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## Studies on Afrotropical Zygaeninae II:

### New taxa of the genus *Neurosymploca* WALLENGREN, 1858, s. l. (Lepidoptera, Zygaenidae)

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#### Abstract

Twelve new taxa, comprising five new species, of the Afrotropical genus *Neurosymploca* are described herein and figured. The holotypes will be deposited in the Ditsong National Museum of Natural History, Pretoria (Republic of South Africa). Newly introduced are three monotypic species (*N. kruegeri* nov.sp., *N. geertsemai* nov.sp., *N. dukeorum* nov.sp.), while *N. kushaica* nov.sp. is differentiated into the nominotypical subspecies from the Cape Peninsula and *N. kushaica sani* nov.ssp. from northern regions. *Neurosymploca naumanniola* nov.sp., in former times and in widely distributed literature often confused with *N. caffra* LINNAEUS, 1764 (HOFMANN 2017), is described as *bona species* with regional subspecific differentiations (*N. naumanniola vanrhynsdorpi* nov.ssp., *N. naumanniola aurora* nov.ssp., *N. naumanniola kamieskronensis* nov.ssp.). Moreover, two significantly distinct subspecies of *N. concinna* DALMAN, 1823 (*N. concinna sesioides* nov.ssp., *dimorpha* nov.ssp.) are introduced; the latter is characterized by the first known populations with alternating red or yellow morphs. For all taxa the larval host-plants as found in the wild and accepted food-plants in captivity are listed.

**Key words:** Lepidoptera, Zygaenidae, *Neurosymploca*, *aurora*, *concinna*, *dimorpha*, *dukeorum*, *geertsemai*, *kamieskronensis*, *kruegeri*, *kushaica*, *naumanniola*, *sani*, *sesioides*, *vanrhynsdorpi*, new species, new subspecies, Afrotropical fauna.

## Zusammenfassung

Zwölf neue Taxa, darunter fünf neue Arten, der Afrotropischen Zygaeninae Gattung *Neurosymploca* werden beschrieben und abgebildet. Die Holotypen werden im Ditsong National Museum of Natural History, Pretoria (Republic of South Africa) deponiert werden. Als monotypische Arten werden *N. kruegeri* nov.sp., *N. geertsemai* nov.sp. und *N. dukeorum* nov.sp. eingeführt; *N. kushaica* nov.sp. differenziert in zwei gut unterscheidbare Unterarten: die Nominatform von der Kap-Halbinsel und *N. kushaica sani* nov.ssp. von nördlich anschließenden Regionen. *Neurosymploca naumanniola* nov.sp., in verbreiteter Fachliteratur oft mit *N. caffra* LINNAEUS, 1764, verwechselt (HOFMANN 2017), wird neu beschrieben und infraspezifisch weiter unterteilt (*N. naumanniola vanrhynsdorpi* nov.ssp., *N. naumanniola aurora* nov.ssp., *N. naumanniola kamieskronensis* nov.ssp.). Hinzu kommen zwei besonders markante Unterarten von *N. concinna* DALMAN, 1823 (*N. concinna sesioides* nov.ssp., *N. concinna dimorpha* nov.ssp.), darunter die ersten polymorphen Populationen mit alternativ gelb oder rot gefärbten Individuen. Soweit bekannt werden für alle Taxa die Raupennahrungspflanzen im Freiland sowie Futterpflanzen im Zuchtversuch aufgeführt.

## Introduction

The subfamily Zygaeninae currently comprises one fossil (*Zygaenites* BURGEFF, 1951) and nine recent genera, of which only two (*Zygaena* FABRICIUS, 1775, *Pryeria* MOORE, 1877) occur in the Palaearctic region while one genus is Oriental (*Epizygaenella* TREMEWAN & POVOLONÝ, 1968) and six genera are restricted to the Afrotropical region; of these one occurs on the Arabian peninsula (*Reissita* TREMEWAN, 1959) while five genera inhabit the southern hemisphere (*Epiorna* ALBERTI, 1954, *Praezygaena* ALBERTI, 1954, *Orna* KIRBY, 1892, *Zutulba* KIRBY, 1892, *Neurosymploca* WALLENGREN, 1858). This relatively high diversity of taxa of higher categories mainly in southern Africa is accompanied by low richness of species in each genus. Only two species each are integrated into *Epiorna* and *Zutulba*, three into *Orna* and six each into *Praezygaena* and *Neurosymploca*. For comparison only, the genus *Zygaena* FABRICIUS, 1775 currently comprises 108 species. However, in the 1980s with closer contacts and after exchange of information between Clas M. Naumann and entomological colleagues from South Africa (C. G. C. Dickson, A. J. & N. J. Duke, H. Geertsema, M. Krüger, J. Vári), it became clear that at least in *Neurosymploca* this low number is caused by shortcomings in the investigation of stored voucher material in the museums and deficiencies in regional fieldwork (HOFMANN 2007: 216).

For three decades Professor Dr Clas M. Naumann (1939–2004) was not only the most outstanding lepidopterist in Germany but also the centre of "Zygaenology" (HOFMANN 2007). In addition to all of his important jobs and duties (DATHE 2004, WAGNER & HÄUSER 2004, HÄUSER 2004) there can be no doubt that these "red-black phenomena" were closer to his heart than any other scientific subject. So many aspects of classic and modern biology (phylogeny, zoogeography, physiology and molecular biology) were focussed by

him on this group; so many theses dealing with *Zygaena* species were composed under his supervision (HOFMANN 2007, SCHMIDT 2005). The purpose was clear: after becoming an Emeritus Professor he intended to bring these single items together like a mosaic, thus forming a greater picture: the monograph of Zygaeninae. He was not granted the privilege of starting this project and nobody else can do it in the way he would have done. What we can do is to make available some of the data and unpublished taxa that are stored in his huge collection.

After 25 years of travelling in the "old world" between Morocco, Algeria, Spain, France, Germany, Austria, Italy, Yugoslavia, Greece, "the Volga", Turkey, Iran, Afghanistan, Tajikistan, Kyrgyzstan, Uzbekistan and Japan, with intensive fieldwork and excellent collecting results, CMN acquired much more of an overview of the distribution (NAUMANN et al. 1984), the phylogeny (NAUMANN 1977a, 1977b, 1985) and the biology of the Palearctic species of this group. He thus began in the beginning of the 1980s with more intensive investigations of the out groups. He investigated material in the international museums, recorded data and made contacts with colleagues in South Africa and several times he visited Yemen, Oman, Ethiopia and South Africa.

His complete collection of Zygaenidae (HOFMANN 2007), including five drawers of non-Palaearctic Zygaeninae that comprise about 1,000 specimens, are deposited now in the Forschungsmuseum Alexander Koenig, Bonn (Germany). All specimens are systematically categorised, some are labelled as new taxa. After having checked the position and synonymy of elder taxa (HOFMANN 2017), hitherto undescribed populations and taxa will be named in this paper.

In 2014, 2015 and 2016 the author visited South Africa in Clas Naumann's footsteps. The acquired material of these tours here is included. Detailed descriptions of fieldwork, ecological and preimaginal biological data and a comparative analysis of general morphology and genitalia structures of the hitherto known taxa will be presented in a subsequent publication.

The fact that all new taxa described herein are placed in the genus *Neurosymploca* s. l. does not mean that the genus, *Callosymploca*, established by VÁRI & KROON (1986), is ignored. Into this genus the authors had integrated the majority of species which were formerly placed under *Neurosymploca* and only two species remain in the latter (with one being a synonym of the other, *vide* HOFMANN & TREMEWAN 1996: 31). A subsequent publication will deal with the taxonomy, genitalia morphology, biology and distribution of this group. At the moment it remains unclear if this split into two genera was necessary or if it can be treated as a useful division into two subgenera or if the younger one should be better treated as a subjective synonym.

The terminology used herein for venation, spot pattern and body morphology is based on the descriptions in HOFMANN & TREMEWAN (2017: 271–275). In a first study on Afrotropical Zygaeninae (HOFMANN 2017), problems of nomenclature, availability and priority of some taxonomic names within the genus *Neurosymploca* s.l. have already been discussed and the results presented.

***Neurosymploca concinna* DALMAN, 1823**

(Figs 1–15, 46, 47, 54, 58–62)

*Neurosymploca concinna* is easily distinguishable from all other *Neurosymploca* species by white, instead of black, surroundings of the forewing spots. It is a widely distributed species from the Little Karoo (Western Cape) to north of Pretoria (Gauteng and Limpopo). Occurrences in the immediate vicinity of the Cape Peninsula require confirmation. Problems arise because of an unclear type-locality (HOFMANN 2017). According to Dalman's description (1823) the nominotypical *Neurosymploca concinna concinna* (Figs 1–3) refers to a monomorphic, densely scaled population as it was found in regions formerly known as Transvaal and Natal (now KwaZulu-Natal, Freestate, Gauteng, Limpopo).

**Larval host-plants:** Larvae are found on *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES., *G. buxifolia* (L.) SZYSZYL., *G. polyacantha* (SOND.) SZYSZYL. and *G. senegalensis* (LAM.) LOES.; several other spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were also accepted in captivity (A. Hofmann, unpubl.).

