

# THE CRITICALLY ENDANGERED, ENDANGERED AND VULNERABLE BUTTERFLY SPECIES IN SOUTH AFRICA

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LEPIDOPTERISTS' SOCIETY OF AFRICA

## CUSTODIANS PROGRAMME

### CRITICALLY ENDANGERED BUTTERFLIES

(as per Henning et al. 2009 South African Red Data Book: Butterflies)

*Pseudonympha swanepoeli* (Grassland)  
*Stygionympha dicksoni* (Fynbos)  
*Alaena margaritacea* (Grassland)  
*Chrysoritis dicksoni* (Fynbos)  
*Chrysoritis thysbe schloszae* (Fynbos)  
*Erikssonia acraeina* (Savanna)  
*Lepidochrysops lotana* (Grassland)  
*Orachrysops niobe* (Fynbos)  
*Thestor brachycerus brachycerus* (Fynbos)  
*Trimenia malagrida malagrida* (Fynbos)  
*Trimenia wallengrenii wallengrenii* (Fynbos)  
*Kedestes barberae bunta* (Fynbos)

***Pseudonympha swanepoeli*** Van Son, 1955

**Type locality** [SA: LP]—'Woodbush Village (Houtbosdorp), Pietersburg district, Transvaal'.

**Common name** Swanepoel's Brown, Swanepoel-bruintjie (A).

**Status** Critically Endangered [CR B2ab(i,ii,iii,iv,v)].

**Distribution** SA:LP: the species is limited to the type locality.

### ECOLOGY

**Range & population** Known only in the recent past from a single marshy locality in extremely small numbers. Not known to occur elsewhere; previously known localities reported by Swanepoel have been destroyed by forestry and invasive plants.

**Habitat** This taxon occurs in a single degraded marshy area in Woodbush Granite Grassland (Mucina & Rutherford 2006), at an altitude of about 2 000 m in the Wolkberg Mountains, near Houtbosdorp. This habitat is separated from the

Mpumalanga populations of its closest relative, *Pseudonympha varii* (Van Son, 1955), by the Groot Letaba and Olifants River valleys.

**Habits** Little is known. This species is found in the Wolkberg Centre of Plant Endemism (Van Wyk & Smith 2001). The larval host plant is unknown. It will most likely be a grass (Poaceae) occurring in the butterfly's marshy habitat. Connectivity with adjacent marshes has been excluded by the activities of commercial afforestation and encroachment by alien trees. Although adjacent indigenous forest is well preserved, the intervening grassy and marshy areas have been degraded by afforestation of alien species by the Department of Forestry (Curle & Curle 1995). Frequent fires are needed to maintain grassland integrity and the associated biodiversity.

**Flight period** February and March.

**Early stages** No published information available on early stages or larval host plant.

### **RATIONALE**

This butterfly is now known from only one population at one locality near Houtbosdorp, near Woodbush, in the Limpopo Province. It has been seen only in extremely small numbers over the last 20 years and is probably on the brink of extinction. It was listed as Rare in S.F. Henning & G.A. Henning (1989) and as Indeterminate in G.A. Henning & S.F. Henning (1992b). There has been an ongoing declining population trend since before the previous listings. There are a few closely related and undescribed taxa in the *Pseudonympha varii* species complex in Mpumalanga (Curle & Curle 1995). This species has very narrow habitat specificity, a small geographic range and exceedingly low abundance.

### **THREATS**

Afforestation (mainly *Pinus* species) and invasion of alien plant species, mainly from plantations, including pine trees, *Pinus* species (Pinaceae), oaks, *Quercus* species (Fagaceae) and black wattle, *Acacia mearnsii* De Wild. (Fabaceae) (Curle & Curle 1995; A. Curle, pers. comm. 2004). This has also altered the normal natural fire cycles, with active fire suppression. It is ironic that the focus of conservation measures in the Wolkberg Centre of Plant Endemism have been mainly concerned with the patches of Afromontane forest. The endemic-rich grasslands, however, have to a certain extent been both neglected and obliterated. This has been both passive (by not controlling alien plant infestation) and active (through afforestation) by the timber industry (Matthews *et al.* 1993). The ecosystem status of the habitat, from a vegetation perspective, is Endangered (Rouget *et al.* 2004).

### **CONSERVATION**

No measures have been implemented. Only urgent and drastic clearing of alien trees from the larger habitat will have any effect on efforts to save this species. Fires in and around the marshy areas would stimulate the senescent grassland structure and remnant phytodiversity (and thus invertebrate diversity). Conservation action may already be too late. On the Wolkberg the locality is next to the Woodbush Forest Reserve but is apparently not part of it.

GENUS *Stygionympha* Van Son, 1955

A southern African genus containing nine species.

***Stygionympha dicksoni*** (Riley, 1938)

**Type locality** [SA: WC]—‘Tygerberg Hills, near Cape Town, S. Africa’.

**Common name** Dickson’s Brown, Dickson-bruintjie (A).

**Status** Critically Endangered [CR B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)].

**Distribution** SA: WC —Swartland.

## ECOLOGY

**Range & population** Used to occur in the southern and western gullies of the Tygerberg Hills, east of Cape Town. Was found on a few renosterveld-covered hills near Darling, but has not been seen for several years. Prior to this, it was known only from extremely few sightings. Last known locality was the Kapokberg, just south of Darling.

**Habitat** Was found in Swartland Shale Renosterveld (Mucina *et al.* 2005), also known as West Coast Renosterveld (Newton & Knight 2004), in the Fynbos Biome (Mucina & Rutherford 2006), on low hills between the Tygerberg Hills and in Swartland Granite Renosterveld (Mucina & Rutherford 2006) near Darling, in small numbers. Renosterveld often has an open, grassy understorey (Cowling & Holmes 1992), is very non-homogeneous, and is characterised by the presence of *renosterbos*, *Elytropappus rhinocerotis* (L.f.) Less. (Koekemoer 2002). Geophyte-rich renosterveld is prone to fire; it also has very few members of the Proteaceae in it, and its geological base is clay-rich. More than 70% of the original extent of renosterveld has been replaced by agriculture (Cowling & Richardson 1995). For West Coast Renosterveld, this figure of destruction is 95% (Low & Rebelo 1998). The larval host plant (see Early stages, below) is quite plentiful on the Kapokberg near Darling.

**Habits** The butterfly is able to maintain sustained flight and appears to favour the higher western and southern slopes of hills (Pringle *et al.* 1994). Very little is known about its ecology.

