

Katarina Šprem

Juraj Dobrila University of Pula
Faculty of Humanities
Croatia

Katarina Gerometta

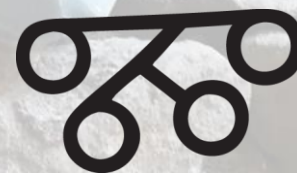
Juraj Dobrila University of Pula
Faculty of Humanities
Croatia

Ivor Karavanić

University of Zagreb
Faculty of Humanities and
Social Sciences
Croatia

TRAMPLING EXPERIMENTS

A contribution to pseudo- retouch issue



EAC11
Trento, Italy
May 2nd – 4th, 2019

INTRODUCTION

- apart from human-made retouch, stone artifacts can exhibit traces of damage due to post depositional processes
 - animal, human or natural in origin
 - can be interpreted as human-made retouch! *pseudo-retouch*
- **McBrearty et al. 1998** - Pseudo-tools can be classified according to Bordes typology.

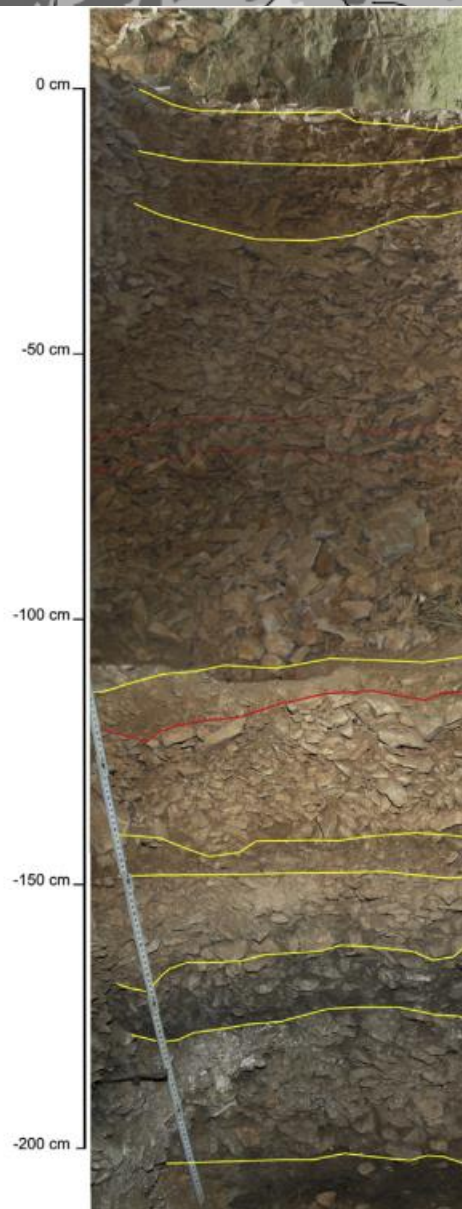
Authors/ Methodology	Depth	Substrate	Material	Sample size	Duration	Results
Driscoll et al. 2015	0	soil (differing compaction)	quartz, chert	500	2 weeks	taphonomy ruled out as a contributor to pseudo-retouch on chert or quartz
Thiébaut 2010	0	soil	flint, chert, quartzite, quartz	236	1 month	identification criteria and discriminating characteristics
McBrearty et al 1998	0	sand, loam	chert, obsidian	1400	60min	pseudo-tools can be classified according to Bordes typology
Shea & Klenck 1993	2-5cm	sandy soil	flint	60	90min	trampling can mask use-wear traces
Nielsen 1991	0	dry surfaces with no vegetation	obsidian	219	1500/800x	scars randomly distributed, isolated, on both surfaces; pseudo-retouch present
Pryor 1988	0	sand, loam	obsidian	1800	120min	scars random, not elongated; on both surfaces
Boot 1987	0/2cm	wet, dry sand	quartz, tuff, silcrete, chalcedony	51	16min	different soil conditions result in different intensities of artefact edge damage
Gifford-Gonzalez et al 1985	0	sand, loam	obsidian	2000	120min	flake scars random; mostly perpendicular, substrate important for scar shape formation
Tringham et al 1974	0	/	flint	10	30min	damage random, but on one surface only; scars elongated, with no fixed orientantion or size

Authors/ Methodology	Depth	Substrate	Material	Sample size	Duration	Results
Driscoll et al. 2015	0	soil (differing compaction)	quartz, chert	500	2 weeks	taphonomy ruled out as a contributor to pseudo-retouch on chert or quartz
Thiébaut 2010	0	soil	flint, chert, quartzite, quartz	236	1 month	identification criteria and discriminating characteristics
McBrearty et al 1998	0	sand, loam	chert, obsidian	1400	60min	pseudo-tools can be classified according to Bordes typology
Shea & Klenck 1993	2-5cm	sandy soil	flint	60	90min	trampling can mask use-wear traces
Nielsen 1991	0	dry surfaces with no vegetation	obsidian	219	1500/800x	scars randomly distributed, isolated, on both surfaces; pseudo-retouch present
Pryor 1988	0	sand, loam	obsidian	1800	120min	scars random, not elongated; on both surfaces
Boot 1987	0/2cm	wet, dry sand	quartz, tuff, silcrete, chalcedony	51	16min	different soil conditions result in different intensities of artefact edge damage
Gifford-Gonzalez et al 1985	0	sand, loam	obsidian	2000	120min	flake scars random; mostly perpendicular, substrate important for scar shape formation
Tringham et al 1974	0	/	flint	10	30min	damage random, but on one surface only; scars elongated, with no fixed orientantion or size

