



Dave Edge & Associates

Biodiversity Surveys

Environmental Consulting

**TERRESTRIAL BIODIVERSITY SENSITIVITY STUDY
(BUTTERFLIES)
MELKHOUTFONTEIN CEMETERY EXTENSION
STILL BAY, HESSEQUA MUNICIPALITY
WESTERN CAPE PROVINCE**

Prepared for:

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CREDENTIALS OF THE CONSULTANT

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Expertise

- Qualifications: BSc (Zoology & Botany) UNISA; BSc (Hons) (Environmental Science) North-West University; MSc (Environmental Science) North-West University; PhD (Environmental Science) North-West University.
- Experience: Lepidopterist and ecologist with over 60 years' experience studying butterflies. Has conducted numerous specialist butterfly surveys in terms of NEMA.
- Publications/ conferences: 32 scientific papers published in peer reviewed journals, and has presented papers at a number of national and international conferences.

A more detailed CV is attached as Appendix 1.

Conditions pertaining to this report

The content of this report is based on the author's best scientific and professional knowledge as well as available information. Dave Edge & Associates reserve the right to modify the report in any way deemed fit should new, relevant or previously unavailable or undisclosed information become known to the author from on-going research or further work in this field, or pertaining to this investigation, and will inform Sharples Environmental Services accordingly.

This report must not be altered or added to without the prior written consent of the author. This also refers to electronic copies of the report, which are supplied for the purposes of inclusion as part of other reports, including main reports. Similarly, any recommendations, statements or conclusions drawn from or based on this report must make reference to this report. If these form part of a main report relating to this investigation or report, this report must be included in its entirety as an appendix or separate section to the main report.

NATIONAL LEGISLATION AND REGULATIONS GOVERNING THIS REPORT


This is a 'specialist report' compiled in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014.

DECLARATION BY THE INDEPENDENT PERSON WHO COMPILED THIS REPORT

I, **David Alan Edge**, as the appointed independent specialist hereby declare that I:

- act as an independent specialist in this application;
- regard the information contained in this report as it relates to my specialist input/study to be true and correct, and do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- have and will not have any vested interest in the proposed activity proceeding;
- have disclosed, to the applicant, EAP and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2014 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2014 (specifically in terms of Regulation 13 and Appendix 2 of GN No. R. 982) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;
- have ensured that information containing all relevant facts in respect of the specialist input/study was distributed or made available to interested and affected parties and the public and that participation by interested and affected parties was facilitated in such a manner that all interested and affected parties were provided with a reasonable opportunity to participate and to provide comments on the specialist input/study;
- have ensured that the comments of all interested and affected parties on the specialist input/study were considered, recorded and submitted to the competent authority in respect of the application; have ensured that the names of all interested and affected parties that participated in terms of the specialist input/study were recorded in the register of interested and affected parties who participated in the public participation process;
- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and am aware that a false declaration is an offence in terms of regulation 48 of GN No. R.982.

Signature of the Specialist:



David Alan Edge

Representing:

Dave Edge & Associates

1. Introduction

The Hessequa Municipality is planning to expand the cemetery facilities at Melkhoutfontein near Still Bay in the Western Cape Province (Figure 1). The Municipality has engaged the services of Sharples Environmental Services to carry out an Environmental Scoping Study for the proposed project.



Figure 1 – Location of the area for expansion of the cemetery facilities at Melkhoutfontein near Still Bay, Hessequa Municipality, Western Province

2. Terms of reference of the Consultant

Dave Edge & Associates was appointed on 20 June 2020 by John Sharples of Sharples Environmental Services, acting on behalf of the Hessequa Municipality, to carry out a butterfly sensitivity survey for the expansion of the Melkhoutfontein Cemetery, with a scope as follows:

- 1) Carry out a desktop study to determine if the following species of conservation concern (SCC) have been recorded at the site, or whether it is feasible, given the physical and biological characteristics of the site (including butterfly host plants) for the following SCCs to occur there:
Aloeides thyra orientis
Aloeides trimeni southeyae
Chrysoritis brooksi tearei
Lepidochrysops littoralis
Thestor claassensi
Trimenia malagrida maryae
- 2) Conduct a preliminary survey at the property on 17 June 2020.
- 3) Prepare a report detailing the findings of the survey, with conclusions and if necessary recommendations for any further investigations at the property.