***Neurosymploca concinna sesioides* HOFMANN, nov.ssp.**

(Figs 4–9, 54, 62)

**Holotypus:** ♂, 25 mm, [white label]: "Südafrika, Western Cape, Oudtshoorn NW., Gr. Swartberg pass, 980–1020 m, [11/14], e.l., e.p.: 16.6.2014, leg. & cult. A. Hofmann"; [green label]: "HOLOTYPUS ♂, *N. concinna sesioides* [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** 5 ♂♂, 3 ♀♀, data as holotypus, but [31/15], e.p.: 1.3.–6.4.2016, coll. HOF; ibidem, 8 ♂♂, 6 ♀♀, F1 ex CV150227,1, e.p. 3.6.–27.7.2015, coll. HOF; ibidem, 3 ♂♂, 3 ♀♀, F1 ex CV150227,2, e.p. 18.5.–25.7.2015, coll. HOF; 10 ♂♂, 6 ♀♀, "South Africa, Western Cape, Oudtshoorn S., Zebra vic., [20/16], 500 m, (e.l., e.p.: 13.2.–17.3.2016, feed on *Putterlickia* sp., leg/cult. A. Hofmann)", coll. HOF; 2 ♂♂, 2 ♀♀, "South Africa, Western Cape, Oudtshoorn W., 300 m, (e.l., e.p.: A.–M.3.2016, feed on *Putterlickia* sp., leg/cult. A. Hofmann)", coll. HOF; 18 ♂♂, 1 ♀♀, "REP. SOUTH AFRICA, Southern Cape Province, Swartberg mts., s-side, Great Swartberg Pass, 900–1000 m, e.l., 18.1.1985, leg. Naumann, Nr. 2192, coll. Naumann", coll. ZFK; ibidem, 2 ♂♂, 1 ♀, coll. HOF; 4 ♂♂, 1 ♀, "REP. SOUTH AFRICA, Western Cape, Swartberg Pass (south), 9.XI.1999 [leg.], leg. Naum., Nr. 2482, coll. Naumann" e.l., e.p.: data 1.–24.XII.1999, coll. ZFK; ibidem, 2 ♂♂, 1 ♀, coll. HOF; ibidem, 2 ♀♀, e.l., e.p.: V.2000, coll. ZFK; 2 ♀♀, "REP. SOUTH AFRICA, Western Cape Prov., 30 km W Oudtshoorn, Gamka Nat. Reserve, 600 m, a.o., V.2000, leg. C. M. Naumann, coll. C. M. Naumann", coll. ZFK; ibidem, 1 ♀, coll. HOF; "REP. SOUTH AFRICA, Western Cape Prov., 5 km N Oudtshoorn, e.l., XI.1999 [e.p.], leg. C. M. Naumann, Coll. Nr. 2427, coll. C. M. Naumann", coll. ZFK; ibidem, 1 ♂, 22.1.2000 [e.p.]; ibidem, 1 ♂, 15.IV.2000 [e.p.], coll. HOF; 1 ♂, "REP. SOUTH AFRICA, Western Cape Prov., 10 km N Oudtshoorn, 500 m, e.l., 12.XII.1999 [e.p.], leg. C. M. Naumann, Coll. Nr. 2427, coll. C. M. Naumann", coll. ZFK; 1 ♀, "REP. SOUTH AFRICA, Groote Swartberg Mts, Seveweekspoort, 500–600 m, e.l., 9.XI.1999 [e.p.], leg. C. M. Naumann, Coll. Nr. 2426, coll. C. M. Naumann", coll. ZFK.



**Referable** to *Neurosymploca concinna sesioides* nov.ssp. but not included in the type series are the following populations: South Africa, Western Cape, Riversdale 9 km SE., 90–100 m, (e.l., e.p.: 13.2.–6.3.2016, feed on *Gymnosporia* sp., leg./cult./coll. A. Hofmann); South Africa, Western Cape, Ladismith S., 520 m; South Africa, Western Cape, Barrydale NE., 450 m; South Africa, Western Cape, Montagu SE., 380 m; South Africa, Western Cape, Robertson W., 260 m; all records e.l., e.p.: 2.–3.2016, leg./cult./coll. A. Hofmann.

**Etymology**: The new subspecies with translucent hindwings is strongly reminiscent of some species of clearwing moths (Sesiidae).

**Description**: Relatively small subspecies, ♂♂ 23–28 mm, ♀♀ 27–30 mm (based on moths cult. ex larva; moths in the wild probably slightly larger). Head with appendices (antennae, proboscis) black, with well developed, long-scaled, strongly contrasting yellow-orange labial palpi and two yellow-orange patches anterior and posterior of the eyes. Thorax black with several coloured elements; instead of collare just two extended yellow-orange patches laterally present on parapatagia, medial parts of parapatagia and patagia black; yellowish scales at the posterior half of the tegulae, medium strong expressed in males, stronger in females, metathorax medio-dorsally with few yellow scales. Abdomen dorsal black with red abdominal half-cingulum on three segments in males and on two in females, comprising a black small mediodorsal spot anterior on each segment, occasionally slightly extended to a transversal line; each segment well distinguishable from next segment by a thin yellowish posterior transversal line, anal tip and cremata yellowish, abdomen ventral yellow and black segmentally striped. Legs off-white scaled, inner side darker grey-black, femur of midlegs and hindlegs yellow scaled. Forewings narrow, elongate, of matt grey ground colour, occasionally with a greenish-brown touch; colour of forewing spots orange-yellow to dark orange or dirty orange. Spot 1 absent, spot 2 translucent, with a short kink at the base, thus reminiscent of a walking stick, stroke-like elongate along vein CuP towards spot 4, occasionally reaching the latter, only the vein and at the basal part terminated by light scales; spot 3 small, punctual to elongate, thin white surrounded; spot 4 and 5, large, more quadratic, white surrounded; spot 6 smaller, round, less white surrounded; distances between spot pairs 3+4 and 5+6 nearly the same. Hindwings translucent, only the veins very slightly dusted with red scales, broad black surrounding along outer margin, enlarged at apex and with extended, pointed, terminal 'tooth' at beginning of anal field, thinner from tornus on to the base; only distal part of anal field and along inner margin poorly reddish coloured.

**Remarks**: *Neurosymploca concinna sesioides* nov.ssp. is characterized by an extended, translucent spot 1 and melanistic-translucent hindwings, hence easily distinguishable from the nominotypical and hereunder described subspecies. Comparable to littoral melanism in *Zygaena*, there is apparently a regional nucleus with the strongest expression of this melanistic form and an adjacent transfusion zone with successively weaker forms. The darkest forms inhabit the Great Swartberg region north of Oudtshoorn; populations further west along the escarpment (as far as Swellendam and Robertson) and southeast (as far as Montagu) are referred to as *N. concinna sesioides* nov.ssp.; they successively become less melanistic but all still exhibit these translucent characters in various intensities.

**Larval host-plants**: *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES., *G. buxifolia* (L.) SZYSZYL. and *G. polyacantha* (SOND.) SZYSZYL.; spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were accepted in captivity (A. Hofmann, unpubl.).

***Neurosymploca concinna dimorpha* HOFMANN, nov.ssp.**

(Figs 10–15, 47, 59–61)

**H o l o t y p u s :** ♂, 26 mm, red morph, [white label]: "South Africa, Eastern Cape, Hoegsback SW., 850 m, [29/15], e.l., e.p.: 28.2.–4.4.2015, leg/cult A. & K. & T. Hofmann"; [green label]: "HOLOTYPUS ♂, *N. concinna dimorpha* [handwritten A. Hofmann], A. Hofmann", reared with *Gymnosporia senegalensis* (LAM.) LOES. and *G. heterophylla* (ECKLON & ZEYHER) LOES.; Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**P a r a t y p e s :** 7 ♂♂, 4 ♀♀, data as holotypus, coll. HOF; 11 ♂♂, 11 ♀♀, ibidem, F1 ex CV 150317 (yellow x yellow), e.p.: 1.–15.7.2015, cult. A. & K. & T. Hofmann, coll. HOF; R e f e r a b l e t o *Neurosymploca concinna dimorpha* nov.ssp. but with lower frequencies of yellow morphs in the populations: South Africa, Eastern Cape, Seymore NE, Nico Malan Pass, 1220 m (e.l., e.p.: 2.–3.2016, leg./cult./coll. A. Hofmann); South Africa, Eastern Cape, Alice 5 km E (Hoegsback S), 550 m, [16/14], e.l., e.p.: 8.3.–10.4.2016, leg./cult./coll. A. Hofmann); South Africa, Eastern Cape, Cradock S., Mount Manod, 1200 m, (29. u.30.11.2007, leg. D. BARTSCH, coll. SMS); South Africa, Eastern Cape Province, 10 km E Bedford, 750 m, e.l., e.p.: 21.1.–27.2.1985, leg./cult. C. M. Naumann, coll. ZFK.

