Genus *Erikssonia* Trimen, 1891
Acraea Coppers

Proceedings of the Zoological Society of London **1891**: 91 (59-107).
Type-species: *Erikssonia acraeina* Trimen, 1891, by monotypy.

The genus *Erikssonia* belongs to the Family Lycaenidae Leach, 1815; Subfamily Aphnaeinae Distant, 1884. The other genera in the Subfamily Aphnaeinae in the Afrotropical Region are *Phasis*, *Tylopaedia*, *Argyraspodes*, *Aloeides*, *Trimenia*, *Aphnaeus*, *Axiocerses*, *Zeritis*, *Crudaria*, *Cigaritis*, *Chloroselas*, *Cesa*, *Vansomerenia*, *Lipaphnaeus*, *Chrysoritis* and *Pseudaletis*.

Erikssonia (**Acraea Coppers**) is a purely Afrotropical genus containing four species. Generic review by G.A. & S.F. Henning, 2001 (*Metamorphosis* **12** (2): 69-78). Comprehensively reviewed by Gardiner & Terblanche, 2010 (*African Entomology* **18** (1): 171-191).

**Erikssonia acraeina* Trimen, 1891
Eriksson's Copper

Erikssonia acraeina Trimen, 1891. *Proceedings of the Zoological Society of London* **1891**: 92 (59-107).

Erikssonia acraeina. Male. Left – upperside; right – underside.
Kataba (16 04 09S; 25 05 19E), Western Province, Zambia. 10 April 2004.
Images M.C. Williams ex Gardiner Collection.

Erikssonia acraeina. Female. Left – upperside; right – underside.
Kataba (16 04 09S; 25 05 19E), Western Province, Zambia. 18 January 2004.
Images M.C. Williams ex Gardiner Collection.

Type locality: [Angola]: "Omrora; Okavango River; Otiembora".

Distribution of *Erikssonia acraeina*

Angola, Zambia.

Distribution: Angola (south), Zambia.
According to Henning & Henning (2001: 70) the three localities given in the original description of the species are in southern Angola, not in northern Namibia.
Specific localities:
Angola – Omrora; Okavango River; Otiembora (TL; Eriksson).
Zambia – near Mongu (Cottrell, *vide* Heath *et al*., 2002); Kataba (images above).
Habitat: The Mongu locality in Zambia is in *Brachystegia* woodland. The habitat at Kataba is regenerating miombo woodland on Kalahari sand. Associated with the trees *Julbernardia paniculata, Swartzia madagascariensis* and *Erythrophloeum africanum*. No *Gnidia* species (the larval food of *Erikssonia edgei*) was found at this locality (Henning & Henning, 2001).
Habits: Flies slowly within a territory, and settles on grass and small shrubs (Henning & Henning, 2001).
Flight period: January (Henning & Henning, 2001).
Early stages: Nothing published.
Larval food: Nothing published.
Associated ant: Nothing published.
Relevant literature:
Congdon & Bampton, 2002 [Field notes; as *alaponoxa*].

Note: The images in D'Abrera (2009: 730) are of *Erikssonia edgei* Gardiner & Terblanche, 2010 not *E. acraeina* Trimen, 1891.

alaponoxa Henning & Henning, 2001 (as sp. of *Erikssonia*). *Metamorphosis* **12** (2): 71 (69-78). Type locality: Zambia: "Western Province, Kataba. 16°04.20'S., 25°05.21'E. 1183m. 27 January 2001, S.P. Norman." Holotype in Transvaal Museum, Pretoria. Described from two males. Female unknown. Synonymized with *Erikssonia acraeina* Trimen, 1891 by Gardiner & Terblanche, 2010.

**Erikssonia bouyeri* Gardiner, 2012

Erikssonia bouyeri Gardiner, 2012. *Metamorphosis* **23**: 22 (22-25).

Erikssonia bouyeri. Male holotype. Left – upperside; right – underside.
Kapelo, Lufira escarpment, Democratic Republic of Congo. 7 October 2000.
Images courtesy Alan Gardiner.