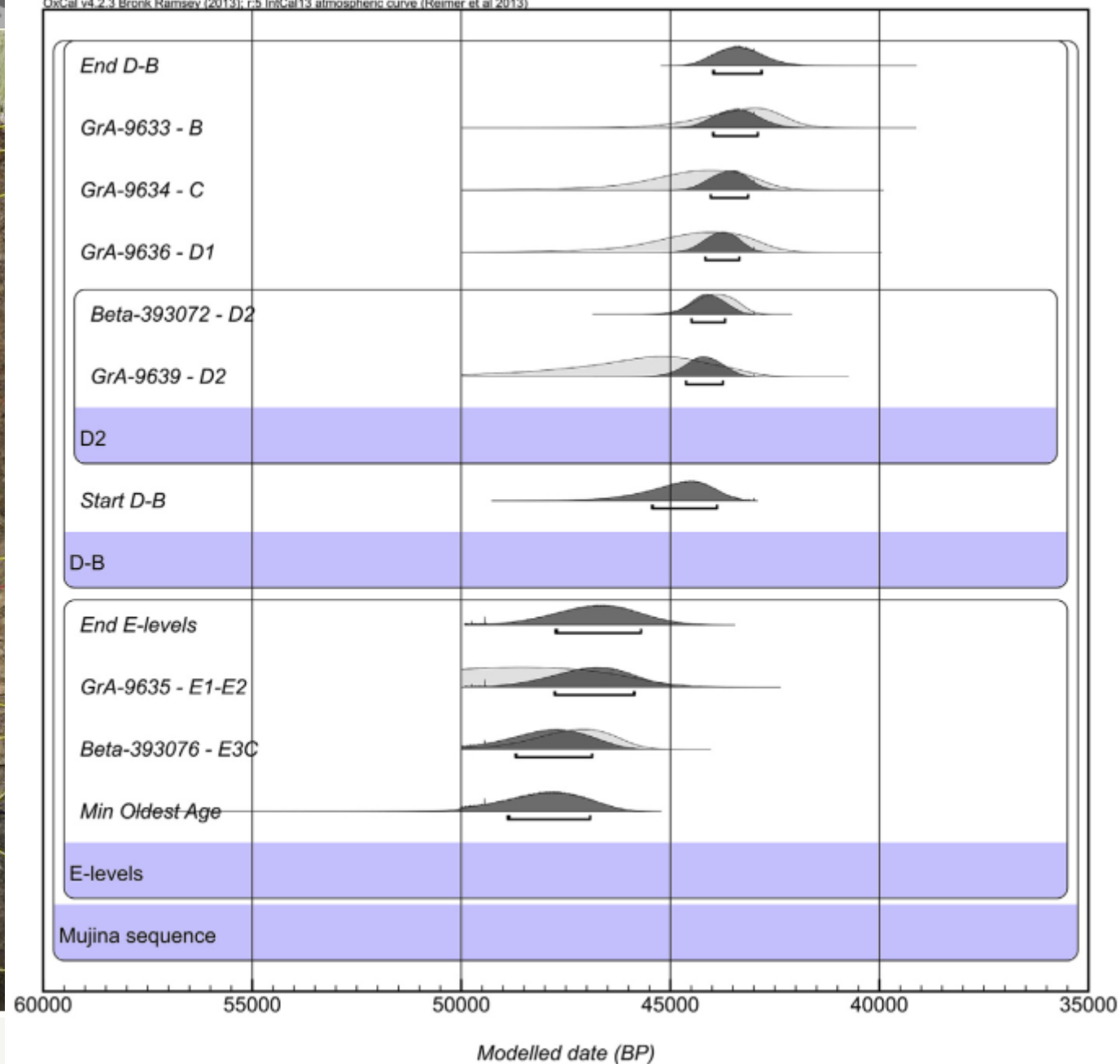
MUJINA PEĆINA, CROATIA



Photo: S. Burić.

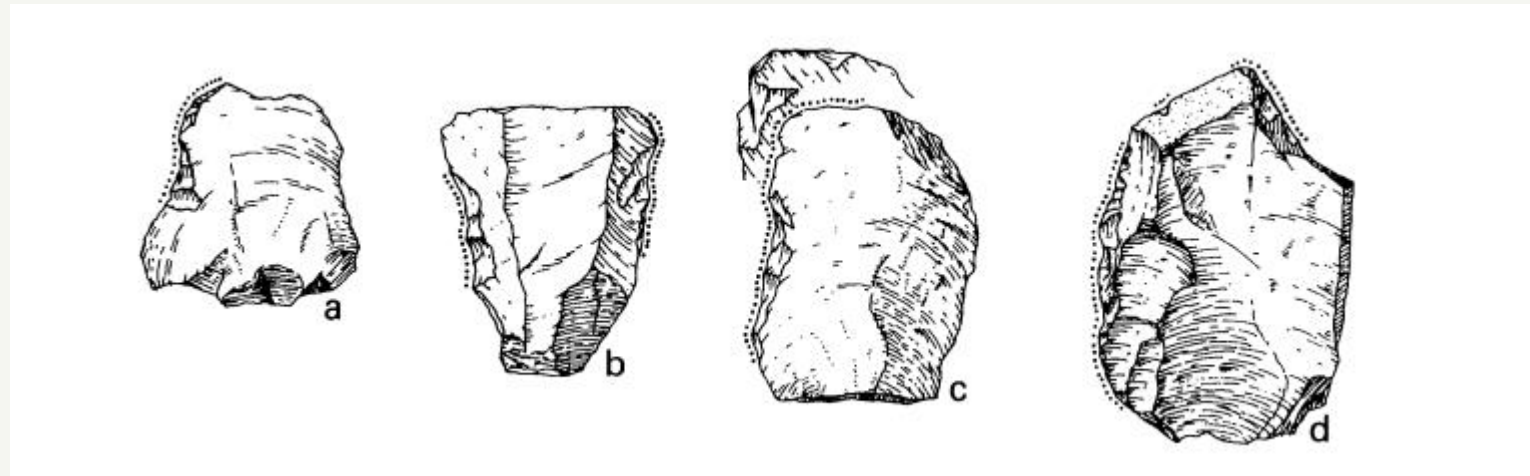


Boschian et al. 2017.



HYPOTHESIS

- We should be able to recognize human-made retouch from continuous edge damage (*pseudo-retouch*) made by trampling.



McBrearty et al. 1998.

2016 TRAMPLING EXPERIMENT (ET1)

TRAMPLING EXPERIMENT 1

(E.T. 1) 2015/2016

Authors/ Methodology	Depth	Substrate	Material	Sample size	Duration	Results
Šprem, Karavanić, Šošić Klindžić	15 cm	dry soil debris	5 different types of siliceous rocks	40 (20 +20)	~ 7 months	?



November 2015



November 2015



February 2016



June 2016

2018 TRAMPLING EXPERIMENT (ET2)

TRAMPLING EXPERIMENT 2

(E.T. 2) 2018

Authors/ Methodology	Depth	Substrate	Material	Sample size	Duration	Results
Šprem, Karavanić	-	debris	6 different types of siliceous rocks	80	30 minutes	?

Crna Draga
– lighter



Istria



Crna Draga
– darker



Melos



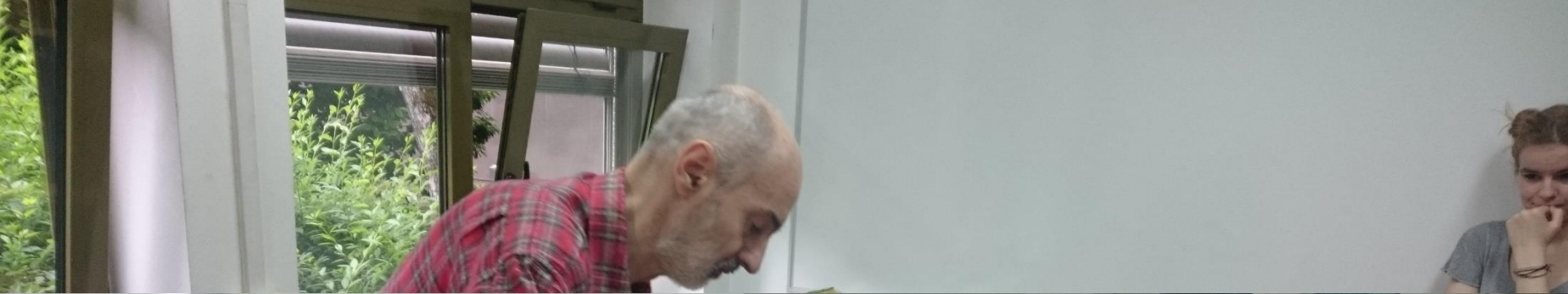
Slavonija



Trogir



May 2017



May 2017



May 2017

September 2018



September 2018



September 2018





„To avoid flake initiation from the shoes themselves, the participants wore soft-soled shoes.“ **McPherron et al. 2014**



September 2018



2018 TRAMPLING EXPERIMENT (ET3)

TRAMPLING EXPERIMENT 3

(E.T. 3) 2018

Authors/ Methodology	Depth	Substrate	Material	Sample size	Duration	Results
Šprem, Gerometta, Karavanić	-	soil	6 different types of siliceous rocks	80 (81)	60 minutes	?

