only fly in sunny, dry conditions. Peak records for most species are characterised by high ambient and water temperatures, high light intensity, high water levels and abundant vegetation (Niba & Samways 2006). Dragonflies can out-fly almost all other insects, and some species are known to reach speeds of up to 60 km/hr. Some are crepuscular, only emerging at dusk (and sometimes again at dawn) to search for prey, or on dull, warm, sultry days. When midday conditions become very warm, some move to the cool shade of a tree, while others raise their abdomen to point upwards to keep cool. This is termed obelisking (Figure 20). This behaviour is also performed by some young adults to regulate temperature.

Some South African species are migrants, such as the Vagrant Emperor (*Anax ephippiger*), the Gliders (*Pantala flavescens* and *Tamea* species) and the Nomad (*Sympetrum fonscolombii*).

Dragonflies are known to eat many insects and close relatives such as mosquitoes, flies, midges, ants, termites, spiders, butterflies and even other dragonflies (Figure 21). Although top predators themselves, dragonflies and damselflies are also preyed on by other animals including birds (e.g. bee-eaters and swallows), fish, reptiles, mammals, other insects such as robber flies (Figure 22, 23 and 24) as well as other drag-



Figure 21. A male Julia Skimmer (*Orthetrum julia*) devouring a butterfly.

onflies. They are also susceptible to parasitic mite infestation (Grant & Samways 2007a). Many can become caught in spider webs or on plants with fine, sharp spines (Figure 25 and 26). Some alien plants in particular, which have barbs or hooks, are sometimes deadly for dragonflies, the wings of which become entangled (Figure 26) (Samways 1991). In their larval stages, dragonflies and damselflies are preyed on by fish and amphibians (frogs, toads) as well as other aquatic invertebrates such as water scorpions and beetle larvae.

Dragonflies and damselflies form important components of freshwater ecosystems and are valuable indicators of water quality and landscape disturbance (Steytler & Samways 1995). Larvae are known to be very sensitive to pollution so the presence or absence of key species can assist in monitoring the health of aquatic ecosystems. Human impacts



Figure 22. Some birds, such as swallows and bee-eaters, are well known for preying on dragonflies. Here a White-fronted Bee-eater (*Merops bullockoides*) is seen feeding on a Skimmer (*Orthetrum* sp.) dragonfly.

that may negatively affect dragonfly presence and diversity include pollution, excessive water abstraction for irrigation, presence of alien invasive plants and predators such as tilapia fish in ponds and rainbow trout in upland streams (Samways 2008a).



Photo: Christopher Willis

Figure 23. Damselflies, such as the young female Slate Sprite (*Pseudagrion salisburyense*) shown here, sometimes fall victim to predatory robber flies (Diptera: Asilidae). All robber flies have well-developed piercing mouthparts with which they stab their prey. Robber flies inject their prey with saliva, which dissolves the prey's internal organs. The resultant 'soup' is then sucked up by the robber fly before the victim's empty shell is discarded.



Photo: Christopher Willis

Figure 24. Adult dragonflies and damselflies live in continual flux between being predators and potential prey. Here an unfortunate male Dancing Jewel (*Platycypha caligata*) has become the prey, losing most of its wings and vivid blue abdomen to another predator.



Photo: Christopher Willis

Figure 25. The orb-web spiny field spider (*Pararaneus cyrtoscapus*; family Araneidae) with a Skimmer dragonfly caught in its web.



Photo: Christopher Willis

Figure 26. Dragonfly with its wings caught on the barbed seeds of the cosmopolitan and alien Common Black-jack (*Bidens pilosa*).

Dragonflies in National Botanical Gardens

To date, 61 species (comprising 39 dragonflies and 22 damselflies) out of a total of 159 species known from South Africa have been recorded in South Africa's National Botanical Gardens. This represents 38% of South Africa's total dragonfly diversity and includes most of South Africa's widely distributed species as well as some local endemics. This compares favourably with the dragonfly species richness in Great Britain, where a total of 56 species has so far been recorded, as well as other European countries such as Denmark (58 species), Latvia (59 species), Macedonia (60 species), Serbia (61 species) and Sweden (61 species) (Kalkman *et al.* 2010). In continental Africa, this number compares with estimated national dragonfly species richness recorded for the countries of Mali (58 species), Niger (59 species) and Somalia (64 species) (Dijkstra & Clausnitzer 2006).

The KwaZulu-Natal National Botanical Garden in Pietermaritzburg, KwaZulu-Natal Province, has the greatest diversity of species (41 species) due largely to a diversity of habitats and extensive surveys and studies over more than a decade having been conducted by staff and students of the University of KwaZulu-Natal. Following research studies conducted in the KwaZulu-Natal Garden, a dedicated dragonfly conservation awareness trail was designed in 1998/99 and implemented in the Garden in 2000 (Suh & Samways 2001, 2005; Niba & Samways 2006). After surveys were conducted along the trail between 2000 and 2002, a list of 24 'core resident species' or 'regular resident species' was developed (Niba & Samways 2006). These 24 generally common and widespread species are 'virtually guaranteed along the trail given the right habitat and time of year' (Niba & Samways 2006). Despite comprehensive surveys having been conducted in the KwaZulu-Natal Garden, new species may still be found. A Stream Hawker (*Pinheyschna subpupillata*), for example, was recorded for the first time in the KwaZulu-Natal Garden as recently as March 2011. These changes also reflect climatic changes from year to year, as well as changing habitats as water plants and vegetation on the banks mature and/or are cut back or removed.

For most other National Botanical Gardens our knowledge of the dragonfly and damselfly diversity is at an embryonic stage and, especially for those Gardens that have perennial rivers or permanent fresh water bodies with marginal vegetation within their boundaries (e.g. the Lowveld, Harold Porter, Kirstenbosch and Walter Sisulu National Botanical Gardens), will certainly improve with further surveys and inventories conducted over time.

South Africa's National Botanical Gardens are generally recognised as having major invertebrate conservation value, and are considered inherently valuable for drawing public attention to invertebrates, especially dragonflies, and, like butterflies, have iconic value (Niba & Samways 2006; Pryke & Samways 2009). It is essential to maintain the natural heterogeneity of vegetation along reservoir and stream margins, and maintain constant water levels at reservoirs, so as to promote relatively stable, natural submerged vegetation structures suitable for a range of species (Niba & Samways 2006). Removal of marginal vegetation for aesthetics or a sense of tidiness can reduce local species diversity and abundance. Based on research conducted in the KwaZulu-Natal National Botanical Garden, Clark & Samways (1997) have indicated that in species-rich urban botanical gardens as many ecotopes (defined as an area of uniform environmental conditions with characteristic plants and animals) as possible should be preserved or created. These should vary in topography, landscape characteristics and vegetation composition, with as much connectivity as possible (McGeoch & Samways 1991; Clark & Samways 1997).

Observation hints

In order to assist enthusiasts to identify dragonflies and damselflies in nature, Samways (2008a) provided a detailed section providing valuable clues and information required to make positive field identifications. A summary of this information is provided here.

The first consideration is the geographic location and elevation, to which can be added the general look, size, flight behaviour and precise microhabitats (e.g. open, still water, perches on sticks, rests on rocks, or flies among grass or reeds). The next clues to look for include determining the general body shape, position of the wings when at rest (see Table 1) and body colour. Wing colour is a valuable guide for some species e.g. the Glistening Demoiselle with its distinctive, glistening, iridescent wings, Widows (*Palpopleura* species) with their characteristic black wing splashes, and many of the Dropwings (*Trithemis* species) have characteristic red or orange wing markings or red wing-veins. When observing body colour, it is critical to determine the exact position and shape of the black or other markings against the coloured background.

With damselflies, especially the Sprites (*Pseudagrion* species), it is vital to recognise the eye, face and thorax colour. In true dragonflies, however, eye colour is less valuable as a distinguishing feature. In dragonflies, abdomen colour pattern is particularly useful, although in Clubtails (Gomphidae) thorax colour is also important. It is useful to keep a

photographic record of one's field observations, if possible, which can then be compared with photographs and illustrations in available field guides, such as this publication as well as Samways (2008a) and Tarboton & Tarboton (2002, 2005, 2009).

When taking photographs, try to take photographs of the individual from different angles that will illustrate different anatomical features (e.g. eyes, wing-, abdominal- and thoracic markings and patterns). Always try to take at least one photograph at a perfect right angle to the length of the body. Using the camera flash and a fast shutter speed (applicable to most insect photography) will usually ensure good photographic shots.

Champions of dragonfly exploration in South Africa

Of past champions of dragonfly exploration in South Africa, two individuals deserve special mention, namely Prof. Boris Balinsky and Dr Elliot Pinhey.



Balinsky, Boris Ivan (1905–1997)

Boris Balinsky came to South Africa in September 1949. As a Second World War refugee he had spent time in Poland, then in Germany itself and later in Scotland, from where he applied for, and was granted, a position in the Zoology Department of Witwatersrand University, Johannesburg. He served as a lecturer in the Zoology Department, becoming Professor in the Department in 1954 and later its Head. The first specimen he collected was a Goldtail (*Allocnemis leucosticta*) damselfly found in Duiwelskloof in 1950. Over

the next 25 years he visited many parts of southern Africa on dragonfly missions. His collection of more than 4 000 specimens comprising 160 species was donated to the Transvaal Museum in 1984 and forms the centrepiece of their Odonata Collection. Over the years he discovered and named many previously undescribed Odonata in the region, including the damselflies Drakensberg Malachite, Badplaas Sprite and Orange Wisp (Tarboton & Tarboton 2005). Boris Balinsky filled the Chair of Zoology and headship of the department until his retirement at the end of 1973. He was Dean of the Faculty of Science from 1965 to 1967 and awarded the degree of DSc *honoris causae*, by the Witwatersrand Uni-

versity in 1978. He was a dedicated and productive researcher until he died. He published 133 research papers and a number of books, mainly in the fields of experimental embryology and entomology (Grossman 2005; Tarboton & Tarboton 2005; Helen David, pers. comm.).