**E t y m o l o g y :** The new subspecies is characterized by dichromatic populations comprising yellow and red morphs.

**D e s c r i p t i o n :** Relatively large subspecies, ♂♂ 26–28 mm, ♀♀ 28–32 mm (based on moths cult. ex larva; moths in the wild probably slightly larger). Head with appendices (antennae, proboscis) black, with very strongly contrasting yellow-orange labial palpi and two prominent yellow-orange patches anterior and posterior of the eyes. Thorax black with several eye-catching coloured elements; instead of collare just two extended yellow-orange patches present laterally on parapatagia, medial parts of parapatagia and patagia black; bright yellow-orange scales at the posterior half of the tegulae, strongly expressed in both sexes, metathorax medio-dorsally with few yellow scales, in females enlarged, sickle-like. Abdomen black with red or yellow abdominal half-cingulum on three segments in males and on two in females, comprising black anterior mediodorsal spots on each segment, forming an interrupted mediodorsal line;

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**Plate 1, Figs 1–24: species of the genus *Neurosymploca* WALLENGREN, 1858 (1),** (specimens enlarged, for original size see holotypus). **Figs 1–15:** *N. concinna* DALMAN, 1823. **Figs 1–3:** *N. concinna concinna* (South Africa: Limpopo, Pietersburg ca. 30 km N, [1/14], 1350 m, e.l., e.p.: 17.–28.3.2014, leg. & cult. A. Hofmann). **Figs 4–9:** *N. concinna sesioides* nov.ssp. (**Figs 4–6:** South Africa: Western Cape, Riversdale 9 km SE, [18/16], 90–100 m, e.l., e.p.: 13.2.–6.3.2016, leg/cult. A. Hofmann; **Fig. 7:** holotype; **Fig. 8:** paratype, data as for holotype, e.p.: 1.3.–6.4.2015; **Fig. 9:** paratype, South Africa: Southern Cape Province, Swartberg mts., s-side, Great Swartberg Pass, 900–1000 m, e.l., 18.1.1985, leg. Naumann, Nr. 2192, coll. Naumann). **Figs 10–15:** *N. concinna dimorpha* nov.ssp. (South Africa: Eastern Cape, Hoegsback SW, 850 m, [29/15], e.l., e.p.: 28.2.–4.4.2015, leg/cult. A. & K. & T. Hofmann; **Fig. 10:** holotype, **Figs 11–15:** paratypes). **Figs 16–24:** *N. naumanniola* nov.sp. **Figs 16–18:** *N. naumanniola naumanniola* nov.ssp. (**Fig. 16:** holotype, **Figs 17, 18:** paratypes, data as for holotype). **Figs 19–21:** *N. naumanniola aurora* nov.ssp. (**Fig. 19:** holotype, **Figs 20, 21:** paratypes, data as for holotype). **Figs 22–24:** *N. naumanniola vanrhynsdorpi* nov.ssp. (**Fig. 22:** holotype, **Figs 20, 21:** paratypes, data as for holotype, e.p.: 13.2.–24.3.2016). Photos: A. Hofmann.



half-belt on the ventral side open, not red but yellow and black segmentally striped; each segment well distinguishable from next segment by a thin yellowish posterior transversal line, anal tip and coremata yellowish. s The independence of the abdominal and thoracic colouration is remarkable. While the abdominal cingulum can alternate from red to bright yellow, the colour of thoracic elements remains always the same yellow-orange colour. The same can be said about the fore- and hindwing colour. The colour of the hindwings can be red or yellow, the colour of the forewings remains orange yellow in all cases. Legs off-white scaled, inner side darker grey-black, femur of midlegs and hindlegs yellow scaled. Forewings narrow, elongate, of matt grey ground colour, occasionally with a greenish-brown touch; colour of forewing spots orange-yellow to dark orange. Spot 1 absent, spot 2 yellow-orange scaled on the vein, only surrounded by a translucent field, short kink at the base, thus reminiscent of a walking stick, stroke-like elongate along vein CuP towards spot 4, but never reaching the latter; spot 3 medium-small, punctual to elongate, thin white surrounded; spot 4 and 5, large, more quadratic, white surrounded; spot 6 smaller, round, less white surrounded; distances between spot pairs 3+4 and 5+6 nearly the same. On the underside there is a suffused wisp from the base to spot 5, red in red morphs, yellow in yellow morphs. Hindwings only translucent at the basal part and in and around the discoidal cell, the veins sometimes well covered with red scales, medium strong black surrounding along outer margin, slightly enlarged at apex and with terminal 'tooth' at beginning of anal field, thinner from tornus on to the base.

**Remarks:** This is the first record of unimodal polymorphism (HOFMANN & TREMEWAN 2017: 382) in the genus *Neurosymploca*. Apparently yellow morphs of both sexes occur in several or even many populations in this area but in variable frequencies. The frequency of yellow morphs derived from larvae found in the wild near Hoegsback (around 850 m) was 50%, lower down near Alice and Bedford and higher up in the vicinity of the Nico Malan Pass (1100–1200 m) it was ca. 20%. The populations from lower altitudes around Alice (550 m) and Bedford (750 m) are more translucent. The colour of the red morphs in all these populations is warmer, more orange than in the nominotypical subspecies. Moreover, in an ab-ovo culture the subsequent F1-generation contained a third morph of orange instead of red or yellow colour. Yellow morphs are not recorded from nominotypical populations in northern South Africa (provinces Limpopo and Gauteng); yellow morphs are also absent (or in very low frequency) in the melanistic-translucent populations in and around the Great Swartberg and in the Little Caroo (*sesioides* nov.ssp.).

**Larval host-plants:** Larvae are found in the wild on *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES. and *G. buxifolia* (L.) SZYSZYL.; other spiny Celastraceae species of the genera *Gymnosporia* (*G. polyacantha* (SOND.) SZYSZYL., *G. senegalensis* (LAM.) LOES.) and *Putterlickia* (*P. cf. pyracantha* (L.) SZYSZYL., *P. verrucosa* (E. MEY. ex SOND.) SZYSZYL.) were accepted in captivity, while non-spiny Celastraceae species of the genera *Maytenus*, *Pterocelastrus* and *Cassine* were strictly refused (A. Hofmann, unpubl.).

***Neurosymploca kruegeri* HOFMANN, nov.sp.**

(Figs 28–30)

**Holotypus:** ♂, 26 mm, [white label]: "S. Afr.: CP, Richtersveld, Omsberg Water, 28°27'S 17°10'E, 21.IX.1991, M. Krüger legit"; [white label] "coll. Naumann"; [red label]: "PARATYPUS, *Neurosymploca concinna extremata* subsp. n., coll. Clas Naumann", [green label]: "HOLOTYPUS ♂, *N. kruegeri* spec. nov., [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** 3 ♂♂, data as holotypus, coll. ZFK; ibidem, 2 ♂♂, coll. HOF; 28 ♂♂, 1 ♀, coll. DMP.

**Etyymology:** Dedicated to its discoverer Dr Martin Krüger (Pretoria).

**Description:** Species of medium size, ♂♂ 25–27 mm, only one female known. Head with appendices (antennae, proboscis) black, labial palpi pale yellow scaled, yellow patch posterior of the eyes present, anterior patch rudimentary or absent. Thorax black with discretely contrasting coloured elements; instead of collar just two orange patches present laterally on parapatagia, medial parts of parapatagia and patagia black; yellow scales at the posterior half of the tegulae, metathorax without coloured scales. Legs off-white, beige scaled, inner side darker grey-black, femur of midlegs and hindlegs more intensive beige coloured. Abdomen black with red abdominal half-cingulum on three segments in males and on two in the female, comprising black anterior mediodorsal spots on each segment, forming an interrupted mediodorsal line; half-belt on the ventral side open, ventral dark brownish grey, anal tip and coremata yellowish. Forewings narrow, elongate, brownish-olive-grey; colour of forewing spots matt yellow, forewing spots small, only very thin with few white scales surrounded (if at all), spot 1 absent, spot 2 yellow scaled with small short kink at the base, stroke-like elongate along vein CuP; spot 3 very small, punctual, not surrounded; spot 4 and 5 larger, narrow, comma-like, standing, with few white scales surrounded; spot 6 small like spot 3, round, with few white scales and darker ground colour scales at its border; distances between spot 3+4 slightly narrower than between 5+6. On the underside there is a suffused red area from the base to spot 5. Hindwings red with small translucent area at the base, strong black surrounding along outer margin, enlarged at apex and with pointed terminal 'tooth' at beginning of anal field, thinner from tornus on to the base.

**Remarks:** *Neurosymploca kruegeri* nov.sp., until now only known from the type-locality close to the border to Namibia, exhibits characters intermediate between *N. concinna* and *N. naumanniola* nov.sp. In fact, the traces of white surroundings may indicate a closer relationship to *N. concinna*. This character is exclusively found in the latter, while it is black in all other *Neurosymploca* species. The next populations geographically of *N. naumanniola* nov.sp. which occur around 200 kilometres further southeast in the vicinity of Kamieskron (Figs 31–33:) do not show a phenotypic similarity towards *N. kruegeri* nov. sp.

**Larval host-plants:** unknown.



***Neurosymploca naumanniola* HOFMANN, nov.sp.**

(Figs 16–27, 48, 49, 55, 63–69)

**H o l o t y p u s :** ♂, 25 mm, [white label]: "South Africa, Western Cape, Welgemoed E, Tygerberg, [28/26], 320 m, [28/16], e.l., e.p.: A.–M.3.2016, (*Gymnosporia* sp.), leg/cult A. Hofmann"; [green label]: "HOLOTYPUS ♂, *N. naumanniola* spec. nov. [handwritten A. Hofmann], A. Hofmann Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**P a r a t y p e s :** 2 ♀♀, data as holotypus, coll. HOF; 3 ♂♂, 1 ♀♀, ibidem, but e.p.: 25.3.–8.4.2016, coll. HOF; ♂♂, ♀♀, "SOUTH AFRICA, S. W. Cape, Durbanville NR, ex *Maytenus heterophylla* bred, cult. H. GEERTSEMA", e.p.: I.–XII. 1989, coll. HOF, CMN, ZFK; 4 ♂♂, 1 ♀, "SOUTH AFRICA, S. W. Cape, Durbanville NR, ex *Putterlickia pyracantha* bred, cult. H. GEERTSEMA", e.p.: I.–XII. 1989, coll. HOF, CMN, ZFK; ♂♂, ♀♀, "REP. SOUTH AFRICA, Western Cape Province, Durbanville Nat. Res., 100–200 m" e.o., e.p.: 1983, 1985, cult. C. M. Naumann, coll. HOF, CMN, ZFK; ♂♂, ♀♀, "REP. SOUTH AFRICA, Western Cape Province, Durbanville Nat. Res., 100–200 m" e.o., e.p.: 1988, 1989, cult. C. M. Naumann, coll. HOF, CMN, ZFK; ♂♂, ♀♀, Western Cape Province, "Tygerberg", Malmesbury S, 100 m, e.o., e.p.: 1988, 1989, cult. H. Seipel, coll. HOF. Available for comparison and included into the type series are further populations on the Cape Peninsula, west and southwest of Cape Town (♂♂, ♀♀, in series from Devils Peak, Camps Bay, Blinkwater stream, Lion's Head, Signal Hill, Little Glen, Fresnaye, Kalk Bay, Muizenberg, Kirstenbosch, leg. C. M. Naumann, leg. H. Geertsema, in coll. HOF, in coll. ZFK) and from the fynbos sanddune-habitats north of Cape Town (♂♂, ♀♀, in series from Haakgat, Bloubergstrand, Melkbosstrand, Ou Skip vic., Brackenfell; leg. A. Hofmann, coll. HOF).

