



Dave Edge & Associates

Biodiversity Surveys

Environmental Consulting

**BUTTERFLY SURVEY – GARDEN ROUTE DAM
REMAINDER OF PORTION 464A, GEORGE
WESTERN CAPE PROVINCE**



Spialia spio – Mountain Sandman

Prepared for:

John Sharples
Sharples Environmental Services
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Representing the George Municipality

Date of issue: 28 October 2019

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CREDENTIALS OF THE CONSULTANT

Contact details:

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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 George Municipality is evaluating possible development scenarios at the Garden Route Dam, remainder of Portion 464 (Portion A), George, 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.

A biodiversity sensitivity analysis was conducted by Bruce Taplin and Ken Coetzee of *Conservation Management Services* and a report was submitted in December 2018, and a report on the biodiversity impacts of the proposed development layout was submitted in August 2019.

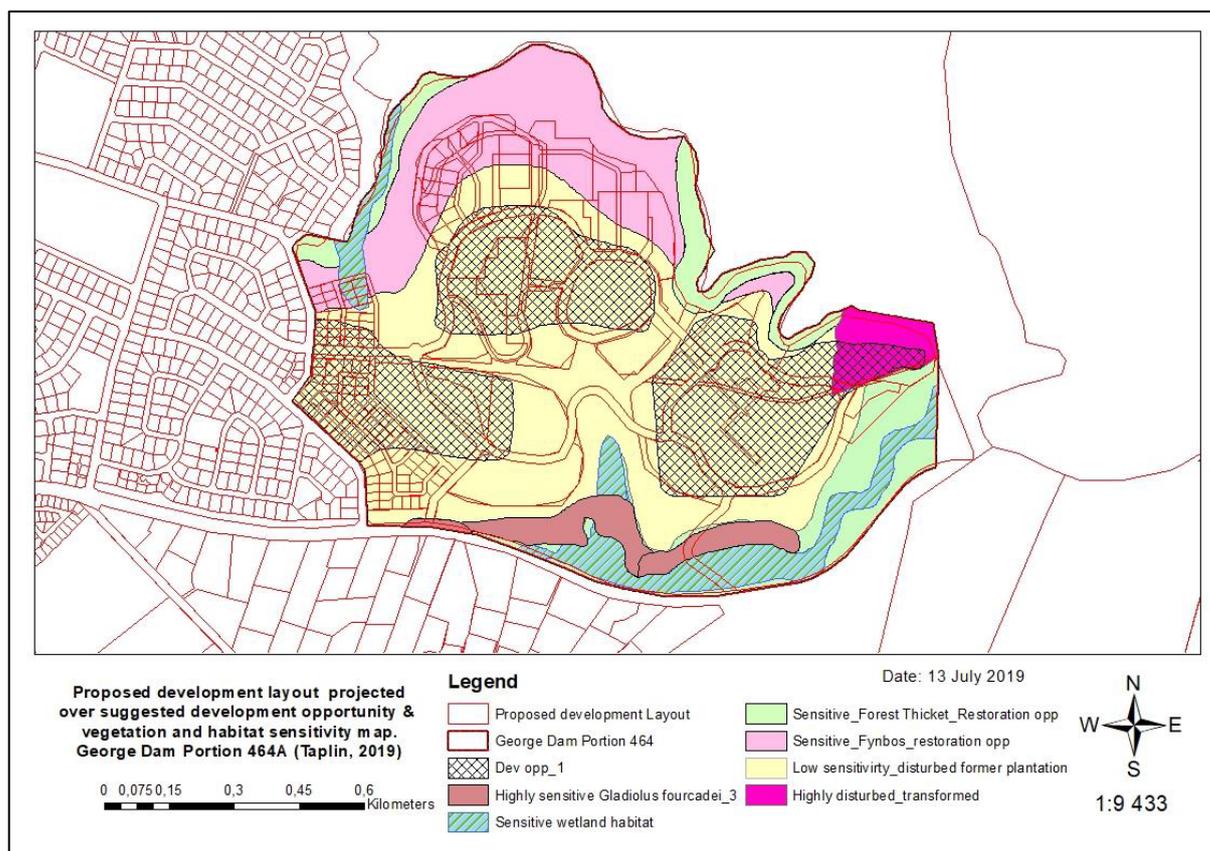


Figure 1 – Development layout proposal with vegetation and habitat sensitivities for George Dam Portion 464A

2. Terms of reference of the Consultant

Dave Edge & Associates was appointed on 20th March 2019 by John Sharples of Sharples Environmental Services, acting on behalf of the George Municipality, to carry out a butterfly survey for the George Dam Portion 464A site, with a scope as follows:

- 1) Conduct a preliminary butterfly survey on the property during October 2019.
- 2) Prepare a report detailing the findings of the survey, with conclusions and recommendations for any further investigations at the property.