**Flight period** The adults emerge in early September.

**Early stages** No published information available on the early stages. *Tribolium echinatum* (Thunb.) Renvoize (Poaceae) has been recorded as a larval host plant (Dickson in Pringle *et al.* 1994).

## RATIONALE

Currently known only from a single population from one locality, near the town of Darling, in the Swartland of the Western Cape. Very few specimens have been seen there over the last 20 years. Listed as Rare in S.F. Henning & G.A. Henning (1989) as well as in G.A. Henning & S.F. Henning (1992b). There has been a declining population trend over the last 30 years. *Stygionympha dicksoni* was one of 16 butterfly species that were added to Schedule 2 of the list of protected wild animals

in the Cape Province in 1976 (Ordinance No. 19 of 1974). However, owing to habitat destruction and the lack of a conservation plan, the butterfly species seems to be on the verge of extinction.

### THREATS

Habitat degradation and fragmentation due to farming, invasive alien vegetation, housing and mining are the major threats. A vast quarry on the western side of the Tygerberg Hills literally obliterated the type locality. We do not know whether the changes to a warmer and drier climate over the last few years have already had an impact on this taxon or not. If Renosterveld receives less than 250 mm of rain per annum, it tends to be replaced by Succulent Karoo vegetation (Van Wyk & Smith 2001). Renosterveld thus tends to be found in an ecotone between Fynbos and Succulent Karoo, and global warming will impact on these vegetation types. The ecosystem status of the habitats, from a vegetation perspective, is Critically Endangered (Rouget *et al.* 2004).

### CONSERVATION

No measures are currently being implemented, and the window of opportunity for conservation measures to succeed may already have passed. If no conservation action is taken urgently, *Stygionympha dicksoni* may become one of the most striking examples of a butterfly species that appeared on a list of legally protected taxa, only to become extinct a few decades later owing to continued loss of suitable habitat. Considerable study is needed, including searches for new localities, in addition to quantifiable information on habitat structure, ecosystem processes and population numbers and trends.

***Alaena margaritacea*** Eltringham, 1929

**Type locality** [SA: LP]—‘Haenertzburg’ [*sic*; *recte*: Haenertsburg].

**Common name** Wolkberg Zulu, Wolkberg-zoeloe (A).

**Status** Critically Endangered [CR A3ce; B2ab(i,ii,iii,iv,v)].

**Distribution** SA: LP—known only from the type locality.

### ECOLOGY

**Range & population** Known only from one very restricted area near the ‘black forest’ in the vicinity of Haenertsburg on the Wolkberg, Limpopo Province, on steep rocky, grassy slopes. In good seasons this small locality can have a large population of several hundred adults flying.

**Habitat** The secluded colony is found on steep grassy slopes with lichen-covered rocks. It is located in the vegetation type known as Woodbush Granite Grassland of the Mesic Highveld Grassland Bioregion in the Grassland Biome Unit (Mucina & Rutherford 2006). The breeding area is about 400 m below the peaks (S.F. Henning & G.A. Henning 1989).

**Habits** The female lays her eggs on rocks, usually covered by the appropriate lichen, which probably is the food plant. Adult males do some ‘almost-hilltopping’

near midday when they congregate at the higher rocks in the colony. This is where some male territoriality may be displayed. The flight, although weak, can be sustained. The ecology was reviewed in S.F. Henning *et al.* (1993c).

**Flight period** December and January.

**Early stages** Described by Clark & Dickson (1971) (in part) and S.F. Henning & G.A. Henning (1989). Larval food: rock lichens (Lichenes) (Clark & Dickson 1971); algae (Cyanophyta) growing on rocks (Pringle *et al.* 1994).

### **RATIONALE**

Since its discovery, *Alaena margaritacea* has been known to occur only in a very restricted area in the northern part of the Wolkberg near Haenertsburg. The high grassy slopes where the butterfly occurs are under severe threat from plantations, and the habitat is currently degraded. The population numbers have plummeted from many hundreds in the 1980s to less than 50 in 2003, while in 2004 a couple of hundred have been noted (M. Williams, pers. comm. 2004). Previously listed as Vulnerable in S.F. Henning & G.A. Henning (1989) and G.A. Henning & S.F. Henning (1992b). There has been a significant declining population trend since 1989. This taxon has very narrow habitat specificity, a very small geographic range and low abundance.

### **THREATS**

Numbers have been dwindling as the habitat is becoming overgrown from the adjacent forest. Plantation forestry has all but destroyed the last known colony of this insect. There are *Eucalyptus* species (Myrtaceae) growing higher up on the hill, contributing to drying the natural seepage at the habitat of this critically endangered butterfly. Trees of a *Pinus* species (Pinaceae) have also been planted lower down around the base of the locality, with a concomitant suppression of natural fires required by this type of fire-dependent grassland. The ecosystem status of the habitat, from a vegetation perspective, is Endangered (Rouget *et al.* 2004).

### **CONSERVATION**

No conservation measures are currently in force. A buffer zone of natural, managed vegetation has to be urgently established, with a radius of a few hundred metres of the sole remaining colony. Alien plantation trees have to be removed from this buffer zone. The management plan will need appropriate intermittent mosaic block-burning of the habitat of the species. Significant thought has to be given to connectivity with some of the previous habitats (this will need removal of alien vegetation).

***Chrysoritis dicksoni*** (Gabriel, 1947)

**Type locality** [SA: WC]—‘Cape Province, near Melkbosch Strand’.

**Common name** Dickson’s Strandveld Copper, Dickson-opaal (A).

**Status** Critically Endangered [CR A3ce; B2ab(i,ii,iii,iv,v)].

**Distribution** SA: WC.

## ECOLOGY

**Range & population** Historically, there were two main, disjunct population groups. One group was found between Melkbosstrand and Atlantis (three colonies, now all apparently 'extinct'). Another two colonies were known from near Witsand (east of De Hoop Nature Reserve). Both of these appear to be at least Critically Endangered. The population size seems to fluctuate significantly between years (Heath & Brinkman 1995). No literature appears to exist for measuring or quantifying the size of colonies of *Chrysoritis* with the aid of sample plots, transects or any well-described mark-release-recapture procedure (Terblanche & Van Hamburg 2004).

