

Genus *Tylopaedia* Tite & Dickson, 1973 King Copper

Bulletin of the British Museum (Natural History) (Entomology) **29**: 232 (227-280).

Type-species: *Zeritis sardonyx* Trimen, 1868, by original designation.

The genus *Tylopaedia* belongs to the Family Lycaenidae Leach, 1815; Subfamily Aphnaeinae Distant, 1884; Tribe Aphnaeini Distant, 1884; Subtribe Phasisina Grishin, 2023. The other genera in the Tribe Aphnaeini in the Afrotropical Region are *Phasis*, *Argyraspodes*, *Aloeides*, *Eriksonia*, *Trimenia*, *Aphnaeus*, *Crudaria*, and *Lipaphnaeus*.

Tylopaedia (**King Copper**) is a purely Afrotropical genus containing a single species.

Tylopaedia sardonyx (Trimen, 1868) King Copper



King Copper (*Tylopaedia sardonyx sardonyx*). Males.
Images courtesy Steve Woodhall.

Zeritis sardonyx Trimen, 1868. *Transactions of the Entomological Society of London* **1868**: 83 (69-96).

Zeritis sardonyx Trimen, 1868. Trimen & Bowker, 1887b.

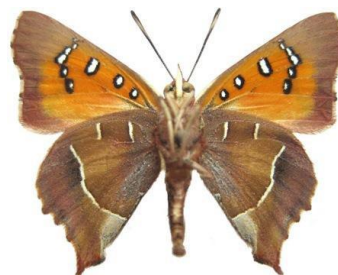
Phasis sardonyx Trimen. Swanepoel, 1953a.

Tylopaedia sardonyx (Trimen, 1868). Tite & Dickson, 1973.

Tylopaedia sardonyx (Trimen, 1868). Dickson & Kroon, 1978.

Tylopaedia sardonyx (Trimen, 1868). Pringle *et al.*, 1994: 176.

Tylopaedia sardonyx Trimen, 1868. d'Abbrera, 2009: 714.



Tylopaedia sardonix sardonix. Male (Wingspan 37 mm). Left – upperside; right – underside.
Springfontein, Free State Province, South Africa. 4 October 2003. J. Dobson.
Images M.C. Williams ex Dobson Collection.



Tylopaedia sardonix sardonix. Female (Wingspan 43 mm). Left – upperside; right – underside.
Verlatekloof Pass, Northern Cape Province, South Africa. 10 December 2005. J. Dobson.
Images M.C. Williams ex Dobson Collection.

Type locality: [South Africa]: “Murraysburg”.

Distribution: Botswana, Namibia, South Africa.

Habitat: Rocky hillsides and gullies in the Karoo. Also in arid savanna.

Habits: The flight is rapid, but usually of short duration. Flowers, especially mesembryanthemums, are frequently visited. Males establish territories on the top of rocky hills and defend them from perches on rocks. On overcast days specimens tend to hide well inside shrubs (Pringle *et al.*, 1994). Individuals generally settle on bare ground with the wings closed or partly open (Schlosz & Brinkman, 1991). A male and female have been observed copulating after numerous circular flights and wing-vibrating solicitations on the ground (Schlosz & Brinkman, 1991). Eggs are laid on the inside of a raised portion of the surface of a branch, or where the branch meets the main stem. Their cryptic colouring, and the decorative appearance of spinous scales from the female’s abdomen adhering to them, plus the carefully selected situation, render them inconspicuous to the human eye. The females only appear to lay eggs on sections of the plant where the host ant is present, at times moving carefully along a branch almost into the middle of the bush before selecting a spot for oviposition (Schlosz & Brinkman, 1991). Both sexes have been observed to feed at the flowers of a small, bright purple *Lampranthus* species (Schlosz & Brinkman, 1991). In captivity the female only appears to oviposit if the correct host ant is present (Schlosz & Brinkman, 1991).

Flight period: August to March but commonest in spring (n nominate subspecies and subspecies *peringueyi*) (Pringle *et al.*, 1994). Subspecies *cerita* has been recorded in November and March.

Early stages:

Clark & Dickson, 1971: 204, plate 96 [as *Phasis sardonix sardonix*; Eastern Cape].