**R e f e r a b l e** to *Neurosymploca naumanniola* nov.sp. but not included into the type series of the nominotypical subspecies are populations from Gansbaai S, Danger Point (5 m, 20.11.2009, leg. J. KLIR) and the populations near Yzerfontaine and Saldanha Bay. Theses populations, and especially those from further north until Elandsbaai, Leipoldville and Lamberts Bay, exhibit phenotypic tendencies towards *aurora* nov.ssp.

**E t y m o l o g y :** For Clas M. Naumann; the affix-*iola* is a hint to Clas' dedication and creation of the genus *Weissmanniola* NAUMANN, 1971 (Synanthedonini, Sesiidae).

**D e s c r i p t i o n :** Species of medium size, ♂♂ 21–25 mm, ♀♀ 22–26 mm (based on specimens ex larva), larger when based on specimens found in the wild (♂♂ 23–25 mm, ♀♀ 24–30 mm); similar to *N. concinna* but instead of white surrounded, yellow forewing spots *N. naumanniola* nov.sp. exhibits red spots which are black bordered. Head with appendices (antennae, proboscis) black to bluish grey, labial palpi red to orange-red scaled, two red patches posterior and anterior of the eyes present, anterior patch triangular, larger than posterior more quadrate patch. Thorax mid grey, bluish grey or grey-black with contrasting red to pinkish-red elements; instead of collare just two red patches present laterally on parapatagia, medial parts of parapatagia and complete patagia grey; red scales at the posterior half of the tegulae, metathorax with red scales at the tip. Legs dark grey to bluish black, inner side darker, femur of midlegs and hindlegs strongly pinkish-red coloured, in foreleg often only red traces. Abdomen dark grey to bluish black with red abdominal half-cingulum on three segments in males (Figs 55, 63:) and on two in females (Figs 64, 69:), with black transversal v- or y-shaped elements, mediodorsally interrupting the red cingulum (Fig. 63:); ventrum black, half-belt on the

ventral side open with only two very thin lines at the posterior end of two segments (Fig. 55:), anal tip and coremata red. Forewings narrow, elongate, grey to bluish grey, lighter than abdomen; colour of forewing spots red to karmin-red, darker than abdominal belt, forewing spots small, all of which with pronounced black scales surrounded, strong in spots 3, 4 and 5, less strong in spot 2 and thin in spot 6; spot 1 absent, spot 2 stroke-like elongate along vein CuP with small short kink at the base; spot 3 small, punctual; spot 4 and 5 larger, spot 4 comma-like, vertically standing, broadly black surrounded, occasionally divided into two attached spots; spot 6 small like spot 3, round, with few black scales at its border; ca. same distances between spot pairs 3+4 and 5+6; on the underside two suffused red strokes, one costal from the base nearly to spot 5, the lower to spot 4. Hindwings lighter red than forewing spots with small translucent area at the base, strong black surrounding, darker than forewing colour, along outer margin, enlarged at apex and with rounded terminal 'tooth' at beginning of anal field, thinner from tornus on to the base.

**Remarks:** Doubtlessly this species is the confused *Neurosymploca caffra* sensu GAEDE (see HOFMANN 2017: Fig. 17:), a wrong taxonomic decision that was based on the specimen with the stroke-like basal spot in the Linnaean collection. *Neurosymploca naumanniola* nov.sp. is widely distributed in the Western Cape Province from Swellendam and De Hope Nature Reserve on the Pacific side in the east, to the Cape Peninsula and along the dune fynbos region in the Atlantic side to Kamieskron in the Northern Cape Province. The species exhibits well distinguishable phenotypic peculiarities (see below).

**Larval host-plants:** Larvae are found on *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES., *G. buxifolia* (L.) SZYSZYL., and *Putterlickia* cf. *pyracantha* (L.) SZYSZYL. (A. Hofmann, H. Geertsema, unpubl.); few observations on *Cassine peragua* L.; several spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were accepted in captivity; (A. Hofmann, unpubl.).

***Neurosymploca naumanniola vanrhynsdorpi* HOFMANN, nov.ssp.**

(Figs 22–24, 49, 64, 65, 67, 69)

**Holotypus:** ♂, 22 mm, [white label]: „South Africa, Western Cape, Nieuwoudtville W, Van Rhyns pass, 640-750 m, [9/15], e.l., e.p.: 13.2.–24.3.2015, leg/cult. A. & K. & T. Hofmann"; [green label]: "HOLOTYPUS ♂, *N. kushaica vanrhynsdorpi* ssp. nov. [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** 4 ♂♂, 3 ♀♀, data as holotypus, coll. HOF; 2 ♂♂, 7 ♀♀, ibidem, but e.p.: 5.2.–20.3.2016, coll. HOF; 10 ♂♂, 5 ♀♀, ibidem, but ex CV160216, e.p.: 11.5.–25.6.2016, coll. HOF.

**Etymology:** After the type-locality near Vanrhynsdorp (Western Cape Province, South Africa).

**Description and remarks:** Relatively small subspecies, ♂♂ 18–22 mm, ♀♀ 21–23 mm (based on moths cult. ex larva; moths in the wild probably slightly



larger) with characters as in the nominotypical subspecies (see above) but much more extended translucent field on the hindwings, mostly from the wing base to the black border at the outer margin and in the majority of specimens with different coloured fore- and hindwings. While the red colour of the hindwings is of the same intensity as that of the nominotypical subspecies, the forewing spots in *N. naumanniola vanrhynsdorpi* nov.ssp. are in the majority of specimens not red or karmin-red but orange or orange-brown (Figs 49, 64, 67, 69). The coloured elements on the thorax normally remain red but can also be warmer red or orange while the abdominal cingulum is not involved in the change of colour and remains always red. This interesting genetic form was found until now only in the population on the west side of the Vanrhyns pass. Collecting half to fully grown larvae at 20. and 21.1.2015 provided exclusively moths in both sexes of this orange form (5 ♂♂, 3 ♀♀), while the following year (19.1.2016) red (2 ♂♂, 3 ♀♀) and orange (4 ♀♀) forms were received from larvae found in the wild. It can be assumed that this form of allelomorphism is controlled by a single gene with red dominant against orange. The frequency of heterozygous specimens (red/orange) in the wild is probably high as a subsequent culture (ab ovo ex CV160216: red ♂ x ♀ orange) resulted in both forms (red: 6 ♂♂, 1 ♀♀; orange: 4 ♂♂, 4 ♀♀), hence the red ♂ (with dominant red allele) was heterozygous.

**Larval host-plants:** Larvae are found on *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES.; other spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were accepted in captivity (A. Hofmann, unpubl.).

### ***Neurosymploca naumanniola aurora* HOFMANN, nov.ssp.**

(Figs 19–21)