Type locality: Democratic Republic of Congo: "Katanga, Exploration du PNU riv., Kapelo, 1600m, 6-7 October 2000, Miss Hasson & T. Bouyer (PNU 0003)". Holotype (male) in the collection of T. Bouyer, Belgium.
General notes: Known from a single male captured by Hassan and Bouyer in 2000 (Gardiner, 2012). Named for Thierry Bouyer (Gardiner, 2012).
Original description:
Diagnosis: Closest to *E. edgei* in shape and colour. Readily separated from the other three species in the genus by the combination of the hindwing underside, the proximal border (Op) being angled away from the wing margin and on the forewing upperside by the gradual increase of the forewing marginal black into a broad evenly arched tip (Gardiner, 2012).

Distribution of *Erikssonia bouyeri*

Democratic Republic of Congo
(Katanga).

Distribution: Democratic Repupublic of Congo (Katanga Province).
Specific localities:
Democratic Republic of Congo – Kapelo, Lufira escarpment, 1 600 m (TL).
Habitat: Wet Miombo woodland (Gardiner, 2012).
Habits: Nothing published.
Flight period: Only recorded in October.
Early stages: Nothing published.
Larval food: Nothing published.
Associated ant: Nothing published.

**Erikssonia cooksoni* Druce, 1905

Erikssonia cooksoni Druce, 1905. *Transactions of the Entomological Society of London* **1905**: 255 (251-262).
Erikssonia cooksoni Druce, 1905. d'Abrera, 2009: 730.

Erikssonia cooksoni. Male. Left – upperside; right – underside.
Mundwiji Plain, Mwinilunga dist., Zambia. 11 September 2003.
Images M.C. Williams ex Gardiner Collection.

Erikssonia cooksoni. Female. Left – upperside; right – underside.
Mundwiji Plain, Mwinilunga dist., Zambia. 21 September 2003.
Images M.C. Williams ex Gardiner Collection.

Type locality: [Democratic Republic of Congo], not Zambia (*see* Cookson, 1954): "North-west Rhodesia".

Distribution of *Erikssonia cooksonia*

Democratic Republic of Congo, Zambia.

Distribution: Democratic Republic of Congo (Lualaba) (Ackery *et al*., 1995), Katanga (Henning & Henning, 2001: 75), Zambia (north-west) (Gardiner, 2010b).
Specific localities:
Democratic Republic of Congo – Kolwezi (Henning & Henning, 2001); Masourie (Henning & Henning, 2001).
Zambia – Mwinilunga district (Gardiner, 2010b).
Habitat: Open Miombo Woodland (Gardiner, 2010b).
Habits: Occurs in very localized colonies (Gardiner, 2010b).
Flight period: January (Henning & Henning, 2001).
Early stages: Nothing published.
Larval food: Nothing published.
Associated ant: Nothing published.

**Erikssonia edgei* Gardiner & Terblanche, 2010#

Waterberg Copper

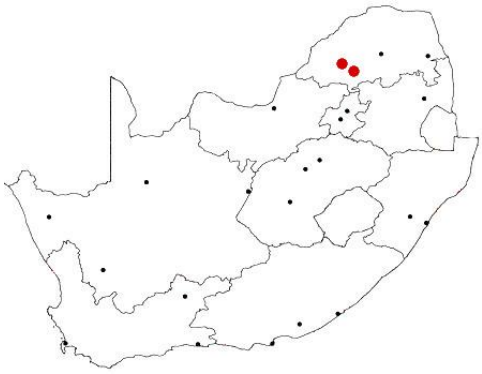
Male (left) and female (right) of the Waterberg Copper, *Erikssonia edgei*.
Bateleur Nature Reserve, Limpopo Province, South Africa. 3 March 2013.
Images courtesy Jeremy Dobson.

Erikssonia acraeina (Trimen, 1891). Pringle *et al*., 1994: 227. [misidentification]
Erikssonia edgei Gardiner & Terblanche, 2010. *African Entomology* **18** (1): 183 (171-191).

Erikssonia edgei. Male (Wingspan 36 mm). Left – upperside; right – underside.
Bateleur Nature Reserve, Limpopo, South Africa. 2 March 2013. M.C. Williams.
Images M.C. Williams ex Dobson Collection.

