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Trust for Nature
Stewardship Coordinator
51-21 Ford St,
Wangaratta, Vic 3677
Attention: Karen Tymms
3/01/2024

RE: Independent Review and Implementation of Striped Legless Lizard Biometric Monitoring Program 2022

Dear Karen

EcoAerial has been engaged by Deep Lead Property Pty Ltd to oversee the annual Striped Legless Lizard monitoring program at Long Paddock Offset Site - 6165 Hamilton Highway, Cressy. The program covers two EPBC Act offset sites:

1. North-West Grassland - EPBC 2016/7734 - 17B Copernicus Way Keilor Downs, Soho Living (Biosis 2018).
2. South-West and Far East Grasslands **-** EPBC 2017/8018- Geelong Bacchus Marsh Road Upgrade, VicRoads (SMEC 2019).

The monitoring program has entailed monitoring 8 tile grids for the duration of the 10-year management period. Grids are placed approximately 50m apart, with each grid consisting of an array of 50 tiles, at 5-metre spacing, with 10 tiles across five transects. Refer to the BushBlocks 2022 annual report Figures 1 & 2. Surveys were conducted under Scientific Procedures Fieldwork Licence (SPFL) 20402, Animals Ethics Approval 15.26 and, DEECA, (formerly DELWP) Research Permit No. 10010456.

EcoAerial staff, Rob Gration is the lead ecologist overseeing seeing the program and undertaking fieldwork supported by Alexandra Petkov-Gration, (EcoAerial) and Emma Wilkins, (BushBlocks).

This letter confirms that the results as detailed in the BushBlocks Spring/Summer 2022 Annual Report is a true account of the Spring/Summer 2022 monitoring program.

Should you have any queries in relation to our role overseeing the Striped Legless Lizard monitoring program or the results please do not hesitate to contact me.

Regards,

Rob Gration

Director / Principal Ecologist

EcoAerial Pty Ltd

BushBlocks

Annual Monitoring Report

Striped Legless Lizard Biometric Monitoring

2022 Survey Season

Long Paddock Offset Site - 6165 Hamilton Highway, Cressy

North-West Grassland (EPBC2016/7734)
South-West and Far East Grasslands (EPBC2017/8018)

Contents

1. INTRODUCTION

EcoAerial Environmental Consulting was engaged to complete zoological monitoring for Striped Legless Lizard *Delma impar* on behalf of landowners Deep Lead Property Pty Ltd for federal biodiversity offsets associated with two separate development projects; EPBC 2016/7734 – 17B Copernicus Way Keilor Downs, Soho Living (Biosis 2018), and EPBC 2017/8018- Geelong Bacchus Marsh Road Upgrade, VicRoads (SMEC 2019).

Long Paddock Offset Site currently has 5 separate offset management agreements in place, each requiring management and monitoring for a 10-year period. The site was established for the protection of several Matters of National Environmental Significance (MNES) listed under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*, including Natural Temperate Grassland of the Victorian Volcanic Plain (NTGVVP), Golden Sun Moth (GSM) *Synemon plana* habitat, Striped Legless Lizard (SLL) *Delma impar* habitat.

This report presents the results of SLL monitoring conducted in the 2022 survey season, to address the requirement for independent zoological monitoring. SLL surveys are required to be completed every annual for the lifetime of each offset management agreement (refer Table 1). This report has been completed by Bush Blocks, with correspondence, advice and review provided by EcoAerial Environmental Consulting as an independent ecological consulting company.

1.1 Survey Area

The survey area is a total of 21 hectares of SLL habitat within a larger 74 hectares Offset Property located at 6165 Hamilton Highway, Cressy, Victoria. The site is identified as EVC 132: *Plains Grassland* in the Victorian Volcanic Plains Bioregion and was primarily used as a sheep grazing paddock prior to the establishment of offsets. The site consists of varying quality of native grassland, with generally high cover of exotic annual and perennial pasture grasses within the survey area. Figures 1 and 2 present the relevant offset areas for each agreement. Appendix 1 presents the locations of tile grids within the survey area.

Table 1. Summary of survey area offset agreements.