**Habitat** Clark & Dickson (1971) described the habitat (north of Cape Town) as country of the sandveld type, with short vegetation. Near Atlantis, the species was found in Atlantis Sand Fynbos (Mucina & Rutherford 2006), in the Malmesbury Centre of Endemism. The habitat north of Witsand is in Albertinia Sand Fynbos (Mucina & Rutherford 2006) in the Potberg Centre of Endemism. The habitats contain considerable amounts of *peperbos*, *Montinia caryophyllacea* Thunb. (Montiniaceae), and *dakriet* (Restionaceae) amongst which the associated ant builds its nests. The degraded site near Atlantis still contains a number of other localised and threatened plant (Hilton-Taylor 1996) and insect (J. Ball, pers. comm.) taxa. The habitat itself is threatened by modification and should enjoy high conservation priority.

**Habits** The adults fly low in open sandy areas, often settling on low vegetation. The butterfly and ant species are particularly sensitive to habitat modification. The colonies near Atlantis would shift in geographic position every few years. With increasing alien vegetation, fires have become too frequent. Adult males seem to be decidedly gregarious and congregate at certain spots in the field (Clark & Dickson 1971). Heath & Brinkman (1995) described aspects of the population dynamics of *Chrysoritis dicksoni* based on collections and observations in the field. They hypothesised that individuals may remain in the larval or pupal state for more than one year.

**Flight period** Late July to the middle of September.

**Early stages** The egg, first instar larva, final instar larva and pupa were described by Clark & Dickson (1971). The second instar larva was described by Heath & Brinkman (1995). Larval food: suspected to be ant larvae (Clark & Dickson 1971) but the larva was observed to be fed by trophallaxis with host ant (Heath & Brinkman 1995). Associated ant: *Crematogaster peringueyi* Emery (Clark & Dickson 1971).

## RATIONALE

Owing to habitat destruction and the lack of a conservation plan in action, the species seems to have disappeared from both its type locality and from nearby localities north of Cape Town (agricultural and urban developments accompanied by the expansion of alien invasive plant species). Too frequent man-made fires at the wrong time of the year are also thought to be destructive (Heath & Brinkman 1995). Only two remaining viable populations are known and *Chrysoritis dicksoni* therefore faces extinction. It is listed here as Critically Endangered. The taxon was listed as Vulnerable in S.F. Henning & G.A. Henning (1989) and G.A. Henning & S.F. Henning (1992b), but as Endangered in G.A. Henning & S.F. Henning (1995). This

species has very narrow habitat specificity; it had a fairly large geographic range, which has been severely diminished, and has very low abundance.

### **THREATS**

Apparently extinct from the colonies near and north of Melkbosch Strand (Pella Mission). The Witsand colony near the mouth of the Breede River has to be investigated further as no specimens have been seen for a few years. This butterfly is currently known from a single subpopulation near Vermaaklikheid. This species is particularly vulnerable to agricultural activity and the encroachment of alien vegetation. Fires at the wrong time of the year are also thought to be a threat, though other unknown factors also appear to have an influence on the adult populations (Heath & Brinkman 1995). The butterfly is in a precarious position as habitat modification is a serious threat. The ecosystem status of the habitats, from a vegetation perspective, varies from Critically Endangered to Endangered (Rouget *et al.* 2004).

### **CONSERVATION**

This species was placed on the list of protected wild animals of the former Cape Province in 1976 (Ordinance 19 of 1974, amendment of Schedule 2 in 1976). Neither of the extant colonies appear to be part of a conserved area. The ecology, especially the ecosystem requirements of the butterfly, is poorly understood, rendering proper conservation management difficult. No practical conservation measures have been instituted. No action to conserve the habitat (Paapekuil Outspan: Portion 6 No. 1, Crown Grant 127, Registered 16 September 1941), near Atlantis transpired following the very adequate reports motivating this by (i) Cottrell (1978) and (ii) Pool & Haselau (1986). Urgent eradication of alien vegetation with proactive management plans, monitoring and implementation are needed. The habitat near Atlantis, with high endemic assemblage diversity, is a highly threatened site containing numerous other endangered plant and insect taxa (Ball 2006).

***Chryсорitis thysbe schloszae*** (Dickson, 1994)

**Type locality** SA: [WC]—'Western Cape Province: near Moorreesburg'.

**Common name** Schlosz's Opal, Schlosz-opaal (A).

**Status** Critically Endangered [CR C2a(i)].

**Distribution** SA: WC—near Moorreesburg.

### **ECOLOGY**

**Range & population** The single, small type locality extends over less than 1 km<sup>2</sup>. It is situated on the southern side of the small mountain known as the Swartberg (not to be confused with the large mountain range to the north of the Little Karoo), south of the town of Koringberg. No specimens of this taxon have been seen either on the hill called Koringberg or on nearby low hills. Fewer than 10 female specimens have ever been seen, and there are possibly less than 50 adult specimens emerging annually, based on counts during site visits.

**Habitat** Adults are found amongst scrubby, low vegetation containing numerous mesemb or *vygie* plants of the family Aizoaceae. The vegetation type in the isolated remnant of natural vegetation is known as Swartland Shale Renosterveld in the Fynbos Biome Unit (Mucina & Rutherford 2006), previously referred to as West Coast Renosterveld (Newton & Knight 2004). Adults have been observed at altitudes of 350 to 450 m.

**Habits** The males have a short, low, whirling flight, settling on low vegetation or the ground. Very little information is available about the ecology of this butterfly. The taxon is double-brooded, adults being more commonly seen in spring and autumn.

**Flight period** October to March.

**Early stages** Unpublished. Larval food plant: the larvae of this insect do not feed on the food plant of *Chrysoritis thysbe thysbe* as stated in the type description ex Heath.

## **RATIONALE**

The conservation needs of *Chrysoritis thysbe schloszae* derive from the fact that this taxon is currently represented by a declining population known only from the very small type locality, which has become cut off from remaining potentially suitable habitat (surrounding renosterveld) owing to agricultural activity. No specimens have been found on nearby renosterveld remnants. When discovered in 1989, the population was already small and numbers of adults seen have declined markedly over the last decade. Not previously included in the Red Data Book or Red-Listed.

## **THREATS**

The isolated renosterveld habitat of *Chrysoritis thysbe schloszae* has been severely impacted by increasing aridification, probably exacerbated by climate warming. Only a small portion of the original extent of renosterveld in the Cape Floral Kingdom remains. The habitat of the type locality is marooned in a sea of wheat farms, isolated by a lack of genetic exchange and impacted by changes in grazing and natural fire. This region has been severely affected by drought over the last decade. The habitat isolation has probably led to genetic isolation, with possible inbreeding depression. Natural fire regimes have been suppressed, leading to an overgrowth of grass (invasive, altered succession) on the higher reaches of the low mountain. Natural grazing has been suppressed over hundreds of years. The influence of pesticides from the surrounding wheat lands is not known. Linkage with the Renosterveld Restoration Project, funded by the Table Mountain Fund of WWF-SA would be useful (Krug 2004). The ecosystem status of the habitat, from a vegetation perspective, is Critically Endangered (Rouget *et al.* 2004).