Crna Draga – darker

December 2018

Istria

Melos

Crna Draga
– lighter

Slavonija

Trogir



December 2018



December 2018



Center for Experimental Archaeology (CEXA), Zagreb, Croatia

December 2018





after 60 min

METHODOLOGY

EDGE DAMAGE

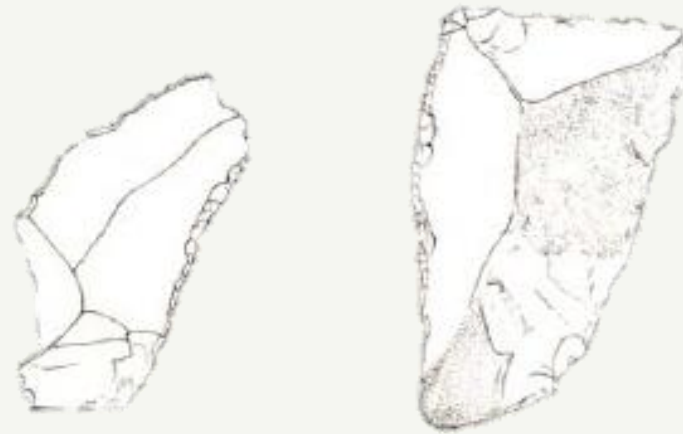
- P. Villa i M. Soressi 2000:
 1. **MARGINAL** – <1.5 mm
 2. **MEDIUM** – 1.5 – 4.5 mm
 3. **MICROFRACTURES** – (edge break without a bulbar scar)



ADDED VALUES

4. CHIPPED – severely affects artifact morphology

5. BREAKAGE – broke in half



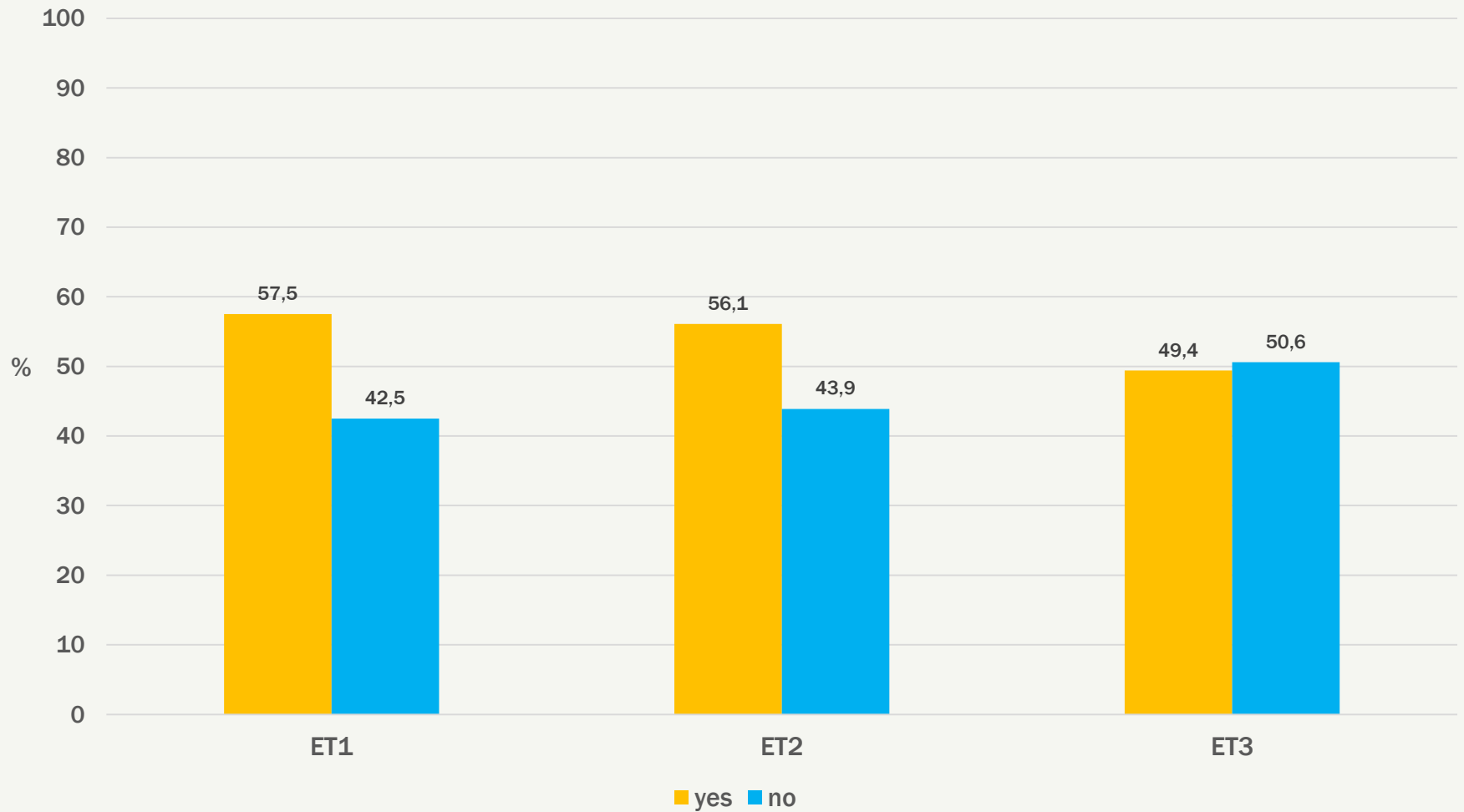
MCBREARTY ET AL. 1998

Pseudo-tools show one or more large scars
($>3\text{mm}$); in most cases these scars are
contiguous.