	Zone Name	Offset Management Zone	Size	Date of Legal Execution
EPBC 2016/7734	Northwest Grassland (NWG)	OMZ-01	5 ha	4th October 2018
EPBC 2017/8018	Southwest Grassland (SWG) Far East Grassland (FEG)	OMZ -02 OMZ -06	16 ha	26th Sept 2020

Figure 1. Management area pursuant to Offset Agreement [EPBC 2016/7734]

Figure 2. Management areas pursuant to Offset Agreement [EPBC 2017/8018

2. Methods

2.1 Striped Legless Lizard Biometric Monitoring

The monitoring of Striped Legless Lizard (SLL) *Delma impar* is required to be undertaken in accordance with the EPBC Act 'Referral guidelines for the vulnerable Striped Legless Lizard, *Delma impar*' (DSEWPaC 2011).

The cataloguing system for SLL monitoring at this site was first developed by Practical Ecology (2021) in consultation with Megan O'Shea (Victoria University PhD). All observed lizards are assigned an encounter number, which identifies any and all observations of SLL within the property and includes incidental observations. (e.g. E0150 is the 150th observation of an SLL within the entire property). Animals that are captured and processed within the biometric survey period are assigned an ID number. ID numbers are an alpha-numeric number which represent the year in which animal was initially processed, along with a number (ref Table 1) (e.g. B25 was first recorded in 2021 and is the 25th animal to be processed and biometric data collected).

A total of 8 monitoring tile grids have been established within the survey area (ref Table 2). Grids are permanently in place throughout the lifetime of the 10-year management period. Grids have been placed approximately 50m apart, with each grid consisting of an array of 50 tiles, at 5-metre spacing, with 10 tiles across five transects. The south-east corner of each tile grid is permanently marked with short star-pickets and labelled with the grid number/offset agreement.

All tiles are checked a total of six times between September-December, and efforts made to capture all sighted animals. Morphological/biometric data is collected for all individuals captured to determine of the long-term sustainability of the population at the site, and any response to management actions. This data includes:

- a photograph of the dorsal head-scale detail to categorise individuals at the site (i.e., determine repeat captures or new individuals)
- location details (grid & tile number)
- snout-vent length measurement (mm)
- tail length measurement (mm)
- point of autotomy (mm from snout) (if present)
- weight (g); and
- sex (if possible)

Table 2. Alpha-numeric Individual ID

Year	SLL Season	Code
1	2020	A
2	2021	B
3	2022	C
4	2023	D
5	2024	E
6	2025	F
7	2026	G
8	2027	H
9	2028	I
10	2029	J

Table 3. Tile grids locations/offset areas

Offset Agreement	Number of grids (tiles)	Grid no.
EPBC 2016/7734	2 (100)	11A, 11B
EPBC 2017/8018	6 (300)	1, 2, 10A, 10B, 10C, 10D

2.2 Habitat Observations

Observation of site conditions and habitat were recorded, particularly the presence/absence of cracking clay soils as key nesting and sheltering sites. General vegetation conditions including key weed species, native vegetation cover, and biomass were also recorded.

2.3 Permits and Licences

Surveys were conducted by suitably qualified and independent zoologist Rob Gration (EcoAerial Environmental Services) under Scientific Procedures Fieldwork Licence (SPFL) 20402, Animals Ethics Approval 15.26 and, DEECA, (formerly DELWP) Research Permit No. 10010456

3. Results

3.1 Striped Legless Lizard Survey Results

Surveys were conducted by Rob Gration with field assistants Alexandra Gration and Emma Wilkin. Tiles checks were completed within the EPBC guideline survey period, September – December 2022 (refer Table 4).

Result of survey efforts are provided in Table 5 below. Biometric data and head-scale photos of identified animals are provided in Appendix 2 and Appendix 3. Figure 3 below provides a summary of SLL population monitoring across the property since commencement of the first survey in 2020.

Table 4. 2022 survey dates

Survey No.	Date
1	26/09/2022
2	19/10/2022
3	3/11/2022
4	18/11/2022
5	30/11/2022
6	8/12/2022

Table 5. 2022 SLL survey results by tile grid and offset area

Tile grid	Captures	Recaptures	New ID	Incidental/Esc
1	13	4	9	2
2	32	13	19	1
10A	18	7	11	0
10B	5	2	3	0
10C	0	0	0	0
10D	8	3	5	1
EPBC2017/8018	**76**	**29**		**4**
11A	6	1	5	0
11B	2	1	1	0
EPBC2016/7734	**8**	**2**	**6**	**0**