Pinhey, Elliot Charles Gordon (1910–1999) Having previously worked as a science teacher in England, Germany and the current Zimbabwe as well as an economic entomologist in the then Rhodesian Department of Agriculture, Elliot Pinhey moved to South Africa in 1948, where he took up a position at the Transvaal Museum. In the following year he accepted the post of Keeper of Entomology in the Coryndon Museum, Nairobi (now the National Museum of Kenya), where he worked for the next five years. In 1955 he returned to Zimbabwe as Keeper of Invertebrate Zoology based at the Natural

History Museum in Bulawayo. Pinhey wrote many papers and definitive books on southern African moths, butterflies and dragonflies (Pinhey 1951, 1984, 1985). He served as President of the Entomological Society of Southern Africa from 1974 to 1975, was an active member of the Societas Internationalis Odonatologica (SIO) and is widely regarded as the doyen of African Odonatology (Dijkstra *et al.* 2003). Elliot Pinhey published almost 200 names for species, subspecies and forms of Odonata in 33 years, from 1950 to 1982. His legacy is one of the major collections of African Odonata in the world and the most important one in the continent itself. There are 112 name-bearing types designated by Pinhey. He was awarded a DSc by London University in 1962 for published entomological works. His many expeditions to remote parts of Africa were rewarded with discoveries of many species new to science.

Conservation status

Much research has been undertaken on the conservation status of South Africa's dragonflies and damselflies (Samways 2002a, 2002b, 2004, 2006b; Samways & Grant 2006a). Sufficient evidence is available to show that certain species are threatened, and that this is an indication of adverse pressure on ecosystem integrity and health (Samways 2002b). Threats that are known to negatively impact dragonfly populations include shading of natural habitats by invasive

alien trees (e.g. Black Wattle, *Acacia mearnsii*) (Samways & Taylor 2004; Samways *et al.* 2005), predation by alien fishes (such as rainbow trout), habitat removal for plantation forestry, over-extraction of water for farming activities, damming and canalisation of streams, pollution from domestic washing, siltation of streams from cattle trampling of the banks, and habitat replacement by industrial development. These anthropogenic threats can, in addition, be aggravated by natural disturbances, such as floods and droughts (Samways 2002b). The single most important threat to South African dragonflies is invasive alien trees growing along river and stream banks, but the good news is that this threat can be reversed by removal of these trees (Samways 2005; Samways & Grant 2006b; Magoba & Samways 2010; Samways & Sharratt 2010).

South Africa's National Red Data List includes four dragonfly species known to have been recorded in one or more of South Africa's National Botanical Gardens located in the Western Cape (Samways & Grant 2006a; see alphabetical quick index). These include the damselfly Marbled Malachite (*Chlorolestes peringueyi*) and dragonflies Elusive Skimmer (*Orthetrum rubens*—last seen in Kirstenbosch in 1927), Mahogany Presba (*Syncordulia venator*) and Yellow Presba (*Syncordulia gracilis*). A summary of the status, distribution range, habitats and threats facing these species is provided in Table 4.

Some very important large-scale studies, both across southern Africa (Suhling *et al.* 2009, 2010) and Africa as a whole (Dijkstra *et al.* 2011), have been undertaken. These well-illustrated and comprehensive reports formed part of an international effort to understand the species richness, distribution and conservation status of these beautiful insects. The two reports produced by the World Conservation Union, known as the IUCN (Suhling *et al.* 2009; Dijkstra *et al.* 2011), are downloadable from the web.

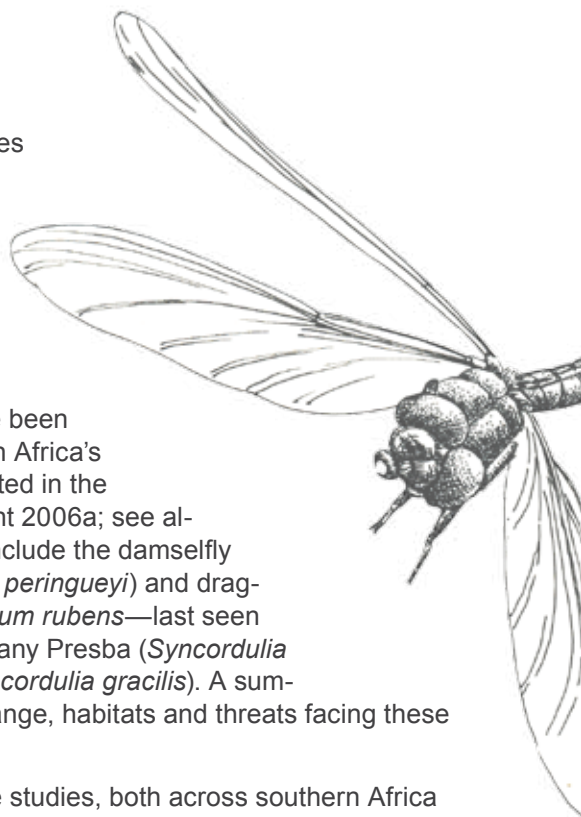


Table 4. Summary of Red Listed dragonflies (after Samways 2006b; Samways & Grant 2006a) recorded in South Africa's National Botanical Gardens. All the species listed are South African endemics.

Taxon	National and global Red List status	Garden where recorded	Range and population	Habitat	Threats
Zygoptera Damselflies					
Marbled Malachite <i>Chlorolestes peringueyi</i>	VU	Harold Porter	Small, boulder-filled streams in the upper reaches of small rivers in the Cape Fold Mountains (WC)	Clear, montane streams with large, lichen-covered boulders	Invasive alien plants, over-extraction of water, predation by rainbow trout
Anisoptera Dragonflies					
Mahogany Presba <i>Syncordulia venator</i>	VU	Kirstenbosch	Confined to montane streams of the Western Cape, known today only from the Hawequa Mountains (WC)	High, rocky, montane streams partially fringed with trees	Synergistic effects of invasive alien trees (especially <i>Acacia longifolia</i>), agricultural activity around streams and possibly trout predation
Yellow Presba <i>Syncordulia gracilis</i>	VU	Harold Porter	Known from the Kogelberg Nature Reserve, Paarl Mountain (WC) and on the Mooi River, Prentjiesberg (EC)	Clear, fast rivers in treeless river valleys	Invasive alien trees (especially <i>Acacia longifolia</i>) and afforestation. Trout predation may be a possible threat
Eiusive Skimmer <i>Orthetrum rubens</i>	CR	Kirstenbosch (old record)	Known in the past from various localities in the WC. Has not been rediscovered at its type locality, Kirstenbosch National Botanical Garden, Cape Town, since 1927	Clear, fast, rocky montane streams with pools and fringing bushes	Synergistic effects of invasive alien trees, plantation forestry, agricultural disturbance, urbanisation, and probably trout predation. Despite intensive searches over the last decade or more, this species has not been rediscovered, either at its original locality in Kirstenbosch or anywhere else.

Abbreviations: VU = Vulnerable, CR = Critically endangered; WC = Western Cape, EC = Eastern Cape.

Climate change

Dragonflies and damselflies are regarded as a good indicator group for climatic change (Ott 2010). Some of the biological effects of the rise in temperature associated with climate change include more prominent tendency for expansion, changes in the composition of local faunas, more rapid larval development, as well as breeding at higher elevations (Ott 2010). In order to be able to determine the effects and future impacts of environmental changes associated with climate change, it will be important to establish and maintain reliable databases and species monitoring projects. There is no evidence yet that ongoing global climate change has affected the population levels or geographic range of the South African species. However, evidence suggests that they have been through climatic bottlenecks in the past, with many species adapted to moving back and forth, thereby temporally changing their geographical distribution relative to wet and dry cycles (Samways 2010a,b), whereas others adapt by changing elevation (Samways & Niba 2010a,b). Several species are known to have relictual climate distributions, where they occur today only in relatively small areas that are climatically suitable, compared to in the past when the right climatic conditions were more widespread. A good example of this is the Mountain Malachite (*Chlorolestes fasciatus*, see Figure 4), an isolated population of which remains in the Mountain Zebra National Park, surrounded by the arid and unsuitable karoo.

How to use the Checklist

For ease of cross-reference, this list follows the order of families (e.g. Aeshnidae) and groups (e.g. Skimmers, Emperors and Malachites) that appear in Samways' (2008a) comprehensive publication *Dragonflies and damselflies of South Africa*. Within each group, dragonflies and damselflies are listed in alphabetical order according to their common names, as agreed upon by international and expert consensus. Where applicable, alternative English common names have been listed. Afrikaans common names follow those listed in Tarboton & Tarboton (2002, 2005). Dragonflies and damselflies recorded in each National Botanical Garden are listed in dedicated columns using open circles which can be filled in by visitors when these insects are seen in a particular Garden.

New records

This Checklist is in its first edition and will be updated from time to time. Should you observe a dragonfly or damselfly in one of South Africa's National Botanical Gardens that is not listed in this Checklist, please

send us a note of this record (with a photograph, details of the observer's name, contact details, date, Garden name and habitat description) to the following address so that it can be confirmed and documented:

Chief Director
Conservation Gardens & Tourism Division
South African National Biodiversity Institute (SANBI)
Private Bag X101
PRETORIA 0001
South Africa

E-mail: info@sanbi.org.za

National Botanical Gardens

FS – Free State National Botanical Garden, Bloemfontein, Free State
29° 03' 05.9"S 26° 12' 48.5"E

H – Hantam National Botanical Garden, Nieuwoudtville, Northern Cape
31° 23' 50.8"S 19° 08' 24.4"E

HP – Harold Porter National Botanical Garden, Betty's Bay, Western Cape
34° 21' 01.6"S 18° 55' 37.4"E

K – Kirstenbosch National Botanical Garden, Cape Town, Western Cape
33° 59' 19.3"S 18° 25' 52.3"E

KD – Karoo Desert National Botanical Garden, Worcester, Western Cape
33° 36' 48.5"S 19° 27' 01.9"E

KZN – KwaZulu-Natal National Botanical Garden, Pietermaritzburg, KwaZulu-Natal
29° 36' 20.5"S 30° 20' 44.2"E

L – Lowveld National Botanical Garden, Nelspruit, Mpumalanga
25° 26' 29.8"S 30° 57' 40.3"E

P – Pretoria National Botanical Garden, Pretoria, Gauteng
25° 44' 10.8"S 28° 16' 34.6"E

WS – Walter Sisulu National Botanical Garden, Roodepoort/Mogale City, Gauteng
26° 05' 16"S 27° 50' 36.4"E

Alphabetical quick index to common names

The circles are left open for you to fill in as and when you record the species at a particular National Botanical Garden. This list is not comprehensive, and there is always a possibility that you will record a new species in one or more of the Gardens. If so, please let us know!