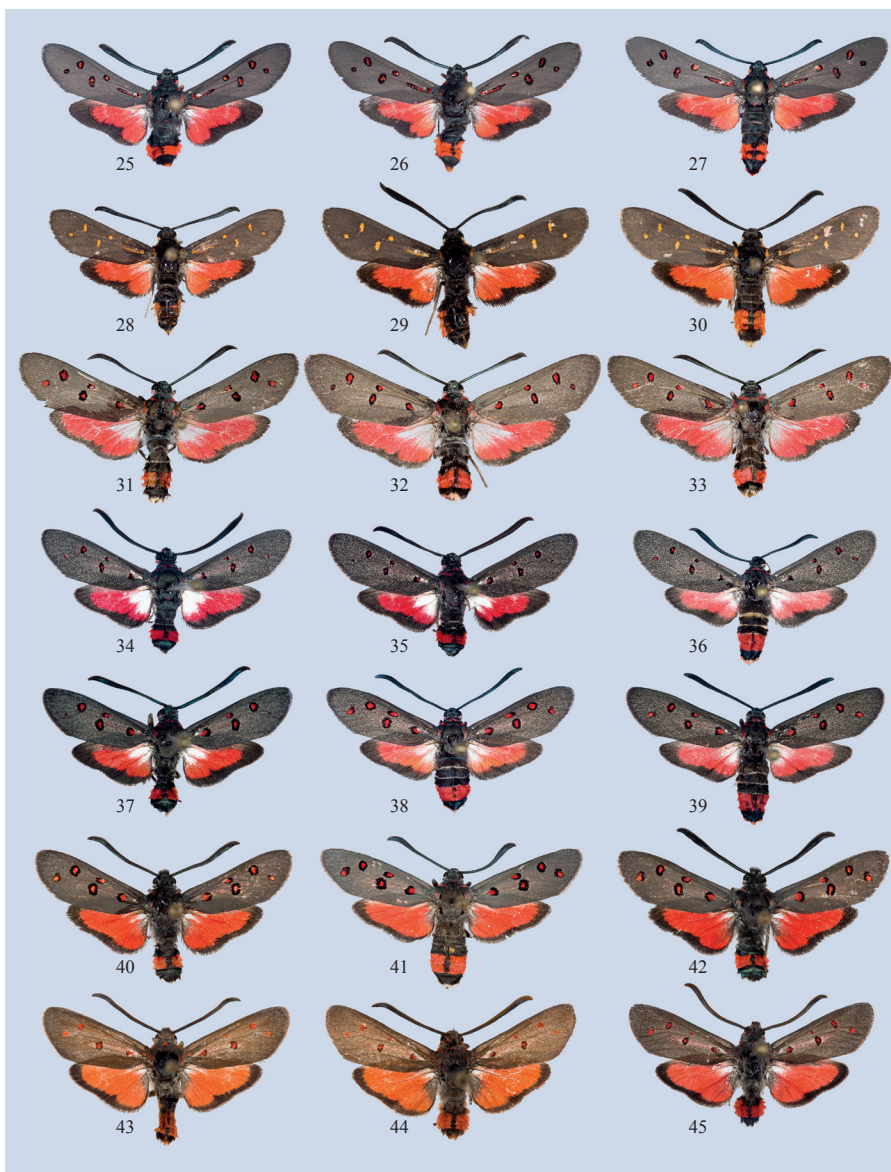
**Holotypus:** ♂, 23 mm, [white label]: „South Africa, Western Cape, Aurora NE via Mount Mist, 520 m, [6/15], e.l., e.p.: 25.2.–26.4.2015, leg/cult. A. & K. & T. Hofmann"; [green label]: "HOLOTYPUS ♂, *N. naumanniola aurora* ssp. nov. [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** 3 ♂♂, 1 ♀, data as holotypus, coll. HOF; 6 ♂♂, „South Africa, Western Cape, Aurora SE, 45–50 m, [5/15], e.l., e.p.: 25.2.–13.4.2015, leg/cult. A. & K. & T. Hofmann", coll. HOF.

**Ety m o l o g y:** After the type-locality near Aurora (Western Cape Province, South Africa).

Footnote continuing from p. 353

**Figs 37–39:** *N. kushaica ad sani* nov.ssp. (South Africa: Western Cape, Wellington E, Bainskloofpass SW, [18/15], 550–700 m, e.l., e.p.: 16.2.–21.3.2015, leg/cult. A. & K. & T. Hofmann); **Figs 40–42:** *N. kushaica* nov.sp. (Fig. 40, holotype, Figs 41, 42: paratypes, data as for holotype). **Figs 43–45:** *N. geertsemai* nov.sp. (Fig. 43, holotype, Fig. 44, paratype, data as for holotype; Fig. 45, paratype, South Africa: Western Cape, Cape Town S, Muizenberg, Bailey's Kloof, 120–210 m, [1/15], e.l., e.p.: 8.–27.2.2015, leg/cult. A. & K. & T. Hofmann); for original size see holotypus. *Photos:* A. Hofmann.



**Plate II, Figs 25–45, species of the genus *Neurosymploca* WALLENGREN, 1858 (II).** (specimens enlarged, for original size see holotypus). **Figs 25–27, *N. naumanniola kamieskronensis* nov.sp.** (Fig. 15, holotype, Figs 26, 27, paratypes, data as for holotype). **Figs 28–30, *N. kruegeri* nov.sp.** (Fig. 28, holotype, Figs 29, 30, paratypes, data as for holotype). **Figs 31–33, *N. dukeorum* nov.sp.** (Fig. 31, holotype, Figs 32, 33, paratypes, data as for holotype). **Figs 34–43, *N. kushaica* nov.sp.** (Fig. 34, holotype, Figs 35, 36, paratypes, data as for holotype). **Figs 34–36, *N. kushaica sani* nov.sp.** (Fig. 34, holotype, Figs 35, 36, paratypes, data as for holotype).

Footnote continuing: see bottom p. 352

**Description and remarks:** Relatively small subspecies, ♂♂ 19–23 mm, ♀ 23 mm (based on moths cult. ex larva; moths in the wild probably slightly larger) with characters as in the nominotypical subspecies (see above) but more melanistic phenotype with less red densely scaled hindwings, widely enlarged translucent field and broader black surrounding; ground colour of the forewings darker grey, red spots small, only weakly contrasting. Coloured thoracic elements discrete. *Neurosymploca naumanniola aurora* ssp. nov. differs from *N. naumanniola vanrhynsdorpi* nov.ssp. by the absence of specimens with orange coloured forewing spots, a form which characterizes the population from Vanrhyns pass.

**Larval host-plants:** Larvae are found on *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES.; other spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were accepted in captivity (A. Hofmann, unpubl.).

***Neurosymploca naumanniola kamieskronensis* HOFMANN, nov.ssp.**

(Figs 25–27, 66)

**Holotypus:** ♂, 21 mm, [white label]: „South Africa, Northern Cape, Kamieskron E, [4/16], 870–900 m, e.l., e.p.: 24.2.–8.3.2016 (*Gymnosporia* sp.), leg/cult. A. Hofmann"; [green label]: "HOLOTYPUS ♂, *N. naumanniola kamieskronensis* ssp. nov. [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** 1 ♂, 3 ♀♀, data as holotypus, coll. HOF.

**Etymology:** After the type-locality near Kamieskron (Northern Cape Province, South Africa).

**Description and remarks:** Medium to small subspecies, ♂♂ 21–23 mm, ♀♀ 24–28 mm (based on moths cult. ex larva; moths in the wild probably slightly larger) with characters as in the nominotypical subspecies (see above) but with darker grey ground colour on the forewings, reduced red spots that are broader black surrounded and only very weakly contrasting with the ground colour; labial palpi warmer red (Fig. 66); spot 6 in the majority of specimens is very small, in ♂♂ often reduced to a little black dot; black border of hindwings broader and wider enlarged at apex; the red colouration is more bluish, colder. Coloured elements on head and thorax reduced, very discrete. *Neurosymploca naumanniola kamieskronensis* nov.ssp. differs from the other subspecies described above by the absence of translucent tendencies.

With the new record from the vicinity of Kamieskron the range of *N. naumanniola* nov. sp. extends far north into the Succulent Karoo, the type-locality only being around 130 kilometres south of the territory of Namibia. All other sites of this species are situated within the Fynbos biome.

**Larval host-plants:** Larvae are found on *Gymnosporia heterophylla* (ECKLON & ZEYHER) LOES.; other spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were accepted in captivity (A. Hofmann, unpubl.).

***Neurosymploca geertsemai* HOFMANN, nov.sp.**

(Figs 43–45, 50, 70–73)