3. Methodology

3.1 Desktop study

Records of the SCCs were extracted from the LepiMap Virtual Museum database and summarised on a spreadsheet. Published data on these two taxa was referenced,

principally Mecenero *et al.* (2013), to determine the vegetation types in which the SCCs occur, and Williams (2019) to determine larval host plants.

3.2 Site visit

The property was surveyed to see if there was any indigenous vegetation that could support either of the SCCs. Notes were made and photographs taken.

4. Results

4.1 Desktop study

The Melkhoutfontein Cemetery is situated in the quarter degree grid square (QDGS) 3421AD (Stilbaai). The vegetation type at the site is FFI 3 Canca Limestone Fynbos (Mucina & Rutherford, 2006).

Aloeides thyra orientis (EN)

This butterfly has been recorded along the south coast of the Western Cape from Witsand (QDGS 3420BD), in the Still Bay area (3421AB and 3421AD), near Gouritsmond (3421BD) and at Brenton-on-Sea (3422BB and 3423AA). The closest known occurrences to the development site are in the Pauline Bohne Nature Reserve less than 4 km away and north of the golf course in Still Bay West at 6.5 km away. It has been recorded in FFI 3 Canca Limestone Fynbos as well as in FFd 9 Albertinia Sand Fynbos. It prefers sparsely vegetated ground with bare patches. Its larval host plant is unknown.

Aloeides trimenii southeyae (EN)

This butterfly has been recorded in QDGS 3422AA 10 km west of Mossel Bay and at Hartenbosheuwels, and in QDGSs 3421BA & BB in the Albertinia area. The closest known occurrence to the development site is around 20 km away. It has been recorded in FRs 14 Mossel Bay Shale Renosterveld, FFs 15 North Langeberg Sandstone Fynbos and FS 9 Groot Brak Dune Strandveld. Its larval host plant is unknown, but probably a *Hermannia* species (Malvaceae).

Chrysoritis brooksi tearei (EN)

This SCC has been recorded in the Still Bay area in QDGSs 3421AB & AD. The closest known occurrences are at 5.2 km north of Still Bay West and at Skulpiesbaai 10 km away. Its recorded vegetation types are FFI 3 Canca Limestone Fynbos and FFd 9 Albertinia Sand Fynbos. Its larval host plants are in genus *Zygophyllum* (Zygophyllaceae), and its host ants are in the genus *Crematogaster*.

Lepidochrysops littoralis (EN)

This species has a fairly wide distribution along the south coast, from the De Mond Nature Reserve near Bredasdorp in the west to 5 km west of Mossel Bay. The closest records to the development site are less than 4 km away in the Pauline Bohne Nature Reserve. Its larval host plants are in the genus *Selago* (Scrophulariaceae), and its host ants are in the genus *Camponotus*. It is mostly found in FFI 3 Canca Limestone Fynbos, and prefers hilltops or higher ground.

Thestor claassensi (VU)

This species has a fairly limited distribution between Vermaaklikheid (3421AC) in the west to Still Bay in the east (3421AD). It has only been recorded in FFI 3 Canca Limestone Fynbos, and prefers rocky areas where the limestone substrate is apparent. Its larvae do not feed on plant material and are fed in the ant nests by their host ants in the genus *Anoplolepis*. The closest records to the development site are about 3 km away near the Still Bay airstrip.

Trimenia malagrida maryae (EN)

This subspecies occurs from the De Hoop Nature Reserve (3420BC) in the west to Vermaaklikheid (3421AC) in the east. It has not been recorded from the Still Bay area, with the closest record 37 km from the development site. It only occurs in Limestone Fynbos vegetation types FFI 1 (Agulhas), FFI 2 (De Hoop) and FFI 3 (Canca). Its life history is unknown, but it is believed to be dependent on ants for its sustenance.