3. Methodology

- The author conducted a site visit on 22nd October 2019 to investigate the occurrence of butterflies and their host plants on the site.
- Attention was paid to the development layout proposal (Fig. 1) produced as Figure 2.1 of Taplin & Coetzee (2019), and in view of the limited time available to complete the butterfly

survey, investigation was confined to the low sensitivity disturbed former plantation portion of the site.

- Butterflies were identified visually in flight, but if any doubt existed voucher specimens were taken of any unusual butterfly taxa (species or subspecies) encountered, with GPS locations. Identifications were sourced from Pringle *et al.* (1994) and Williams (2019).
- Photographs were taken of any unusual butterfly taxa either in the wild or from set specimens.
- A checklist of the butterfly taxa and their host plants occurring at the site was prepared.

4. Study Area

Refer to the biodiversity sensitivity analysis (Taplin & Coetzee, 2018) for a general description of the study area, including its geology, topography, climate and vegetation present, and to Fig. 1 for the proposed development layout.

5. Results

5.1 Weather, timing and area surveyed

The weather was warm with a gentle breeze and a clear sky – ideal for butterflies. Refer to Fig. 2, which shows the route followed by the author between 10.15 and 14.00 on 23 October 2019.



Figure 2 – Track followed by the author on 23 October 2019

5.2 Butterfly observations

The butterfly taxa actually recorded at the site during the surveys are listed in Table 1, and images are given in Figs 3–10.

5.3 Butterfly host plants

The host plants known for the butterfly species recorded are given in the last column of Table 1. Some of the commoner butterflies use many different host plants, and this is why they are so widespread.

Table 1 – Butterflies observed at George Dam Portion 464A

SCIENTIFIC NAME	COMMON NAME	Fig.	GPS COORDINATES		HOST PLANTS
<i>Cassionympha cassius</i>	Rainforest Brown	3	33°57.907'	22°30.304'	Various Poaceae
<i>Cacyreus fracta fracta</i>	Water Bronze	4	33°57.871'	22°30.463'	<i>Pelargonium</i> species
<i>Danaus chrysippus orientis</i>	African Monarch	5	33°57.733'	22°30.159'	<i>Asclepias physocarpa</i>
<i>Papilio demodocus</i>	Citrus Swallowtail	6	33°57.944'	22°30.585'	<i>Vepris lanceolata</i>
<i>Pieris brassicae</i>	Cabbage White	7	33°58.077'	22°30.518'	<i>Heliophila</i> species
<i>Pontia helice</i>	Meadow White	8	33°57.944'	22°30.585'	<i>Heliophila</i> species
<i>Spialia spio</i>	Mountain Sandman	9	33°57.838'	22°29.995'	<i>Hermannia</i> species
<i>Vanessa cardui</i>	Painted Lady	10	33°58.077'	22°30.518'	Various

5.4 Vegetation types surveyed

All observations were made in recovering fynbos where there had formerly been a plantation. Consequently most of the plants recorded were pioneering species, and agreed very well with the plant list presented by Taplin & Coetzee (2018).

6. Discussion

6.1 Vegetation of the site

The area surveyed was mapped and described in Mucina & Rutherford (2006) as Garden Route Shale Fynbos.

6.2 Potential for other butterfly species

The type of habitat found at the study site could host certain rare and endemic *Aloeides* species such as *A. pallida* subspecies, which are known to occur in the George area.

7. Conclusions

The proposed development area on George Dam Portion 464A does not appear on the basis of this survey to contain any rare or endangered butterflies, and the eight butterflies recorded are reasonably common and widespread. The author will make another visit to the site in the second half of November to be certain that there are no rare *Aloeides* species on the site.