Common Name	Page	FS	H	HP	KD	K	KZN	L	P	WS
Banded Groundling	78		O							
Barbet Percher	81						O			
Black Emperor	57			O			O			
Black-splashed Elf	75							O		
Black-tailed Skimmer	86						O	O		
Blue Basker	68						O	O		
Blue Emperor	58					O	O			
Boulder Hooktail	61						O			
Broad Scarlet	84	O	O		O	O	O			
Common Citril	49					O	O	O		
Common Thorntail	63						O			
Common Threadtail	44						O			
Conspicuous Malachite	37			O		O				
Dancing Jewel	36						O	O		
Darting Cruiser	66							O		
Elusive Skimmer	87					O				
Epaulet Skimmer	88							O		O
Forest Malachite	38						O			
Glistening Demoiselle	35						O	O		
Goldtail	43					O	O	O		
Great Sprite	50							O		
Green Hooktail	62						O			
Grizzled Pintail	82							O		
Highland Spreadwing	42						O	O		
Horned Rockdweller	83							O		
Jaunty Dropwing	70			O			O	O		
Jones' Forestwatcher	76						O			
Julia Skimmer	89		O	O	O	O	O	O	O	O

Common Name	Page	FS	H	HP	KD	K	KZN	L	P	WS
Kersten's Sprite	51	0			0		0	0	0	
Kirby's Dropwing	71		0		0					
Little Scarlet	85			0		0		0		
Little Skimmer	90						0			
Long Skimmer	91						0			
Lucia Widow	93						0	0		
Mahogany Presba	64					0				
Marbled Malachite	39			0						
Marsh Bluetail	48	0		0			0			
Masai Sprite	52						0			
Mountain Malachite	40									0
Navy Dropwing	72	0	0		0					
Nomad	79	0					0			0
Orange Emperor	59			0			0	0		
Painted Sprite	53						0			
Palmiet Sprite	54			0						
Pantala	80						0	0	0	0
Portia Widow	94						0			
Red-veined Dropwing	73	0	0	0	0		0	0	0	
Round-hook Dropwing	74						0	0		0
Scuffed Cascader	69						0			
Slate Sprite	55						0	0		
Slender Bluet	46						0	0		
Sooty Threadtail	45			0						
Stream Hawker	60			0		0	0			
Swamp Bluet	47	0	0	0	0		0			0
Two-banded Cruiser	67							0		
Two-striped Skimmer	92	0					0			0
Voyaging Glider	77				0		0			
White Malachite	41			0						
White-masked Wisp	56						0			
Yellow Presba	65			0						
Yellow-veined Widow	95						0			
TOTAL		8	7	15	8	10	41	25	4	8

Checklist of dragonflies and damselflies

Damselflies sub-order Zygoptera

Family Calopterygidae

Demoiselles

Demoiselle

Phaon iridipennis

Glistening Demoiselle

Alternative common name: None

Afrikaans common name: Glinsterjuffertjie

Body length: 69–70 mm

Hindwing length: 37–38 mm

Flight period: Nov to May.

Habitat: Among bushes and trees close to swift rivers or streams. Seldom seen out of deep shade, perching within a metre of the ground. Often in undergrowth some distance away from water.

Notes: Widespread in tropical Africa. Very large metallic greenish-brown species with iridescent wings. Pterostigma absent or very small, light brown in colour, turning dark brown with age. Rests with wings shut and angled at about 35° from the abdomen.

Female is similar to the male but less metallic. The Glistening Demoiselle is the largest damselfly in southern Africa. About 160 species of Demoiselles are known worldwide, of which only one, the Glistening

Demoiselle, occurs in South Africa. Often seen along the Riverside Trail and other shady forested areas in the Lowveld National Botanical Garden. When disturbed, it has a very fluttering flight, due in part to its glistening wings rapidly reflecting the light.



Photo: Christopher Willis



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					O	O		

Family Chlorocyphidae

Jewels

Jewel

Platycypha caligata

Dancing Jewel

Alternative common name: Dancing Broad-legged Jewel, Glade Jewel

Afrikaans common name: Dansende Juweeltjie

Body length: 31–33 mm

Hindwing length: 21–22 mm

Flight period: Dec to May.

Habitat: Bush- or tree-lined, rocky, permanent fast-flowing rivers and streams.

Notes: Typical of the family, it is a stocky, colourful damselfly with a distinct nose projecting forward between the eyes. The male is among the most strikingly coloured of all damselflies, with vivid blue abdomen and red-and-white legs. It is one of the most well-studied damselfly species in Africa, as the male performs a striking territorial and courtship dance. During courtship, the male dances half circles around the female waving his outstretched legs and facing the white inner sides of the legs towards the rather drab and brown female. Female lays eggs in driftwood



or roots at the water's edge. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, and often seen, even performing its courtship dance, along the river just below Kingfisher Dam.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					○	○		

Family Synlestidae

Malachites

Malachites

Chlorolestes conspicuus

Conspicuous Malachite

Alternative common name: None

Afrikaans common name: Reusemalagiet

Body length: 64 mm

Hindwing length: 33–33.5 mm

Flight period: Nov to May.

Habitat: Conspicuous as it hangs from fynbos vegetation overhanging streams and small rivers.

Notes: Largest and most robust of the South African Synlestidae. Always with clear wings. Pterostigmas large and brownish in colour. Strongly striped thorax in yellow and metallic green colours. S9–10 with heavy whitish-grey pruinescence in males. Female with no or very light pruinescence. A Western Cape Province endemic. Occasionally seen along the wooded streams at Kirstenbosch just above the Tea Garden. In strong numbers on top of Table Mountain, especially along Disa Stream.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		O		O				

Family Synlestidae

Malachites

Malachites

Chlorolestes tessellatus

Forest Malachite

Alternative common name: Mosaic Sylph

Afrikaans common name: Woudmalagiet

Body length: 54 mm

Hindwing length: 30.5–31.5 mm

Flight period: Nov to May, with occasional winter specimens.

Habitat: Very camouflaged when clear-winged (more conspicuous in its

banded form) as it hangs from bushes and ferns in the dappled shade beside small rivers. Occupies small, clear streams with pools in forests.

Notes: Individuals from the Eastern Cape Province (and occasionally KwaZulu-Natal Province) have black and white, banded wings. Synthorax a dull metallic green colour with indistinct yellow stripes. Pterostigmas equally bicoloured, very

dark brown and cream or light brown. Dull metallic green abdomen. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, particularly along the stream on the western side of the Garden. But here all the individuals recorded so far have clear wings. Do look out for the possibility of a banded-wing form.



Photo: Michael Samways



Photo: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					○			

Family Synlestidae

Malachites

Malachites

Chlorolestes peringueyi

Marbled Malachite

Alternative common name: Rock Malachite

Afrikaans common name: Marmermalagiet

Body length: 44–46 mm

Hindwing length: 26–27 mm

Flight period: Dec to May (mostly Apr to May).

Habitat: Perches on very large lichen-covered rocks and boulders along montane streams of the Western Cape Province, where it is highly camouflaged, and occasionally on branches over streams.

Notes: Robust with a distinctive marbled and buff appearance. Wings are clear with very black venation. A very rare Western Cape Province

endemic. An unusual sexual difference is found in this species where the male perches with open wings whereas the female perches with closed wings along the abdomen. The species was named by Ris (1921) after Louis Albert Péringuey, Director of the South African Museum in Cape Town from 1906 to 1924 and the effective head of the department

of Entomology at the Museum for 40 years. Rare in the Harold Porter National Botanical Garden, but more commonly seen in the upper reaches of the adjacent Kogelberg Nature Reserve and at Bain's Kloof.



Photo: Michael Samways



Photo: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		○						

Family Synlestidae

Malachites

Malachites

Chlorolestes umbratus

White Malachite

Alternative common name: Shade Sylph

Afrikaans common name: Bleekmalagiet

Body length: 43–44.5 mm

Hindwing length: 22–23.5 mm

Flight period: Nov to May (occasionally to July).

Habitat: Conspicuous as it perches on fynbos bushes overhanging pools along streams.

Notes: The only smallish, banded-wing, forest-dwelling *Chlorolestes* species in the southern Cape, and one of our most beautiful damselflies. Highly pruinescent prothorax and synthorax in males (almost white in mature male individuals)—no pruinescence on synthorax of females. Wings strongly black and white banded in mature males, but clear in young males and females. Occasionally unbanded mature males occur, and this has been observed in the Harold Porter National Botanical Garden. Pterostigmas all buff-coloured. Endemic to the Western Cape Province and the western parts of the Eastern Cape Province. Regularly seen at the small pools close to the gate of the Harold Porter National Botanical Garden, mostly from April onwards.



Photo: Michael Samways



Photo: Christopher Willis



Photo: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		O						

Family Lestidae

Spreadwings

Spreadwing*Lestes plagiatus*

Highland Spreadwing

Alternative common name: Common Spreadwing, Highland Emerald Damselfly**Afrikaans common name:** Gewone Spanvlerkie**Body length:** 44–47 mm**Hindwing length:** 25–26.5 mm**Flight period:** Nov to May
(occasionally July to Oct).**Habitat:** Perches with its wings open on the top of reeds beside pools and dams.**Notes:** The most common and widespread *Lestes* species in South Africa. Above 700 m.a.s.l. it is the only large, striped *Lestes* species.

Eyes are bright sky blue above, and greyish green below. The area between the wing bases is heavily pruinose. Strongly light and dark brown-striped thorax, with a thin

metallic stripe on the side. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden and commonly seen perching on tall grass stems and reeds around the larger ponds.



Photo: Christopher Willis



Photo: Michael Samways



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Platycnemididae

Goldtail, Streamjacks, Riverjack

Goldtail

Allocnemis leucosticta

Goldtail

Alternative common name: None

Afrikaans common name: Goudstertjie

Body length: 39–43 mm

Hindwing length: 22.5–24 mm

Flight period: Sept to May.

Habitat: Perches in sunny spots on branches or ferns near streams and small rivers.