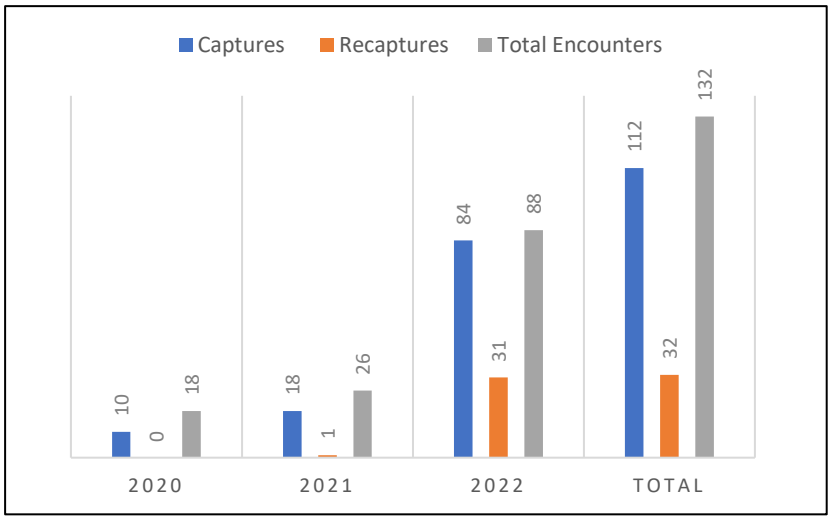

Figure 3. Summary of all SLL population monitoring since commencement in 2020.

3.2 Habitat Observations

The quality of the grassland and SLL habitat vary across the site, and across grids. Grids are located in the eastern and western most ends of the approx. 3,200m long property.

Vegetation at the time of survey consists of a generally high cover of exotic pasture grasses with increasing biomass/average height of vegetation as the survey period progressed. Cracking clay coils were largely absent throughout the survey. Basalt rock occurs throughout the property and is consistent across both east and the west survey areas.

Tile grids 1 and 2 (EPBC2017/8018) are located on the eastern end of the site. Yorkshire Fog *Holcus lanatus* and Quaking Grasses *Briza major* and *B.minor* were present in high cover (<40%) across both grids. Toowoomba Canary-grass *Phalaris aquatica*, Squirrel-tail fescue *Vulpia bromoides* and Wild Oat *Avena fatua* were also generally present throughout. Dense kangaroo tussocks were frequent, particularly in Grid 2, and biomass in these areas was sufficient to provide adequate cover for SLL in the absence of large soil cracks.

Tile grids 10A, 10B, 10C and 10D (EPBC2017/8018) are located on the western end of the site. Toowoomba Canary-grass is most prominent, particularly in 10A where cover is approx. 80%. Grassland quality improves east of 10A, with high cover (40%) Quaking grass, along with Wallaby grasses *Rytidosperma spp*, Kangaroo Grass *Themeda triandra* along with native herbs.

Tile Grids 11A and 11B (EPBC2016/7734) also have high cover Phalaris along with Rye Grass *Lolium perenne and* Brome *Bromus spp,* with native vegetation in higher cover in grid 11A.

Figure 4. Top left. Vegetation typically of tile grids 1 & 2

Figure 5. Top right. Vegetation typical of tile grids 10A – 10D

Figure 6. Bottom left. Vegetation typical of tile grids 11A and 11B

4. Discussion and Recommendations

Survey results indicate a stable and potentially increasing population of SLL at the site. The approximate. 300% increase in new animals recorded is likely due to a combination of favourable survey conditions along with a healthy breeding population. Wet conditions in the western plains through Spring and early Summer 2022 have reduced the occurrence of cracking clays, and as such has likely increased the occupation of tiles as shelter sites along with a likely increased food resource availability. Individuals were also recorded at various growth stages, as well as gravid females and, juveniles.

Vegetation was sufficient to provide shelter, however wet conditions have also likely contributed to high weed cover, particular pasture grasses. Given that management of the site is required to maintain offsets for Natural Temperate Grassland and Golden Sun Moth, any weed control activities will need to be mindful of the potential effects on the SLL population. Ecological burning is recommended for management of exotic pasture grasses, and the management plans of each agreement specify conditions and application of fire in relation to SLL. Additional shelter sites should also be considered in large burnt patches, if the surface litter is inadequate and cracking clays soils are limited.

