
Vandalism vs. Heroism

Failures & Successes in Rock Art Conservation

KATY CORNELI

COLLECTIONS MANAGER & CONSERVATOR

USU EASTERN PREHISTORIC MUSEUM



Overview

- Threatened heritage
- What is "conservation"?
 - Aims
 - Ethics
 - Considerations
- Preventive vs. Interventive
- Case Studies
 - Big Bend National Park
 - Baloon Cave
 - Buckhorn Draw
- Current Aims

The Guardian
Global heating is destroying rock art
tens of thousands of years old, experts warn

The New York Times
Prehistoric Rock Art 'Irreparably Damaged' by Vandals, Officials Say
Geometric rock carvings that are believed to be at least 3,000 years old were scratched with names and dates at Big Bend National Park in Texas

NATIONAL GEOGRAPHIC
TRAVEL | WORLD HERITAGE
Pollution is threatening some of the world's oldest rock carvings
Scientists fear climate change and mining contamination could destroy Murujuga—Australia's next UNESCO site—within a century.

Threatened Heritage

"NATURAL"

- Physiochemical Weathering
 - Water
 - Sand/Dust
 - Light
 - Fire/Smoke/Heat
- Biological Growth (may induce weathering)
 - Lichens
 - Moss
 - Plant material
- Animal Impacts
 - Habitation on/near (Birds, bats, wasps)
 - Surface wear

"HUMAN"

- Soiling (through touch, pollution, road dust, etc.)
- Graffiti
- Rubbings & Chalking
- Quarrying
- Climate change
 - Severe weather
 - Wildfires
 - Humidity & Temperature changes
 - Increased winds
- Acid rain
- Vibrations
- Good intentions

“Conservation”



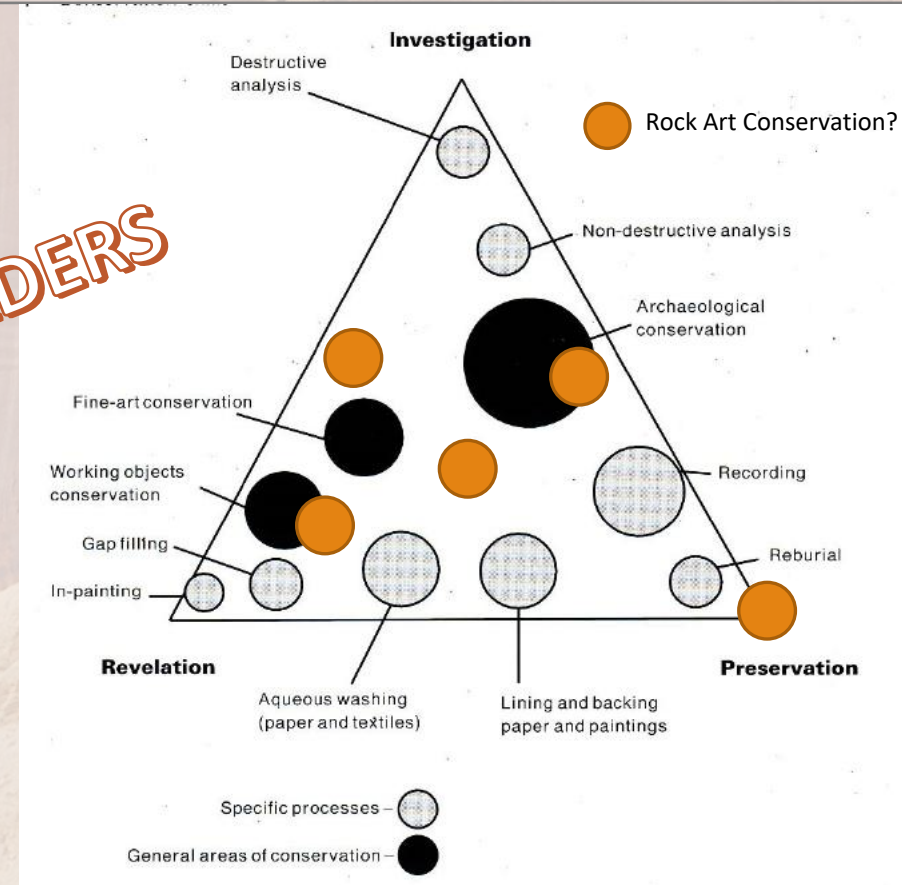
Conservation: The profession devoted to the preservation of cultural property for the future.

Conservator: A professional whose primary occupation is the practice of conservation and who, through specialized education, knowledge, training, and experience, formulates and implements all the activities of conservation in accordance with an ethical code such as the AIC Code of Ethics and Guidelines for Practice.