8. References

- Mucina, L. & Rutherford, M.C. (eds). The vegetation of South Africa, Lesotho and Swaziland. 2006. *Strelitzia* 19. South African National Biodiversity Institution, Pretoria.
- Pringle, E.L., Henning, G.A. & Ball, J.B. 1994. *Pennington's Butterflies of southern Africa*. Struik Winchester, Cape Town.
- Taplin, B. & Coetzee, K. 2018. Garden Route dam development – biodiversity sensitivity analysis. Unpublished report for Sharples Environmental Services.
- Taplin, B. & Coetzee, K. 2019. Garden Route dam development – Biodiversity impacts of the proposed development layout. Unpublished report for Sharples Environmental Services.
- Williams, M.C. 2019. Afrotropical Butterflies.
<https://www.metamorphosis.org.za/?p=articles&s=atb>

Edge

D.A. Edge
Dave Edge & Associates



Figure 3 – *Cassionympha cassius*



Figure 4 – *Cacyreus f. fracta*



Figure 5 – *Danaus chrysippus*



Figure 6 – *Papilio demodocus*



Figure 7 – *Pieris brassicae*



Figure 8 – *Pontia helice*



Figure 9 – *Spialia spio*



Figure 10 – *Vanessa cardui*

Figures 3–10 – Butterflies recorded at the Garden Route Dam – 23 October 2019

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, Sedgefield	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

- EDGE, D.A.** 1982. Re-discovery of *Erikssonia acraeina* Trimen. *Rostrum*, **1**(2): 2
- EDGE, D.A.** 1985. Life history of *Iolous diametra natalica* Vári. *Metamorphosis*, **1**(13): 4–6
- EDGE, D.A.** 1987. Life history of *Iolous pallene* (Wallengren). *Metamorphosis*, **1**(19): 3–5
- EDGE, D.A.** 1990. Life history - *Aphnaeus hutchinsonii* Trimen 1887. *Metamorphosis*, **1**(27): 16–18
- EDGE, D.A.** & PRINGLE, E.L. 1996. Notes on the natural history of the Brenton Blue *Orachrysops niobe* (Trimen) (Lepidoptera: Lycaenidae). *Metamorphosis* **7**(3): 109–120
- EDGE, D.A.** 2002. Some ecological factors influencing the breeding success of the Brenton Blue *Orachrysops niobe* (Trimen) (Lepidoptera: Lycaenidae). *Koedoe* **45**(2): 19–34
- EDGE, D.A.** 2005a. Butterfly conservation in the southern Cape. *Metamorphosis* **16**(2): 28–46
- EDGE, D.A.** 2005b. Ecological factors influencing the survival of the Brenton Blue butterfly, *Orachrysops niobe* (Trimen) (Lepidoptera: Lycaenidae). Potchefstroom: North-West University. (Thesis–D.Phil.)
- EDGE, D.A.** 2005c. Life history and ecological observations on *Aloeides pallida*, undescribed subspecies (Lepidoptera: Lycaenidae). *Metamorphosis* **16**(4): 110–115
- EDGE, D.A.** & WILLIAMS, M.C. 2005. Observations on the life history of *Lepidochrysops balli* Dickson (Lepidoptera: Lycaenidae). *Metamorphosis* **16**(4): 106–109
- EDGE, D.A.** & PRINGLE, E.L. 2006. Observations on the life history of *Chrysoritis braueri* (Pennington) (Lepidoptera: Lycaenidae). *Metamorphosis* **17**(4): 134–139
- EDGE, D.A.** 2007. The Brenton Blue – tiny icon for biodiversity. *Vision – Endangered Wildlife Trust 15th Annual*. Future Publishing, Rivonia.
- TERBLANCHE, R.F.** & **EDGE, D.A.** 2007. The first record of an *Orachrysops* in Gauteng. *Metamorphosis* **18**(4): 131–141