**Holotypus:** ♂, 23 mm, [white label]: „REP. SOUTH AFRICA, Western Cape Province, 6 km N Bloubergstrand, alt. 5–15 m NN, 29.IX.1982, leg. H. Geertsema, coll. Naumann", [whitish label]: "Bloubergstrand, 29. IX. 1982, H. Geertsema"; [red label]: "PARATYPUS, *Neurosymploca geertsemai* Vari & Naum. [handwritten C. M. Naumann], coll. Clas Naumann"; [green label]: "HOLOTYPUS ♂, *Neurosymploca geertsemai* nov. spec. [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** "Bloubergstrand: 1 ♀, REP. SOUTH AFRICA, Bloubergstrand, 9-XI-1975, leg. H. GEERTSEMA", coll. Transvaal Museum Pretoria; 1 ♀, "REP. SOUTH AFRICA, Western Cape Province, 6 km N Bloubergstrand, 10 m, 24-XI-1983, leg. H. Geertsema, coll. Naumann"; 5 ♂♂, 3 ♀♀, "REP. SOUTH AFRICA, Western Cape Province, vic. Cape Town, 6 km N Bloubergstrand, alt. 5–15 m NN, 16-X-1983, leg. Naumann & Rammert, Coll. Nr. 2125, coll. Naumann"; 1 ♂, ibidem, e. l., 28-XI-1983, coll. Naumann; 1 ♂, "REP. SOUTH AFRICA, Western Cape Province, 6 km N Bloubergstrand, 10 m, 20-V-1984, leg. H. Geertsema, coll. Naumann"; 1 ♀, "REP. SOUTH AFRICA, Western Cape Province, 6 km N Bloubergstrand, 10 m, 4-VIII-1984, leg. H. Geertsema, coll. Naumann" [on one pin together with cocoon]; 2 ♂♂, 3 ♀♀, "Südafrika, Western Cape Bloubergstrand N, Haakgat vic. 6–8 m, [4/14], e. l., e.p.: 16.8.2014, leg. & cult. A. Hofmann" coll. HOF; 1 ♂, ibidem, [2/15], e.p.: 19.3.2015, coll. HOF; 1 ♂, 1 ♀, ibidem, e.p.: 26.3.2016; 3 ♂♂, "Südafrika, Western Cape Melkbosstrand, Ou Skip vic., 12–14 m, [5/14], e. l., e.p.: 11.4.2014, leg. & cult. A. Hofmann" coll. HOF; 1 ♂, ibidem, e.p.: 8.–13.9.2014, coll. HOF; 1 ♂, 1 ♀, ibidem, e.p.: 27.–30.3.2016, coll. HOF; 3 ♂♂, "REP. SOUTH AFRICA, Western Cape Province, Yzerfontein, 23. X. 1984, leg. H. Geertsema, coll. Naumann"; 1 ♂, ibidem, 24. III. 1984; 1 ♂, ibidem, 26. III. 1984; 1 ♂, 1 ♀, ibidem, 30. IX. 1984; 1 ♂, ibidem, 21. X. 1984; 1 ♀, ibidem, 26. X. 1984; 1 ♀, ibidem, 14. X. 1984; 1 ♀, ibidem, 15. III. 1984; 1 ♀, ibidem, 26. X. 1984; 1 ♀, ibidem, 10. X. 1984; 1 ♀, ibidem, 30. IX. 1984; 1 ♀, ibidem, 12. VIII. 1984 [on one pin together with cocoon]; 1 ♂, "REP. SOUTH AFRICA, Western Cape Province, Yzerfontein, alt. 5–15 m NN, e. l., 26. I. 1985, leg. C. Naumann, Coll. Nr. 2181, coll. Naumann"; 1 ♂, ibidem, e. l., 18. I. 1985; 1 ♂, ibidem, e. l., 19. I. 1985; 2 ♂♂, ibidem, e. l., 20. I. 1985; 1 ♀, ibidem, e. l., 10. I. 1985; 1 ♀, ibidem, e. l., 2. II. 1985; 1 ♀, ibidem, e. l., 30. I. 1985, coll. ZFK.; 8 ♂♂, 7 ♀♀, RSA: Western Cape, Elandsbai S, 10 m, e.l., e.p.: 14.–30.3.2016, leg/cult. A. Hofmann, coll. HOF.; r e f e r a b l e to *Neurosymploca geertsemai* nov.sp. but slightly differing from specimens around the type-locality are populations from the Cape Peninsula, viz. from Muizenberg (2 ♂♂, "REP. SOUTH AFRICA, Western Cape Province, vic. Cape Town: Muizenberg, alt. 50–100 m NN, 20-X-1983, lg. Naumann, Nr. 2132, coll. Naumann"; 3 ♀♀, ibidem, e.l. 18.–22. XI. 1983; 1 ♀, ibidem, e.l. 20.I.1984 (*Cassine peragua*); 1 ♀, Western Cape, vic. Muizenberg, 6.X.1990, leg. A. Brinkmann, coll. Naumann"; 1 ♂, 1 ♀, RSA: Western Cape, Cape Town S, Muizenberg, Bailey's Kloof, 200 m, e.l., e.p.: M.3.2016, leg/cult. A. Hofmann, coll. HOF); Kirstenbosch ("1 ♂, Kirstenbosch, 22.10.83, T. Pittaway, coll. HOF"; 5 ♂♂, 4 ♀♀, RSA: Western Cape, Cape, Clencairn W., Jonkersdam, 170 m, e.l., e.p.: 7.3.–7.4.2015, leg/cult. A. Hofmann, coll. HOF; 1 ♂, 1 ♀, RSA: Western Cape, Cape, Clencairn W., Brakkloofrand, 160 m, e.l., e.p.: 23.3.–5.4.2015, leg/cult. A. Hofmann, coll. HOF; 1 ♂, 1 ♀, RSA: Western Cape, Cape, Simons Town W., 210 m, e.l., e.p.: 24.–29.3.2015, leg/cult. A. Hofmann, coll. HOF; 2 ♂♂, 1 ♀, RSA: Western Cape, Cape, Constantia Nek, 340 m, e.l., e.p.: M.3.2016, leg/cult. A. Hofmann, coll. HOF; 2 ♂♂, 2 ♀♀, RSA: Danger Point, 5 m, 20.11.2009, leg. J. Klir, coll. HOF; ♂♂, ♀♀, ibidem, coll. J. Klir.

**E t y m o l o g y :** The new species was labelled by CMN and dedicated to his colleague and friend Professor Dr Henk Geertsema (Stellenbosch, RSA).

**D e s c r i p t i o n :** Medium to small species, ♂♂ 19–23 mm, ♀♀ 21–27 mm (mainly based on moths cult. ex larva; moths in the wild probably slightly larger). Head large, larger than in other *Neurosymploca* species, hairy, brownish to brownish-grey coloured, thorax and abdomen of same colouration; head and thorax with only weakly, less sharply contrasting reddish elements, viz. labial palpi whitish-pinkish, pinkish setae at the base of antennae and anterior and posterior of the eyes, antennae brownish anthracite. Thorax: red patagia thin, medial stronger, parapatagia dorso-medial wide open, laterally well developed, tegulae distal pinkish bordered, a thin pinkish line often continuing over meso- and metathorax; legs grey, whitish, femur reddish. Abdomen with well-developed red half-cingulum on three segments in males, and over two in females, mediodorsal by dark brownish-grey scales interrupted, ventral open, ventrum of abdomen whitish with discrete pinkish touch. Forewings broad, broader than in other *Neurosymploca* species, ground colour brownish to brownish grey, interspersed with whitish-grey scales especially at the apex and outer margin, and six (!) small, isolated red spots; colour of forewing spots and hindwings warm red, not pinkish, warmer than thoracic elements, except spot 1, rudimentary indicated by few pinkish scales at the base of wings, spot 2 warm red, larger, triangular, distal black terminated, spot 3 small, round, distal with few black scales, spot 4 largest, quadrangular, strongly black bordered, spot 5 shaped and in size like spot 3, but stronger black bordered, spot 6 smallest, occasionally proximal with black scales half-bordered; spots 3 and 4 significantly closer to each other than spots 5 and 6; in freshly emerged individuals a peculiar white band, consisting of dispersed white scales, often occurs as a broad, not sharply terminated elongate "cloud" from spot 2 towards 4 and further. Basal half of forewings on the underside greyish or greyish-golden, spots more suffused and not black terminated, a suffused red stroke from the base towards spot 6 well developed. Hindwings also broader than in other *Neurosymploca* species, more triangular than elongate; warm red with only very small, or even absent, translucent area at the base, strongly black-brown surrounding, sharply terminated, only slightly enlarged at apex and with rounded terminal 'tooth' at beginning of anal field, thinner from tornus on to the base.

**R e m a r k s :** Easily distinguishable from all other *Neurosymploca* species by at least two unique characters in the adult phenotype, viz. brown or brownish ground colour on the forewings (instead of grey or anthracite) and a whitish stroke from the base towards spot 4 (Fig. 70). All specimens were found at a few coastal-near sites within a small area in the Dune and lower Mountain Fynbos region of the Western Cape Province between Elandsbaai in the northwest and Danger Point (5 m, 20.11.2009, leg. J. Klir) in the southeast. Muizenberg is a locality south of Cape Town while Bloubergstrand and Yzerfontein are located to the north-west. The single specimen from Kirstenbosch is significantly darker, with very small, nearly black forewing spots and very broad hindwing border.

**L a r v a l h o s t - p l a n t s :** Larvae are found on *Pterocelastrus tricuspidatus* (LAM.) WALP., *Cassine peragua* L., *Putterlickia* sp. and *Maytenus oleoides* (LAM.) LOES.; in captivity *Cassine* sp. and several spiny Celastraceae species of the genera *Gymnosporia* and *Putterlickia* were accepted (A. Hofmann, unpubl.).





**Plate III, Figs 46–53, head and thorax with coloured elements of herein described new taxa (selection).** **Figs 46, 47, *N. concinna*** (Fig. 46, subsp. *concinna*, RSA: Limpopo, Pietersburg ca. 30 km N., 1,350 m, e.l., 12.3.2014; Fig. 47, subsp. *dimorpha* nov.ssp., RSA: Eastern Cape, Alice 5 km E., 550 m, F2, 3.6.2014). **Figs 48, 49, *N. naumanniola* nov.sp.** (Fig. 48, subsp. *naumanniola* nov.ssp., RSA: Western Cape, Bloubergstrand N., Haakgat vic., 5 m, e.l., 15.5.2014; Fig. 49, subsp. *vanrynsdorpi* nov.ssp., RSA: Western Cape, Van Rhyns pass, 640 m, e.l., 6.2.2016). **Fig. 50, *N. geertsemai* nov.sp.** (data as for Fig. 48, e.l., 4.6.2014). **Figs 51, 52, *N. kushaica* nov.sp.** (Fig. 51, subsp. *kushaica*, RSA: Western Cape, Wellington E., Bainskloofpas SW., 650 m, e.l., 23.3.2015; Fig. 52, subsp. *sani* nov.ssp., RSA: Western Cape, Piketberg W., Versfeld pass, 650 m, e.l., 7.3.2016). **Figs 53, *N. dukeorum* nov.sp.** (RSA: Western Cape, Clanwilliam NE., Pakhuis pass vic., 730 m, e.l., 26.6.2014); (photographs of living moths). *Photos: A. Hofmann.*

### Taxonomic remark

The following species and populations were exclusively found on non-spiny Celastraceae of the genus *Maytenus*, in the majority on *M. oleoides* (LAM.) LOES.; in captivity all these larvae without exception refused to feed on spiny Celastraceae (*Gymnosporia* spp., *Putterlickia* spp.); this fact in combination with some phenotypical and genitalia morphological characters may fit well with the subdivision into two subgenera of which the following would be *Callosymploca* VARÝ (with *Sphinx caffra* as the type-species), while *Neurosymploca concinna* is the designated type of the genus (and subgenus) *Neurosymploca*; however, the positions of some species (e.g. *N. hottentota*, *N. geertsemai*) remain unclear, as their characters cannot be assigned with certainty to particular subgenera.



**Plate IV, Figs 54–57, ventral side of abdomen of herein described new taxa (selection).** Fig. 54, *N. concinna sesioides* nov.sp. (RSA: Western Cape, Oudtshoorn S., Zebra vic., 550 m, e.l., 1.3.2016). Fig. 55, *N. naumanniola* nov.sp., male moth in thanatosis (RSA: Western Cape, Lambertsbaai 16 km ESE., 100, e.l., 7.10.2016). Fig. 56, *N. kushaica* nov.sp. (RSA: Western Cape, Paarl E., Du Toits Kloof pass, 780 m, e.l., 24.2.2016). Fig. 57, *N. dukeorum* nov.sp. (data as for Fig. 53); (photographs of living moths). Photos: A. Hofmann.