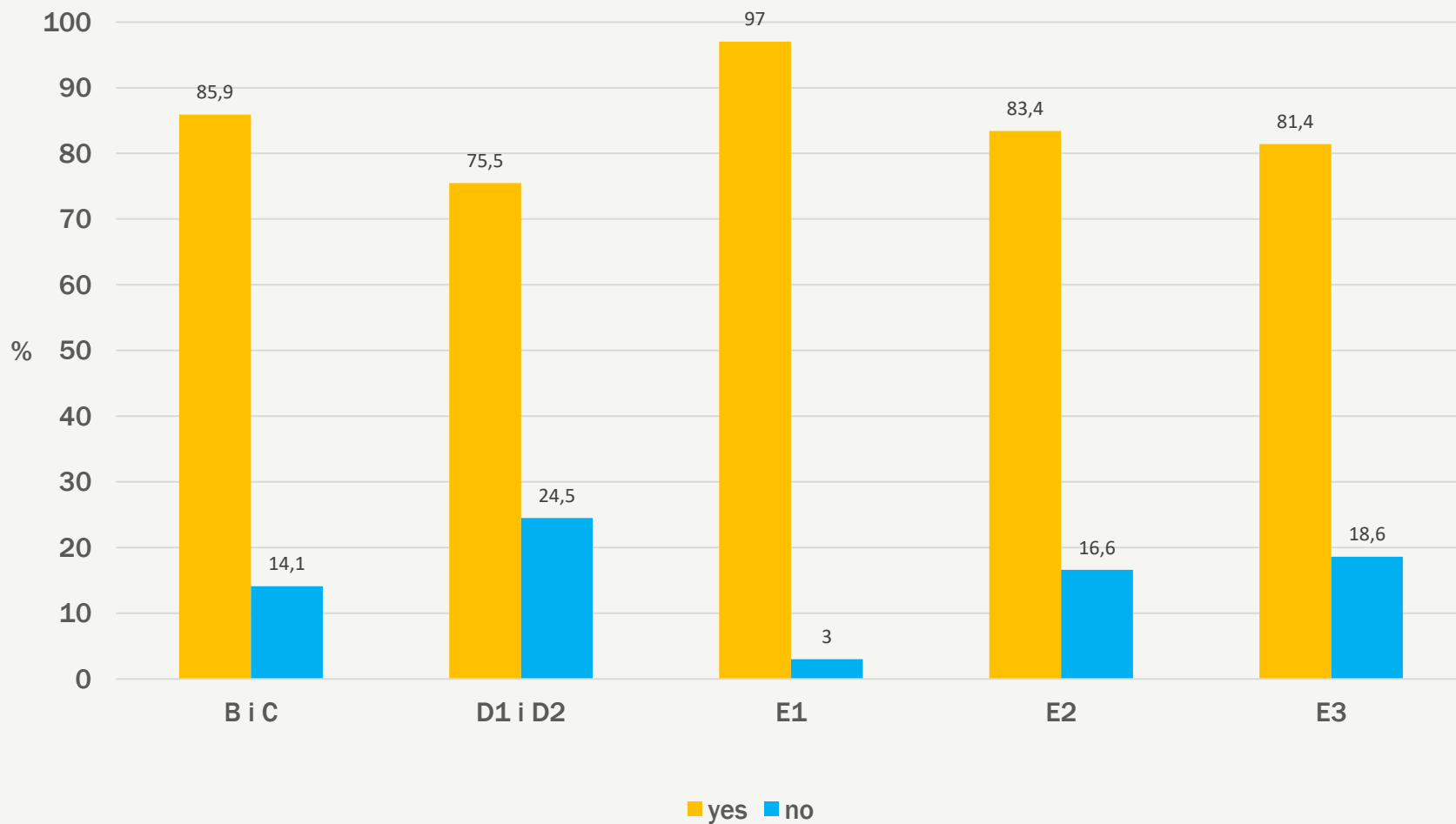
RESULTS



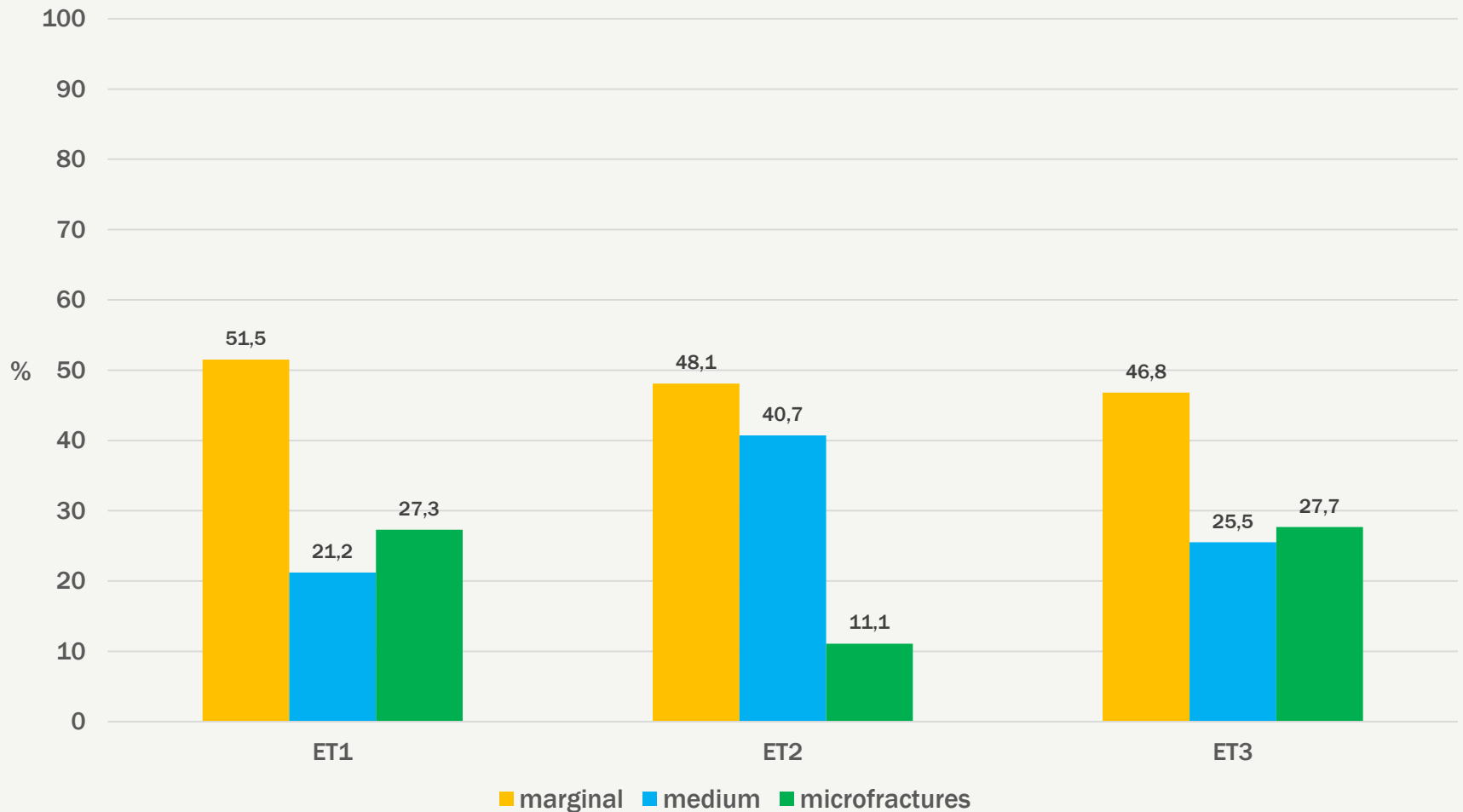
EXPERIMENTAL EDGE DAMAGE



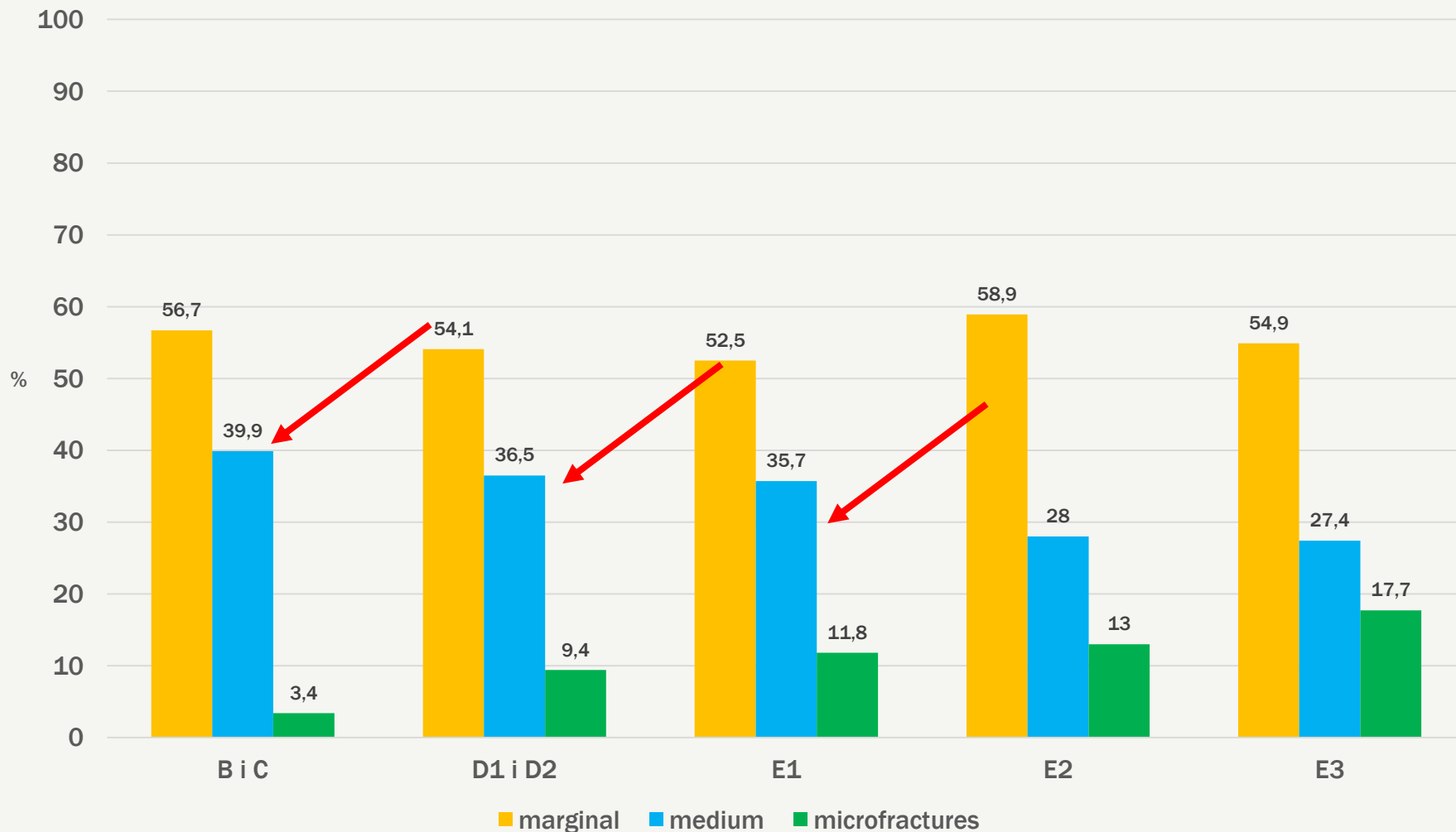
EDGE DAMAGE – MUJINA PEĆINA



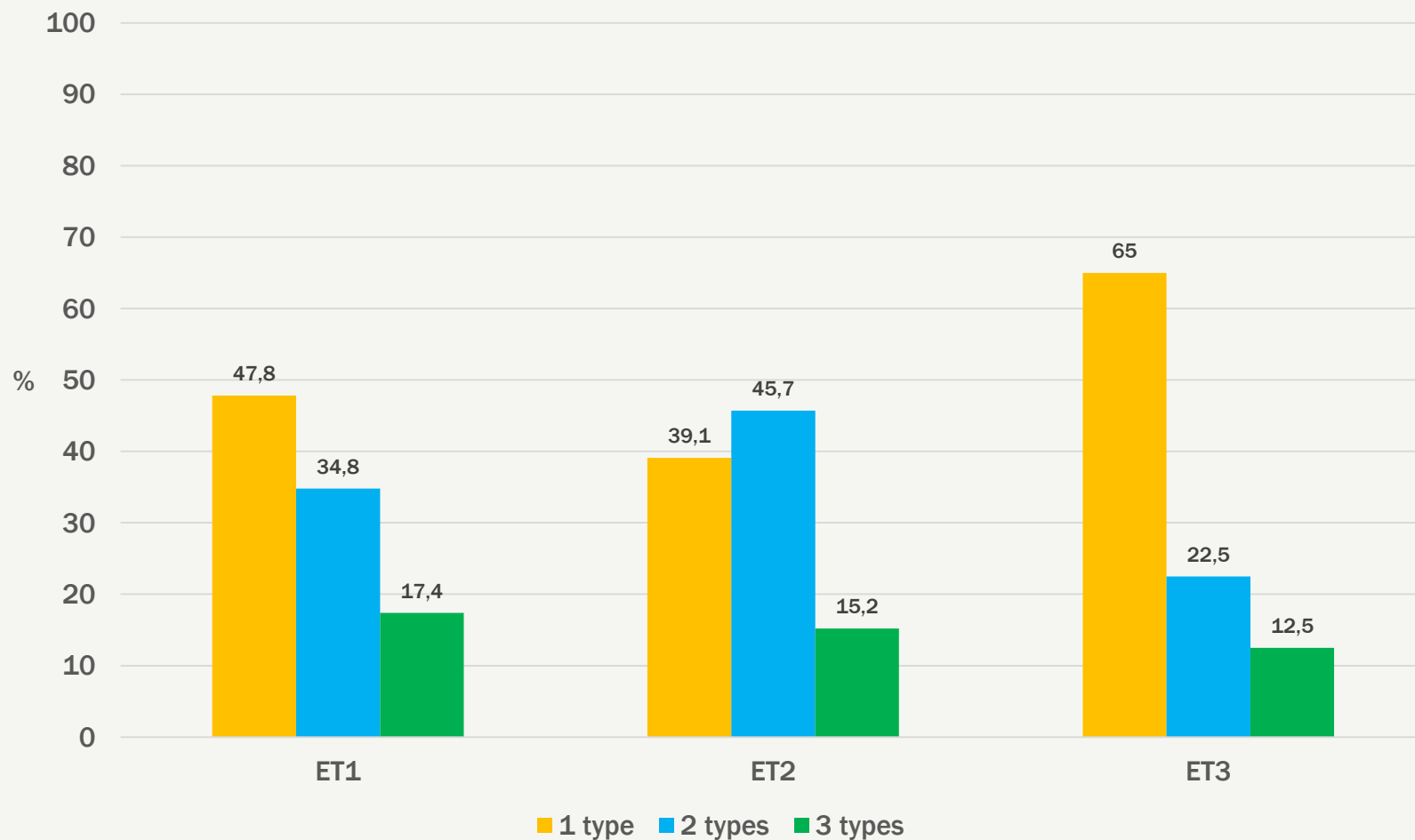