“**Egg:** 1.15 mm diam. x 0.6 mm high. Laid singly on stems. The eggs are brown with heavy moles from which radiate numerous whitish, curved ribs, and are dome-shaped. Eggs hatch after 7 days. The discarded shell is not eaten. **Larva:** 1st instar 2.25 mm, on emergence from the egg. Tubercles are present in the 1st instar. On emergence, the larva is of a rather light brown colour, with the head and neck-shield black and the anal-shield of the colour of the body. The head is very large in proportion to the width of the body. There is an outer dorsal series of very robust, apparently partly flattened, curved club-shaped setae, which are black or nearly black and are tipped with white. These setae are augmented by a small seta of similar type on each side of the body on segments 6-8 and by two additional small setae on segment 9. There are five setae on each outer side of seg. 10, arranged in fan-shaped formation and of various lengths, as shown in the figure of the larva; and the flattened and very broad terminal segment has a semicircle of long, curved pointed setae round its outer edge. Very small white setae just above the spiracles are of club-shaped form; and the light, slender setae, of various lengths, on the lateral ridge and round the anterior part of seg. 1, are of the pointed type. The last named setae are very finely barbed. This remarkable larva differs considerably from those of both the *thero* and *wallengrenii* sections of the genus *Phasis* (as at present recognized) although, in certain features, showing a relationship to either one or the other of these groups. The single larva which was recorded died in the 1st instar and the later larval instars and the pupa of *Ph. sardonix* are as yet unknown. The egg of this species has much in common with the eggs of the *thero* group of the genus and does not resemble, as regards the surface pattern, the eggs of the *wallengrenii*

group.” “Recorded from an egg from the eastern Cape Province.”

Downey & Allyn, 1981.

Downey & Allyn, 1984.

Schlosz & Brinkman, 1991: 81 [as *Tylopaedia sardonyx peringueyi*; locality not noted].

The bun-shaped eggs are dark khaki-brown with lighter, raised moles, which are connected by numerous radiating ribs. Most eggs have a number of spinous scales from the female's abdomen adhering to them. Eggs hatch in from 23 to 28 days. The larva emerges through a hole which it eats out of the top of the egg, the rest of the egg-shell not being eaten. It is uncertain if the honey-gland is functional in the first instar but the tubercles respond to the attention of the host ants. In the second instar all dorsal and some lateral setae are of similar general form, with slender stems that terminate bulbously. The overall colour of the larvae is dark wine-red and the surface of the skin is covered in tiny white moles. *Crematogaster* sp. are in constant attendance, 'drumming' on the larvae with their antennae, shielding them, and spending much time in the vicinity of their honey-glands. In captivity the larvae feed after following a web-trail, and always return to the same resting place either on a stem of the food-plant or on the side of the container. In the field, for the duration of the first and second instar, the larvae remain on the food-plant in the company of ants. From the third instar onwards they shelter under stones during the day, either in or close to the host ants nest, and presumably feed at night. The head of the third instar larva and that of subsequent instars is normally partially or fully withdrawn into the first segment. In the fourth instar the larvae begin to resemble the shape, colour and appearance of the final instar, the dark areas being deep wine-red and the light areas stone coloured to white. The exuvium is not eaten after the first three moults. The duration of the first instar is 14 to 16 days, the second 12 to 15 days, the third 15 to 16 days, the fourth 16 to 18 days, the fifth, and the sixth (penultimate) instar 22 to 23 days. In the seventh instar which lasts 30 to 32 days, the larvae show a distinct widening in the region of the third to fifth segments when viewed dorsally, otherwise they much resemble the larvae of the sixth instar. The pupa has a flat rigid base at the anal end which enables it to be supported in a horizontal position, parallel to the underside of the stone. The pupal period is 16 to 17 days.

Larval food:

Aspalathus spinosa L. (Fabaceae) [Schlosz & Brinkman, 1991: 81; locality not noted; for subspecies *peringueyi*].

Euclea undulata Thunb. (Ebenaceae) [Schlosz, 1996: 92; Nuweveld farm (Montagu District), near Matjiesfontein, and Rooiberg Pass (near Van Wyksdorp) – all Western Cape; for subspecies *sardonyx*] (*Metamorphosis* 7 (2): 92).

Phyllica oleaefolia Vent. (Rhamnaceae) [Heath, 1997a: 28; locality not noted; for subspecies *peringueyi*].

Associated ant:

Crematogaster species near *melanogaster* Emery [Schlosz & Brinkman, 1991: 81; locality not noted; for subspecies *peringueyi*].

Tylopaedia sardonyx sardonyx (Trimen, 1868)

King Copper

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Tylopaedia sardonyx sardonyx (Trimen, 1868). Tite & Dickson, 1973.

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Tylopaedia sardonyx sardonyx Trimen, 1868. d'Abrera, 2009: 714.



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Type locality: [South Africa]: “Murraysburg”.