***Neurosymploca kushaica* HOFMANN, nov.sp.**

(Figs 34–42, 51, 52, 56, 75, 76)

**Holotypus:** ♂, 25 mm, [white label]: „REP. SOUTH AFRICA, Western Cape Province, vic. Cape Town, Orange Kloof, 200–400 m, 19.12.84, leg. C. Naumann, Coll. Nr. 2185, coll. Naumann"; [red label]: "PARATYPUS, *Neurosymploca atomarina* Vari & Naum. [handwritten C. M. Naumann], coll. Clas Naumann", [green label]: "HOLOTYPE ♂, *N. kushaica* spec. nov., [handwritten A. Hofmann], A. Hofmann", reared on *Maytenus oleoides* (LAM.) LOES.. Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** ♂♂, ♀♀, data as holotypus, coll. HOF, coll. ZFK; ♂♂, ♀♀, ibidem, e.l., e.p.: 2014, 2015, coll. HOF, ZFK; ♂♂, ♀♀, RSA: Western Cape, Wellington E, Bainskloofpas SW, 550–700 m, e.l., e.p.: 2015, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, RSA: Western Cape, Cerres vic., 460–500 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, RSA: Western Cape, Cape, Constantia Nek, 280–350 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, RSA: Western Cape Province, Table Mountain, Devil's Peak, 400–500 m, e.l., e.p.: 2.1985, cult. C. M. Naumann, coll. ZFK; ♂♂, ♀♀, RSA: Western Cape, Paarl E, Du Toits Kloof pass W., 450–550 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, RSA: Western Cape, Cape, Constantia Nek, 280–350 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, RSA: Western Cape, Franschhoek E, Pass E., 560–



570 m, leg/cult. A. Hofmann, coll. HOF; 3 ♂♂, 4 ♀♀, South Africa: Western Cape Province, vic. Frenschoek, Frenschoek pass, 600–800 m, e.l., e.p.: 24.11.–22.12.1983, cult. C. M. Naumann, coll. ZFK; 4 ♂♂, 3 ♀♀, RSA: SW Cape, Stellenbosch, Jonkershoek, 8. 1988, leg. H. Geertsema, coll. ZFK. Transitional to subsp. *sani* ssp.nov. are the following populations: ♂♂, ♀♀, South Africa: Western Cape, Citrusdale ESE, Middelberg Pass W., 950–1000 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, South Africa: Western Cape, Cedarberg, Driehoek, Gabrielspas, 1000–1100 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, South Africa: Western Cape, Cedarberg, Driehoek vic., 900–980 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, RSA: Western Cape, Citrusdale NE, Uitkykpas NW., 600–650 m, leg/cult. A. Hofmann, coll. HOF.

**E t y m o l o g y :** For my son Kusha Charles and in memory of our first common field tour to South Africa in 2015.

**D e s c r i p t i o n :** Species of medium size, ♂♂ 19–25 mm, ♀♀ 22–27 mm. Head grey, anthracite black, with black to bluish grey antennae and brownish black proboscis, labial palpi off-white or light pinkish white, two red patches, one posterior and one anterior of the eyes present, anterior patch triangular, smaller than posterior more longitudinal patch. Thorax mid grey, bluish grey or grey-black with contrasting red to pinkish-red elements; instead of collare just two red patches present medial on parapatagia, medial parts of patagia dark grey; red scales at the tip of the tegulae, metathorax with very thin slightly indicated pinkish border. Legs whitish-grey, inner side darker, femur of midlegs and hindlegs strongly off-white with pinkish touch. Abdomen dark grey to bluish black with red abdominal half-cingulum only on two segments in both sexes, mediodorsal with black interrupting; red colour warmer than on thoracic elements; ventrum off-white with pinkish touch, red half-belt on ventral side open, anal tip and coremata pinkish white (Fig. 56). Forewings narrow, elongate, grey to dark bluish grey, lighter than abdomen; ground colour interspersed with white scales, at the apex enforced, occasionally over the whole wing except the most basal part and along the costa; colour of forewing spots dark red to karmin-red, darker as abdominal belt, forewings spots medium to small, all of which with pronounced black scales surrounded, strongest around spots 2, 4 and 5, less strong in spot 3 and thin in spot 6; spot 1 absent, spot 2 triangular to round, distal black bordered, at the base open; spot 3 small, punctual; spot 4 and 5 larger, comma-like, vertically standing, completely black surrounded; spot 6 small like spot 3, round, with few black scales at its proximal end; spots in pair 3+4 narrow, closer distanced than in 5+6; underside brownish-grey with broad, suffused red stroke from the base to spot 4, spots 5 and 6 separated, larger than on upperside but without black bordering. Hindwings carmine to medium red, densely scaled, translucent area (in nominotypical subspecies) reduced or absent; black surrounding darker than forewing colour, medium broad, only weakly enlarged at apex.

**R e m a r k s :** The nominotypical form inhabits the Cape Peninsula and adjacent hillsides. Populations along the escarpment are successively getting darker; those from the Cedarberg are referred to *sani* nov.ssp. The species is closely related to *N. dukeorum* nov.sp. but surely not conspecific as both species occur syntopically around the Pakhuis pass (Clanwilliam) and exhibit phenotypically distinct larvae (A. Hofmann, unpubl.).

**L a r v a l h o s t - p l a n t s :** Larvae are found on *Maytenus oleoides* (LAM.) LOES.; few observations on *Cassine schinoides* (SPRENG.) R.H. ARCHER; in captivity only species of the genus *Maytenus* were accepted (A. Hofmann, unpubl.).





**Plate VI, Figs 70–76.: Living moths of herein described new taxa (selection). Figs 70–73, *N. geertsemai* nov.sp.** (70, RSA: Western Cape, Cape Muizenberg, Bailey's Kloof, 150 m, e.l., 7.3.2015; 71, RSA: Western Cape, Constantia Nek, 300 m, e.l., 4.3.2016; 72, RSA: Western Cape, Bloubergstrand N., Haakgat vic., 5 m, e.l., 4.6.2014; 73, same data as for Fig. 72, 18.6.2014). **Fig. 74, *N. dukeorum* nov.sp.** (RSA: Western Cape, Clanwilliam NE., Pakhuis pass vic., 730 m, e.l., 26.6.2014). **Figs 75, 76: *N. kushaica* nov.sp.** (75, *sani* nov.ssp., RSA: Western Cape, Piketberg W., Versfeld pass, 600, e.l., 7.3.2016; 76, subsp. *kushaica*, RSA: Western Cape, Paarl E., Du Toits Kloof pass, e.l., 24.2.2016). *Photos: A. Hofmann.*

**Plate V, Figs 58–69.: Living moths of herein described new taxa (selection). Figs 58–62, *N. concinna*** (58, subsp. *concinna*, RSA: Limpopo, Pietersburg ca. 30 km N., 1,350 m, e.l., 8.3.2014; 59–61, *dimorpha* nov.ssp., RSA: Eastern Cape, Alice 5 km E., 550 m, F2, 3.6.2014; 59, ab. *flava*; 62, *sesioides* nov.ssp., RSA: Western Cape, Oudtshoorn S., Zebra vic., 550 m, e.l., 1.3.2016). **Figs 63–69, *N. naumanniola* nov.sp.** (63, subsp. *naumanniola*, red/red form, RSA: Western Cape, Cape Town S, Muizenberg, Bailey's Kloof, 200 m, e.l., 12.3.2016; 64, *vanrhynsdorpi* nov.ssp., orange/red form, RSA: Western Cape, Van Rhyns pass, 640 m, e.l., 20.2.2016; 65, *vanrhynsdorpi* nov.ssp., orange/yellow form, F2, 23.5.2016; 66, *kamieskronensis* nov.ssp., with orange labial palpi, RSA: Northern Cape, Kamieskron E., 900 m, e.l., 24.2.2016; 67, *vanrhynsdorpi* nov.ssp., orange forewing spots, pinkish thoracic elements, RSA: Western Cape, Van Rhyns pass, 640 m, e.l., 20.2.2016; 68, subsp. *naumanniola*, red forewing spots, red thoracic elements, RSA: Western Cape, Bloubergstrand N, Haakgat vic., 5 m, e.l., 25.8.2014; 69, *vanrhynsdorpi* nov.ssp., orange forewing spots, orange thoracic elements, RSA: Western Cape, Van Rhyns pass, 640 m, e.l., 26.2.2015). *Photos: A. Hofmann.*



***Neurosymploca kushaica sani* HOFMANN, nov.ssp.**

(Figs 34–39, 52, 75)

**H o l o t y p u s :** ♂, 21 mm, [white label]: „South Africa, Western Cape, Clanwilliam NE., Pakhuis pass vic., 730 m, [2/16], e.l., e.p.: 6.2.–26.3.2016, leg/cult. A. Hofmann", [green label]: "HOLOTYPUS ♂, *N. kushaica sani* ssp. nov. [handwritten A. Hofmann], A. Hofmann", reared on *Maytenus oleoides* (LAM.) LOES. Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**P a r a t y p e s :** ♂♂, ♀♀, data as holotypus, coll. HOF; 1 ♂, "Südafrika, Western Cape Clanwilliam NE, Pakhuis pass vic., 730 m, [3/14] e. l., e.p.: 20.3. 2014, leg. & cult. A. Hofmann", coll. HOF; 1 ♂, ibidem, e.p.: 23.5.2014, coll. HOF; 12 ♂♂, 2 ♀♀, "REP. SOUTH AFRICA, Western Cape Province, vic. Clanwilliam, Pakhuis Pass, 650–700 m NN, 25-X-1983, Nr. 2137, leg. Naumann & Rammert, coll. Naumann", coll.ZFK; 2 ♂♂, 1 ♀, ibidem, coll. HOF; 5 ♂♂, ibidem, e.l., e.p.: 26.12.1983–10.1.1984, cult. C. M. Naumann, coll. ZFK; ♂♂, ♀♀, RSA: Western Cape, Piketberg W., Versfeld pass, 560–620 m, leg/cult. A. Hofmann, coll. HOF; 2 ♂♂, 1 ♀, ibidem, 11. 1996, leg. H. Geertsema, coll. ZFK; ♂♂, ♀♀, RSA: Western Cape, Clanwilliam W., Graafwater E., 310–330 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, South Africa: Western Cape, Nieuwoudtville W, Van Rhyns pass, 640–750 m, leg/cult. A. Hofmann, coll. HOF; ♂♂, ♀♀, South Africa: Western Cape, Aurora NE, Mountain Mist, 710–780, leg/cult. A. Hofmann, coll. HOF.

