

Export permit

Please note an export permit must be linked to an object that has to be created on SAHRIS! If the object you want to work on has not been created yet, you would need to **create an ObjectID**.

Required documents:

- For export of material from KZN, Eastern Cape or Western Cape that involves destructive analysis, the **destructive sampling permit** from the respective Heritage Authority must be submitted;
- A consent letter from the accessioning institution.

The proposal should include (you can fill these in below):

- a list of participants (name, affiliation, phone no, email addresses) and how they are involved;
- the name and address of the facility, including address, it is being analysed at;
- name and address of the museum/university department that currently hosts the object;
- names of the responsible person(s) during transport and while the fossil is at the facility;
- the period/time frame during which the fossil(s) will be outside the country;
- detailed information on the fossil(s), especially as it is a "unique" specimen;
- detailed information on the research project behind it & methodology including expected outcomes (i.e., the reason for export);
- the written confirmation of the institution that currently hosts the object that the object may be used as proposed and be returned in good condition;
- should there be any damage/destructive analysis (e.g., coating for higher resolution) undertaken, this needs to be stated in detail;
- Statement why this study cannot be done in South Africa.

Applicant (name and affiliation):

Dawn Green, PhD candidate, University of Cape Town

Applied for (principal researcher):

Professor Adelphine Bonneau, University of Sherbrooke

Participants with affiliations, email addresses, phone numbers (& their role):

1) Dawn Green, University of Cape Town, dgreen@eci.co.za, 0459719078.

Role: Assistant pigment sampling

2) Professor Adelphine Bonneau, University of Sherbrooke, Canada,

Adelphine.Bonneau@USherbrooke.ca, +1 581 986 8942

Role: Pigment characterization in laboratory at University of Sherbrooke.

The material will be hand-carried to the University of Sherbrooke, Canada on **5 November 2022** by Professor Adelphine Bonneau and brought back by (not applicable).

Professor Adelphine Bonneau will be involved with the transport and analysis of the samples.

Institution incl. address that currently hosts the object:

Rock art sites in the Eastern Cape: GLL 1 & 2, BNB 1, 2, 3, 4, and LEL 1, 2, 3, 4, 5

And

Kwa-Zulu Natal: 2929CC 035, 036, 037, 038.

Facility incl. address at which the experiment will be done:

Laboratories at the Faculty of History and Faculty of Chemistry, 2500 Bd de l'Université, Sherbrooke, QC J1K 2R1, Canada.

Table of objects or upload file:

Green Bonneau SAHRIS Template for Objects export permit November 22

Site including age at which object was found:

Rock art sites in the Eastern Cape: GLL 1 & 2, BNB 1, 2, 3, 4, and LEL 1, 2, 3, 4, 5

And

Kwa-Zulu Natal: 2929CC 035, 036, 037, 038.

Age unknown until further analysis.

Time frame:

Transport to University of Sherbrooke: 5 November 2022

Return date: Not applicable.

Aim/rationale:

Dr Adelphine Bonnueau has collaborated with Dr David Pearce for the past seven years to refine the

process of removing pigment and its analysis, predominantly in the Maclear area of the Eastern

Cape, South Africa (Bonneau et al 2017a&b). The characterisation of pigments is essential to

understand pigment choices and recipes between sites and areas which may indicate differences in

the choices and identities of the San painting. It may also provide information about how San people

moved through landscapes and the potential of trade in pigment. In addition, it may provide

information on how shelters were used for ritual and other purposes. Characterisation of pigments is also crucial for identifying carbon blacks for finding ^{14}C dates. Dates obtained on carbon-black and soot paints will most likely reflect the time of painting. Carbon black may be found in nature but will not survive more than 2 or 3 months. Most of the time, this kind of pigment is thought to be made by humans (Garate et al. 2004; Bonneau et al 2017: 672).

Dating southern African rock art is in the early phases and this work is critical for providing more exact interpretations of the past. No excavations have been undertaken in these sites so the paintings cannot be dated by comparison to excavated material nor can we approximate dates for when the sites were occupied (Bonneau et al 2017a&b; Bonneau et al 2021). It is unlikely that many of these shelters could be excavated due to their isolated and difficult to reach provenance. Excavation is also a very destructive and expensive process which also demands sustained expense in the curation of materials.

Methodology (short):

To conduct the characterization of paints, a multi-instrumentation protocol has been developed to analyse unprepared, prepared and cross-section samples using microscopy, Raman spectroscopy, scanning electron microscopy coupled with X-ray energy dispersive spectrometer (SEM-EDS), and Fourier transform infrared (FTIR) spectroscopy (Bonneau et al 2017: 663). Each sample is split into two parts; one is left unprepared and the other embedded in an epoxy resin and polished in section to reveal the succession of layers (Bonneau et al 2021). Both samples are observed with a light microscope and scanning electron microscope (SEM; Bonneau et al 2021).

Confirmation/permit by museum

See permits from:

Eastern Cape Provincial Heritage Resources Authority: 3429

KwaZulu-Natal Provincial Heritage Resources Authority: SAH21/17136/37/38/39

Damage/destructive analysis? (if yes, explain in detail)

Yes. Tiny pigment samples 0.5 mm² are treated and then analysed with various microscopes.

Statement why this study cannot be done in South Africa:

There is not the equipment nor the expertise in South Africa.