4.2 Site visit on 17 June 2020

The current development footprint is quite small, with an intention to expand the site eastwards in the future. All of the ground that will be transformed was examined. The vegetation is fairly degraded, but may still be inhabited by butterfly species that prefer bare sandy ground and sparse vegetation. The site has a gentle slope from north (higher) to south, where it eventually drains into a wetland/ watercourse which feeds into the Goukou river. The veld further away from the cemetery, south of a new gravel road, is in much better condition with the following plants apparent:

Carpobrotus edulis
Asparagus sp.
Pelargonium sp.
Solanum rigescens
Helichrysum sp.
Metasia (2 sp.)
Polygala sp.
Osteospermum sp.
Aspalathus sp.
Protea sp.
Restio sp.

A few of these species are found sparsely in the disturbed area nearer to the cemetery.

5. Terrestrial Biodiversity Compliance Statement

Refer to Table 1 on page 8.

6. Conclusions

The proposed cemetery development area at Melkhoutfontein was rated as being of “Medium” sensitivity because of the possibility of the occurrence of six butterfly species of conservation concern. This investigation has revealed that three of these SCCs could not possibly occur on the site. However there is a low possibility that one or more of the other three SCCs species could occur on or near the site. It is recommended that another site visit be made during the butterfly’s flight periods in early November to eliminate this possibility.

7. References

- Mecenero, S., Ball, J.B., Edge, D.A., Hamer, M.L., Henning, G.A., Krüger, M., Pringle, E.L., Terblanche, R.F., Williams, M.C. 2013. *Conservation Assessment of butterflies of South Africa, Lesotho and Swaziland – Red List and atlas*. Saftronics (Pty.) Ltd, Johannesburg & Animal Demography Unit, University of Cape Town.
- Mucina, L. & Rutherford, M.C. (eds). The vegetation of South Africa, Lesotho and Swaziland. 2006. *Strelitzia* 19. South African National Biodiversity Institution, Pretoria.
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<https://www.metamorphosis.org.za/?p=articles&s=atb>



D.A. Edge

Dave Edge & Associates

TABLE 1

SCC no.	1	2	3
Family	Lycaenidae	Lycaenidae	Lycaenidae
Common name	Brenton Copper	Mossel Bay Copper	Riversdale Opal
Scientific name	<i>Aloeides thyra orientis</i>	<i>Aloeides trimenii southeyae</i>	<i>Chrysothrix brooksi tearei</i>
IUCN Red List category	EN	EN	EN
Habitat requirements (vegetation type codes as per Mucina & Rutherford, 2006)	Flat sandy open ground in coastal fynbos, altitude from 40 to 250m. Albertinia Sand Fynbos FFd 9 Knysna Sand Fynbos FFd 10 Canca Limestone Fynbos FFI 3 Blombos Strandveld FS 8	Gentle, north-facing slopes, sparsely covered by low shrubs with bare ground in between. North Langeberg Sandstone Fynbos FFs 15 Mossel Bay Shale Renosterveld FRs 14 Groot Brak Dune Strandveld FS 9	Low, sandy hills and slopes sparsely covered by low shrubs. Canca Limestone Fynbos FFI 3 Albertinia Sand Fynbos FFd 9
Probability of occurrence	Low but possible	Almost zero	Low but possible
Justification	Vegetation and habitat types occur at site; records of taxon not far from the site; butterfly can exist in degraded veld.	Vegetation and habitat types do not occur at site; no records of taxon at or near the site; site is degraded and has little natural vegetation.	Vegetation and habitat types occur at site; records of taxon not far from the site; butterfly can exist in degraded veld. Host plant present near site (<i>Osteospermum</i>).