Aims – Balance & Compromise

- Revelation
 - Cleaning/exposing
 - Reveal “original” form or function
 - “Restoration”
- Investigation (Analysis)
 - Microscopy
 - XRF
 - FTIR
 - Sampling
 - C¹⁴ Dating
 - GCMS
- Preservation
 - Maintaining present form (and materials?)
 - Arrest deterioration/stabilize
 - Digital Preservation

STAKEHOLDERS



From: Caple, C. 2006. *Conservation Skills: Judgement, Method and Decision Making*, p. 34

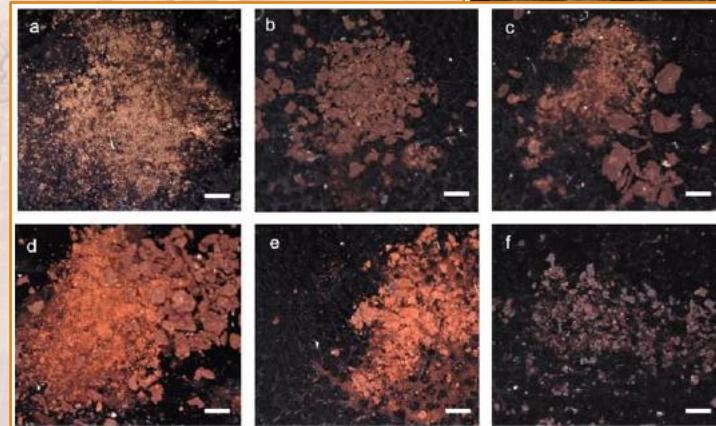
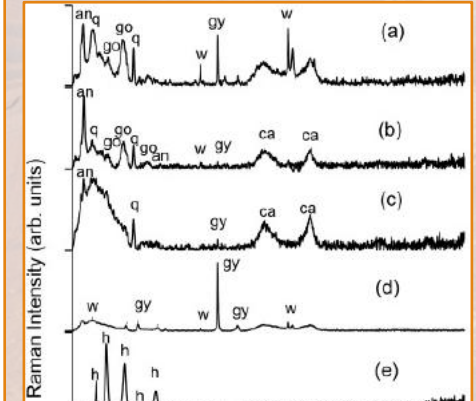
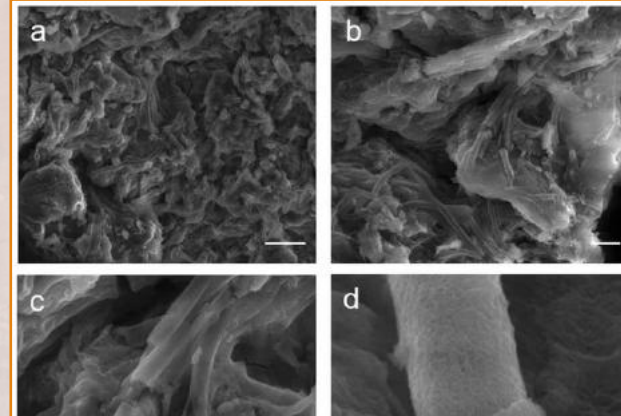
Ethics – Balance & Judgement

- True Nature?
 - Loss of “authenticity”
 - Removal of “inappropriate” restorations
 - Remove dirt & decay
- Reversibility?
 - Re-treatability
- Minimal intervention?
- Pragmatic (funding)?
- Stewardship
- Importance to descendant communities & traditional users*



Considerations – Materials

- Substrate
- Pigments
- Binders
- Tools
- Location



Samples of the lake bacteria heated to between 600 and 800 degrees (d and e) show vivid colours. Samples heated to lower temperatures (a-c) or higher ones (f) are less impressive (MacDonald et al., Scientific Reports)



These vivid red petroglyphs at Babine Lake, B.C., were painted many hundreds, or possibly thousands of years ago with a pigment harvested by ancient indigenous people from lake goo. (University of Missouri)

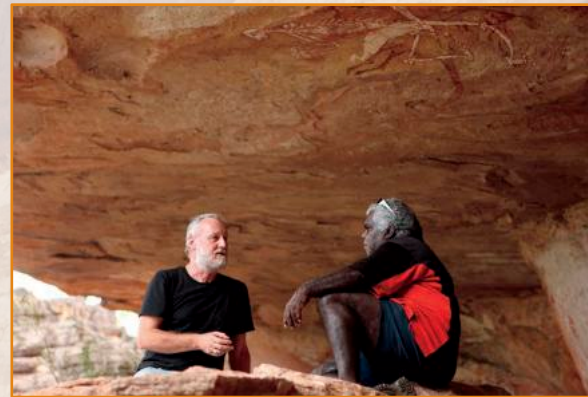
Considerations: 10 Agents of Deterioration

1. Water
2. Fire
3. Theft
4. Temperature
5. Humidity
6. Light
7. Neglect
8. Pollution
9. Physical Forces
10. Pests



Considerations – Values & Ownership

- Decolonization
- Cultural Inheritance
- Traditional and modern techniques
- Tangible and intangible values
- Indigenous collaboration
 - International examples
 - Australia
 - USA – Sanilac Petroglyphs Historic State Park
 - Benefits
 - Empower Indigenous communities
 - Give control over management & interpretation
 - Result: Positive outcomes & shared path



Other Considerations

- Every site is unique
 - Location
 - Weather systems
 - Biota
 - Sociocultural formations
 - Land ownership
 - Available funding
- What works *here* may not work *there*
- What may be *justifiable* here may be *indefensible* there



Prevention vs. Intervention



Intervention – Is it necessary?