Erikssonia edgei. Female (Wingspan 40 mm). Left – upperside; right – underside.
Bateleur Nature Reserve, Limpopo, South Africa. 2 March 2013. M.C. Williams.
Images M.C. Williams ex Dobson Collection.

Alternative common name: Tilodi Copper.
Type locality: South Africa: "Limpopo Province, Perdekop, Waterberg Mountains, 24° 27' 34"S 27° 50' 38"E, 1 600 m, 27.XII.1980, D.A. Edge". Holotype male in the South African Museum, Cape Town (Accession number 0606).



Distribution of *Erikssonia edgei*

Limpopo Province.

Distribution: South Africa (Limpopo Province).
Specific localities:
Limpopo Province – Perdekop, Waterberg (TL); Bateleur Nature Reseve (Mark & Tildie Williams, 2 March, 2013).
Etymology: Named for Dave Edge who, together with Esmé Edge, discovered the species.
Habitat: The type locality in the Waterberg is about three hectares in extent and is in grassy savanna. Associated trees are *Burkea africana*, *Ochna pulchra*, and *Protea caffra*. The colony is located on the north-west base of a hill known as Perdeberg. The soil is deep, reddish sandy loam.
Habits: Specimens perch, with folded wings, on low bushes or on grass stems (Pringle *et al*., 1994). Males establish territories during the warmer hours of the day in which they patrol. The flight is slow and fluttering, possibly because they are toxic to potential predators such as birds. The larval host-plant is highly toxic to cattle (Henning & Henning, 2001). When disturbed adults dive into the grass (Edge, 1982). This predator avoidance behaviour has not been seen in *Erikssonia acraeina*, and has only been observed once in *Erikssonia cooksoni* (Gardiner & Terblanche, 2010).
Flight period: September to April (M. Williams, unpublished, 2014).
Early stages:

Henning, S., & Henning, G., 1984: 1 [as *Erikssonia acraeina*; Waterberg, Limpopo Province (*Metamorphosis* **1** (5): 1)].

"It was with great anticipation that we accompanied Mr Rudi Mijburgh to his locality for *Erikssonia acraeina* on the 20th December 1983 with the purpose of documenting its life history and habits. Ever since its discovery in South Africa by Mr Dave Edge (*Metamorphosis* **1** (1) – Ed.) lepidopterists have been wondering why it is so confined and so far from its original haunts in Ovamboland and Zambia.

We arrived at the locality at about 10h15. The weather was cloudy and cool. A male was soon discovered and Stephen set about watching it. He observed this specimen for about 45 minutes. Rudi discovered a fresh female about 11h00 and called Stephen over to observe it. Stephen observed this female for 2½ hours and during this time recorded pre- and post-oviposition behaviour, oviposition, determined the foodplant and discovered the host ant. During this time Graham walked widely over the area in an attempt to observe male/male and male/female interactions.

We decided after some deliberation that since the ant and the foodplant was widespread over the area, we should dig up one plant and collect some ants for identification. Graham loosened the soil around the foodplant and gently removed it from the ground. This exposed the brood chamber of the nest and to our amazement and joy, six *E. acraeina* larvae of various instars. Stephen took home the *E. acraeina* larvae, the ant colony and foodplant for further study. He also caught the female he was observing and took her home to see if he could get her to lay in captivity. He housed her with several of the host ants and some foodplant; after five days she began laying on a piece of cotton wool and eventually laid eleven eggs. This study is still underway and will eventually be reported on in a scientific journal. We would like to request that no more ant nests be disturbed when investigating this species as this could be detrimental to the future of the butterfly in the area. The following is a brief summary of the behaviour and life history of *E. acraeina*:

The foodplant is *Gnidia kraussiana* Meisner (Thymelaeaceae) which is a small, robust shrublet with erect, hairy stems arising from a woody rootstock. The leaves are simple, lanceolate and alternate. The flowers are yellow, tubular, silky-hairy, arranged in a dense, terminal flower-head. It is found over much of the interior of South Africa. It is commonly called 'gifbossie', for it is exceedingly poisonous to domestic stock – a mere handful of leaves is enough to kill a horse or a cow. This suggests that *E. acraeina* is probably unpalatable to potential vertebrate predators as most poisonous insects derive their poisons from their foodplants. The bright orange colour and slow fluttering flight of *E. acraeina* is probably a warning to predators of its unpalatability.