Notes: The black and blue-striped thorax, white-ringed, black abdomen and golden tip with yellow, smoky wings, are unmistakable. White pterostigmas are clearly visible in flight. A South African endemic.

One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden and may be seen among the bushes and ferns on the western side of the Garden. Occasionally it can also be seen along the wooded streams at Kirstenbosch National Botanical Garden, sitting on a twig in a sunny spot, with its conspicuous white pterostigmas and yellow tail.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Protoneuridae

Threadtails

Threadtails

Elatoneura glauca

Common Threadtail

Alternative common name: Common Pinfly, Grey Threadtail



Afrikaans common name: Gewone Draadstertjie

Body length: 34–35 mm

Hindwing length: 18–18.5 mm

Flight period: Oct to May.

Habitat: Among lush banks of tall grasses and reeds beside ponds, dams and occasionally sluggish streams.

Notes: Small and slender with a bluish grey colour. Rare in the southwestern parts of the Western Cape Province. Smaller and more slender than any *Pseudagrion* (Sprites) species. Males have wide dorsal, greyish blue thoracic stripes giving them a 'grey-backed' appearance. In females,

brown replaces the bluish grey colour of the synthorax. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, and may be seen, when looking carefully, among the tall, lush grasses associated with Kingfisher Dam.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Protoneuridae

Threadtails

Threadtails

Elattonaura frenulata

Sooty Threadtail

Alternative common name: None

Afrikaans common name: Roetswartdraadstertjie

Body length: 33–35 mm

Hindwing length: 18.5 mm

Flight period: Nov to May.

Habitat: Among grasses and bushes near or at streams and small rivers.

Notes: Blackish body with a greyish, pruinescent abdomen tip. Black eyes are distinctive with no postocular spots. A localised endemic of montane areas of the Western Cape

Province and western parts of the Eastern Cape Province. This very small, blackish damselfly roosts among the bushes, and has a hovering flight when disturbed. It is most often seen where a path narrows between bushes over a small stream where it breeds.



Photos: Warwick Terborgh

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		O						

Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Bluets

Africallagma elongatum

Slender Bluet

Alternative common name: None

Afrikaans common name: Slanke Blouetjie

Body length: 30 mm

Hindwing length: 16.5–17 mm



Flight period: Dec to May.

Habitat: Thick, tall grasses and reeds near or at pools.

Notes: Small and slender, bright blue species with large pale blue postocular spots and a blue abdominal tip. Nationally, this species is very rare and highly localised, with the KwaZulu-Natal National Botanical Garden a stronghold for the species. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, where it may be seen among the lush growth of tall grasses and reeds just beyond the bridge in the centre of the Garden.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Bluets

Africallagma glaucum

Swamp Bluet

Alternative common name: Common African Blue

Afrikaans common name:

Vleiblouetjie

Body length: 28–29 mm

Hindwing length: 15.5–16.5 mm

Flight period: All year, but scarce in winter.

Habitat: Small but conspicuous as it flits from one lily leaf or emerging grass stem to another across the surface of pools and dams. Very common in marshy areas throughout South Africa.

Notes: Common throughout South Africa from sea level to the alpine zone of the Drakensberg Mountains. Eyes are light blue with a black cap and a thin blue line between the eyes. Abdomen is light blue with a black dorsal line of varying widths. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden. This is the little blue damselfly most commonly seen at ponds, sitting on lilies or emergent grass stems. It is restless and frequently flies from one perch to another close to the water surface. When it does this, it almost looks as if it is flying slightly sideways.



Photos: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Bluetail

Ischnura senegalensis

Marsh Bluetail

Alternative common name: Common Bluetail

Afrikaans common name: Hemelstertjie

Body length: 29–30 mm

Hindwing length: 14.5–15.5 mm

Flight period: Sept to May (occasionally overwintering).

Habitat: Common among grasses and reeds beside pools, dams and sluggish reaches of rivers.

Notes: The only *Ischnura* species in South Africa. Small, hairy, with round (and not crescent-shaped nor linked) postocular spots and S8 bright blue. The black on the thorax is slightly metallic, and easily seen through close-focus binoculars. Pterostigmas bicoloured—blackish in the inner half and bright blue in the outer half. The most distinguishing

feature of the male is the blue patch on the side at the base of the abdomen. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden. Very tolerant of urbanisation, even organically polluted ponds, and often seen in suburban gardens.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Citril

Ceriatrion glabrum

Common Citril

Alternative common name: Common Orange, Common Pond Damsel

Afrikaans common name: Gewone Aljander

Body length: 39–41 mm

Hindwing length: 20–20.5 mm

Flight period: Oct to May.

Habitat: Among thick clumps of long grasses and reeds beside open pools and dams. At Kirstenbosch, it occurs along small streams in forest.

Notes: Unmistakeable, being the only common, bright, all-orange damselfly species throughout much of South Africa. Eyes are greenish with a dark grey cap. The abdomen is all bright orange in the male and duller, browner and greener in the female. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden. It can be a fierce predator of other, smaller damselflies, especially when they are young and the body is still soft.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Sprites

Pseudagrion gamblesi

Great Sprite

Alternative common name: Gambles' Sprite

Afrikaans common name: Gamblese Gesie

Body length: 45–46 mm

Hindwing length: 27.5–28 mm

Flight period: Oct to Apr.

Habitat: Fast, rock-bottomed rivers with quieter, reed-fringed pools.

Notes: Very distinctive, being the largest *Pseudagrion* species in South Africa. The male has a characteristic yellowish-orange face with large, light blue postocular spots. Eyes are black on the top half and yellowish orange on the lower half. The terminal segments of the abdomen are bright blue becoming heavily pruinescent whitish with age. Abdominal appendages are very long. The abdomen curves upwards slightly. Females have yellowish-green postocular spots and a yellowish-green thorax. A very localised species in South Africa, but may be seen perching among tall grasses and reeds along

the Crocodile River, below the Cascades, in the Lowveld National Botanical Garden. Pinhey named the species in honour of Robert M. Gambles who discovered, described and recorded many Nigerian and West African dragonflies between the 1950s and 1970s, and who produced an unpublished manuscript entitled 'The Nigerian dragonflies'.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
						O		

Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Sprites

Pseudagrion kersteni

Kersten's Sprite

Alternative common name: Powder-striped Sprite

Afrikaans common name: Kerstense Gesie

Body length: 38–41 mm

Hindwing length: 20–21 mm

Flight period: All year, but scarce in winter.

Habitat: Among long grasses and reeds beside streams and small rivers.

Notes: One of the commonest damselflies in southern Africa, although rare in the southwestern Cape. Often seen along the same stream but in different habitats as the Slate Sprite

(*P. salisburyense*). White pruinescent face. Eyes blackish above, light green to yellow green below. Distinct light blue postocular spots. The synthorax is heavily pruinescent with whitish blue stripes. The species is named in honour of the German explorer, Dr Otto Kersten, who collected the first specimens at Mbaramu (northern Tanzania) during the Von Decken Expedition to Mount Kilimanjaro in October 1862. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, where it can be seen along the river just below the outlet waterfall of the Kingfisher Dam.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Sprites

Pseudagrion massaicum

Masai Sprite

Alternative common name: Massai Sprite, Vermilion Sprite

Afrikaans common name: Masaigesie

Body length: 31–35 mm

Hindwing length: 16.5–20.5 mm

Flight period: Oct to May.

Habitat: Perches close to the water on lilies and emergent grass stems in pools and dams.

Notes: Common throughout much of South Africa, but rarely above 1 300 m.a.s.l., except in the Limpopo Province. Head and thorax in males all the

same red colour. Very clearly marked bright red dumbbell-shaped postocular spots. The only *Pseudagrion* with bright orange on the sides of the thorax. Has a blue pruinose area between the wing bases and a cobalt blue abdominal tip in males. Adults are well documented to fly near swimming pools and artificial waterholes. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden. This distinctly red-headed species is often seen on a warm day skimming across the water surface from one lily or grass stem to the next.



Photos: Michael Salmways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					○			

Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Sprites

Pseudagrion hageni

Painted Sprite

Alternative common name: Hagen's Sprite

Afrikaans common name: Blanketselgesie

Body length: 36–43 mm

Hindwing length: 21.5–23.5 mm

Flight period: Nov to May.

Habitat: A shade-loving species in sunny spots in wooded areas beside pools, streams and sluggish reaches of rivers.

Notes: Male has a distinctly blue abdominal tip as well as a bright red head and thoracic stripes. The red to orange postocular spots are connected to a line on top of the head. Female has reddish head markings and greenish thoracic stripes. Named after the German doyen of Odonatology, Dr Hermann August Hagen (1817–1893). One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, and often seen among the tall grasses and reeds associated with shade of bushes on the far side of Kingfisher Dam.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					O			

Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Sprites

Pseudagrion furcigerum

Palmiet Sprite

Alternative common name: Cape Sprite

Afrikaans common name: Kaapse Gesie

Body length: 35–36 mm

Hindwing length: 20.5–21 mm

Flight period: Late Oct to May.

Habitat: Most commonly seen perching on rocks midstream in small rivers.

Notes: No truly pigmented postocular spots, but pruinescent spots connected by a pruinescent line. Similar to Kersten's Sprite (*P. kersteni*). *P. kersteni* is 3–5

mm larger and more extensively pruinescent. Endemic to the Western Cape Province. This highly localised and sensitive species only likes very natural rivers. It can be seen along the small rivers in the Harold Porter National Botanical Garden. It is unusual in that the female is brightly coloured like the male. She is rufous brown when young but becomes distinctly

blue when fully mature, and perches, with the male, conspicuously on flat stones midstream. It is a mystery why the female of this species behaves like this.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		O						

Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Sprites

Pseudagrion salisburyense

Slate Sprite

Alternative common name: Salisbury Sprite

Afrikaans common name: Salisburygesie

Body length: 35–38 mm

Hindwing length: 20.5–21 mm

Flight period: All year, but scarce Jul to Aug.

Habitat: Among tall grasses and reeds beside quiet reaches and pools of streams and small rivers.