The rate of species captured across the 2 offset areas is not proportional when considering area (ha) alone. Grids 1 and 2 in the eastern end generally saw higher numbers than those grids in the west. This is likely due to a range of factors, including variation in typography and soil conditions, however grids located in areas of high cover of Phalaris tended to be lower yielding in terms of SLL observations. Targeted weed control to reduce cover of Phalaris is therefore recommended, and review of future survey results post weed control will assist in determining its effect on the SLL occupation of shelter sites in those areas.

References

Biosis (2018) *Copernicus Way EPBC Act (EPBC 2016/7734) Offset Management Plan: 6165 Hamilton Highway Cressy*. Melbourne.

DSEWPaC (2011) *Referral guidelines for the striped legless lizard, Delma impar.* Department of Sustainability, E., Water, Population and Communities, Australian Government, Canberra.

Practical Ecology (2021) *Annual Monitoring Report Spring 2021/Summer 2022. Vegeation Quality, Striped Legless Lizard and Golden Sun Moth Popultion Monitoring. North-Western Grassland (EPBC2016/7734) Southwest and Far-East Grasslands (EPBC2017/8018. Long Paddock Offset Site, 6165 Hamilton Highway, Cressy*. Preston

SMEC (2019) *Offset Management Plan. Geelong Bacchus Marsh Road Upgrade Project Victoria [EPBC 2017/808]* Melbourne

APPENDIX 1 - MAPS

Striped Legless Lizard
Tile Grid Locations

Eastern End
Long Paddock Offset Site
6165 Hamilton Hwy, Cressy

Legend

Internal Fences
Subject Site
Offset Management Zones
SLL Tile Grids

Details

Date: 20 February 2023
Version: 1
Created by: Emma Wilkin

Data Source:
Aerial Photography from Esri Satellite

BushBlocks

0 50 100 m

Appendix 2 – SLL survey 2022 -Biometric Data

Encount	ID	Recap	Date	Grid_no	Tile_no	SVL_mm	tail_mm	total_mm	auto_mm	weight_g	sex	hand_min	wound_T1	cond_T1	cond_T2	auto_hand
E0045	C29		26/09/2022	2	A2	75	170	245		3.7	?	12	N	GC	GC	No
E0046	C30		26/09/2022	2	A5	100	185	285		5.5	?	5	N	GC	GC	No
E0047	C31		26/09/2022	2	B2	80	91	171		1.1	?	6	N	GC	GC	No
E0048	C32		26/09/2022	2	D2	73	138	211	161	2.6	?	6	N	GC	GC	No
E0049	C33		26/09/2022	2	E3	72	145	217	192	2.1	?	8	SG	GC	GC	No
E0050	C34		26/09/2022	2	I2	62	122	184		2.4	?	5	N	GC	GC	No
E0051	C35		26/09/2022	2	J2	44	80	124		0.9	?	6	N	GC	GC	No
E0052	C36		26/09/2022	11A	D1	90	180	270	240	4.6	?	6	N	GC	GC	No
E0053	C37		26/09/2022	10A	B5	43	85	128		1	?	6	N	GC	GC	No
E0054	C38		26/09/2022	10A	D5	70	110	180		2.3	?	9	N	GC	GC	No
E0055	C39		26/09/2022	10A	J1	100	100	200	175	5.4	?	6	N	GC	GC	No
E0056	C40		26/09/2022	10A	J1	105	85	190	140	5	?	11	N	GC	GC	No
E0057	C41		26/09/2022	10A	J1	88	100	188	128	4.3	?	15	N	GC	GC	No
E0058	C42		26/09/2022	10D	A2	45	96	141		1.1	?	4	N	GC	GC	No
E0059	C43		26/09/2022	10D	A3	44	75	119		1	?	4	N	PC	PC	No
E0060	C44		26/09/2022	10D	D1	85	170	255		4.5	?	4	N	GC	GC	No
E0061	C45		26/09/2022	10D	G5	72	156	228		3.3	?	5	N	GC	GC	No
E0062	C46		19/10/2022	11A	C5	97	210	307		8	?	5	N	GC	GC	No
E0063	C47		19/10/2022	10A	C2	85	190	275		7	?	4	N	GC	GC	No
E0064	C48		19/10/2022	10A	J3	85	175	260		5.5	?	5	N	GC	GC	No
E0065	C40	*	19/10/2022	10A	J1	95	100	195	145	7	?	10	N	GC	GC	No
E0066	C39	*	19/10/2022	10A	J1	100	110	210	180	6.5	?	12	N	GC	GC	No
E0067	C41	*	19/10/2022	10A	J1	85	100	185	123	5	?	15	N	GC	GC	No
E0068	C42	*	19/10/2022	10D	A2	47	90	137		1	?	4	N	GC	GC	No
E0069	C43	*	19/10/2022	10D	A3	48	80	128		1	?	3	N	GC	GC	No
E0070	C49		19/10/2022	10D	C2	85	165	250		6	?	5	N	GC	GC	No
E0071	C50		19/10/2022	10B	H4	80	190	270		5	?	3	N	GC	GC	No
E0072			19/10/2022	1	F4											
E0073	C51		19/10/2022	1	I5	80	160	240	215	6	?	4	N	GC	GC	No
E0074	C30	*	19/10/2022	2	A5	100	200	300		7	?	3	N	GC	GC	No
E0075	C31	*	19/10/2022	2	B2	70	95	165	120	3.5	?	4	N	GC	GC	No
E0076	C52		19/10/2022	2	D2	75	135	210	185	3.5	?	3	N	GC	GC	No
E0077	C53		19/10/2022	2	F3	100	160	260	230	9	?	3	N	GC	GC	No
E0078	C33	*	19/10/2022	2	F3	68	145	213		3	?	4	N	GC	GC	No
E0079	C54		19/10/2022	2	F2	85	190	275		5	?	5	N	GC	GC	Yes
E0080	C55		3/11/2022	1	A2	85	160	245		4.5	?	5	N	GC	GC	No
E0081	C56		3/11/2022	1	C3	90	140	230		5	?	3	N	GC	GC	No
E0082	C57		3/11/2022	1	D4	85	160	245	243.5	4.5	?	3	N	GC	GC	No
E0083	C58		3/11/2022	1	F4	70	135	205		3	?	3	N	GC	GC	No
E0084	C51	*	3/11/2022	1	I5	80	150	230	205	3	?	2	N	GC	GC	No
E0085	C30	*	3/11/2022	2	A5	100	185	285	281	6.5	?	3	N	GC	GC	No
E0086	C31	*	3/11/2022	2	B2	75	95	170		3	?	4	N	GC	GC	No