- Cleaning
 - Laser
 - Latex Poultice
 - Biological
- Surface Coatings
 - Water repellents
 - Anti-graffiti
 - Emulsions
 - Crystal growth inhibitors
 - Oxalates
 - Lime & Biocalcification
 - Colloidal Silica
 - Biocides

TABLE 1. Summary of main causes and effects in the deterioration of paintings executed on granite (o) and sandstone (x)

EFFECT	CAUSE							
	Sunlight or Rain	Surface Run-off	Rainfall – Low	Covering by precipitated salts and/or organic growths	Effect of moisture on surface of soluble salts	Moisture dissolving soluble salts	Crystallization of salts and sealing effect of paint	Thermal Extremes
Fading (Bleach and Removal)	o							
Paint Removal (Pigment and Binder)		o x						
Maximal Salt Formation on Paintings			o					
Obliteration of Paintings				x				
Deterioration of Surface and Paint					o			
Weakening of Rock Surface						x		
Spalling							o x	o x

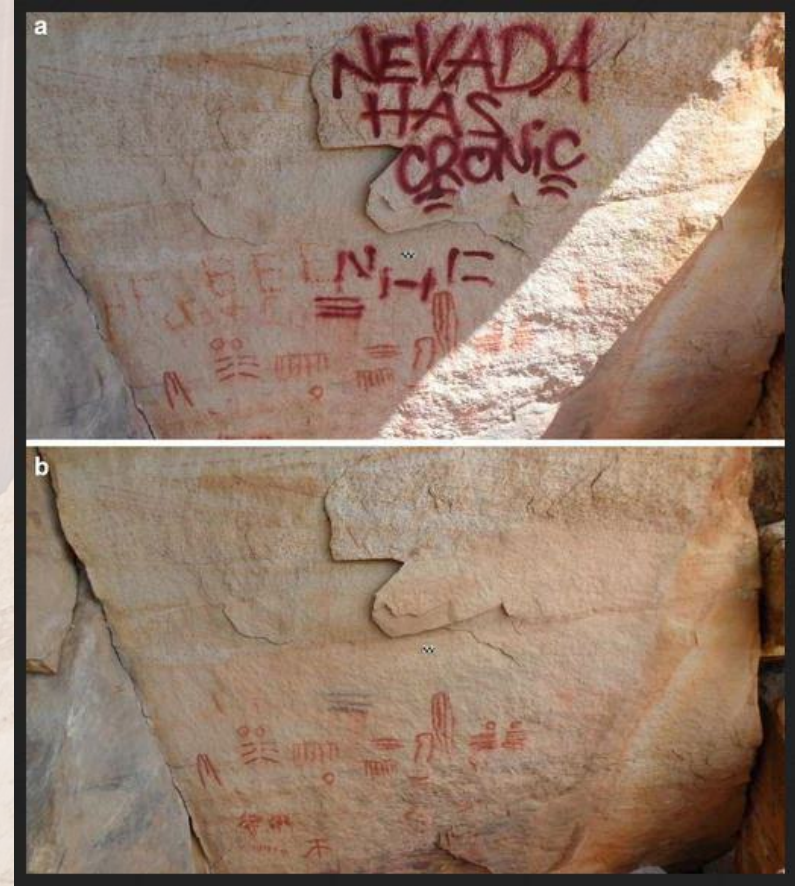
o – Granite – dense rock, dry Climate (South West Africa)

x – Sandstone – porous rock, Subtropical Montane (Drakensberg – S. Africa)

From Avery, 1978: Rock Art Conservation in South Africa

Intervention – Graffiti Removal

- See 2017 URARA talk by Don Montoya
- Solvents
- Abrasives
- Laser cleaning – Hueco Tanks, TX