Notes: Very common throughout much of South Africa, except in the southwestern Cape. Plain, slate blue thorax above with a mauve sheen in males. Eyes are black above and green on the undersides. Has two round, bright blue, postocular spots. In the female the blue postocular spots are joined by a brownish bar. The abdomen has a bluish tip which later turns whitish in colour. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, both of the ponds and pools in the stream, especially just below Kingfisher Dam.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					O	O		

Family Coenagrionidae

Bluets, Bluetails, Citrils, Slims, Sprites, Wisps

Wisp

Agriocnemis falcifera

White-masked Wisp

Alternative common name: None

Afrikaans common name: Witmaskersoetjie

Body length: 24–25 mm

Hindwing length: 11–12 mm

Flight period: Nov to May.

Habitat: Well hidden among shorter grasses and sedges in swampy areas beside pools and dams.

Notes: Very small, with a distinctive pruinescent white 'moustache'. Male pterostigmas are light in the forewings and dark in the hindwings. Female pterostigmas are light brown in both forewings and hindwings. A South African endemic. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden. This tiny species is really only seen when it is disturbed from its resting site among rank grasses and sedges in swampy areas adjacent to Kingfisher Dam.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Dragonflies sub-order Anisoptera

Family Aeshnidae

Duskhawkers, Emperors, Hawkers

Emperors

Anax tristis

Black Emperor

Alternative common name: Long Skimmer

Afrikaans common name: Swart Keiser

Body length: 118–120 mm

Hindwing length: 62–63 mm

Flight period: Nov to May, most common in Dec.

Habitat: Flies powerfully and swiftly across pools and dams.

Notes: This enormous species is South Africa's largest dragonfly by far and almost looks like a black bird flying across the water. Once disturbed, it takes off high into the air at tremendous speed. Both sexes are similar in colour. The thorax and eyes are green, while the abdomen is black with yellow dorsal spots. The abdomen is very long in proportion to the wings. The distinctive cream ring at the base of the abdomen is an unmistakable feature. This magnificent, fast-flying species is an unforgettable sight but only a rare vagrant to Botanical Gardens where its favourite habitat is medium-sized ponds, like Kingfisher Dam at the KwaZulu-Natal National Botanical Garden.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Aeshnidae

Duskhawkers, Emperors, Hawkets

Emperors

Anax imperator

Blue Emperor

Alternative common name: The Emperor

Afrikaans common name: Blou Keiser

Body length: 74–75 mm

Hindwing length: 50–51 mm

Flight period: Oct to Jun, occasionally Jul to Sep.



Habitat: Cruises along the edges of pools and dams, although at dusk often leaves the water and hawks over grass among bushes.

Notes: The green thorax and bright blue and black abdomen are characteristic. Hawks rapidly about 1–2 m above the water surface along the reedy fringes of pools and dams. Pinhey (1951) described this species as the “commonest aeshnid



in southern Africa” and mentioned that “their prey may consist of other large Odonata such as *Pantala flavescens*”. One of the ‘regular resident’ species in the KwaZulu-Natal National Botanical Garden, where it hawks back and forth along the edge of Kingfisher Dam. At dusk it may be seen over the lawns swiftly wheeling around catching swarming midges.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
				○	○			

Family Aeshnidae

Duskhawkers, Emperors, Hawkets

Emperors

Anax speratus

Orange Emperor

Alternative common name: None

Afrikaans common name: Oranje Keiser

Body length: 76–78 mm

Hindwing length: 53–54 mm

Flight period: Late Sept to Apr.

Habitat: Small rivers with banks of tall grasses and reeds with some bushes.

Notes: Enormous and unmistakable. The only huge orange dragonfly in South Africa. Female has a green thorax. Often seen ovipositing in vegetation just below the water surface at the water's edge, sometimes being guarded by a male hovering nearby. This superb species is mostly seen cruising fairly fast along streams and rivers, rarely more than a metre above the surface of the water. It can surprise the observer by suddenly passing from behind, close by.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Aeshnidae

Duskhawkers, Emperors, Hawkets

Hawker

Pinheyschna subpupillata

Stream Hawker

Alternative common name: South African Stream Hawker

Afrikaans common name: Spruitjie Venter

Body length: 58–60 mm

Hindwing length: 40–41 mm



Photo: Michael Samways



Photo: Christopher Willis

Flight period: Oct to Apr; in Western Cape common only in early summer (Nov).

Habitat: Rocky montane streams with an abundance of bushes and trees.

Notes: A South African endemic, fairly commonly seen hawking along streams and rivers. In South Africa, this is the only distinctly green and brown speckled aeshnid, with no

blue at all. Has a distinctive black 'bull's eye' spot on top of the head between the eyes. This species appears olive in colour when in flight. It cruises at speed along rivers, often turning sharply as it intercepts small flying insects. Often seen far away from water, even in suburban gardens and over fynbos.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Gomphidae

Tigertail, Fingertail, Fairytail, Yellowjack, Siphontail, Leaf-tail, Talontails, Thorntails, Hooktails, Claspertail

Hooktails

Paragomphus cognatus

Boulder Hooktail

Alternative common name: Rock Hooktail, Riffle Hooktail, Brook Browntail

Afrikaans common name: Klipkrammetjie

Body length: 41.5–44 mm

Hindwing length: 24–25.5 mm

Flight period: Oct to May.

Habitat: Commonly seen perching on boulders midstream.

Notes: Distinguished from the Green Hooktail by its contrasting yellowish-green and black thoracic markings and uniformly dark brown pterostigma. Usually solitary. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden. This alert species is the most easily observed Hooktail, as it is common and sits conspicuously on boulders midstream.

Careful observation will reveal this species constantly moving its head from side to side, looking out for prey, rivals, and females which tend to stay away from the water except to breed. It can often be seen from the bridge over the river in the centre of the KwaZulu-Natal National Botanical Garden.



Photo: Michael Samways



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Gomphidae

Tigertail, Fingertail, Fairytail, Yellowjack, Siphontail, Leaftail, Talontails, Thorntails, Hooktails, Claspertail

Hooktails

Paragomphus genei

Green Hooktail

Alternative common name: Common Hooktail, Green Browntail

Afrikaans common name: Groen Krammetjie

Body length: 40–40.5 mm

Hindwing length: 24–25 mm

Flight period: Nov to Jun.

Habitat: Moist, gravel or sandy edges of savanna rivers with low water levels.

Notes: The most abundant of the African Gomphidae (Pinhey 1985). Distinct green face and green eyes, as well as green thorax with indistinct brown lines. Pterostigmas cream coloured with a thick black frame. Distinguished from the Boulder Hooktail by its greenish colouration. Foliations on S8 and S9 dark brown. Often several individuals may be seen close to each other.

The species 'genei' was dedicated

to the Italian entomologist, Prof. Carlo Guiseppè Genè (1780–1847), who gave Baron Edmond de Sélys-Longchamps (considered as the 'Father of Odonatology') access to the dragonfly collection at the Torino Natural History Museum. Only a rare vagrant to the KwaZulu-Natal National Botanical Garden, where it is occasionally seen perching on the gravelly ground of the car park.



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Gomphidae

Tigertail, Fingertail, Fairytail, Yellowjack, Siphontail, Leaf-tail, Talontails, Thorntails, Hooktails, Claspertail

Thorntail

Ceratogomphus pictus

Common Thorntail

Alternative common name: Common African Clubtail

Afrikaans common name: Gewone Doringstert

Body length: 53–54 mm

Hindwing length: 29–30 mm

Flight period: Mostly Dec to Apr, occasionally Oct and May.

Habitat: Open dams, pools and rivers with pools.

Notes: Distinctively yellow in appearance. Recognised by its ground- or boulder-perching habit in streams, greyish thoracic side stripes and foliations that are far from the tip of the abdomen. Black pterostigmas. Female is very similar to the male, although the abdomen is less boldly marked with blackish brown. This very alert species is distinctly yellow, perching mostly on the bare ground beside Kingfisher Dam. It has not yet been recorded in the Botanical Gardens of the Cape although it does occur in the area.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Corduliidae

Presbas, Emerald, Cruisers

Presbas

Syncordulia venator

Mahogany Presba

Alternative common name: Chestnut Cruiser, Ferruginous Emerald

Afrikaans common name: Sapele Swalker

Body length: 49–50 mm

Hindwing length: 28 mm

Flight period: Sept to Mar.

Habitat: Clear, boulder-strewn montane streams.

Notes: Endemic to the southwestern Cape. Reddish brown with small yellow spots. Very rare and localised in the Cape. Hawks rapidly up and down over bush-lined montane streams and pools. Sexes alike. Thorax very hairy. DNA and other biogeographical studies have suggested that the genus *Syncordulia* diverged from its ancestor about 60 million years ago, at the same time as



several Cape plant fynbos groups (e.g. proteas and restios) (Ware *et al.* 2009). This distinctly rich brown species is often seen cruising along the paths near trees at the higher elevations of Kirstenbosch. It breeds in the wooded streams, mostly above the Gardens, and also in Disa Stream on top of Table Mountain. This species and several other rare and threatened endemics



have benefitted enormously from the removal of the invasive alien pine trees on Table Mountain. The alien trees were making this and many of our other national rarities locally extinct, which is why it has been so important and urgent to remove these invasive aliens. It is the only *Syncordulia* known from Table Mountain.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Corduliidae

Presbas, Emerald, Cruisers

Presbas

Syncordulia gracilis

Yellow Presba

Alternative common name: Yellow Cruiser

Afrikaans common name: Geel Swalker

Body length: 43–45 mm

Hindwing length: 27.5–28.5 mm

Flight period: Sept to Mar.

Habitat: Frequents clear, fast-flowing, rocky streams and rivers.

Notes: Endemic to South Africa, with most records known from the southwestern Cape. Very rare and localised but with a stronghold in the Kogelberg Biosphere Reserve, including the Harold Porter National Botanical Garden. Has a fine yellow line along the midline of the thorax. Rarely found over water, normally found flying over fynbos or low, bushy vegetation, often 100 m or so from water. The elongated yellowish spots along the midline of the abdomen are distinctive. Female is very similar to the male. This is a very ancient species, at least 60 million years old.



Photo: Christopher Willis



Photo: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		O						

Family Corduliidae

Presbas, Emerald, Cruisers

Cruisers

Phyllomacromia picta

Darting Cruiser

Alternative common name: None

Afrikaans common name: Pyltjie Swalker

Body length: 50–55 mm

Hindwing length: 32–35 mm

Flight period: Nov to Apr.

Habitat: Pools and dams.