## **CONSERVATION**

No conservation measures have been taken to-date. Such measures would require population monitoring, an autecological study to determine the habitat requirements of the species, as well as an appropriate fire regime (which, however, would be difficult to execute as the type locality is surrounded by wheat farms). The habitat is being engulfed by grass. The latter needs investigation and probably fire in late autumn, the cycle yet to be determined. Co-operation with local farmers is needed, coupled with ongoing communication. Monitoring for invasive alien vegetation is

needed. A continuing management plan is needed to prevent this taxon from going extinct.

***Trimenia malagrida malagrida*** (Wallengren, 1857)

**Type locality** [SA]—‘Caffraria’ [a false locality; previously (mid- to late 1800s), Kaffraria was the part of the Eastern Cape between the Keiskamma and the Kei Rivers (Du Toit 1972)].

**Common name** Scarce Mountain Copper, Leeukop-kopervlerkie (A).

**Status** Critically Endangered [CR A4ce; 2ab(i,ii,iii,iv,v); D].

**Distribution** SA: WC—Cape Peninsula.

## ECOLOGY

**Range & population** The last known colony of this taxon occurred in an area the size of one to two tennis courts. Between 20 and 50 adults were observed per season in the late 1980s (J.B. Ball, pers. obs.).

**Habitat** Peninsula Granite Fynbos in the Fynbos Biome Unit (Mucina *et al.* 2005), at altitudes of 250 to 350 m.

**Habits** The adults needed fairly open rocky ground with appropriate vegetation, where they exhibited short, jerky flying sorties, settling on the ground, rocks, grasses or other vegetation. The vegetation included nectaring sources, such as pink-flowered *Mesembryanthemum* species (*sensu lato*) (Aizoaceae) and *Cuscuta* species (Convolvulaceae).

**Flight period** Late January to March.

**Early stages** The first instar larvae of this butterfly taxon have not been found to feed on plant material. It is possible that their larvae are exclusively aphytophagous. No late instar larvae or pupae have been found. One of the other subspecies, *Trimenia malagrida maryae* (Dickson & W.H. Henning 1980), has been noted to have late instar larvae and pupae in the nests of the Pugnacious Ant, *Anoplolepis custodiens* (F. Smith) (Heath & Brinkman 1995). The larval diet has, however, not been ascertained.

## RATIONALE

Of major concern is the decline of the subspecies *Trimenia malagrida malagrida*. Colonies of the nominate subspecies were once known from various localities on the Table Mountain Range, but today only one or two small areas where it may still exist are known (Claassens 2000). Extent of occurrence of *T. malagrida malagrida* is less than 100 km<sup>2</sup>. Area of occupancy is very small and is less than 10 km<sup>2</sup>. Severe fragmentation of its habitat has occurred, leading to an extensive population decline over past decades. This subspecies has not been seen at its last known locality on the western side of Lion’s Head since the mid-1990s. The taxon is possibly ‘extinct’ in the sense that no specimens have been seen in its former localities for some years, but it is not Extinct from the 2001 IUCN Red List categorisation viewpoint.

This butterfly was listed as Vulnerable in S.F. Henning & G.A. Henning (1989) and G.A. Henning & S.F. Henning (1992b). It was subsequently listed as Endangered in the updated G.A. Henning & S.F. Henning (1995). It has very narrow habitat specificity, a small geographic range and very low abundance.

## THREATS

The nominate subspecies has disappeared from most of its habitats and now appears to be in a precarious state, if not already extinct. It is believed that repeated mountain fires may eventually have taken their toll on the very small only known colony through occurring too frequently during the main part of the butterfly's late summer flight period (S.F. Henning & G.A. Henning 1989; Claassens 2000). It has possibly also been affected by habitat modification due to the invasion of alien vegetation (S.F. Henning & G.A. Henning 1989). The last known colony on the western side of the higher slopes of Lion's Head in Cape Town was destroyed by the too frequent passage of alien vegetation-enhanced fires in the mid-1990s. Ironically, this coincided with a decision made at about the same time by Alderman Kreiner, Chairman of the Amenities and Health Committee of the Cape Town City Council, to halt fire breaks and the burning of fynbos on Table Mountain and elsewhere in the Cape Peninsula (A. Brinkman, pers. comm. 2004). This was partly influenced by the threat of legal claims from residents at the fynbos/suburban interface on the Atlantic border from Camps Bay to Sea Point consequent on smoke/ash pollution caused by controlled vegetation burns. One of the uncontrolled fires in the mid-1990s, near Kloof Nek, was caused by electric cables, with the resultant fire intensified by the biomass of alien vegetation. The imagines used to fly from late January to early April, months when the vegetation is at its driest. The second last known colony of this taxon, near the Apostle Batteries above Llandudno, was destroyed by invasive alien vegetation—groves of trees of a *Eucalyptus* species (Myrtaceae). These groves continue to expand, displacing indigenous vegetation and thus inhibiting invertebrate presence, and also posing a fire hazard. The ecosystem status of the habitat, from a vegetation perspective, is Endangered (Rouget *et al.* 2004).

## CONSERVATION

*Trimenia malagrida malagrida* was placed on the list of protected wild animals of the former Cape Province in 1976 (Ordinance 19 of 1974, amendment of Schedule 2 in 1976), and is also protected in the Table Mountain Nature Reserve. The appearance of the butterfly species on a list of protected animals did not prevent the decline of many of its subpopulations. Butterfly species such as *T. malagrida* will be safe in the long term only if habitat management plans are continuously updated through research and applied. However, no practical measures or monitoring were undertaken after the passing of legislation in 1974. The last known locality is currently in the Table Mountain National Park.

***Trimenia wallengrenii wallengrenii*** (Trimen, 1887)

**Type locality** [SA]—'Swellendam and Grahamstown, Cape Colony' [false localities].

**Common name** Wallengren's Silver-spotted Copper, Wallengren-silverkolkopervlerkie (A).

**Status** Critically Endangered [CR A3ce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v)].

**Distribution** SA: WC—endemic to the southwestern Cape, northeast of Cape Town.

## ECOLOGY

**Range & population** The last two remaining localities, in the Kapokberg and Contreberg, are about 700 m<sup>2</sup> in extent each. The Kapokberg locality has had very few specimens in the last 10 years (probably no more than 50 adults per flying season). The Contreberg site has shown greater fluctuations in population numbers. There were about 100 adults at the latter locality in November 2003 (J. Ball, pers. obs.).

