

# **ANNUAL PERMIT REPORT**

## **Archaeological annual research excavation**

**Archaeological excavations at Damvlei, Free State Province: the 2019 season.**

**Permit number:** 2862

**SAHRIS Case ID:** 13324

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**Date:** 23 January 2020

**SAHRA permit officers:** Ragna Redelstorff and Philip Hine

**Date of permit issue:** 4 February 2019

**Expiry date of permit:** 28 February 2022

**Permit holder:** Dr. Lloyd Rossouw, National Museum Bloemfontein

**Permit to:** Dr. Michael Toffolo (Bordeaux Montaigne University, France), Dr. Britt Bousman (Texas State University, USA), Dr. Daryl Codron (University of the Free State, South Africa), Dr. Christopher Miller (University of Tübingen, Germany), Dr. Lloyd Rossouw (National Museum Bloemfontein)

**Site name:** Damvlei

**Object ID:** 129111

## **Executive summary**

The site was excavated from 30 July until 7 August 2019. Five excavation units, each of 1 m<sup>2</sup> surface area, were laid out in the southern side of the preserved alluvial terrace, between the Modder River (to the north) and the donga (to the south). Locales were selected based on the occurrence of lithics in situ in eroded sections of the donga, and units were laid out using a total station according to an excavation grid anchored to two permanent landmarks (concrete blocks), whose exact coordinates were measured using a GPS device and corrected. Units 1-4 are located in the southernmost tip of the terrace, overlooking the donga, whereas Unit 5 is located about 60 m to the north. The edges of the donga were plotted with the total station to obtain a reference contour map of the site. Unit 4 was not excavated. All other units were excavated to a depth of 50 cm below surface (Unit 1 reached 60 cm) by arbitrary levels 10 cm thick using pointing trowels, patches and small picks due to the hardness of clay-rich layers. All levels were photographed and plotted. Artifacts, bones and sediment samples were 3D-plotted using a total station and labeled using progressive numbers, whereas excavated sediments were sieved through a 4-mm mesh to recover small lithic flakes and bone chips. Large herbivore teeth and diagnostic artifacts were 3D-plotted and collected out of context at the bottom of the donga. Aerial photos of the site were taken using a drone. At the end of the season, trenches were backfilled with sandbags. Two sedimentary units were identified and described during fieldwork. From top to bottom: a layer of eolian sand about 20 cm thick, and a layer of clayey silt 30 cm thick. In Unit 1, the latter is 40 cm thick due to the higher depth of the excavation and exhibits incipient calcium carbonate nodules, which make the sediment fairly compact. Most artifacts recovered were concentrated in Level 3-4 and show characteristic features of Later Stone Age technology. A dating profile was prepared by cutting back a one-meter wide portion of the exposed south donga section. Here the stratigraphic sequence reaches 2 m in depth. Variations in calcium carbonate nodule concentrations and bioturbation were observed throughout the profile, whereas no additional sedimentary units are present. Bulk sediment samples were collected for radiocarbon and luminescence dating, infrared spectroscopy and phytolith analysis. Intact blocks of sediment were collected for micromorphological analysis. Sediment samples cover all of the excavated levels and transitions between sedimentary units.

## **SAHRIS object links**

**Damvlei:** <https://sahris.sahra.org.za/sites/damvlei>

**OSL samples:** <https://sahris.sahra.org.za/objects/lov-dmv2019osl>

**Sediment samples:** <https://sahris.sahra.org.za/objects/lov-dmv2019sediment>

**Bone samples:** <https://sahris.sahra.org.za/objects/lov-dmv2019bones>

**Export permit for OSL samples:** <https://sahris.sahra.org.za/cases/export-permit-2019-osl-samples-lovedale-and-damvlei>

**Export permit for bone and sediment samples:** <https://sahris.sahra.org.za/cases/export-permit-2019-sediment-and-bone-samples-lovedale-and-damvlei>