Notes: This scarce species of mostly warm areas may be seen hanging from vegetation away from water, or swiftly patrolling gaps and paths between trees. Eyes are metallic green, and easily seen in flight. Pterostigmas are reddish brown. Has a distinct club on the abdomen from S7–9. The abdomen is alternately black and yellow with very angular markings. This species, with its very bright black and yellow colouring, flies very rapidly low over the water.

But it is usually seen cruising at speed back and forth along paths and through openings between trees, when its black and yellow colouring is very conspicuous. It is much smaller than the Two-banded Cruiser.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Corduliidae

Presbas, Emerald, Cruisers

Cruisers

Phyllomacromia contumax

Two-banded Cruiser

Alternative common name: Natal Macromia

Afrikaans common name: Dubbelband Swalker

Body length: 76–78 mm

Hindwing length: 53–54 mm

Flight period: Nov to May.

Habitat: Mostly away from water, along forest margins and along vehicle tracks. In coastal areas, the female frequents lake edges.

Notes: One of the largest black and bright yellow dragonflies in South Africa. Usually seen cruising along forest margins, rarely flying more than 2 m above the ground, or perching on the end of branches of large trees.

Easily recognised on the wing by the long, yellow saddle on S3 and a wide yellow band on S7. S8–10 all black. Has no (or occasionally very small) stripes on the sides of the thorax. A very rare visitor to National Botanical Gardens in warm areas.



Photo: Mithani Samways



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
						O		

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Basker

Urothemis edwardsii

Blue Basker



Alternative common name: None

Afrikaans common name: Blou Sonbaaier

Body length: 40–42 mm

Hindwing length: 33.5–35 mm

Flight period: Dec to May.

Habitat: Pools and dams with an abundance of reeds and tall grasses.

Notes: Usually seen perching conspicuously on a bush or twig of a tree. Pinhey (1985) describes the species as

“very persistent in perch selection”. Abdomen deep blue with an unmistakable black ladder along the upper surface. Hindwing has a large, dark basal patch with a fine amber halo. Eyes are black with grey on the lower margins. Pterostigmas are light yellowish with a fine, blackish, front margin. Female is yellow but also has the dark, basal patch on the hindwing. A rare visitor to the KwaZulu-Natal National Botanical Garden.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Cascader

Zygonyx natalensis

Scuffed Cascader

Alternative common name: Blue Cascader, Natal Cascader

Afrikaans common name: Blou Klatertjie

Body length: 50–52 mm

Hindwing length: 39–40 mm

Flight period: Sept to May, but often most abundant Oct to Nov.

Habitat: Cruises rapidly around waterfalls, rapids and swift reaches of rivers, usually bordered by bushes and trees.

Notes: Abdomen blackish brown with thin, pale blue pruinescence that is usually patchy and scuffed. Eyes are dull turquoise to grey. Pterostigmas are dark reddish brown above but yellowish brown underneath. S10 and the appendages at the end of the abdomen are blackish. Although it looks like a Skimmer (*Orthetrum* species), Skimmers would not patrol over the water for extended periods. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, regularly seen at the outlet of Kingfisher Dam.



Photo: Michael Sarmwaya



Photo: Christopher Willis

National Botanical Garden								
FS	H	HP	KD	K	KZN	L	P	WS
					O			

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Dropwings

Trithemis stictica

Jaunty Dropwing

Alternative common name: None

Afrikaans common name: Vrolike Valvlerkie

Body length: 35–37 mm

Hindwing length: 26.5–28 mm

Flight period: Nov to May, with occasional winter individuals.

Habitat: Pools, dams and sluggish reaches of rivers.

Notes: Locally common in southern Africa. The only *Trithemis* species in South Africa with a pruinescent blue thorax, and a black and yellow abdomen. Pinhey (1985) describes the male as “one of the prettiest of the family”. Pterostigmas dark brown with black margins. Commonly seen perching on a reed or broken branch around the edge of the water. Responds to hot sunlight by moving its abdomen into a vertical, obelisk position. One of the ‘regular resident’ species in the KwaZulu-Natal National Botanical Garden, and often seen around the margin of the Kingfisher Dam.



Photo: Michael Samways



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Dropwings

Trithemis kirbyi

Kirby's Dropwing

Alternative common name: Rock Dropwing

Afrikaans common name: Kirbyse Valvlerkie

Body length: 35–38 mm

Hindwing length: 25–26.5 mm

Flight period: Nov to May, with occasional winter individuals.

Habitat: Shallow, rocky rivers and rock pools. Also around water troughs and swimming pools.

Notes: Large orange wing splashes on all four wings distinguish this species from other *Trithemis* species. Short pterostigmas are dark reddish brown. Male has a bright orange-red abdomen whereas the female's abdomen is yellowish to greenish brown with faint dark brown stripes. The abdomen has black dashes on the upper surface of S8–10, widest on S9. One of the African dragonfly species that has recently expanded its range across Europe. The species name 'kirbyi' is named after William Forsell Kirby (1844–1912), the leading British specialist in Odonata at the end of the 19th century. This species favours hot, dry areas such as the karoo and savanna of the Kruger National Park. It perches mostly on rocks or bare soil with its wings open, showing the conspicuous red splashes at the base of its wings.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
	O		O					

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Dropwings

Trithemis furva

Navy Dropwing

Alternative common name: Dark Dropwing, Lowland Spectrum-blue Dropwing

Afrikaans common name: Blou Valvlerkie

Body length: 37.5–38.5 mm



Hindwing length: 27.5–29 mm

Flight period: All year, but more common in summer months.

Habitat: Streams and rivers at mostly low elevations (below 700 m.a.s.l.). Rarely pools and still reaches of rivers.

Notes: Perches on rocks and sometimes emergent vegetation in the water. This dark blue species is easily separated from all other species

except the Round-hook Dropwing (*Trithemis dorsalis*), from which it is almost indistinguishable in the field. It has very dark purplish brown eyes, being lighter below. The thorax side of the female has a zigzag black line (compared with the two pairs of diagonal, black wiggly lines in *Trithemis dorsalis*). It prefers rivers, where it is often seen perching on boulders midstream, mostly unlike the Round-hook Dropwing.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
O	O		O					

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Dropwings

Trithemis arteriosa

Red-veined Dropwing

Alternative common name: None

Afrikaans common name: Rooierfie

Body length: 32–36 mm

Hindwing length: 26–27.5 mm

Flight period: All year, but more common in summer months.

Habitat: Pools, dams and sluggish reaches of streams.

Notes: Very common and abundant throughout South Africa. A slender, bright red species commonly seen perching on reeds or dead branches emerging from the water. The most common slender red species in South Africa. Eyes blood red. Synthorax red with black side stripes, and sometimes with a purple bloom on top of the synthorax. Wings have bright red veins and light orange splashes at the bases of all wings. The black wedge shape along the tip of the slender abdomen is one of the clearest features. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, but also common in many of the National Botanical Gardens.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
○	○	○	○		○	○	○	

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Dropwings

Trithemis dorsalis

Round-hook Dropwing

Alternative common name: Dorsal Dropwing, Lakeside Dropwing, Upland Spectrum-blue Dropwing

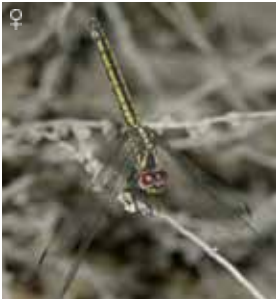
Afrikaans common name: Dorsal Valvlerkie

Body length: 37.5–38.5 mm

Hindwing length: 27.5–29 mm

Flight period: Nov to May.

Habitat: Mostly large lakes and dams and still reaches of rivers (rarely smaller pools or swift-flowing rivers) at elevations above 700 m.a.s.l. (although at lower elevations in the Western Cape).



Notes: Perches on tall grasses and reeds at the edge of water. Indistinguishable in the field from the Navy Dropwing (*Trithemis furva*), but the habitat difference is usually enough to tell them apart. For final determination a full field guide is required. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden where it perches



on tall grasses and rushes. A distinguishing feature is that this species often has a white margin on the inside of the pterostigmas, usually absent in the Navy Dropwing. The name 'Round-hook' describes the genital apparatus of the male, which is roundish, while it is much straighter in the Navy Dropwing, but this can only be seen with a hand lens when the specimen is in the hand.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					○	○		○

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Elf

Tetrathemis polleni

Black-splashed Elf

Alternative common name: Black-splash, African Primitive

Afrikaans common name: Swart Spikkeldwergie

Body length: 30–32.5 mm

Hindwing length: 24–25 mm

Flight period: Oct to Mar.

Habitat: Shaded forest pools and still reaches of rivers.

Notes: Small but striking, unmistakable, with huge, roundish black splashes on the ends of all wings (although in some individuals the wing tips may be clear).

Perches conspicuously on twigs over shaded forest pools, where it is very alert. The male shows a strong preference for a certain twig, returning again and again. The black wing splashes of this species (which only develop when individuals are fully mature) reach the hind margin of the hindwing, unlike those in the Lucia Widow and Portia Widow, where the black splashes have an indented or irregular hind edge, and neither reaches the base of the wing nor the hind margin of the hindwing. The female is brownish with no wing markings and is sometimes seen perching close to a male. Also regularly seen at the wooded ponds on the golf courses on the KwaZulu-Natal coast.



Photos: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
						O		

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Forestwatcher

Notiothemis jonesi

Jones' Forestwatcher

Alternative common name: Forest-watcher, Jones's Primitive, Jones's Forest-Watcher

Afrikaans common name: Boswagter

Body length: 32–33 mm



Hindwing length: 24–25 mm

Flight period: Dec to Mar.

Habitat: In sunny spots at pools and sluggish reaches of rivers in heavily wooded areas.

Notes: Unmistakable species with its small size, bright turquoise eyes and distinctive creamish to light blue dorsal patch on S7. A characteristic woodland

or forest species. It is named after W.E. Jones who was the first to collect it at M'Fongosi, Zululand, in May 1911. This small species is very alert and perches on reeds and branches over water in dappled shade. The female, which is a dull mottled turquoise, is very rarely seen. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden in and among the trees at the entrance, but a careful search is required.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					○			

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Glider

Tramea limbata

Voyaging Glider

Alternative common name: Ferruginous Glider

Afrikaans common name: Engelband Swewer

Body length: 45–50 mm

Hindwing length: 38–42 mm

Flight period: Dec to May, occasional individuals in winter.