SCC no.	4	5	6
Family	Lycaenidae	Lycaenidae	Lycaenidae
Common name	<i>Lepidochrysops littoralis</i>	<i>Thestor claassensi</i>	<i>Trimenia malagrida maryae</i>
Scientific name	Coastal Blue	South Coast Skolly	South Cape Scarce Mountain Copper
IUCN Red List category	EN	VU	EN
Habitat requirements (vegetation type codes as per Mucina & Rutherford, 2006)	Rocky limestone ridges or sand dunes in coastal fynbos, altitude up to 400m. Albertinia Sand Fynbos FFd 9 Canca Limestone Fynbos FFI 3	Gentle slopes and flat areas in limestone fynbos vegetation, with either a sandy or rocky substrate. Canca Limestone Fynbos FFI 3	Rocky limestone ridges with short fynbos vegetation; fairly low altitude. Agulhas Limestone Fynbos FFI 1 De Hoop Limestone Fynbos FFI 2 Canca Limestone Fynbos FFI 3
Probability of occurrence	Almost zero	Low but possible	Almost zero
Justification	Habitat type does not occur at site although records of taxon not far away. The site is degraded and has little natural vegetation. Absence of host plant.	Vegetation and habitat types occur at site; records of taxon not far from the site; butterfly can exist in degraded veld.	Habitat types does not occur at site; no records of taxon at or near the site; site is degraded and has little natural vegetation.

APPENDIX 1

CURRICULUM VITAE

DAVID ALAN EDGE

Date of birth: 22nd August 1943
Place of birth: Ormskirk, Lancs., UK
Residence: Brenton-on-Sea, Knysna, Western Cape

QUALIFICATIONS

1965 MA (Cantab) – Mechanical Engineering
2001 BSc (cum laude) – Zoology & Botany (UNISA)
2002 BSc (Hons) (cum laude) – Environmental Science (Potchefstroom University)
Specialising in Biodiversity and Conservation biology
2006 PhD in Environmental Sciences – North-West University. Thesis entitled “The ecology and conservation of the Brenton Blue”

ENGINEERING & MANAGEMENT CAREER

1965 – 1993 **Nchanga Consolidated Copper Mines, Zambia**
Assistant Divisional Engineer
Maintenance engineering and management

1973-1979 **Palabora Mining Company**
Assistant General Manager
Operations and maintenance management, mechanical engineering and extractive metallurgy, general management

1979-1993 **LTA Process Engineering**
Managing Director
General management, marketing, project engineering and management, design engineering, procurement and construction management.

LEPIDOPTERISTS’S SOCIETY OF AFRICA (LEPSOC AFRICA)

1983 Founder member
1984–1986 Council member
1993–2016 Representative – Southern Cape
2008–2011 Treasurer
2011–2018 Editor – *Metamorphosis*, a scientific journal dedicated to the study of African Lepidoptera

CONSERVATION ACTIVITIES

1993–1996 Leading role-player in the campaign to save Brenton Blue
1995–2018 Brenton Blue Management Committee - member and leader of research programme
1999–2018 Knysna Environmental Forum - Co-chairman
2005–2018 Brenton Blue Trust – Trustee
2008–2013 South African Butterfly Conservation Assessment (SABCA)
Digitised own collection of over 8000 specimens of South African butterflies. Project leader for the southern Cape – an area of 60 000 sq. km, supervising three other field workers. Field surveys yielded over 2500 new species–QDGS records. Editor of South African Butterfly Atlas, lead author for Chapters 3 and 4 (see publications below). Authored over 100 species accounts (out of 800)

2011–2018 Leader of the Conservation of Rare and Endangered Lepidoptera (COREL) programme for South Africa, including being “Custodian” for six species.