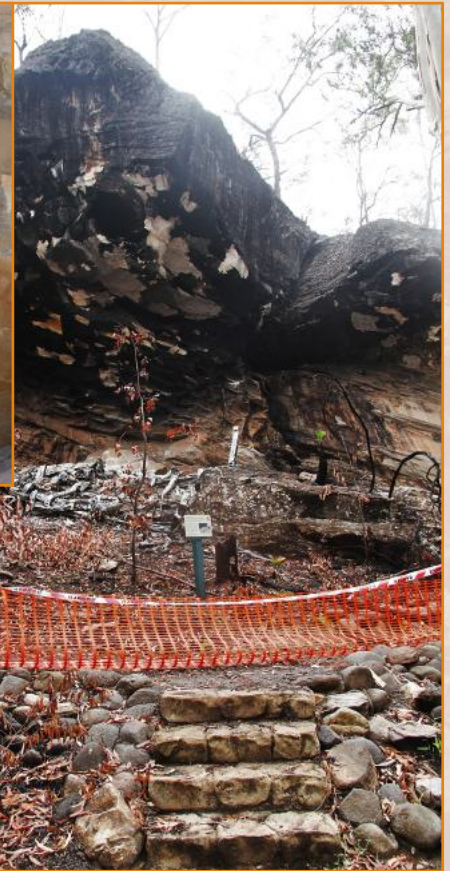
Case Study – Big Bend National Park



Image credits: <https://www.texasmonthly.com/travel/folks-please-dont-mess-with-texas-rock-art/>

Case Study – Balloon Cave

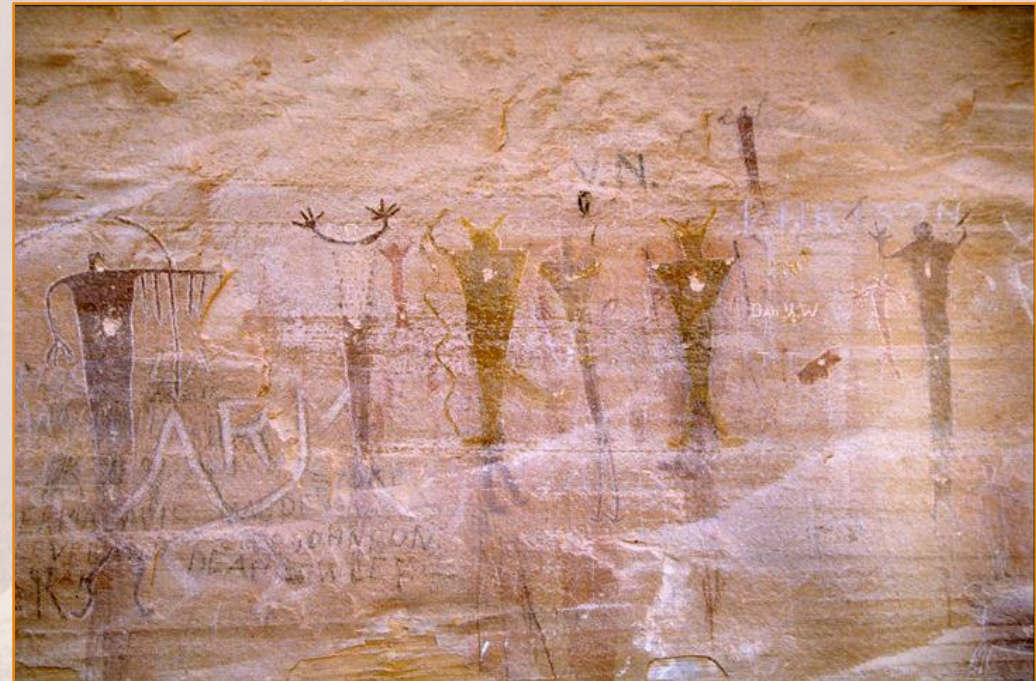
- Carnarvon Gorge, Australia
- 2014 – boardwalk installed
 - Replas Enduroplank™
 - Recycled plastic
 - Designed to reduce visitor impact
 - “Durable & Fire Retardant”
- 2018 brushfire
- Explosion of boardwalk
 - Broken rock
 - Water damage from steam
 - Smoke damage
 - Similar occurrence in 2008



Case Study – Buckhorn Draw



Photograph by Horace Sykes c. 1945-53. Courtesy <https://pauldorpat.com/2010/04/21/our-daily-sykes-9-utah-buckhorn-draw-pictograph-panel/>



Photograph by Christopher Christie. Pre-1995. Courtesy <https://www.flickr.com/photos/christopherchristie/32717443084/in/photostream/>

Buckhorn Draw – Cleaning



Photograph and D-Stretch from 2022

Buckhorn Draw – D-stretch



Current Aims

1. Work actively to promote rock art as a valuable heritage for everyone, and allocate sufficient resources specifically to its future care.
2. Manage to protect all values
3. Preserve and manage rock art as an inherent part of the landscape
4. Safeguard cultural rights and practices
5. Involve and empower Indigenous owners and local communities in decisions about rock art management and conservation.
6. Use recognized ethics, protocols and standards for documentation, conservation and interpretation as the basis for management practice
7. Give priority to preventive and protective conservation
8. Make effective communication and collaboration a central part of management