**Habitat** Currently occurs in Swartland Granite Renosterveld in the Fynbos Biome Unit (Mucina *et al.* 2005), also described as Rocky West Coast Renosterveld (Newton & Knight 2004). Renosterveld itself is threatened (Cowling & Richardson 1995). In the past, the butterfly was also found in the ecotone between renosterveld and Sand Plain Fynbos. Wheat farming has destroyed some of the localities at lower altitudes. The remaining two localities are on the southwestern side of the Kapokberg (south of Darling), and the Contreberg (southeast of Darling). No adults have been observed at the locality north of Mamre for nearly 15 years (J. Ball, pers. obs.).

**Habits** No life cycle information has been published. The larvae are probably aphytophagous, with an obligate ant association. Adult butterflies were noted to fly low and fast, in open areas. Autecological and synecological information is needed.

## RATIONALE

The extent of occurrence of *Trimenia wallengreni wallengreni* is less than 100 km<sup>2</sup>. The area of occupancy is very small and is less than 10 km<sup>2</sup>. Severe fragmentation of its habitat near Darling in the near future is very likely if no conservation action is taken. Lack of dispersal routes and corridors may become a major concern for the long-term survival of the butterfly. It was included as Rare in S.F. Henning & G.A. Henning (1989).

## THREATS

The subspecies is threatened by habitat destruction and degradation by agricultural activity and invasive alien vegetation. Fires, when the adult butterflies are on the wing, can also be devastating. The ecosystem status of the habitat, from a vegetation perspective, is Critically Endangered (Rouget *et al.* 2004). Trimen reported that he 'found *Trimenia wallengrenii*, rather numerous, on hills near Stellenbosch.' There have been no other records from this locality and it probably no longer occurs there. Extensive agricultural activities in the area have led to the extinction of several colonies. It has survived at a few habitats situated on rough or rocky ground, which, owing to its nature, has escaped the plough. In some cases the cultivated areas extend up to the borders of the existing colonies.

## CONSERVATION

The last two known localities are on privately owned farms near Darling in the Western Cape. Although the taxon was placed on the list of protected wild animals of the Cape Province in 1976 (Ordinance 19 of 1974, amendment of Schedule 2 in

1976), no practical measures or monitoring have been undertaken, and *Trimenia wallengrenii wallengrenii* appears to be on the brink of extinction.

***Erikssonia acraeina*** Trimen, 1891

**Type locality** [Angola]—‘Omrora; Okavango River; Otiembora’.

**Common name** Eriksson’s Copper, Eriksson-kopervlerkie (A).

**Status** Critically Endangered [CR A1ac+2a; B1ab(iii,v)c(iv)+2ab(iii,v)c(iv)].

**Distribution** SA: LP—known only from one locality at the base of the Perdeberg near Rankin’s Pass, in the Waterberg.

## ECOLOGY

**Range & population** The specimens from the single locality in the Waterberg comprise an undescribed species, which would render the new entity endemic to South Africa. In the present context of the species taxonomy, localities have been recorded in southern Angola, western Zambia (Mongu) and South Africa (Limpopo Province: only near Alma in the Waterberg).

**Habitat** Known from grassy savanna, on the farm Tlodili, about 5 km north of the village of Rankin’s Pass, in the Waterberg Mountains of the Limpopo Province, at 1 595 m above sea level (Dobson & Garvie 2005). The centre of the locality has GPS readings of 24° 27.549’ S, 27° 50.571’ E. The vegetation type is Central Sandy Bushveld in the Central Bushveld Bioregion of the Savanna Biome Unit (Mucina & Rutherford 2006). The colony is found on the northwestern foot of the hill named Perdeberg (G.A. Henning & S.F. Henning 2001). Trees found in the area include *Ochna pulchra* Hook.f. (Ochnaceae), *Burkea africana* Hook. (Fabaceae) and *Protea caffra* Meisn. (Proteaceae).

**Habits** The females oviposit on coarse red sand at the base of the larval food plant, *gifbossie*, *Gnidia kraussiana* Meisn. (Thymelaeaceae). This will be near the entrance to the nests of an ant of the genus *Lepisiota*. The larvae feed on the food plant nocturnally, accompanied by their attendant ants, which feed frequently from the larval honey glands (S.F. Henning 1984c). During the day they shelter in the nest of the ants. The flight is leisurely, as the adult coloration is probably aposematic.

**Flight period** November to February.

**Early stages** S.F. Henning & G.A. Henning (1984); S.F. Henning (1984c). Larval food: *Gnidia kraussiana* Meisn. var. *kraussiana* (Thymelaeaceae) (S.F. Henning & G.A. Henning 1984). Associated ant: *Lepisiota* species (S.F. Henning & G.A. Henning 1984; as *Acantholepis* species).

## RATIONALE

Only one population is known in South Africa, with an area of occupancy of less than 1 km<sup>2</sup>. This South African taxon was listed as Vulnerable in S.F. Henning & G.A. Henning (1989) and G.A. Henning & S.F. Henning (1992b). In South Africa it has very narrow habitat specificity, a tiny geographic range and low abundance (De Wet

1995). Of considerable concern is that the butterfly has not been seen by lepidopterists at the Waterberg locality in recent years (Dobson & Garvie 2005). De Wet (1995) observed an increase in numbers of adults after introducing a veld-burning programme. It appears that grass burning has been less optimal over more recent years. This has resulted in ecological succession and the locality has been covered by a dense sward of tall grass, which has shaded out the larval food plant (Dobson & Garvie 2005). Habitat change, and perhaps under-utilisation, may continue at the Waterberg locality and the population may have already become extinct there. No other localities were found despite exploration by lepidopterists and conservationists in the Marakele area.

### THREATS

A major threat is the lack of regular burning. There were no fires between 1984 and 1989. When biennial fire cycles were introduced in 1989, the numbers of adult butterflies increased. There is no maintained conservation management. The exclusion of game and cattle (De Wet 1995) is also important from an evolutionary point of view. The habitat has been severely overgrown for many years. Severe synecological disruption of the butterfly, associated ant and the larval food plant, has been the result. The habitat is on private property. The ecosystem status of the habitat, from a vegetation perspective, is Least Threatened (Rouget *et al.* 2004).