## **Location details**

**Location name:** Farm Strydomspan 29

**GPS coordinates:** 28°54'29.90"S 25°41'51.94"E

**Nearest town:** Dealesville

**Local District:** Petrusburg

**Magisterial District:** Petrusburg

**Province:** Free State

**Approximate age of materials:** the last 20,000 years (based on relative chronology of artifacts)

## **List of all participating researchers**

- Dr. Michael Toffolo, Bordeaux Montaigne University (France): director of fieldwork, infrared spectroscopy analysis of sediments and bones.
- Dr. Kristen Wroth, University of Tübingen (Germany): fieldwork, registrar, phytolith analysis, sediment analysis using infrared spectroscopy and micromorphology.
- Dr. Britt Bousman, Texas State University (USA): fieldwork, site survey, lithics analysis.
- Dr. Chantal Tribolo, Centre National de la Recherche Scientifique (France): fieldwork, optically stimulated luminescence dating.
- Dr. Elisabetta Boaretto, Weizmann Institute of Science (Israel): fieldwork, radiocarbon dating.
- Dr. Lloyd Rossouw, National Museum Bloemfontein: fieldwork, phytolith analysis, curation of artifacts and bones.
- Mr. Isaac Thapo, National Museum Bloemfontein: fieldwork.
- Mr. Jacob Maine, National Museum Bloemfontein: fieldwork.
- Mr. Abel Dichakane, National Museum Bloemfontein: fieldwork.
- Dr. Daryl Codron, University of the Free State: carbon and oxygen stable isotope analysis of teeth.
- Dr. Liora Kolska Horwitz, Hebrew University of Jerusalem (Israel): faunal analysis.
- Dr. Christopher Miller, University of Tübingen (Germany): micromorphology analysis of sediments.

## **Curation of materials**

**Name of institution:** Florisbad Quaternary Research Department, National Museum Bloemfontein

**Name of curator:** Dr. Lloyd Rossouw

**Phone number of curator:** 0842505992

**Email address of curator:** [lloyd@nasmus.co.za](mailto:lloyd@nasmus.co.za)

**Institutional address:** 36 Aliwal Street, 9300 Bloemfontein

**Storage:** lithics and bones are stored in ziplock plastic bags labeled with progressive numbers, which are kept in labeled carton boxes (one box for lithics and one box for bones). Each number corresponds to specific spatial coordinates and Unit/Level numbers. Bulk sediment samples are stored in plastic vials. A comprehensive list of all materials extracted from the excavation and their spatial coordinates is available in an Excel worksheet at the National Museum, as well as fieldwork photos.

### Specific information

<b>Responsible person 1</b> <i>Full name:</i> <i>Position/academic level:</i>	Dr. Michael Toffolo Junior Research Chair Bordeaux Montaigne University, France
<b>Responsible person 2</b> <i>Full name:</i> <i>Position/academic level:</i>	Dr. Kristen Wroth Postdoc University of Tübingen, Germany
<b>Responsible person 3</b> <i>Full name:</i> <i>Position/academic level:</i>	Dr. Lloyd Rossouw Head of Department National Museum Bloemfontein
<b>Number of participants</b>	9
<b>Duration of field work</b> (e.g., 3-15 May 2015)	30 July-7 August 2019
<b>Excavation equipment used</b> (e.g., trowels, picks, chisels, total station, screen mesh sizes)	Pointing trowels, patches and small picks were used for excavation; dentistry tools were used to uncover stone tools; pickaxes and shovels were used to clean dating profiles along exposed donga sections. All sediments were sieved through a 4 mm mesh. Excavation grid and units, artifacts, bones, sediment samples and off-excavation surface finds were 3D-plotted using a total station.
<b>Indication of volume excavated</b> numbers or names of stratigraphic units removed, approximate volume excavated (estimated bucket count)	Five excavation units were laid out. Unit 1 was excavated by arbitrary levels 10 cm thick to a depth of 60 cm. Units 2-3-5 were excavated in the same manner to a depth of 50 cm. Unit 4 was not excavated.
<b>Samples</b> provide a list of all samples taken and what analysis is planned to be carried out. (e.g. charcoal samples taken for radio-carbon dating, samples and placement of scimitars for TL dating)	List of radiocarbon dating samples: DMV-TOC-1 sediment DMV-TOC-2 sediment DMV-TOC-3 sediment DMV-TOC-4 sediment DMV-TOC-5 sediment DMV-TOC-6 sediment DMV-TOC-7 sediment DMV-RC-1 undiagnostic bone fragments DMV-RC-2 sediment  List of optically stimulated luminescence dating samples: DMV-OSL-1 sediment  List of bulk sediment samples for phytolith analysis and infrared spectroscopy: DMV-SED-1 DMV-SED-2 DMV-SED-3 DMV-SED-4 DMV-SED-5 DMV-SED-6 DMV-SED-7

	DMV-SED-8 DMV-SED-9 DMV-SED-10 DMV-SED-11 DMV-SED-12 DMV-SED-13 DMV-SED-14 DMV-SED-15 DMV-SED-16 DMV-SED-17 DMV-SED-18 DMV-SED-19 DMV-SED-20 DMV-MM-1-bulk DMV-MM-2-bulk  List of intact sediment blocks for micromorphology analysis: DMV-MM-1 DMV-MM-2
<b>Description of work/methodology</b> excavation strategy, recording techniques used etc.	Units were excavated by arbitrary levels 10 cm thick. All level surfaces, artifacts and sediment samples were 3D-plotted using a total station. Level surfaces and sediment sample locations were photographed. All sediments were described according to texture, structure, inclusions and color.