E0087	C32	*	3/11/2022	2	D2	70	140	210	165	2.5	?	1	N	GC	GC	No
E0088	C33	*	3/11/2022	2	F3	66	145	211		3	?	3	N	GC	GC	No
E0089	C53	*	3/11/2022	2	H3	95	155	250	220	8	?	4	N	GC	GC	No
E0090	C47	*	3/11/2022	10A	C2								N	D		
E0091	C48	*	3/11/2022	10A	J3	78	170	248	238	5.5	?	4	N	GC	GC	No
E0092	C40	*	3/11/2022	10A	J1	100	93	193	143	6.5	?	3	N	GC	GC	No
E0093	C41	*	3/11/2022	10A	J1	90	105	195	140	4	?	7	N	GC	GC	No
E0094	C42	*	3/11/2022	10D	A2	50	90	140		1	?	3	N	GC	GC	No
E0095	C50	*	3/11/2022	10B	H3	75	185	260		4.5	?	3	N	GC	GC	No
E0096	B11	*	3/11/2022	10B	J3	100	130	230	200	7	?	3	N	GC	GC	No
E0097	C46	*	3/11/2022	11A	E5	80	180	260		7.5	?	3	N	GC	GC	No
E0098	C59		18/11/2022	11B	B5	90	190	280		6.5	?	4	N	GC	GC	No
E0099	C60		18/11/2022	10A	A5	52	95	147		2	?	4	N	GC	GC	No
E0100			18/11/2022	2	A2											
E0101	C61		18/11/2022	2	B4	85	35	120		4.5	?	5	N	GC	GC	Yes
E0102	C62		18/11/2022	2	E3	95	132	227	187	6	?	6	N	GC	GC	No
E0103	C56	*	30/11/2022	1	A4	95	150	245	180 / 210	6.5	?	6	N	GC	GC	No
E0104	B28	*	30/11/2022	1	D2	80	95	175		4.5	?	3	N	GC	GC	No
E0105	C63		30/11/2022	1	G5	90	180	270		6.5	?	4	N	GC	GC	No
E0106	C64		30/11/2022	1	J2	75	140	215		4	?	5	N	GC	GC	No
E0107	C65		30/11/2022	2	A2	92	180	272		5.5	?	4	N	GC	GC	No
E0108	C31	*	30/11/2022	2	B2	80	100	180	130	4.5	?	6	N	GC	GC	No
E0109	C29	*	30/11/2022	2	B1	75	167	242		4.5	?	5	N	GC	GC	No
E0110	C62	*	30/11/2022	2	E2	92	130	222	182	6.5	?	3	N	GC	GC	No
E0111	C66		30/11/2022	2	J4	95	120	215	185	5.5	?	3	N	GC	GC	No
E0112	C67		30/11/2022	10B	B5	75	165	240		4.5	?	5	N	GC	GC	No
E0113	C68		30/11/2022	10B	I2	75	160	235		4.5	?	4	N	GC	GC	No
E0114	C69		30/11/2022	11A	E3	75	180	255		5.5	?	4	N	GC	GC	No
E0115	C70		30/11/2022	11A	F2	90	125	215	175	6	?	3	N	GC	GC	No
E0116	C59	*	30/11/2022	11B	B5	92	180	272		7	?	4	N	GC	GC	No
E0117	C71		8/12/2022	11A	A1	85	115	200	175	5.5	?	4	N	GC	GC	No
E0118	C72		8/12/2022	10A	A2	90	170	260		7.5	?	4	N	GC	GC	No
E0119	C73		8/12/2022	10A	C5	115	115	230	170	7	?	5	N	GC	GC	No
E0120	C74		8/12/2022	10A	E4	90	190	280		7	?	5	N	GC	GC	No
E0121			8/12/2022	10D	C5											
E0122	C56	*	8/12/2022	1	A4	95	155	250		7	?	4	N	GC	GC	No
E0123	C75		8/12/2022	1	F3	85	95	180	130	5	?	4	N	GC	GC	No
E0124			8/12/2022	1												
E0125	C76		8/12/2022	1	J1	85	165	250	240	8	?	4	N	GC	GC	No
E0126	C65	*	8/12/2022	2	A2	93	160	253		7.5	?	5	Y	GC	GC	No
E0127	C77		8/12/2022	2	A2	87	115	202	172	6	?	8	N	GC	GC	No
E0128	C78		8/12/2022	2	D5	95	195	290		9	?	3	N	GC	GC	No
E0129	C79		8/12/2022	2	E1	95	200	295		9	?	3	N	GC	GC	No
E0130	C80		8/12/2022	2	E4	100	192	292		9.5	?	4	N	GC	GC	No
E0131	C81		8/12/2022	2	F4	90	176	266		6	?		N	D		
E0132	C53	*	8/12/2022	2	H4	100	160	260		8	?	4	N	GC	GC	No