The host ant belongs to the genus *Acantholepis* and specimens have been sent off for more positive identification. It is a small shiny black monomorphic ant only 3 mm long. It nests in the soil and the colonies do

not appear to be very large, possibly consisting of only two or three hundred individuals. The eggs, larvae and pupae are usually piled together. The cocoons are pale yellow in colour.

The males of *E. acraeina* are very conspicuous and can be observed patrolling about their territories in ever widening circles and then returning to their favourite perch sites. They have a slow, fluttering flight, usually no more than one metre above the ground. They most frequently settle with their wings closed, near the top of a grass stem or small herbaceous plant. In cool and cloudy weather the males can often be found resting on the sand between the grass tufts. When disturbed or frightened, they dive into the grass and hide in the bases of the grass tufts. When one male encroaches upon the territory of another, the resident male approaches the intruder, and chases the rival rapidly out of the area. The intruder can be chased for up to ten metres before the resident male returns to his perch. Occasionally during the chase the males will rise four metres or more into the air. The males appear to feed early in the morning and seem to favour white flowers. Once they start territorial behaviour they do not appear to feed.

The female of *E. acraeina* rests on the ground or a low plant during the early part of the day and in cloudy weather. During the period of observation it was very cloudy and with the appearance of the sun the female would orientate sideways to it so that the rays would fall directly onto the underside of the folded wings. As observed in the male she did not expand her wings to bask in the sun. Having warmed up she would flutter off and investigate various small herbaceous plants. She would land and investigate the surface of the plant with her antennae. If conditions were unsatisfactory she would fly off once more.

Upon encountering the foodplant, *Gnidia kraussiana*, she searches with her antennae for traces of the trail pheromones of the host ant. If this is present she makes her way down to the ground at the base of the plant. Once on the ground the female starts to oviposit, curving her abdomen down and dislodging a few coarse soil particles before laying. At one plant the ground was strewn with plant debris and the female sat on the dead leaves and twigs and curved her abdomen around and down to lay the eggs on the ground beneath. In one instance she actually pushed her way beneath a partially curled leaf and oviposited beneath it. The host ants were usually present and on several occasions actually ran about on the female's abdomen. After laying about four eggs at the base of a particular plant the female would fly off a metre or so and rest on the ground in the sun. The female observed for the 2½ hour period did not feed once during this time.

While this particular female was making her way down one of the foodplants, her way was barred by a praying mantis. The praying mantis kept absolutely still waiting for her to approach. If Stephen had not removed it with his tweezers it would have certainly killed the female *E. acraeina*. The female was completely unaware of her danger and even if she was, she could not have taken to the wing quickly as she was completely boxed in by the leaves of the foodplant and grass stalks. Invertebrate predators are not affected by poisons that affect mammals or birds, so the praying mantis would not be deterred by the possible poisonous nature of the *E. acraeina* female.

The eggs are laid directly onto the ground among coarse soil particles. They are unlike any other lycaenid egg we have ever seen. They are flattened basally with rounded sides raised to the micropyle. The surface consists of irregular raised convolutions except at the micropyle which is large, round and deeply indented. The texture of the chorion is very coarse. When first laid it is yellowish ochre in colour, darkening to grey or greyish brown. It is similar in appearace to a truffle. The eggs take approximately 18 days to hatch.

All the larval instars are rather similar in appearance. The head is dark brown with yellow markings. The broad neck shield and smaller anal shield are dark brown to black in colour with a broad yellow median line. The body is a pinkish grey colour with a maroon longitudinal line down the centre of the dorsal surface, flanked on either side by a bluish green area. Laterally the larvae are marked with regular reddish brown markings. The tubercle casings on the eighth segment are black and bear the characteristic protective spines. The retractile tubercles are white and clearly visible, even to the naked eye. The honey-gland on the seventh segment is well developed.

The first to the third instars feed on the surface of the leaves, leaving patches or short furrows. The fourth instar larvae started to feed on the margins of the leaves. During this period the larvae are constantly attended by the host ant. The larvae shelter during the day in the nest of the host ant.