Habitat: Cruises and wheels around just above head height over grass among trees and bushes. Rarely lands, but will do so under cloudy conditions on the tops of bushes.

Notes: A fairly large, deep red, gliding species with a smooth-edged, dark red patch at the base of the hindwing. Has a black abdominal tip (S9–10 all black above) with very long, blackish appendages on the tip of the abdomen. Glides between bushes and trees, perching on top of bushes on very hot days. A long-distance traveller, and will even cross the ocean. A rare vagrant to Botanical Gardens.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
			O		O			

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Groundling

Brachythemis leucosticta

Banded Groundling

Alternative common name: Four-square Groundling

Afrikaans common name: Gebande Grondkruiper

Body length: 29–31 mm

Hindwing length: 23.5–25 mm



Flight period: Nov to May.

Habitat: Dry, heavily grazed savanna near pools, dams and sluggish reaches of rivers. Mostly away from water, along dirt tracks or on the fringes of receding pools with unvegetated beaches.

Notes: Male is one of the most easily identified of all dragonflies, with its dark brown wing bands and all-charcoal head, thorax and abdomen. The wing bands are absent in the female and teneral.

Female often seen with the male, but mating pairs rarely seen. Pterostigma is bicoloured, yellowish in the centre and dark brown towards the edges. Male and female typically perch on bare ground near the water's edge. Like cattle egrets, this species is known to accompany herds of large mammals. They fly close to the ground between the legs of antelope and cattle (and even human observers), catching insects disturbed by the animals (Suhling & Martens 2007). This is a species typical of hot savanna areas.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
	O							

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Nomad

Sympetrum fonscolombii

Nomad

Alternative common name: Red-veined Darter

Afrikaans common name: Swerwertjie

Body length: 38–41 mm

Hindwing length: 27–30 mm

Flight period: Sept to May but most abundant Oct to Nov; a few individuals may be seen in midwinter.

Habitat: Reedy and grassy margins of pools and dams, although sometimes in grassland far from water.

Notes: Recognised by its orange-red abdomen with black marks at the tip, with a brownish grey head and thorax with pale diagonal stripes. The 'hairy collar' is easily seen in the field with close-focus binoculars. Known as a wanderer or migrant, especially in early summer. A very widespread species which occurs all the way to Europe. Named after the French entomologist E.L.J.H. Boyer de Fonscolombe (1772–1853), who described the species for the first time, but under a name that was occupied by another species. Mostly a rare vagrant to Botanical Gardens.



Photo: Michael Samways



Photo: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Pantala

Pantala flavescens

Pantala

Alternative common name: Wandering Glider, Globe Skimmer, Global Wanderer

Afrikaans common name: Narbroekie

Body length: 47–50 mm

Hindwing length: 38.5–41 mm

Flight period: Late Nov to May.

Habitat: Although it breeds in small pools, even temporary ones, it is usually seen wheeling just above head height over grass among trees, often in groups.

Notes: Common in nearly all parts of Africa, roving far and wide. Often seen in gardens, flying back and forth over lawns and swimming pools. Highly migratory. It is the only South African dragonfly that has the following combination of characteristics: fairly large, orange-coloured, no distinct wing flashes, tapered abdomen, long appendages combined with pterostigmas longer in the forewing than hindwing. According to Pinhey (1985), frequently observed “flying erratically before an advancing storm, apparently anticipating precipitation”. On very warm days, it will even fly in drizzle. Occurs all around the world in warm climates, even on Easter Island (Samways & Osborn 1998), and is generally regarded as the most widespread and abundant dragonfly on Earth.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Percher

Diplacodes luminans

Barbet Percher

Alternative common name: Barbet, Luminous Percher

Afrikaans common name: Baartjie

Body length: 36–39 mm

Hindwing length: 27–30 mm

Flight period: Nov to Apr.

Habitat: Shallow marshy pools with tall grasses, sedges and reeds.

Notes: The male's bright red head and thorax with mostly yellow and black abdomen,

together with orange patches at the bases of the wings, make this species unmistakable. Eyes are dark red above and grey below. The pterostigmas are light yellowish with large, dark brown centres. This attractive species is a very rare visitor to the KwaZulu-Natal National Botanical Garden in Pietermaritzburg, where it may be seen perching on the top of a tall grass stem or a reed.



Photo: Michael Samways



Photo: Warwick Tarboton

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
					O			

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Pintail

Acisoma panorpoides

Grizzled Pintail

Alternative common name: Pintail

Afrikaans common name: Pylstertjie



Photos: Michael Samways

Body length: 28.5–33.5 mm

Hindwing length: 21–23 mm

Flight period: Nov to May.

Habitat: Pools and rivers clogged with water plants, especially lilies.

Notes: Very conspicuous, with its small size, swollen-then-constricted abdomen, grizzled-grey colouring and turquoise eyes. The pterostigmas are long and whitish. Females are straw-coloured to greenish yellow with dark brown to blackish markings. A lover of hot areas, this species looks almost like a bluish bee darting from one perch to another.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Rockdweller

Bradinopyga cornuta

Horned Rockdweller

Alternative common name: Don-Dwala, Horned Rock-dweller

Afrikaans common name: Don-Dwala

Body length: 42–43 mm

Hindwing length: 33–35 mm

Flight period: Sept to May.

Habitat: Rocky outcrops and domes with incised rain pools, in which it breeds, close to rocky, fast-flowing, Lowveld and some Zululand rivers.

Notes: Unmistakable with its mottled grey, brown and greyish yellow colour pattern that blends with the sloping and vertical rock walls on which it settles. It has relatively long wings, with dark tips, and a short abdomen. From above S7 is largely greyish yellow, forming a patch on the abdomen. Often gregarious.

This dragonfly is sometimes difficult to detect because of its cryptic markings that blend remarkably well with the rocks on which it perches. Apart from females having brown-tipped wings, there are no differences in the colouration of the sexes. This is a very alert species that will take off at great speed when disturbed from its resting position. The sudden movement of this large dragonfly often causes one to start, having not seen it until then as it is so camouflaged on the rock surface. The scientific name 'cornuta' means 'horned' referring to four sharp horns it has on top of its head, the function of which is unknown.



Photo: Christopher Willis



Photo: Michael Samways

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
						O		

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Scarlets

Crocothemis erythraea

Broad Scarlet

Alternative common name: Scarlet Darter

Afrikaans common name: Breë Bloisie

Body length: 39–40 mm

Hindwing length: 29–30 mm

Flight period: Oct to May.

Habitat: Pools, dams, streams and rivers.

Notes: This very common broad-bodied, bright red species is often seen perching on rocks and sometimes grasses either at the water or away from it. No other bright red species has such a broad abdomen. The abdomen is



a long, dark, smudgy line running dorsally along its length. Unlike *Trithemis* species, the Broad Scarlet has no black on the sides of the abdomen. The pterostigmas are long and light yellowish-brown in colour. The eyes are a dark crimson colour with a bright blue edging on the hind margin, very visible in the field. One of the 'regular resident' species in the KwaZulu-

Natal National Botanical Garden. This very common species throughout South Africa is a real opportunist, readily colonising artificial ponds, even small ones. It is often seen by rivers as well, where it perches on tall grasses and reeds, generally unlike the Little Scarlet which usually prefers to perch on rocks. This species and the Red-veined Dropwing are the most-recorded species in the Odonata Database of Africa (ODA).

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Scarlets

Crocothemis sanguinolenta

Little Scarlet

Alternative common name: Small Scarlet

Afrikaans common name: Klein Bloisie

Body length: 35–37 mm

Hindwing length: 27–28 mm

Flight period: Nov to May.

Habitat: Rocky streams with pools, in open situations.

Notes: A small, bright red species usually found on stones and bare soil near rocky streams. Unlike the Broad Scarlet, it very rarely perches on vegetation. Smaller than the Broad Scarlet, with a similar fine blackish dorsal line along the abdomen.

Pterostigmas are shorter than those of the Broad Scarlet and are yellowish to reddish brown. Similar to the Broad Scarlet, it has a basal orange patch on the hindwing. A locally abundant species.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
		O		O		O		

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Skimmers

Nesiothemis farinosa

Black-tailed Skimmer

Alternative common name: Black-pointed Skimmer, Black-faced Dancing Skimmer

Afrikaans common name: Swartstert Skepper

Body length: 40–46 mm



Hindwing length: 30.5–35 mm

Flight period: Oct to May.

Habitat: Pools and dams with an abundance of reeds and bushes.

Notes: Unmistakable pale blue species with a black head and abdominal tip that perches on twigs and reeds at the water's edge. Wings are clear to slightly smoky. Pterostigmas are deep yellowish

brown. Often returns to the same perch. Female is yellowish brown and has a dark brown line running either side of the length of the abdomen. Female also has a distinct, pale cream, median line running along the top of the thorax. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, where it can be seen perching on small branches or reeds over the water at Kingfisher Dam.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Skimmers

Orthetrum rubens

Elusive Skimmer

Alternative common name: Alto Rouge, Waxy-winged Skimmer

Afrikaans common name: Rooi Skepper

Body length: 39–40 mm

Hindwing length: 29–31 mm

Flight period: Late Oct to Jan.

Habitat: Fast-flowing streams in wooded montane kloofs.

Notes: Restricted to the southwestern Cape where the original scientific specimen, collected by Reginald F. Lawrence (arachnologist at the South African Museum from 1922 to 1935) in Kirstenbosch in January 1923, was described by Dr Keppel Harcourt Barnard, then Assistant Director of the South African Museum (also served as Director of the Museum from 1942 to 1956), in 1937. Known only from Table Mountain, Hottentots-Holland, Langeberg and the Tulbagh areas of the Western Cape Province. Diagonal, bicoloured side stripes on the brown to reddish synthorax are very conspicuous. Wings have a fine net-like appearance. An interesting feature of this species is the prominent waxy coating of the wings, giving a smoky yellowish tone generally well into maturity (Pinhey 1985). Pterostigmas are deep yellowish in colour. This species has not been seen since the 1970s, and is feared to be extinct. Any sightings should be reported to SANBI.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
				O				

Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Skimmers

Orthetrum chrysostigma

Epaulet Skimmer

Alternative common name: None

Afrikaans common name: Epoulet Skepper

Body length: 42–45.5 mm

Hindwing length: 31–32 mm

Flight period: Oct to May, with occasional winter individuals.