### CONSERVATION

No conservation measures are currently in operation. Some research by the local (then Transvaal) Provincial Department of Nature Conservation, with assistance from the Lepidopterists' Society of Africa, was carried out some time ago (S.F. Henning & G.A. Henning 1989; Dobson & Garvie 2005). The official involved moved elsewhere, and monitoring ceased. The area urgently has to be burnt and then managed. Further searching for other colonies is needed (S.F. Henning *et al.* 1993b).

*Lepidochrysops lotana* Swanepoel, 1962

**Type locality** SA: [LP]—'Farm Rietvlei (Pietersburg Distr., Tvl.)'.

**Common name** Lotana Blue, Lotana-bloutjie (A).

**Status** Critically Endangered [CR B1ab(i,ii,iii,iv,v)+2a(i,ii,iii,iv,v)].

**Distribution** SA: LP—known only from three localities, the type locality on the farm Rietvlei 30 km southwest of Polokwane, on the Wolkberg east of Polokwane and in the Legalameetse Nature Reserve.

### ECOLOGY

**Range & population** Found on the farm Rietvlei, 30 km southwest of Polokwane (formerly Pietersburg), on the Ysterberg, as well as east of Polokwane, next to the road between Moria and the Serala Forest, on the Wolkberg and the Legalameetse Nature Reserve in the Limpopo Province.

**Habitat** The vegetation type of the habitat is Strydpoort Summit Grassland in the Mesic Highveld Grassland Bioregion of the Grassland Biome (Mucina & Rutherford 2006).

**Habits** It inhabits the lower slopes of the grassy hills on the western side of the Ysterberg and the opposite east-facing slope.

**Flight period** It flies from the end of September to early November.

**Early stages** Nothing published. Larval food: *Ocimum obovatum* E.Mey. ex Benth. (Lamiaceae) (Woodhall 2005; as *Becium obovatum*). Associated ant: nothing published.

## **RATIONALE**

This butterfly is currently known from only three populations, one at the type locality and the other two east of Polokwane. It has not been observed at the type locality for at least 10 years. This species was listed as Vulnerable in S.F. Henning & G.A. Henning (1989) and G.A. Henning & S.F. Henning (1992b). It has narrow habitat specificity, a smallish geographic range and a very low abundance, and although not historically abundant, it has a declining population trend. Habitat change in the near future may cause this butterfly species to become extinct. It is also very localised at any habitat. The extent of occurrence is far below 100 km<sup>2</sup> and the area of occupancy smaller than 10 km<sup>2</sup>. No conservation management practices are currently in place.

## **THREATS**

Cattle grazing, a number of years of drought and a lack of burning have seriously degraded the type locality. Several visits over the last few years by the Dobsons and Williams failed to reveal evidence of adult butterflies. It was also observed that only very few flowering specimens of the larval host plant were in evidence (J. & C. Dobson & M.C. Williams, unpublished). The locality, in the Wolkberg, has so far yielded only a single female of disputed taxonomic affinity. A couple of males were recorded by M.C. Williams on the grassy hills in the Legalameetse Nature Reserve. The ecosystem status of the habitat, from a vegetation perspective, is Least Threatened (Rouget *et al.* 2004).

## **CONSERVATION**

No conservation measures are in place. A couple of specimens were recently recorded in the Legalameetse Nature Reserve. Only two potentially viable localities are known. Urgent research is necessary to establish a habitat management plan for *Lepidochrysops lotana*. Further searches for localities is urgently needed.

***Orachrysops niobe*** (Trimen, 1862)

**Type locality** [SA: WC]—‘Knysna’.

**Common name** Brenton Blue, Brenton-bloutjie (A).

**Status** Critically Endangered [CR B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); C2a(ii)].

**Distribution** SA: WCP—Knysna, Brenton-on-Sea and Nature’s Valley.

## **ECOLOGY**

**Range & population** This species was discovered by Roland Trimen at Knysna in 1858. He found only three specimens upon which he based his description in 1862. For many years it was thought to inhabit a much larger area, but when it was rediscovered at Nature's Valley in 1977 by J.B. Ball, after not having been seen for 119 years, he soon realised that this species was confined to the southern Cape region. After a 10-year search, Ball only recorded it at Brenton-on-Sea near Knysna. This led to the discovery of a strong breeding colony at Brenton-on-Sea by E.L. Pringle (proclaimed in July 2003 as the Brenton Blue Butterfly Reserve = BBR). Since 2001, the adult population of the only extant population at the BBR has varied from 50 to 280 individuals per brood (Edge 2005a; Edge pers. comm.). The area of occupancy is less than 1 km<sup>2</sup>.

**Habitat** The BBR is situated at 90–115 m above mean sea level on a south-facing slope with an average inclination of 1 in 3 (18°), 500 metres from the sea.

The Brenton peninsula was mapped as Knysna Sand Fynbos (FFd10), part of the fynbos biome, by Mucina & Rutherford (2006). At a finer scale this mosaic of dune thicket, fynbos and forest was classified as Goukamma Dune Thicket, occurring on relatively fire protected moist south-facing slopes of palaeodunes with rather poor calcareous aeolian soils, enriched by a build up of humic material. (Vlok, Euston-Brown & Cowling 2003). A more detailed investigation into the vegetation of the BBR classified it into 9 vegetation units (Edge, Cilliers & Terblanche 2008), and demonstrated a highly significant association between the occurrence of the butterfly's host plant *Indigofera erecta* Thunb. and the shade of candlewood trees, *Pterocelastrus tricuspidatus*. The cutting of paths through the vegetation was also demonstrated to promote strong growth of the host plant (Edge 2002; Edge 2005a; Edge *et al.* 2008). Experiments with burning at the BBR have been unsuccessful in promoting growth of the host plant (Edge 2005a; Edge *et al.* 2008).

**Habits** Adult behaviour and habits were described by Edge (2008b). Males are territorial and patrol routes, often defined by open spaces within the habitat; females are found mainly in areas where there are concentrations of the host plant.

**Flight period** Double-brooded, October and November, then February and March.

**Early stages** Some aspects of the early stages were described by J.B. Ball, cited by S.F. Henning & G.A. Henning (1989), Williams (1996) and Edge & Pringle (1996). The larval host plant is *Indigofera erecta* Thunb. (Fabaceae), first noted but not identified by J. B. Ball in the late 1970s. More recently, detailed research has found that, whereas the 1<sup>st</sup> and 2<sup>nd</sup> instar larvae feed on leaves of the host plant, the 3<sup>rd</sup> and 4th instar larvae feed on the rootstock, attended by *Camponotus baynei* Arnold ants attracted by secretions of the larva's dorsal nectary organ (DNO) (Edge 2005a; Edge & van Hamburg 2009). This is only the second time that rootstock-feeding has been recorded in butterflies (see Jackson 1937 for life history of *Euchrysops crawshayi*). Cannibalism has been recorded in the early larval stages, and is believed to play an important role in population dynamics (Edge 2005; Edge & van Hamburg 2009). The larvae have an obligate relationship with the *C. baynei* ants, with the ants assisting the larvae to gain access to the rootstock of the host plant.