In the formicarium it was observed that the larvae congregated together with the ant brood and were always attended by the ants. The larvae are much bigger than the ants, which run all over them. The ants often feed at the honey-glands. When the ants become too persistent the larvae respond by extruding their tubercles rapidly in and out causing the ants to depart. Most of the time the *E. acraeina* remain motionless, with the host ants either stroking them slowly with their antennae or just standing on or near them. The droppings of the larvae are removed by the ants to the 'refuse pile'.

The larvae leave the nest at night to feed on the host plant. Often the larvae leave the nest together, following one behind the other. They are always attended by the host ants, while leaving the nest and when feeding on the host plant.

The behaviour of the larvae of *E. acraeina* is very similar to that recorded for *Aloeides dentatis* (Swierstra) and *Aloeides thyra* (Linnaeus). The host ant also appears to belong to the same genus, *Acantholepis*, as that of these two species.

About three days before pupation the larva becomes yellowish and smaller. Just before pupation all the dark markings on the larva disappear except for a faint maroon line down the centre of the back. The pupa is at first bright yellow with a faint maroon longitudinal line down the centre of the dorsal surface. It darkens to a deep

ochre with a brownish dorsal line within 48 hours. As it pupated among the other *E. acraeina* larvae and ant brood and was constantly attended by the ants it appears most likely that it normally pupates in the ant nest. A portion of a hatched pupal case was found within the nest, supporting this hypothesis.

We would like to thank Mr Rudi Mijburgh, Mr Dave Edge and Dr Izak Coetzer for making their observations of *E. acraeina* available to us.

Henning, S.F., 1984: 337 (figs 1-7) [as *Erikssonia acraeina*; Waterberg, Limpopo Province].

"The foodplant is *Gnidia kraussiana* Meisner (Thymelaeaceae) which is a small, robust shrublet with erect, hairy stems arising from a woody rootstock. The leaves are simple, lanceolate and alternate. The flowers are yellow, tubular, silky-hairy, arranged in a dense, terminal flower-head. It is found over much of the interior of South Africa. The host ant belongs to the genus *Acantholepis* but determination to species cannot be made at present at (sic) the whole genus is in need of revision. It is a small shiny black monomorphic ant only 3 mm long. It nests in the soil and the colonies do not appear to be very large, possibly consisting of only two or three hundred individuals. The eggs, larvae and pupae are usually piled together. The cocoons are pale yellow in colour."