EXPERIMENTAL EDGE DAMAGE TYPES



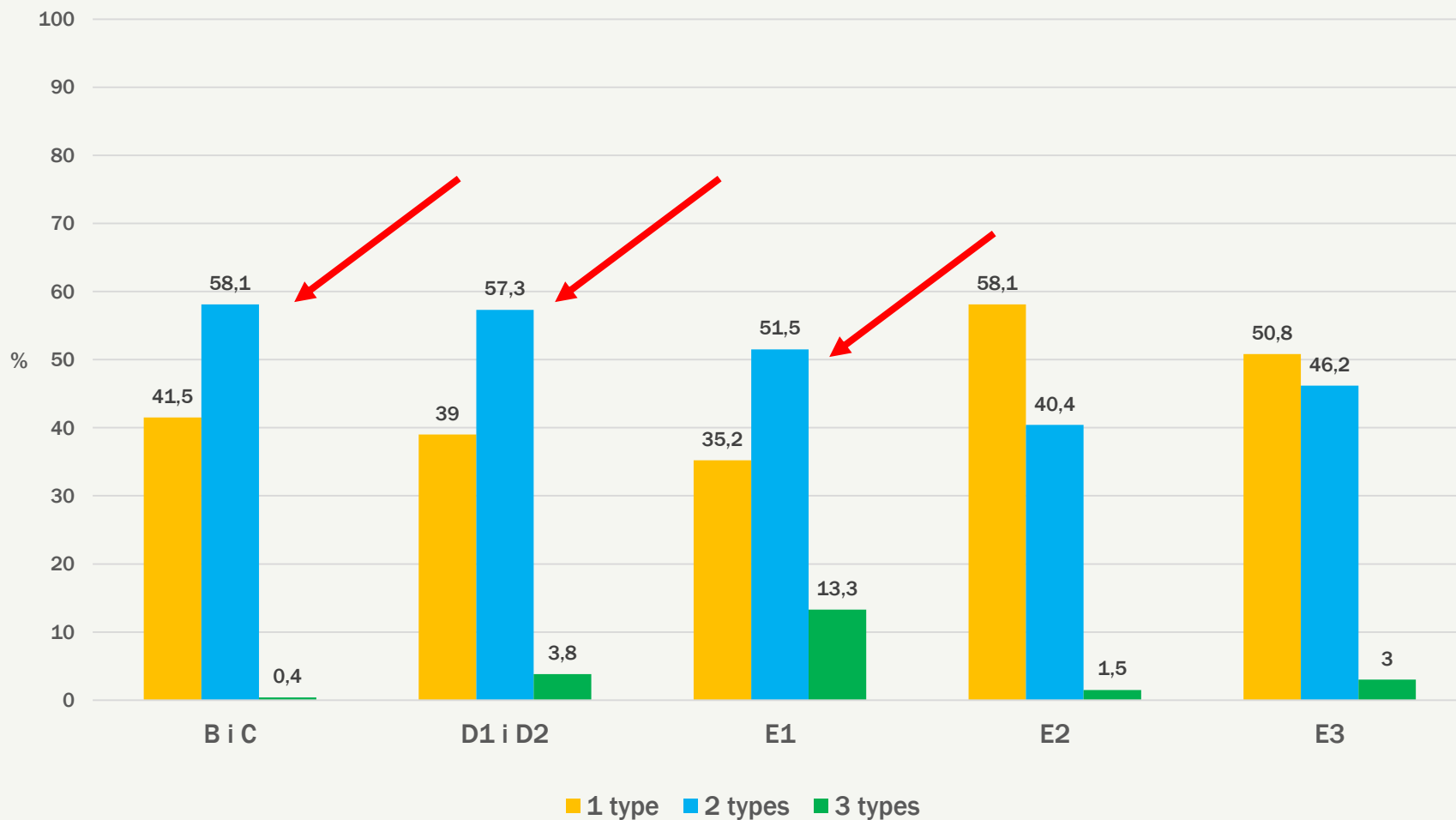
EDGE DAMAGE TYPES – MUJINA PEĆINA



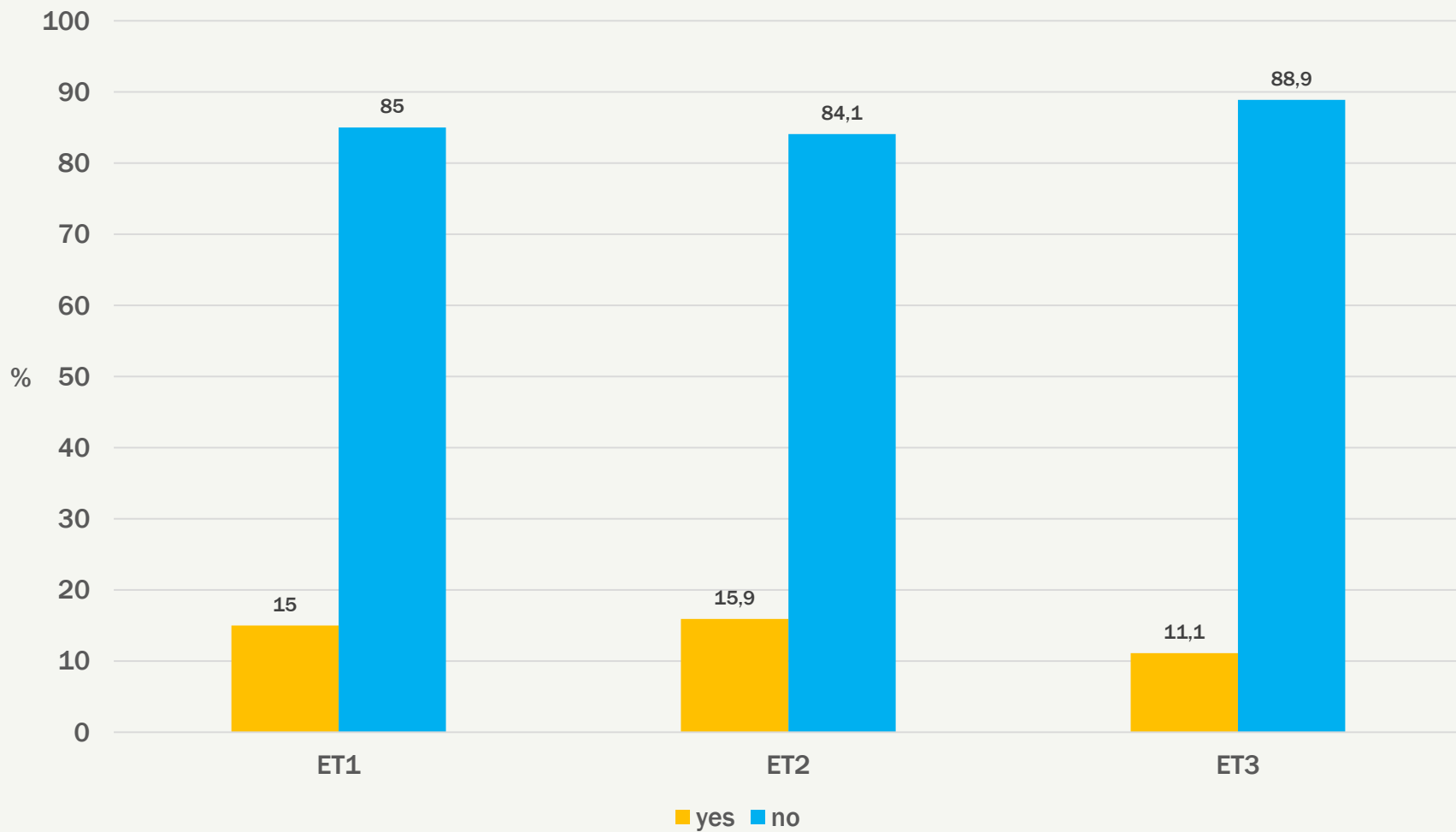
QUANTITY OF EXPERIMENTAL EDGE DAMAGE



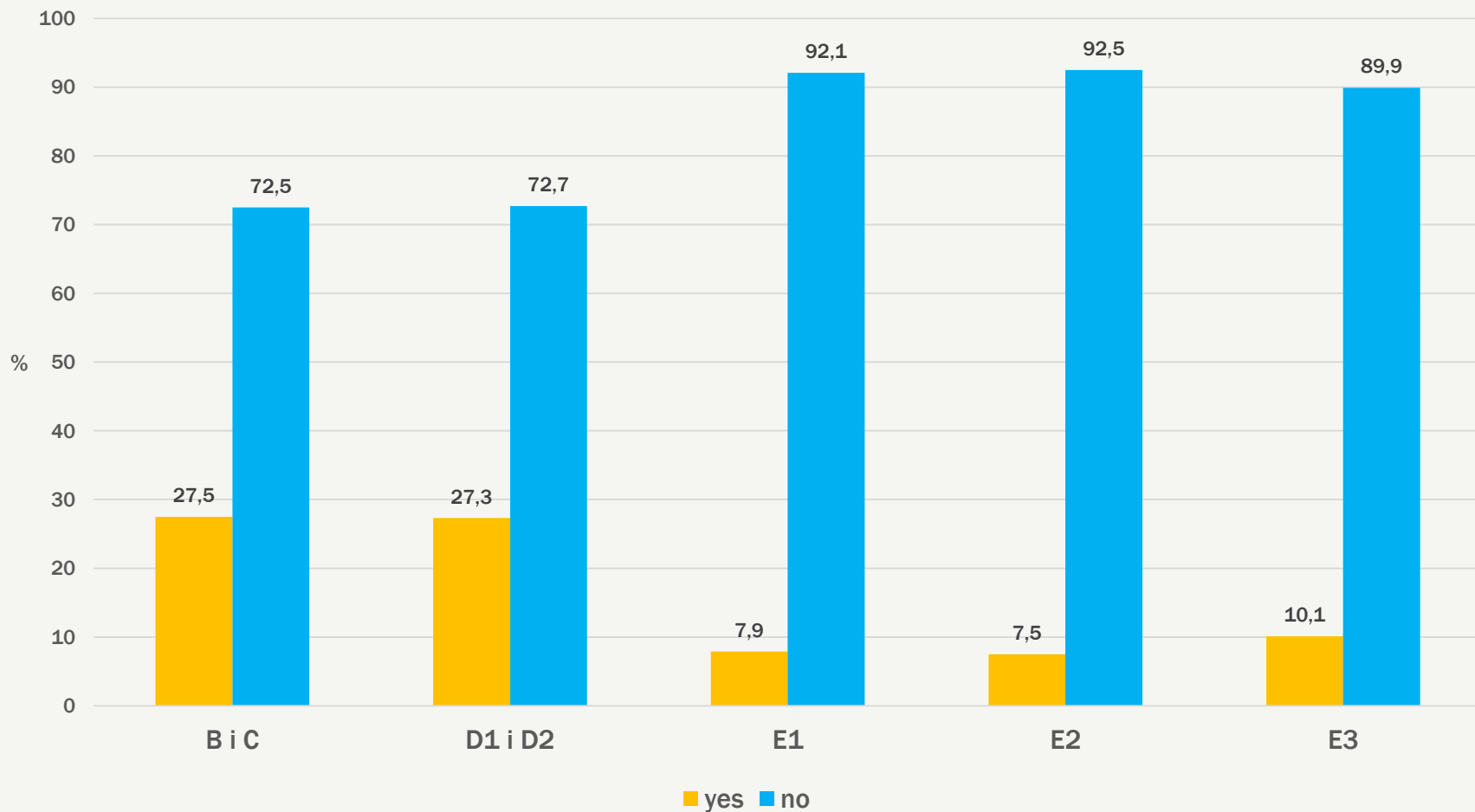