Habitat: Shallow, rocky streams and pools.

Notes: Pinhey (1985) describes this species as one of the commonest African *Orthetrum* species in the open, in bush or light woodland but not in dense forest, in mostly hotter areas. A pale blue species with a single creamish, black-edged, shoulder (thoracic) stripe, which perches on reeds and boulders at the stream edge or along paths. *Orthetrum julia capicola*, which

is only found in the Western Cape Province, has two side stripes. Female is light brown in colour, but also displays the single, light creamish, thoracic stripe, finely edged in black.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Skimmers

Orthetrum abbotti

Little Skimmer

Alternative common name: Abbott's Skimmer

Afrikaans common name: Abbottse Skepper

Body length: 36–37 mm

Hindwing length: 26–26.5 mm

Flight period: Nov to May.

Habitat: Clumps of tall grasses and reeds in swampy pools.

Notes: The smallest of the South African *Orthetrum* species, and one of three (the other two being Hintz's Skimmer, *O. hintzi*, and Machado's Skimmer, *O. machadoi*) that is all pale blue, with no other markings, when mature. Pterostigmas are large and long, light brown with a dark brown anterior margin. The abdomen in the female is light yellowish brown with parallel black lines either side of the top of the abdomen. The Little Skimmer has a



Photo: Michael Samways



Photo: Warwick Tarbotton

weak flight, and frequently returns to the same grass or reed perch. The species is named after the American explorer and naturalist Dr William Louis Abbott (1866–1948), who collected the new species at Kilimanjaro, Tanzania. A very localised species, occasionally seen in sheltered parts of the KwaZulu-Natal National Botanical Garden where there are clumps of tall grasses.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Skimmers

Orthetrum trinacria

Long Skimmer

Alternative common name: Slender Skimmer

Afrikaans common name: Gestrekte Skepper

Body length: 53–58 mm

Hindwing length: 35–37 mm

Flight period: Nov to May.

Habitat: Reeds along the edges of pools and dams.

Notes: An all dark blue and large, elongated species that perches conspicuously, usually over water. The large, pale yellowish-brown pterostigmas are easily recognisable in the field. The abdomen is long and narrow with no foliations. It is the only strong flying, but frequently perching, virtually all dark blue dragonfly of pool margins in South Africa. It often preys on large insects, including other dragonflies and butterflies. Present in the KwaZulu-Natal National Botanical Garden in Pietermaritzburg, but rarely seen.



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Skimmers

Orthetrum caffrum

Two-striped Skimmer

Alternative common name: White-lined Skimmer, Mountain Marsh Orthetrum

Afrikaans common name: Strepies Skepper

Body length: 40–41 mm

Hindwing length: 28.5–29.5 mm

Flight period: Oct to Mar.



Habitat: Perches on tall grasses and reeds along streams and rivers.

Notes: A scarce (although common in the Drakensberg Mountains), all pale blue (in the male) species with two whitish thoracic stripes, a shoulder stripe as well as a strong, whitish stripe between the wings. The only other species with two side stripes is the larger *O. julia capicola* which has far less distinct stripes and does not have a creamish white stripe between the wings, but greyish. Also, pterostigmas are shorter in *O. caffrum* than *O. j. capicola*. This is

really a montane species associated with pools in small rivers with an abundance of tall grasses. Very common in the Little Berg, for example at Impendle.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Widows

Palpopleura lucia

Lucia Widow

Alternative common name: St Lucia Widow, African Black Widow, Black-winged Widow

Afrikaans common name: Luciase Weetje

Body length: 28.5–31 mm

Hindwing length: 23–24.5 mm

Flight period: Nov to May.

Habitat: Pools and dams with an abundance of reeds and grasses.

Notes: The extensive black wing markings readily identify this species from *Tetrathemis polleni* with its smaller, roundish black splashes. Generally larger than the Portia Widow (*Palpopleura portia*) with more extensive, in-filled black wing markings.

The hind margin of the black wing markings is undulating (as opposed to being highly indented in *P. portia*). Pterostigmas are bicoloured. The abdomen of the male is pale pruinose bluish grey with clearly visible black appendages, whereas in the female it has two lines of yellowish, squarish spots on either side and is pruinose dorsally. One of the 'regular resident' species in the KwaZulu-Natal National Botanical Garden, associated with the ponds. Its wings are nearly all black, and with its pale blue body very conspicuous as it sits on the top of tall grass stems. The Lucia Widow is regarded as the first named African odonate, initially named *Libellula lucia* by Drury in 1773 (Dijkstra *et al.* 2003).



National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Widows

Palpopleura portia

Portia Widow

Alternative common name: African Black Widow, Shadow-bridge Widow



Afrikaans common name: Portiase Weetjie

Body length: 25–29 mm

Hindwing length: 20–25 mm

Flight period: Nov to May.

Habitat: Garden ponds, natural pools, swamps, marshes with an abundance of grasses and reeds.

Notes: Wings with extensive indented black markings. Black wing patches are more jagged than the shade-loving *Tetrathemis pollenii*. Generally smaller than *Palpopleura lucia* with much more indented black wing markings. Pterostigmas are mostly bicoloured. Like the Lucia Widow, the abdomen of the male is pale pruinulent bluish grey with clearly visible black appendages, whereas in females it has two lines of yellowish, squarish spots on either side and is pruinulent dorsally. A careful look is required to distinguish this species, with its much more indented black wing markings, from the Lucia Widow, with its more extensive black wing markings.

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Family Libellulidae

Elf, Forestwatcher, Skimmers, Widows, Inspector, Pied-spot, Pintail, Perchers, Scarlets, Rockdweller, Groundlings, Nomad, Dropwings, Cascaders, Riverking, Bottletail, Flutterer, Duskdarters, Twister, Pantala, Gliders, Baskers, Pennant

Widows

Palpopleura jucunda

Yellow-veined Widow

Alternative common name: None

Afrikaans common name: Geelaar Weetjie

Body length: 22–24 mm

Hindwing length: 16–17 mm

Flight period: Oct to May, but most common late summer.

Habitat: Reedy and grassy areas around pools associated with streams and rivers.

Notes: Unmistakable with its very small size (one of the smallest dragonflies in South Africa) and distinctive wing patterning, splashed in dark brown and yellow. Pterostigmas in the male are dark brown, whereas in the female they are bicoloured, cream on the inside and dark brown on the outside. This very attractive little dragonfly frequently perches high on grass stems, mostly in quiet reaches of streams with shallow water and a muddy bottom.



Photos: Christopher Willis

National Botanical Garden

FS	H	HP	KD	K	KZN	L	P	WS
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Glossary

Abdomen – long, thin terminal section of the body.

Anisoptera – the group of species that are all true dragonflies.

Crepuscular – active at dawn and dusk, although in the case of dragonflies, this is usually dusk.

Endemic – confined to a restricted geographical area e.g. endemic to the Western Cape Province.

Exuvia – empty larval skin left behind on vegetation or rocks after the adult has emerged and flown away (plural: exuviae).

Eyes – the main eyes dominating the head. The head also bears three tiny, simple eyes (ocelli) that possibly function as night/day receptors.

Face – a casual term for the whole frontal area of the head.

Foliations – flattened, lateral, leaf-like extensions at the tip of the abdomen of some adults in the family Gomphidae, particularly conspicuous in the Boulder Hooktail.

Forewing(s) – first pair of wings.

Head – the first of three main sections (others being the thorax and abdomen) bearing important sensory organs, especially the eyes and the mouth.

Hindwing(s) – second pair of wings.

Neck – casual term for the prothorax.

Obelisking – in some perching dragonflies, the raising of the abdomen high in the air, sometimes in an almost vertical position, to keep cool (often seen in the Blue Basker and Jaunty Dropwing).

Ocelli – three, simple eyes, arranged in a triangle on the upper (dorsal) surface of the head, each with a single lens.

Odonata – the insect order comprising the true dragonflies (Anisoptera) and the damselflies (Zygoptera).

Postocular spots – light-coloured spots on top of the head in some damselflies, diagnostic in Sprites (*Pseudagrion*).

Prothorax – small, first segment of the thorax bearing the first pair of legs but no wings, casually referred to as the ‘neck’.

Pruinescence – waxy, whitish bloom on the body of many adults (especially male) dragonflies; it increases in intensity and extent with age, e.g. *Orthetrum* species (Skimmers), Scuffed Cascader and Kersten’s Sprite.

Pruinose – having pruinescence.

Pterostigma – pigmented cell near the tip and leading edge of all four wings.

S(egments) – an abbreviation for abdominal segments. There are 10, with S1 being adjacent to the thorax and S10 being the last and bearing the appendages.

Secondary genitalia – accessory genitalia of male damselflies and dragonflies on segments 2 and 3 of the abdomen.

Synthorax – the bulk of the thorax, made up of the last two thoracic segments bearing both pairs of wings and the last two pairs of legs.

Tandem linkage – clasping of the female by the male's appendages but the pair are not in genital contact.

Teneral – freshly-emerged young adult; tenerals often move away from water to mature.

Thorax – thick, middle section of the body comprised of the small prothorax and larger synthorax.

Waist – narrowing of the abdomen at segment 3 in some true dragonflies.

Wheel position – the situation when the male and female are coupled by the male holding the female by the neck and at the same time the coupling of the female's abdomen tip with the male's secondary genitalia near the base of the abdomen, the two creating a pattern reminiscent of a wheel.

Wings – large structures enabling dispersal and prey capture in adults; there are two pairs, the first pair being the forewings and the second pair the hindwings.

Zygoptera – the group of species comprising the damselflies.

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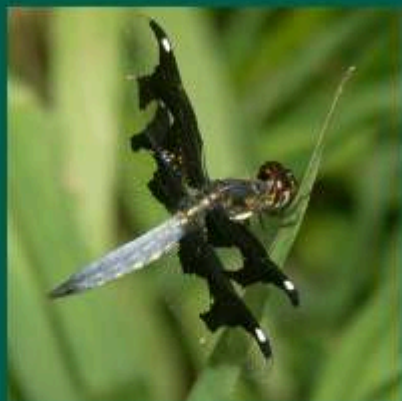
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