**E t y m o l o g y :** There are several sites with historical rock art paintings of hunter-gatherer San people in the vicinity of the type-locality. The ancestors of the San or Bushmen are considered to have been the first inhabitants of South Africa.

**D e s c r i p t i o n a n d r e m a r k s :** Subspecies of same size nominotypical populations, ♂♂ 19–22 mm, ♀♀ 24–28 mm (based on moths from the wild; moths ex larva smaller) with general characters as in the nominotypical subspecies (see above) but with darker ground colour on the forewings and white scales more intensively interspersed; red spots reduced, broader black surrounded, surrounding often broader than red nucleus, only very weakly contrasting with the ground colour; spot 6 in the majority of specimens very small, in ♂♂ often reduced to a little black dot (Fig. 75) or absent; hindwings with translucent field at wing base, occasionally extended to one third of the red colouration, black border of hindwings broader and wider enlarged at apex; red colouration more bluish, colder; coloured elements on head and thorax reduced, more discrete.

**L a r v a l h o s t - p l a n t s :** Larvae are found on *Maytenus oleoides* (LAM.) LOES.; in captivity only species of the genus *Maytenus* were accepted (A. Hofmann, unpubl.).

***Neurosymploca dukeorum* HOFMANN, nov.sp.**

(Figs 31–33, 53, 57, 74)

**H o l o t y p u s :** ♀, 31 mm, [white label]: „REP. SOUTH AFRICA, Western Cape Province, vic. Clanwilliam, Pakhuis Pass, 1000 m, 2.XI.1999, 32°04'S/19°05'E, leg. Naum. Nr. 2416, coll. Naumann"; [red label]: "PARATYPUS, *Neurosymploca magnifica* sp. n. [handwritten C. M. Naumann], coll. Clas Naumann", [green label]: "HOLOTYPUS ♀, *N. dukeorum* spec. nov., [handwritten A. Hofmann], A. Hofmann". Deposited in coll. Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa).

**Paratypes:** 13 ♀♀, data as holotypus, coll. ZFK; 5 ♀♀, ibidem, coll. HOF; 2 ♂♂, "REP. SOUTH AFRICA, Western Cape Province, vic. Clanwilliam, Pakhuis Pass, 650-700 m NN, 25-X-1983, Nr. 2137, leg. Naumann & Rammert, coll. Naumann"; 1 ♂, ibidem, coll. HOF; 1 ♂, "Südafrika, Western Cape Clanwilliam NE, Pakhuis pass vic., 730 m, [3/14] e. l., e.p.: 26.6. 2014, leg. & cult. A. Hofmann", coll. HOF; 1 ♀, "Pakhuis Pass, CAPE, 17/10/82, N. J. DUKE", coll. DMP; 5 ♂♂, "Paleisheuvel, CAPE, 2/11/76, C. B. COTTREIL", coll. DMP; 1 ♀, "Rooiberg, Robertson, CAPE, 19/10/82, N. J. DUKE", coll. DMP.

**E t y m o l o g y :** Specimens were labelled by CMN and dedicated to his colleagues and friends the late Arthur J. and the late Neville J. Duke, the discoverers of this species.

**D e s c r i p t i o n :** Relatively large species, ♂♂ 27–29 mm, ♀♀ 30–37 mm. Head, thorax and abdomen dark grey to bluish black, antennae bluish anthracite, proboscis brownish black, pink elements on head and thorax well expressed, labial palpi tenderly pink, only one pink patch posterior of the eyes present, sickle-like behind the eyes ventrally reaching labial palpi, anterior patch absent, i.e. bluish black. Thorax mid grey, bluish grey with well contrasting pink elements; parapatagia only with traces of pink laterally, patagia strongly contrasting pink, only mediodorsal open; tegulae thin pink at the costa, broader at the dorsum, metathorax dark grey. Legs off-white, tenderly pink, inner side darker, femur of forelegs stronger pinkish. Abdomen dark grey to bluish anthracite, segmentation recognizable by off-white to pale yellow scales at the posterior end, transversally crossing dorsum; red to orange red abdominal half-cingulum only on two segments in both sexes, mediodorsally black interrupted; red colour warmer than on thoracic elements, not pinkish; ventrum off-white, pinkish tinged, red half-belt on ventral side open, anal tip and coremata pinkish white (Fig. 57). Forewings elongate, mid grey to light bluish anthracite, much lighter than abdomen; ground colour interspersed with white scales, at the apex enforced, occasionally over the whole wing except the most basal part and along the costa; colour of forewing spots dark red to karmin-red, darker as abdominal belt, forewing spots of medium size, all spots with pronounced black scales surrounded; spot 1 absent, spot 2 triangular, distal sharply and strongly black bordered, at the base narrowly open; spot 3 small, punctual, distally stronger bordered; spot 4 and 5 larger, comma- to triangular-like, vertically standing, broadly black surrounded; spot 6 small like spot 3, round, with few black scales at its proximal end; spots in pair 3+4 narrow, closer distanced than in 5+6; underside brownish-grey with broad, suffused red stroke from the base to spot 4, spots 5 and 6 separated, larger than on upperside but without black bordering. Hindwings medium red to orange red, densely scaled with small to medium translucent area at the base; black surrounding darker than forewing colour, brownish-grey, surrounding relatively thin, only at apex weakly enlarged and two thin, not very extended but steep "teeth" at beginning of anal field.

**R e m a r k s :** *Neurosympleca dukeorum* nov.sp. is the largest of all known *Neurosympleca* species. At the type-locality it occurs syntopically with *N. kushaica* nov.sp. and is easily distinguishable by its size and the lighter ground colour of forewings. Moreover, the pink patch anterior of the eyes is absent in this species. All specimens were found in a small area near Clanwilliam. Size and pattern may indicate closer relationship of *N. dukeorum* nov.sp. to *N. caffra* L. but different ecologies and constant differences in pattern (e.g. white instead of reddish abdominal ventrum in *N. dukeorum* nov.sp.) suggest heterospecificity.

**Larval host-plants:** Larvae are found on *Maytenus oleoides* (LAM.) LOES., *Cassine schinoides* (SPRENG.) R.H. ARCHER; in captivity only species of the genus *Maytenus* were accepted (A. Hofmann, unpubl.).

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### Abbreviations

BMN .....	The Natural History Museum, London (formerly British Museum of Natural History)
CMN .....	Clas M. Naumann (coll. now in ZFK)
DMP .....	Ditsong National Museum of Natural History (formerly Transvaal Museum) (TMSA), Pretoria (Republic of South Africa)
HOF .....	Axel Hofmann, Linkenheim-Hochstetten (Germany)
LIN .....	Linnean Society, London
MEU .....	Museum of Evolution of Uppsala University (Evolutionsmuseet, Uppsala Universitet, Sweden)
RSA .....	Republic of South Africa
SMS .....	Staatliches Museum für Naturkunde, Stuttgart (Germany)
ZFK .....	Zoologisches Forschungsmuseum Alexander Koenig (Bonn, Germany)

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**Fig. 77. Sand Fynbos, view towards Table Mountain, habitat of *Neurosymploca geertsemai* nov.sp. and *N. naumanniola* nov.sp. (RSA: Bloubergstrand N., Haakgat vic., 5 m, 3.3.2014). Photo: A. Hofmann.**



**Fig. 78: Lowland Fynbos on the Cape Peninsula, habitat of *Neurosymploca geertsemai* nov.sp. and *N. naumanniola* nov.sp. (RSA: Cape Town S., Muizenberg, 210 m, 18.1.2015). Photo: A. Hofmann.**



**Fig. 79. Montane Fynbos along the escarpment, habitat of *Neurosymploca kushaica* nov.sp. (RSA: Western Cape, Wellington E., Bainskloofpas SW., 600 m, 25.1.2015). Photo: A. Hofmann.**



**Fig. 80: Near the Pakhuis pass, type-locality of *Neurosymploca dukeorum* nov.sp. and *N. kushaica sani* nov. ssp. (RSA: Western Cape, Clanwilliam NE., 500 m, 18.1.2016). Photo: A. Hofmann.**





**Fig. 81: The Great Swartberg pass** at the Great Escarpment, type-locality of *Neurosyplocia concinna sesoioides* nov.ssp. (RSA: Western Cape, Oudtshoorn NW., 1000 m, 4.3.2014). Photos: A. Hofmann.

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