QUANTITY OF EDGE DAMAGE – MUJINA PEĆINA



EXPERIMENTAL PSEUDO-RETOUCH



PSEUDO-RETOUCH – MUJINA PEĆINA



NUMBERS, NUMBERS...

damage type	ET1 (out of 40)	ET2 (out of 82)	ET3 (out of 81)
edge damage	23 (57,5%)	46 (56,1%)	40 (49,4%)
pseudo-retouch	6 (15%)	13 (15,9%)	9 (11,1%)

SOIL MICROMORPHOLOGY

EXP 1

**SOIL
COMPACTION**



EXP 2

Samples from
the trampled
area

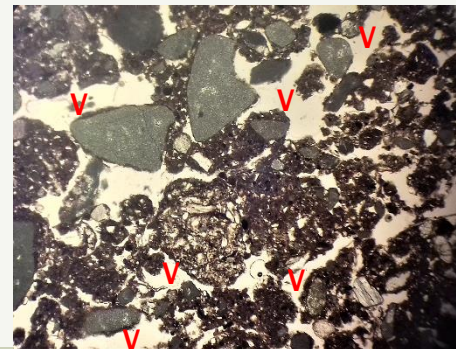
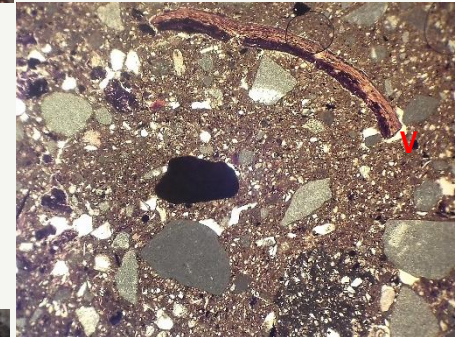
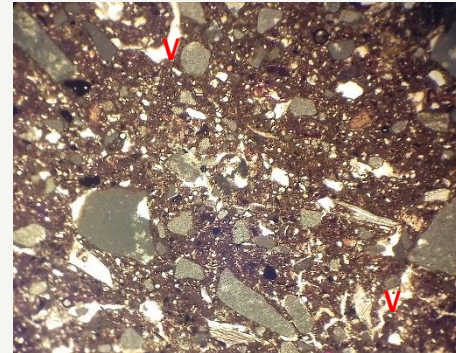