## RATIONALE

Known only from one very small population at Brenton-on-Sea. The second colony, at Nature's Valley (about 30 km east of Plettenberg Bay), went extinct owing to housing development in the late 1980s (Ball 1997). The restricted distribution of *Orachrysops niobe* should be seen in the context that it became a well-researched species recently, so that there is little doubt about its precarious position. The last known locality is now protected within the Brenton Blue Butterfly Reserve. Re-introduction of *Orachrysops niobe* to its former habitat at Nature's Valley is being attempted, without success so far (Edge 2007). Even though this butterfly species is protected in a special nature reserve, it is in a very precarious situation. The BBBR where *Orachrysops niobe* occurs is only 1.4 ha in extent (Edge 2005a). The extent of occurrence as well as area of occupancy of *Orachrysops niobe* is 1 km<sup>2</sup>, well below the limits of 100 km<sup>2</sup> and 10 km<sup>2</sup> for being critically endangered. The species was listed as Vulnerable in S.F. Henning & G.A. Henning (1989) and G.A. Henning & S.F. Henning (1992b) and as Endangered in G.A. Henning & S.F. Henning (1995). This species has very narrow habitat specificity, a very small geographic range and low abundance.

## THREATS

Whilst all immediate foreseeable threats to the species are under control, there are longer term threats such as the loss of genetic diversity in a small isolated population, unforeseeable stochastic events that could cause extinction (of a climatic nature or from a runaway fire, for example), and the longer term impact of global warming. The ecosystem status of the habitat from a vegetation perspective is Endangered (Rouget *et al.* 2004).

## CONSERVATION

A major campaign by the Lepidopterists' Society of Africa and several other NGOs resulted in the proclamation of the BBBR in July 2003 specifically to protect the butterfly. The issues leading to the establishment of this reserve are discussed by Steenkamp & Stein (1999). The BBBR is managed by a management committee established by the Brenton Blue Trust with representatives from all stakeholders and chaired by CapeNature. A management plan at this site has been established and is continuously refined by research (Edge 2008a), and regular monitoring of the habitat and population levels is undertaken. Expansion of the reserve is planned onto > 20 ha of public open space to the north of the BBBR. This is a medium term project, and habitat alteration to make it suitable for the host plant has commenced (Edge 2007). Attempts to reintroduce the species at the Nature's Valley fynbos reserve site (about 60 km to the east), where the butterfly originally occurred and where habitat restoration work has been undertaken, have not met with success so far because of the poor condition of the host plant population at the site, the small area of suitable habitat on the site, and the absence of the host ant *Camponotus baynei* (Edge *et al.* 2008b). Furthermore, the site is threatened with being sold by the Plettenberg Bay municipality to a property developer.

***Thestor brachycerus brachycerus*** (Trimen, 1883)

**Type locality** [SA: WC]—'Cape Colony (Western Districts)'.

**Common name** Knysna Skolly, Knysna-skollie (A).

**Status** Critically Endangered [CR B2ab(i,ii,iii)].

**Distribution** SA: WC—Knysna.

## **ECOLOGY**

**Range & population** Two small populations, each about 6 000 m<sup>2</sup> in size, remain near the Eastern Head of the Knysna lagoon. There are probably less than 200 adult specimens per season, based on population counts.

**Habitat** North-, northeast- and northwest-facing slopes covered with Knysna Sand Fynbos (Mucina & Rutherford 2006), with low vegetation and open sandy soil (Edge 2005). The underlying geological formation is Table Mountain Sandstone. The species used to have a much wider range in and around Knysna (J. Ball, pers. obs. over 42 years). Historically, the taxon would have coped with low-intensity grazing by various ungulates. Low-intensity bovine grazing can approximate this situation. The habitat changes caused by the high-intensity grazing of sheep are not conducive to the sustainability of this insect (Edge 2005).

**Habits** Trimen, who described the species in 1883, says that ‘they settle on the bare ground, and I often used to find them sitting on the heaped-up dust of the wagon-roads, to which they would return after being roused by the passing vehicles’. The flight is fairly weak.

**Flight period** December and January.

**Early stages** The first instar larva was recorded by Clark & Dickson (1971). Larval food: probably some substance obtained during association with ants and is probably obtained by trophallaxis (Clark & Dickson 1971). Associated ant: nothing published.

## **RATIONALE**

Currently known only from two small localities in the Pezula Golf Estate (previously Sparrebosch), near Knysna. The species was listed as Indeterminate in S.F. Henning & G.A. Henning (1989) and subsequently Red-Listed as Rare in G.A. Henning & S.F. Henning (1995). This taxon has very narrow habitat specificity, a small geographic range and low abundance. The population trend has been declining since the 1960s (J.B. Ball, pers. obs.) and more rapidly since 1989. Heath & Pringle (2004) have included the former *Thestor dukei* as a subspecies of this butterfly. The latter is a widespread taxon found in the mountains to the west in the Western Cape Province.

## **THREATS**

The remaining localities inhabited in the Knysna vicinity are threatened by loss of habitat and by housing developments (Edge 2005). Incremental habitat loss and fragmentation is caused by ongoing housing and road development, golf course development and excessive grazing, particularly of late by sheep. Seven strong colonies have gone extinct in the general area since 1962. Historically, plantation forestry has also eradicated a number of localities southeast of Knysna. The habitat threats, both past and present, embody and illustrate the process of landscape

attrition (Hunter 1996). The ecosystem status of the habitat, from a vegetation perspective, is Endangered (Rouget *et al.* 2004).

## CONSERVATION

Two small colonies are currently found in the Pezula Golf Estate. A few colonies went extinct as a result of this development. No conservation measures are in force apart from the undertaking by developers not to disturb known localities (Edge 2005). Such an approach is to be commended and, if applied, reflects a recent paradigm shift by some developers towards butterfly conservation.