Appendix 3 – SLL Surveys 2022: Dorsal scale photos

C29

C30

C31

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C33

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C36

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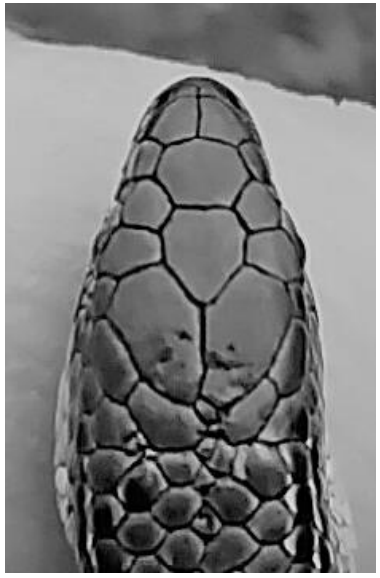
C38

C39

C40



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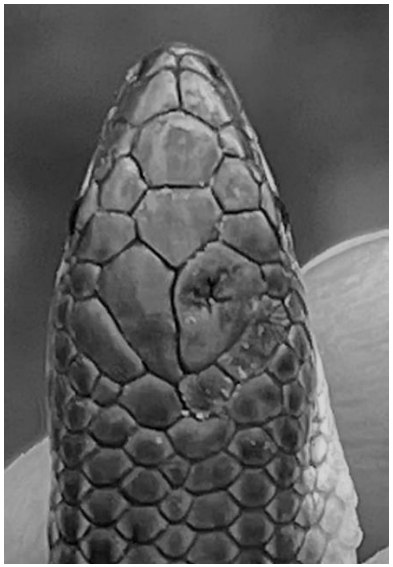

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