EXP 3

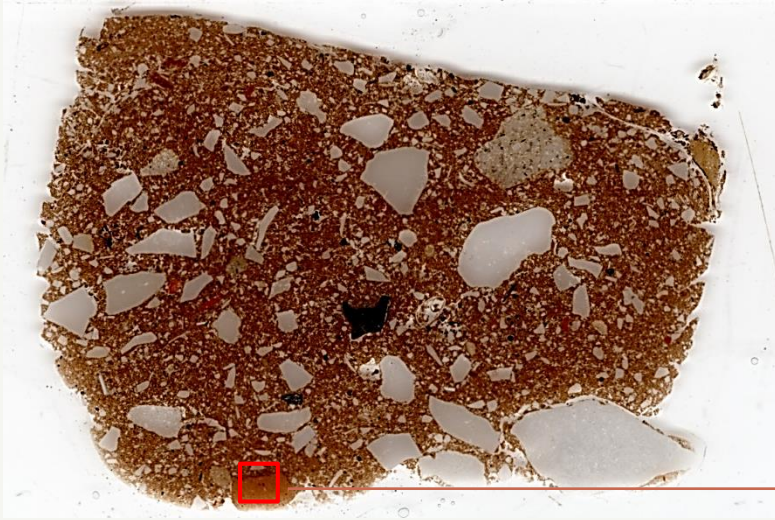


Control sample

SOIL POROSITY, PPL, 40x, voids



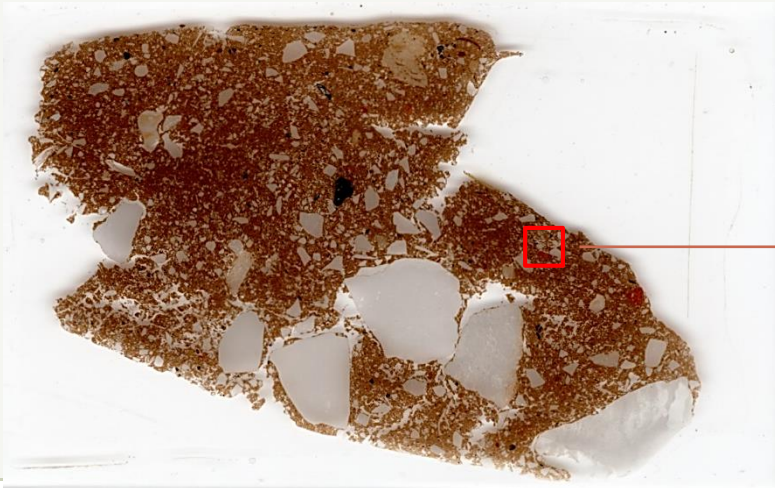
SOIL MICROMORPHOLOGY



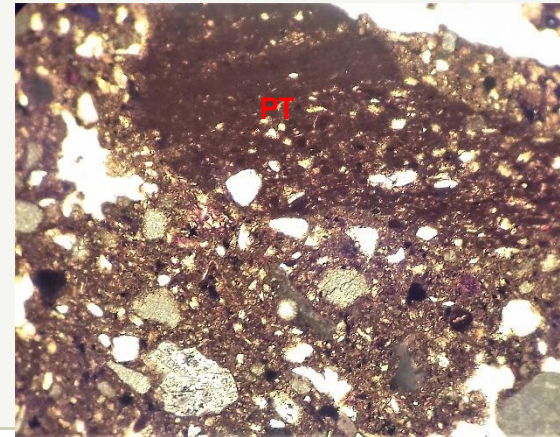
Sample EXP 1



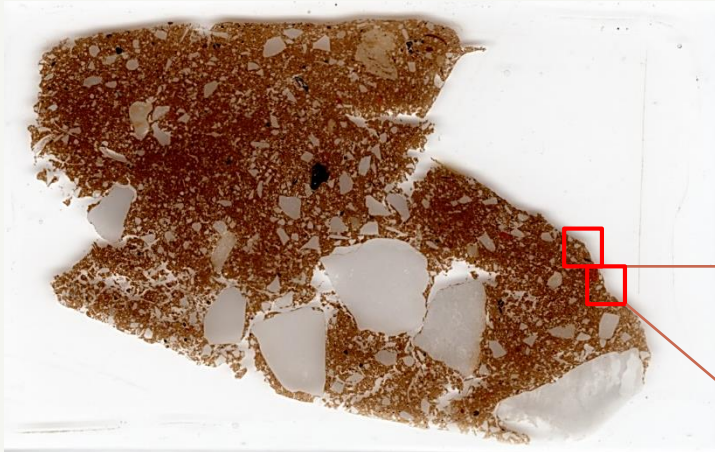
PPL, 40x, pottery fragment



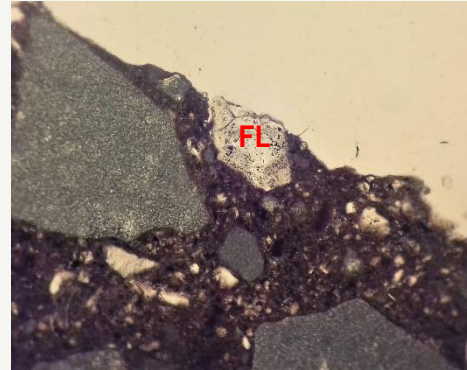
Sample EXP 2



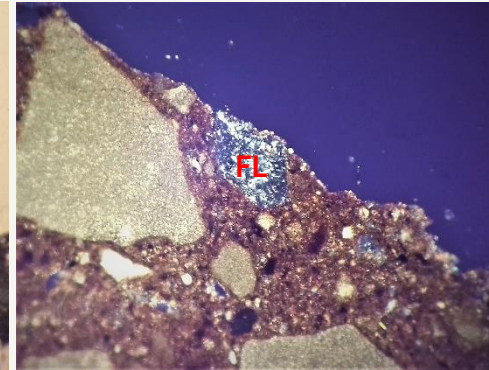
SOIL MICROMORPHOLOGY



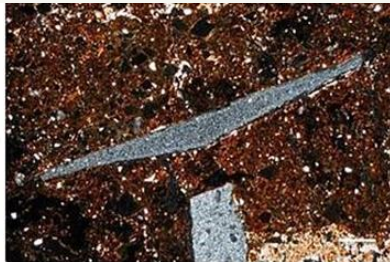
Sample EXP 2



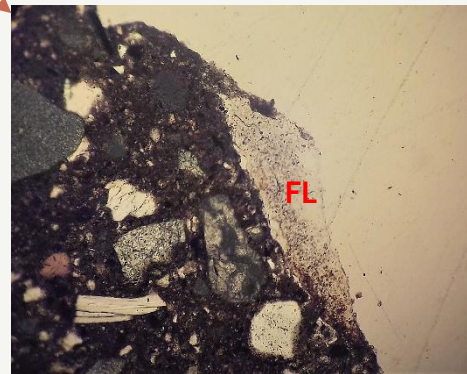
PPL, 40x, flint



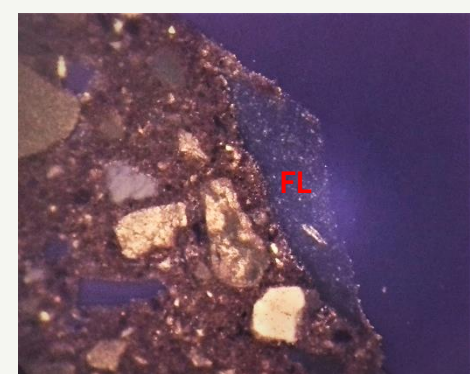
XPL, 40x, flint



Mujina pećina, PPL, XPL, flint



PPL, 40x, flint



XPL, 40x, flint

CONCLUSION

- ET1 and ET2 have some similar results regardless of different methodologies.
- 30min of trampling on debris produced 13 pseudo-tools; 60 minutes on soil produced 9.
- **taphonomy** as a need-to-know process.

CONCLUSION

- direct trampling on debris
(ET2) produced more edge-damage
- similar to upper layers (B – D, E1) of Mujina pećina
- associated with the quantity of stone debris in the sediment?



WE WOULD LIKE TO THANK:

■ CEXA

■ Dinko Radić

■ Rajna Šošić Klindžić

■ Tea Bušac

■ Ivana Ida Radanović

■ Lia Vidas

■ Ana Škreblin

■ Mia Čujkević Plečko

■ Janko Gašpar

■ Šime Ivić

■ Mateja Lovrić

■ Stjepan Marinković

■ Margareta Mikić

■ Adriana Pavlić

■ Zvonimir Plavec

■ Luka Rep



While we all would like to be the one to find a prehistoric Pompeii, all of our reconstructions of human prehistory will be far more accurate if they are based on a thorough understanding of taphonomy and its effects on prehistoric assemblages.

Dibble et al. 1997, 647

**THANK YOU
FOR YOUR ATTENTION.**

CONTACT: katarina.sprem@unipu.hr