Distribution: Botswana (south-west), Namibia (south-west) (Swart, 2004), South Africa (Free State Province – west, Eastern Cape Province, Western Cape Province, Northern Cape Province).

Specific localities:

Botswana – Junction of the Aoub and Nosop Rivers, Kgalagadi Transfrontier Park (Van Son, 1936).

Namibia – Between Rosh Pinah and Aus (Swart, 2004).

Free State Province – Bethulie (Swanepoel, 1953); Philippolis (Swanepoel, 1953); Springfontein (male illustrated above); Cyferfontein [-30.3736 25.8131] (R. Griesel, unpublished).

Eastern Cape Province – Burghersdorp (Kannemeyer); Klipplaat (Swanepoel, 1953); Cradock (Swanepoel, 1953); Graaff-Reinet (Swanepoel, 1953); Carlton (Swanepoel, 1953).

Western Cape Province – Murraysburg (TL; Muskett); Montagu area (Duke); Matjesfontein (Swanepoel, 1953); Calitzdorp (Swanepoel, 1953); Oudsthoorn (Swanepoel, 1953); Beaufort West (Swanepoel, 1953); Nuweveld Farm, Montagu District (Schlosz, 1996); Rooiberg Pass near Van Wyksdorp (Schlosz, 1996).

Northern Cape Province – Colesberg (Swanepoel, 1953); Springbok (Swanepoel, 1953); Kagaligadi Transfrontier Park – 12 miles north of Twee Rivieren in the bed of the Nossob River (van Son, 1959); Upington (Pringle *et al.*, 1994); Kareeboomvlakte, south-west of Olifantshoek (Pringle *et al.*, 1994); Kuruman (Pringle *et al.*, 1994); Verlatekloof Pass (female illustrated above).

knobeli van Son, 1959 (as f. of *Phasis sardonix*). *Koedoe* (2): 56 (52-59). South Africa: “Kalahari Gemsbok National Park”. Described from one male and two females; housed in Transvaal Museum, Pretoria.

Tylopaedia sardonix cerita Henning & Henning, 1998
Namib King Copper

Tylopaedia sardonix cerita Henning & Henning, 1998. *Metamorphosis* 9 (4): 181 (180-183).

Type locality: Namibia: “Namibia: Regenstein, 4.xi.1995, F. Swart.”

Described from a large series from the type locality and a single male from Kupferberg Pass, west of Windhoek.

Distribution: Namibia (central).

Specific localities:

Namibia – Regenstein, 30 km south-west of Windhoek (TL; Swart); Kupferberg Pass, 30 km south-west of Windhoek (Stephen); Gross Herzog peak, Auas Mtns, just south of Windhoek (Swart, 2004); Gamsberg in south-west Namibia (Swart, 2004).

Note: D’Abrera (2009: 714) does not list this taxon.

Tylopaedia sardonix peringueyi (Aurivillius, [1924])

Western King Copper

Phasis sardonix ab. *peringueyi* Aurivillius, [1924]. *In*: Seitz, [1908-25]. *Die Gross-Schmetterlinge der Erde*, Stuttgart (2) **13** *Die Afrikanischen Tagfalter*: 430 (614 pp.).

Phasis sardonix peringueyi Dickson, 1969. *Entomologist’s Record and Journal of Variation* **81**: 313 (313-315).

Tylopaedia sardonix peringueyi (Dickson, 1969). Tite & Dickson, 1973.

Tylopaedia sardonix peringueyi Aurivillius. Dickson & Kroon, 1978.

Tylopaedia sardonix peringueyi (Aurivillius, 1929). Pringle *et al.*, 1994: 176. [date of authorship erroneous]

Tylopaedia sardonix peringueyi Aurivillius, 1924. d’Abrera, 2009: 714.



Tylopaedia sardonix peringueyi. Male. Left – upperside; right – underside.
Clanwilliam, Western Cape Province, South Africa. 19 August, 1994. D. Edge.
Images M.C. Williams ex Edge Collection.



Tylopaedia sardonix peringueyi. Female. Left – upperside; right – underside.
Clanwilliam, Western Cape Province, South Africa. 19 August, 1994. D. Edge.
Images M.C. Williams ex Edge Collection.

Type locality: [South Africa]: “Cape Colony”. Holotype in the Swedish Natural History Museum (images available at www2.nrm.se/en/lep_nrm/s).

Distribution: South Africa (Western Cape Province).

Specific localities:

Western Cape Province – Leipoldville; 8 km south of Klawer (Duke); Heerenlogementsberg
(Williams); Springbok (Schlosz & Brinkman, 1991); Piketberg (Schlosz & Brinkman, 1991).