2015-2018 Project Director for the South African Lepidoptera Conservation Assessment (SALCA) project carried out for the South African Biodiversity Institute (SANBI)

2015-2018 Taxon Lead – Butterflies for the BioGaps project to establish the biological diversity of the ‘Shale Gas Fracking’ area of the Karoo

2015-2018 Project Coordinator of the “Butterfly Evolutionary Diversity” project to obtain DNA samples for all c. 800 South African butterfly species

ENVIRONMENTAL CONSULTING

Dave Edge & Associates Environmental Consulting

1997 – 2001	Sparrebosch, Knysna	Detailed butterfly surveys for EIA and monitoring
2000 – 2004	Roodefontein, Plettenberg Bay	Butterfly surveys for scoping report and EIA
2001	Pezula Estate, Knysna	Preliminary assessment of butterfly potential

2001	The Cove, Knysna	Preliminary assessment of butterfly potential
2001 – 2003	Fernwood, Knysna	Butterfly surveys for scoping report and EIA
2003 – 2004	The Lakes, Sedgfield	Butterfly survey for scoping report and EIA
2004 – 2005	Lagoon Bay, Glentana	Butterfly survey for scoping report and EIA
2004 – 2006	Paradise Coast, Mossel Bay	Butterfly survey for scoping report and EIA
2004 – 2005	Pezula@Hunters, Knysna	Butterfly survey for scoping report and EIA
2004 – 2006	Uitzicht 216-176, Knysna	Butterfly survey for scoping report and EIA
2004 – 2008	Pierpoint Nature Estate, Knysna	Butterfly survey for scoping report and EIA
2005 – 2006	Erf 4016 Eastford, Knysna	Butterfly survey for scoping report
2006 – 2007	Stilbaai Farm 485/51	Butterfly survey for scoping report
2006 – 2008	Destiny Africa, George	Butterfly survey for scoping report
2008	Escom, Nuclear Power Stations	Preliminary assessment of butterfly potential
2009	Pierpoint Nature Estate, Knysna	Research programme to establish ecology of <i>A. almeida</i>
2009 – 2010	Escom, Nuclear Power Stations	Detailed butterfly surveys (3 power station sites)
2011 – 2012	Uitzicht 216-77, Brenton	Biodiversity survey for scoping report
2012	Green View Estate, Mossel Bay	Butterfly survey for scoping report
2015	Zeelandsnek, Oudtshoorn	Butterfly survey for scoping report
2015 – 2018	Mossel Bay Cemetery project	Butterfly survey for scoping report; monitoring programme
2016	Schaapkraal, Cape Town	Butterfly scoping and sensitivity report
2016 – 2019	Entabeni Estate, Knysna	Management plan for butterfly reserve
2016 – 2019	Uitzicht 216-71 & 72, Brenton	EIA for development proposal
2017 – 2019	Hartenbosheuwels	Butterfly scoping study
2019	Abalone Hatchery, Gouritsmond	Desk top study – butterflies
2019	Lamloch Safari Park, Kleinmond	Butterfly survey
2019	Village-on-Sea, Mossel Bay	Butterfly survey
2019	Mossel Bay Golf Estate	Butterfly survey

ACADEMIC CAREER

2009–2014 North-West University (Potchefstroom) Senior Lecturer

Developed new post graduate teaching module for “Conservation Ecology”
Lectured to postgraduate (honours and masters) students on Conservation Ecology; including setting and marking assignments and examination papers.

AWARDS

- 1998** The Habitat Council “for outstanding achievements in the field of environmental conservation and management – for his role in helping to secure the habitat of the endangered Brenton Blue butterfly”
- 2003** LepSoc Africa – June 2003 – Chairman’s Award “for the most significant contribution to African Lepidoptera conservation for the period July 2002 – June 2003”
- 2013** LepSoc Africa – October 2013 – President’s Award “for his passion and commitment leading the development and completion of the new e-*Metamorphosis* web journal.
- 2015** LepSoc Africa – August 2015 – Honorary Life Membership.
- 2018** LepSoc Africa – September 2018 – President’s Award “in acknowledgement of his tireless work and commitment to the Lepidopterists’ Society of Africa”.

PUBLICATIONS IN SCIENTIFIC JOURNALS

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- EDGE, D.A.** 1985. Life history of *Iolaus diametra natalica* Vári. *Metamorphosis*, **1**(13): 4–6
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