- EDGE, D.A.** 2008a. Adult behaviour of *Orachrysops niobe* (Trimen) (Lepidoptera: Lycaenidae). *Metamorphosis* **19(3)**: 116-126.
- EDGE, D.A.** 2008b. Environmental management plan: Brenton Blue butterfly special nature reserve: Revision 2 (unpublished). CapeNature document. 43 pp.
- EDGE, D.A.**, CILLIERS, S.S. & TERBLANCHE, R.F. 2008. Vegetation associated with the Brenton Blue butterfly. *South African Journal of Science* **104(11/12)**: 505–510.
- EDGE, D.A.**, ROBERTSON, H.G. & VAN HAMBURG, H. 2008. Ant assemblages at potential breeding sites for the Brenton Blue butterfly *Orachrysops niobe* (Trimen) (Lepidoptera: Lycaenidae). *African Entomology* **16(2)**: 253–262.
- EDGE, D.A.** & VAN HAMBURG, H. 2009. Larval feeding behaviour and myrmecophily of the Brenton Blue butterfly *Orachrysops niobe* (Trimen). *Journal of Research on the Lepidoptera* **42**: 21–33.
- EDGE, D.A.** 2011a. The Brenton Blue butterfly – twenty years of conservation. *Environment* **6**: 34–35.
- EDGE, D.A.** 2011b. Custodians of rare and endangered Lepidoptera (COREL). *Metamorphosis* **22(3)**: 81–96.
- EDGE, D.A.** & TERBLANCHE, R.F. 2011. A rapid assessment protocol for surveying and monitoring diurnal Lepidoptera in Africa. *Metamorphosis* **22(3)**: 75–80.
- EDGE, D.A.**, TERBLANCHE, R.F., HENNING, G.A., MECENERO, S. and NAVARRO, R. 2013. Butterfly conservation in South Africa: Analysis of the Red List and threats. In: *Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red list and atlas*. Safronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town. pp. 13–33.
- EDGE, D.A.**, WOODHALL, S.E., BALL, J.B., HENNING, G.A., ARMSTRONG, A.J. and MECENERO, S. 2013. Future priorities for butterfly conservation and research. In: *Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red list and atlas*. Safronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town. pp. 36–40.
- EDGE, D.A.** 2013. Family Lycaenidae Leach, 1815. In: *Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red list and atlas*. Safronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town. pp. 335–610.
- MECENERO, S., BALL, J.B., **EDGE, D.A.**, HAMER, M.L., HENNING, G.A., KRÜGER, M., PRINGLE, E.L., TERBLANCHE, R.F., and WILLIAMS M.C. (eds). 2013. *Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red list and atlas*. Safronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town.
- MECENERO, S., NAVARRO, R., COETZER, B. and **EDGE, D.A.** 2013. Description of data and methods. In: *Conservation assessment of butterflies of South Africa, Lesotho and Swaziland: Red list and atlas*. Safronics (Pty) Ltd., Johannesburg and Animal Demography Unit, Cape Town. pp. 3–11.
- EDGE, D.A.** 2014. Searching in the Waterberg for *Erikssonia edgei* Gardiner & Terblanche, 2010 during December 2011 & January 2012. *Metamorphosis* **25**: 77–81.
- GARVIE, O.G., DOBSON, J., **EDGE, D.A.**, GARDINER, A.J., TERBLANCHE, R.F. & WILLIAMS, M.C. (2014). Research and conservation plan for the Waterberg Copper (*Erikssonia edgei* Gardiner & Terblanche, 2010) (Lepidoptera: Lycaenidae) at the Bateleur Nature Reserve
- BAZIN, E.A. & **EDGE, D.A.** 2015. The ecology and conservation of *Thestor brachycerus brachycerus* (Trimen, 1883) – an aphytophagous miletine butterfly from South Africa. *Journal of Insect Conservation* **19(2)**: 349-357.
- EDGE, D.A.** & MECENERO, S. 2015. Butterfly conservation in southern Africa. *Journal of Insect Conservation* **19(2)**: 325-339.
- GILLOMEE, J.H. & **EDGE, D.A.** 2015. The ants and scale insects on which the critically endangered butterfly *Chrysoritis dicksoni* (Gabriel) (Lepidoptera: Lycaenidae: Aphnaeinae) depends for its survival. *Metamorphosis* **26**: 38-43.
- WILLIS, C.K. & **EDGE, D.A.** 2015. Oviposition and mating behaviour in *Orachrysops warreni* G.A. & S.F. Henning, 1994 (Lepidoptera: Lycaenidae: Polyommatainae), in Mpumalanga, South Africa. *Metamorphosis* **26**: 1-3.
- MECENERO, S. & **EDGE, D.A.** 2015. Southern African Lepidoptera Conservation Assessment (SALCA). *Metamorphosis* **26**: 116-122.
- EDGE, D.A.** 2016. Vegetation associated with the critically endangered butterfly *Chrysoritis dicksoni* (Gabriel, 1947) (Lepidoptera: Lycaenidae: Aphnaeinae) at Witsand, Western Cape Province. *Metamorphosis* **27**: 66–77.
- EDGE, D.A.** 2018. A new species of *Cooksonia* Druce, 1905 (Lepidoptera: Lycaenidae: Poritiinae) from Western Zambia. *Metamorphosis* **29(1)**: 51–55.
- EDGE, D.A.** 2018. Obituary – C.J. McMaster. *Metamorphosis* **29(2)**: xi–xxiii.