***Kedestes barberae bunta*** Evans, 1956

**Type locality** [SA: WC]—‘near Steenberg Railway Station, Cape Province’.

**Common name** Barber’s Cape Flats Ranger, Barber-kuswagttertjie (A).

**Status** Critically Endangered [CR A2ce; B1ab(i,ii,iii,iv,v)+2ab(i,ii,iii,iv,v); D].

**Distribution** SA: WC—Cape Flats on the Cape Peninsula.

## ECOLOGY

**Range & population** *Kedestes barberae bunta* is currently known only from two localities on the Cape Flats, near Cape Town, in the Western Cape. The type locality near the Steenberg railway station in Retreat was destroyed by housing development. The last specimens in this locality were recorded in 1947 (Dickson & Kroon 1978). Two other small localities (metapopulations) were known near Strandfontein, 8 km east of the type locality near Steenberg railway station. This was east (smaller population) and west (larger and stronger population) of the junction between the M17 and R310 roads. This isolated coastal race had previously never been seen in the nearby Rondevlei, Zandvlei or Driftsands Reserves. The total area of possibly suitable stands of *Imperata cylindrica* (L.) Raeusch. (Poaceae) in seeps near the tiny present Strandfontein locality and adjacent areas was found to be smaller than 0.1 km<sup>2</sup> (Allan 2004). This comprised 33 stands in 11 study sites. The vagility of the adult butterfly is not known. The currently known habitat of this taxon (east of the M17) **has an area of occupancy** of about 0.001 km<sup>2</sup> (Allan 2004).

There would clearly have been metapopulation movement of the adult in the past. Fifteen years ago J. Ball noted about 40 adult specimens at the two Strandfontein localities. The flight period was from early September to the middle of October. Near Strandfontein only, *Kedestes barberae bunta* has occurred in the same small habitats as *K. lenis lenis* in the past. The latter has a slightly different phenology and a slightly larger range than the former.

**Habitat** The habitat of this narrow Cape Flats endemic consists of stands of *Imperata cylindrica* (L.) Raeusch. (Poaceae) (Gibbs Russell *et al.* 1991), growing in damp seeps between dunes. This is predominately in coastal Strandveld vegetation (with mosaicism of dune thicket and Sand Plain Fynbos (Low & Rebelo 1998) or Acocks Veld Type 47 (Coastal Macchia or Fynbos) (Acocks 1988), at an altitude below 10 m (Pringle *et al.* 1994; Claassens 2000; Allan 2004). The vegetation type is

now called Cape Flats Dune Strandveld (Mucina & Rutherford 2005). The sandy soil where the butterfly is found, is mainly alkaline, calcareous soil (Allan 2004).

**Habits** The adult skippers are seldom found far from the larval host plant, cottonwool grass, *Imperata cylindrica* (L.) Raeusch (Poaceae). This grass usually only flowers after fire. The very wise use of fire is needed to maximise the ecological availability of the host plant. *I. cylindrica* occurs from Cape Town to central Africa and Asia (Bond & Goldblatt 1984). This skipper, however, occurs only in a very small winter-rainfall location, in damp seeps (winter and early summer) between dunes. *Geranium incanum* Burm.f. (Geraniaceae) appears to be an important nectar plant for the adult skippers.

**Flight period** September and October.

**Early stages** Unrecorded.

### **RATIONALE**

Only one viable locality of *Kedestes barberae bunta* appears to be left at Strandfontein on the Cape Peninsula. Most of its other habitats on the Cape Flats north of Table Mountain have been destroyed (Claassens 2000). The Cape Flats is a unique ecosystem between Table Mountain and the Cape Fold Mountains to the north and east. The natural vegetation and habitats in this area have been almost totally destroyed by urbanisation, alien invasive species, especially *Acacia saligna* (Labill.) H.L.Wendl. (Fabaceae), and agriculture. The decline in suitable habitats as well as in the numbers of this subspecies is a reflection of the poor conservation of the Cape Flats. *K. barberae bunta* faces extinction in the near future if no conservation action is taken. There has been a precipitous declining population trend over the last 15 years, as well as dramatic incremental deterioration of quality habitat since 1989. Two adult specimens were seen in 2002 and one in 2004. This subspecies was not previously listed in a Red Data Book or Red List. The combination of narrow habitat specificity, a tiny geographic range, with the last known population split by a municipal road, and a very low abundance adjacent to an urban environment, is cause for great concern.

### **THREATS**

Suitable habitats on the Cape Flats have been systematically destroyed. Threats to the remaining localities are habitat destruction, housing developments and alien vegetation. A few synchronous factors have conspired to place this taxon on the brink of extinction. The major components are: urban development with incremental habitat fragmentation and loss of habitat connectivity, invasive alien vegetation encroachment, mainly Port Jackson willow, *Acacia saligna* (Labill.) H.L.Wendl., and *rooikrans*, *A. cyclops* A.Cunn. ex G.Don (Fabaceae) and increased fire frequency (the pupae and larvae remain on the *Imperata* food plant and are not fire-adapted as are many lycaenids) and fire intensity. There is the possibility of further housing development and possible road construction (M3 toll road extension) in the general region of the currently minute and fragmented habitats (Allan 2004). There has been virtually no suitable food plant grass on the western side of the Strandfontein site for a few years owing to too frequent fires.

Warmer summers with increasingly dry winter and spring seasons, with greater and earlier drying of the seeps of adequate quality (aggravated by transpiration of alien vegetation), may also be a factor. In the nearby Driftsands area, residents of informal settlements regularly burn the grass to produce new grazing for livestock. Dumping of refuse degrades some of the habitats. There has been unsavoury social behaviour and criminal activity among the alien vegetation at the Strandfontein site and this possibly may also have led to annual burning of the habitat. The ecosystem status of the habitat, from a vegetation perspective, is Endangered (Rouget *et al.* 2004).

## **CONSERVATION**

Research is currently being undertaken by Cape Nature Conservation to assess its conservation status. No conservation measures have been implemented at the last known habitat at Strandfontein. The remaining suitable *Imperata* sites (Allan 2004) (probably more beneficial to *Kedestes lenis lenis*) should preferably be cleared of alien vegetation. Small mosaic block burns at greater intervals should occur. Fencing the area in the present political milieu may prove fruitless, but would be a useful first step. Connectivity of suitable habitat should be encouraged through an alien-free green belt of vegetation adjacent to the major arterial roads. Development should be done in conjunction with a conservation management plan and ongoing effective implementation. Only 0.05 km<sup>2</sup> of apparently suitable *Imperata* habitat falls within reserves in the general area, these being Rondevlei Nature Reserve (a municipal reserve) and the Driftsands Nature Reserve (Cape Nature Conservation) (Allan 2004).