**List of excavated artifacts and bones by Unit/Level.** All artifacts are made of hornfels. Classification by type is not yet available, although artifacts show characteristic features of Later Stone Age technology.

	Unit 1	Unit 2	Unit 3	Unit 5
Level 1	11	6	0	3
Level 2	10	17	5	4
Level 3	28	27	10	3
Level 4	9	8	35	5
Level 5	13	18 (+2 bones)	8	24
Level 6	4	-	-	-

Off-excavation surface lithics: 24

Off-excavation surface bones and teeth: 10

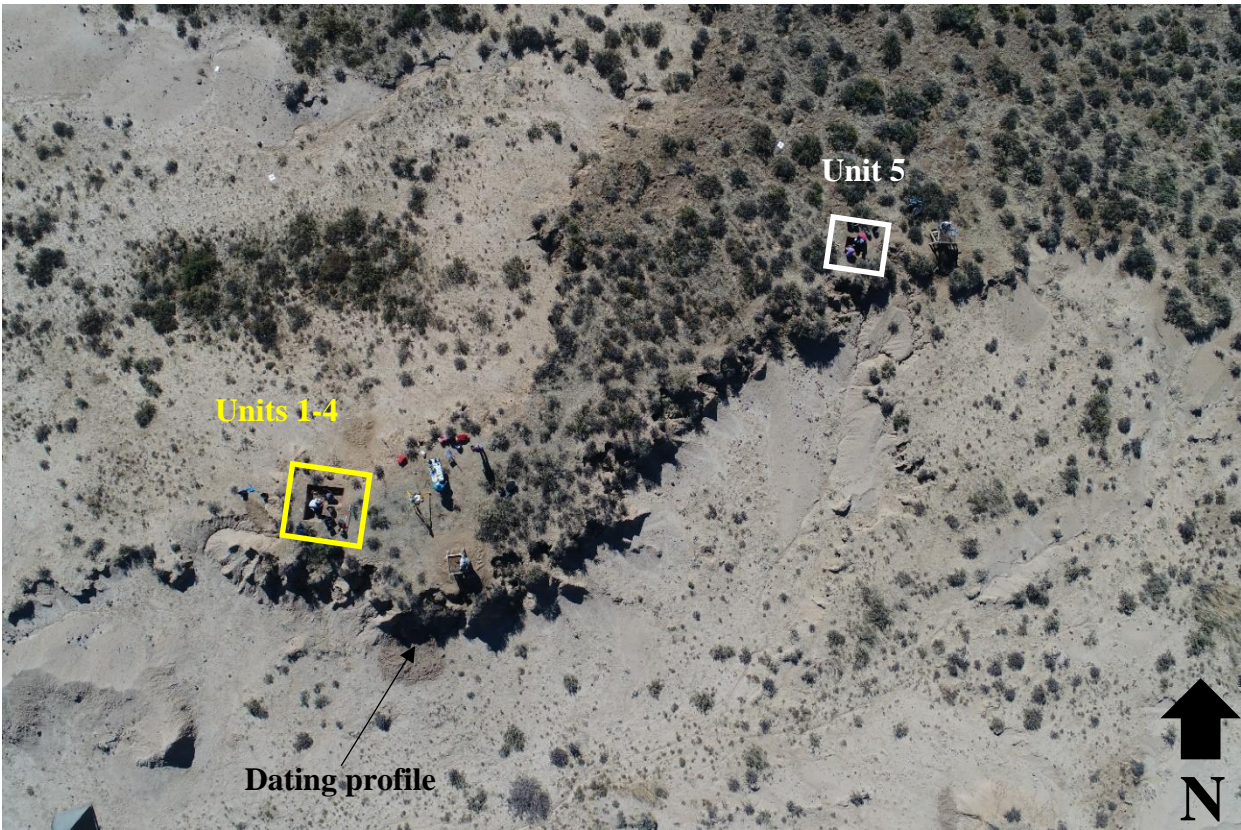
Off-excavation surface potsherds: 1



**Figure 1.** Map showing the location of Damvlei in the western Free State. The meandering green line running east-west is the Modder River.