"Upon encountering the foodplant, *Gnidia kraussiana*, she searches with her antennae for traces of the trail pheromones of the host ant. If this is present she makes her way down to the ground at the base of the plant. Once on the ground the female starts to oviposit, curving her abdomen down and dislodging a few coarse soil particles before laying. At one plant the ground was stewn with plant debris and the female sat on the dead leaves and twigs and curved her abdomen around and down to lay the eggs on the ground beneath. In one instance she actually pushed her way beneath a partially curled leaf and oviposited beneath it. The host ants were usually present and on several occasions actually ran about on the female's abdomen. After laying about four eggs at the base of a particular plant the female would fly off a metre or so and rest on the ground in the sun. The female observed for the 2½ hour period did not feed once during this time. Eggs. These are laid directly onto the ground among coarse soil particles. They are unlike any other lycaenid egg I have seen. They are flattened basally with rounded sides raised to the micropyle. The surface consists of irregular raised convolutions except at the micropyle which is large, round and deeply indented (see Fig. 4). The texture of the chorion is very coarse. When first laid it is yellowish-ochre in colour, darkening to grey or greyish-brown. It is similar in appearance to a truffle. The eggs take from 17-18 days to hatch. Larva. All the larval instars were rather similar in appearance (see Figs 6 & 7). The head was dark brown with yellow markings. The broad neck shield and smaller anal shield were dark brown to black in colour with a broad yellow median line. The body was a pinkish-grey colour with a maroon longitudinal line down the centre of the dorsal surface, flanked on either side by a bluish-green area. Laterally the larvae were marked with regular reddish-brown markings. The tubercle casings on the eighth [abdominal] segment were black and had the characteristic protective spines. The retractile tubercles white and were clearly visible, even to the naked eye. The honey-gland on the seventh [abdominal] segment was well developed. 1st instar. On emergence it is 1,75 mm in length. It eats only the surface of the leaf, leaving patches or furrows. 2nd instar. Not recorded. 3rd instar. It grows to a length of 10-10,5 mm and feeds on the surface and edges of the leaves. 4th instar. It grows to approximately 15 mm in 13-14 days and feeds on the edges of the leaves. 5th instar. It grows to about 20 mm in 15-17 days and feeds on the edges of the leaves. 6th instar. It grows to 30-34 mm in length in 20-23 days and feeds on the edges of the leaves. About three days before pupation the larva becomes yellowish and smaller. Just before pupation all the dark markings on the larva disappear except for a faint maroon line down the centre of the back. Pupa. It is 15-15,5 mm in length. It is at first bright yellow with faint maroon longitudinal line down the centre of the dorsal surface. It darkens to a deep ochre colour with a brownish dorsal line within 48 hours It was fairly thick in proportion to its length, rounded anteriorly, and terminated obtusely. The discarded larval skin remains around the last two or three segments of the abdomen. As they pupated among the other *E. acraeina* larvae and ant brood and were constantly attended by ants it appears most likely that they normally pupate in the ant nest. A portion of a pupal case was found within the ant nest supporting this hypothesis. Behaviour of larvae. The first to the third instar larvae fed on the surface of the leaves, leaving patches or short furrows. The fourth instar larvae started to feed on the margins of the leaves. During this period the larvae were constantly attended by the host ant. In the formicarium it was observed that the larvae congregated together with the ant brood and were always attended by the ants. The larvae were much bigger than the ants which ran all over them. The ants often fed at the honey-glands. When the ants became too persistent the larvae responded by extruding their tubercles rapidly in and out causing the ants to depart. Most of the time the *E. acraeina* larvae remained motionless, with the host ants either stroking them slowly with their antennae or just standing on or near them. The droppings of the larvae were removed by the ants to the 'refuse pile'. The larvae left the nest at night to feed on the host plant. Often the larvae left the nest together, following one behind the other. They were always attended by the host ants, while leaving the nest and when feeding on the host plant. Emergence of adult. As an adaptation to emerging within an ants' nest the newly emerged adult *E. acraeina* does not appear to expand its wings in the dark as most other butterflies will do. It was found that if the adult emerged from the pupa in the light it would expand its wings within 10 minutes. One newly emerged adult was kept in the dark for one hour after emergence and did not expand his wings until he was exposed to the light. Once exposed to the light he expanded his wings within 10 minutes. A second individual kept in the dark for 3 hours failed to expand his wings at all."

Base of *Gnidia microcephala* plant with *Lepisiota*ants.
Image courtesy Steve Woodhall.

Larval food:
Gnidia kraussiana Meisn. var. *kraussiana* (Thymelaeaceae) [Henning, S., & Henning, G., 1984; Waterberg, Limpopo Province; as *Gnidia kraussiana*].
Gnidia microcephala Meisn. (Thymelaeaceae) [Williams, unpub. March 2013, Bateleur N.R., Limpopo Province].
Associated ant:
Lepisiota species [Henning, S., & Henning, G., 1984; as *Acantholepis* species; Waterberg, Limpopo Province].
Conservation status: Classified as Critically Endangered (Henning *et al*., 2009: 48; as *Erikssonia acraeina*).

Relevant literature:
Gardiner & Terblanche, 2010b [Description of *edgei* sp. n.].
Garvie & Williams, 2006 [Report on monitoring of colony; as *Erikssonia acraeina*].
Dobson & Garvie, 2005 [Status of population; as *Erikssonia acraeina*].
De Wet, 1995 [Conservation management; as *Erikssonia acraeina*].
Henning, S.F., Henning, G.A. & Samways, 1993b [Conservation; as *Erikssonia acraeina*].
De Wet, 1987 [Conservation; as *Erikssonia acraeina*].
Henning, S.F. & Henning, G.A., 1984b [Life history; as *Erikssonia acraeina*].
Henning, S.F., 1984a [Life history; as *Erikssonia acraeina*]
Edge, 1982 [Field notes; as *Erikssonia acraeina*].