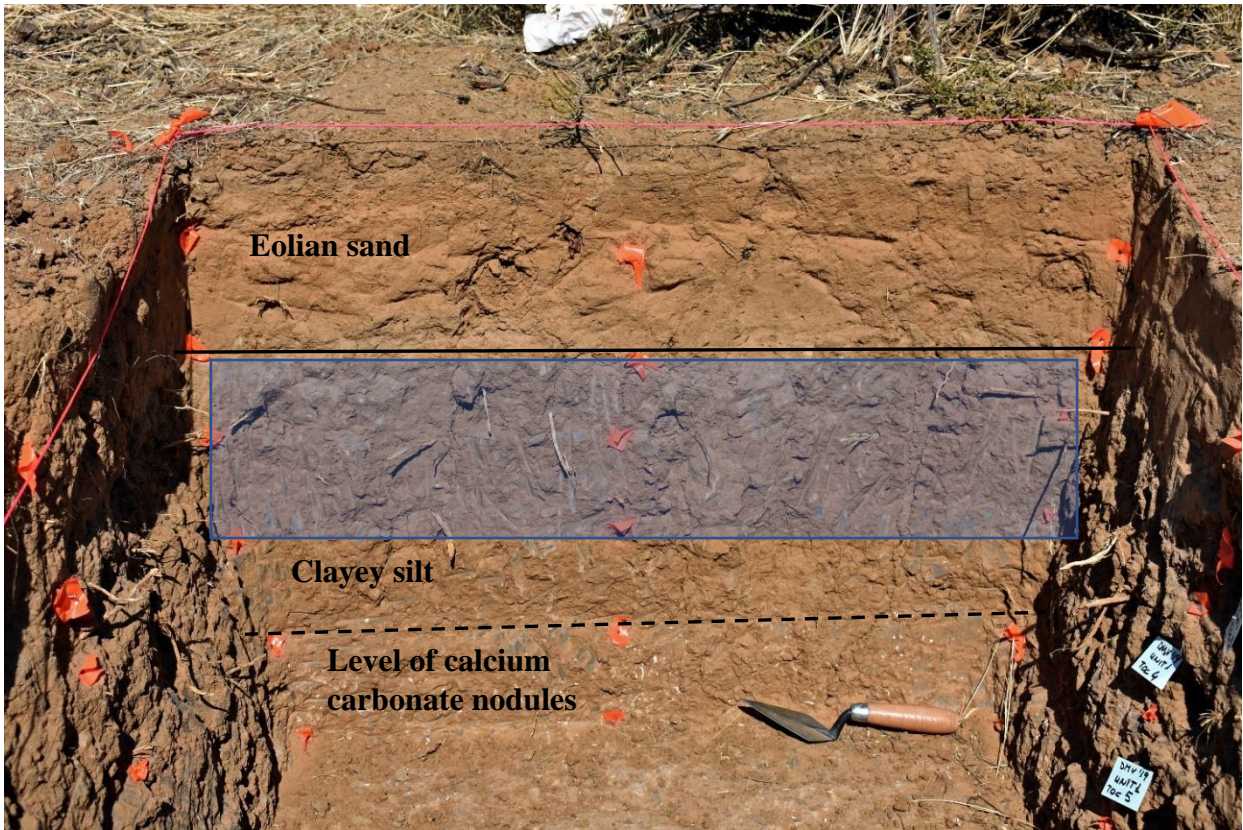
**Figure 2.** Aerial photo showing the location of the excavation site between the Modder River (grey line running east-west in the upper portion of the photo) and the donga (white patches). The green meandering feature running south-north in the right-hand side of the photo is the vlei.



**Figure 3.** Aerial photo showing the location of excavation units and dating profile.



**Figure 4.** Units 1-4 during excavation.



**Figure 5.** Profile photo of the south section of Unit 1, showing the stratigraphic sequence. Orange tape marks the elevation of Levels, whereas the transparent rectangle marks the levels with the highest concentration of stone tools. Trowel: 15 cm. Depth of profile: 50 cm.





**Figure 6.** Photo of the dating profile, facing south. The solid line marks the transition between eolian sand and clayey silt; dashed lines mark zones with varying content of calcium carbonate nodules. The hole is the collection site of a luminescence dating sample. Scale: 20 cm.