

This is a repository copy of *The mesolithic occupation at Isolidda (San Vito Lo Capo), Sicily*.

White Rose Research Online URL for this paper:
<http://eprints.whiterose.ac.uk/109496/>

Version: Accepted Version

Article:

Lo Vetro, Domenico, Colonese, Andre Carlo orcid.org/0000-0002-0279-6634, Mannino, Marcello et al. (3 more authors) (2016) The mesolithic occupation at Isolidda (San Vito Lo Capo), Sicily. *Preistoria Alpina*. pp. 239-245. ISSN 2035-7699

Reuse

This article is distributed under the terms of the Creative Commons Attribution-ShareAlike (CC BY-SA) licence. This licence allows you to remix, tweak, and build upon the work even for commercial purposes, as long as you credit the authors and license your new creations under the identical terms. All new works based on this article must carry the same licence, so any derivatives will also allow commercial use. More information and the full terms of the licence here: <https://creativecommons.org/licenses/>

Takedown

If you consider content in White Rose Research Online to be in breach of UK law, please notify us by emailing eprints@whiterose.ac.uk including the URL of the record and the reason for the withdrawal request.



Article

The mesolithic occupation at Isolidda (San Vito Lo Capo), Sicily

Domenico Lo Vetro^{1,2} *, Andrè C. Colonese³, Marcello A. Mannino^{4,5}, Kenneth D. Thomas⁵, Zelia Di Giuseppe², Fabio Martini^{1,2}

¹ Dipartimento di Storia, Archeologia, Geografia, Arte e Spettacolo (SAGAS) – Archeologia Preistorica, Università degli Studi di Firenze, via S. Egidio 21, 50122 Firenze, Italy

² Museo e Istituto Fiorentino di Preistoria "P.Graziosi", via S. Egidio 21, 50122 Firenze, Italy

³ BioArCh, Department of Archaeology, University of York, Biology S. Block, Wentworth Way, York YO10 5DD, United Kingdom

⁴ Department of Human Evolution, Max Planck Institute for Evolutionary Anthropology, Deutscher Platz 6, 04103, Leipzig, Germany

⁵ Institute of Archaeology, University College London, London, United Kingdom

Key words

- Sicily
- Mesolithic
- lithic assemblages
- coastal resource exploitation

Parole chiave

- Sicilia
- Mesolitico
- industrie litiche
- sfruttamento delle risorse marine

* Corresponding author:

e-mail: dlovetro@unifi.it

Summary SUMMARY TOO LONG PLEASE CUT 2 LINES

'Gruppo dell'Isolidda' is a complex of five caves along a rocky cliff on the eastern side of the promontory of San Vito Lo Capo (Trapani) in NW Sicily. In 2004 archaeological excavations in the slope below the caves revealed a stratified deposit, partially in secondary position, containing levels with Late Epigravettian and Mesolithic stone tool assemblages. Early Mesolithic stone tool industries, characterized by backed microlithic tools, were distributed in two contiguous layers (SU 21 and SU 25), the lowest of which (SU 21) also contained Epigravettian tools, probably due to sediment reworking. Three AMS dates on *Phorcus turbinatus* shells (~9520-8990 cal. BP) are chronologically compatible with the Early Mesolithic materials and suggest that the bulk of the deposit accumulated then. A third level, lying above the previous ones, contained material culture associated to the Late Mesolithic or Early Neolithic. Faunal remains from the site represent mainly food refuse and included abundant shells of intertidal molluscs (e.g. *Phorcus turbinatus* and *Patella* sp.), along with few fragmented bones of terrestrial herbivores (e.g. *Cervus elaphus* and *Sus scrofa*). Oxygen isotope analyses on shell carbonates of *Phorcus turbinatus* show that, around 9520-9000 cal. BP, marine molluscs were exploited year-round, albeit more often in autumn and winter.

Riassunto SUMMARY TOO LONG PLEASE CUT 2 LINES

Il "Gruppo dell'Isolidda" è un complesso di cinque cavità che si aprono lungo la falesia del versante orientale del promontorio di San Vito Lo Capo (Trapani). Nel 2004 un sondaggio praticato nel pendio che si estende davanti alle grotte, ha messo in luce un deposito pluristratificato, parzialmente in giacitura secondaria, con livelli riferibili all'Epigravettiano finale, al Mesolitico e probabilmente al Neolitico antico. Le industrie del Mesolitico antico, caratterizzate da armature ipericrolitiche, sono distribuite in due strati sovrapposti (SU 21 e 25); in quello più antico (SU 21) si registra una commistione con elementi epigravettiani, probabilmente frutto di un rimaneggiamento in antico. Un terzo livello, stratigraficamente soprastante ai precedenti, potrebbe essere riferibile ad un aspetto mesolitico a trapezi o al Neolitico antico. Le faune sono rappresentate soprattutto da abbondanti resti di molluschi marini eduli (*Phorcus turbinatus* e *Patellidae*) mentre sono molto scarsi i reperti ossei di erbivori (*Cervus elaphus* and *Sus scrofa*). Recenti analisi isotopiche effettuate su conchiglie di *Phorcus turbinatus*, dimostrano che, intorno a 9520-9000 cal. BP, la raccolta dei molluschi marini avveniva durante tutto l'anno, ma soprattutto in autunno ed in inverno.

Redazione: Valeria Lencioni e Marco Avanzini

pdf: http://www.muse.it/it/Editoria-Muse/Preistoria-Alpina/Pagine/PA/PA_48-2016.aspx

The site and its setting

'Gruppo dell'Isolidda' is a complex of five caves that opens 70-60 m above sea level along a coastal rocky cliff on the eastern side of the promontory of San Vito Lo Capo (Trapani) (Fig. 1).

The caves were probably all part of a single larger cave, which is now partially collapsed.

The first archaeological investigations at this site took place in the 1920s, when Raymond Vaufrey found Upper Palaeolithic industries at Grotta Racchio (Vaufrey 1928), the easternmost of the five caves. In the early 1960s, Giovanni Mannino discovered rock art in this same cave (Mannino 1962).

In 2004 a research team from the University of Florence, in partnership with the Museo e Istituto Fiorentino di Preistoria, undertook multidisciplinary investigations at the site (Martini *et al.* 2012a; Baglioni *et al.* 2012). Three trenches were opened to verify the presence of archeological deposits.

A trench of around 8 square metres, excavated on the slope

below the cave complex, revealed a stratified deposit under the modern topsoil (SU 20), partly in secondary position, consisting of three main stratigraphic units (SU 24, 25 and 21), each excavated in artificial spits of about five centimeters (Fig. 1, E-F). No structures or evident paleosurfaces were detected, as it is likely that the stratigraphic sequence accumulated following distinct colluvial episodes, which transported sediments from just outside the caves further downslope. Despite these formation processes, the deposits have distinguishable levels and constitute a rather coherent sequence. This can be explained by hypothesizing that the colluvial events were chronologically discrete and colluviated down the slope soon after their primary deposition.

The archaeological sequence contained stone tool industries dating back to the Late Pleistocene (Late Epigravettian) and Early Holocene (Mesolithic and Early Neolithic) (Tab. 1). The lowermost levels (SU21-spits 17 lower, 18 and 19) contained only Epigravettian industries, while the levels above them (SU21-spits 17 and 16, SU25 spit 16 upper) contained a mixture of Upper Palaeolithic and Early Mesolithic industries. SU25- spit 15 contained the bulk of the Early

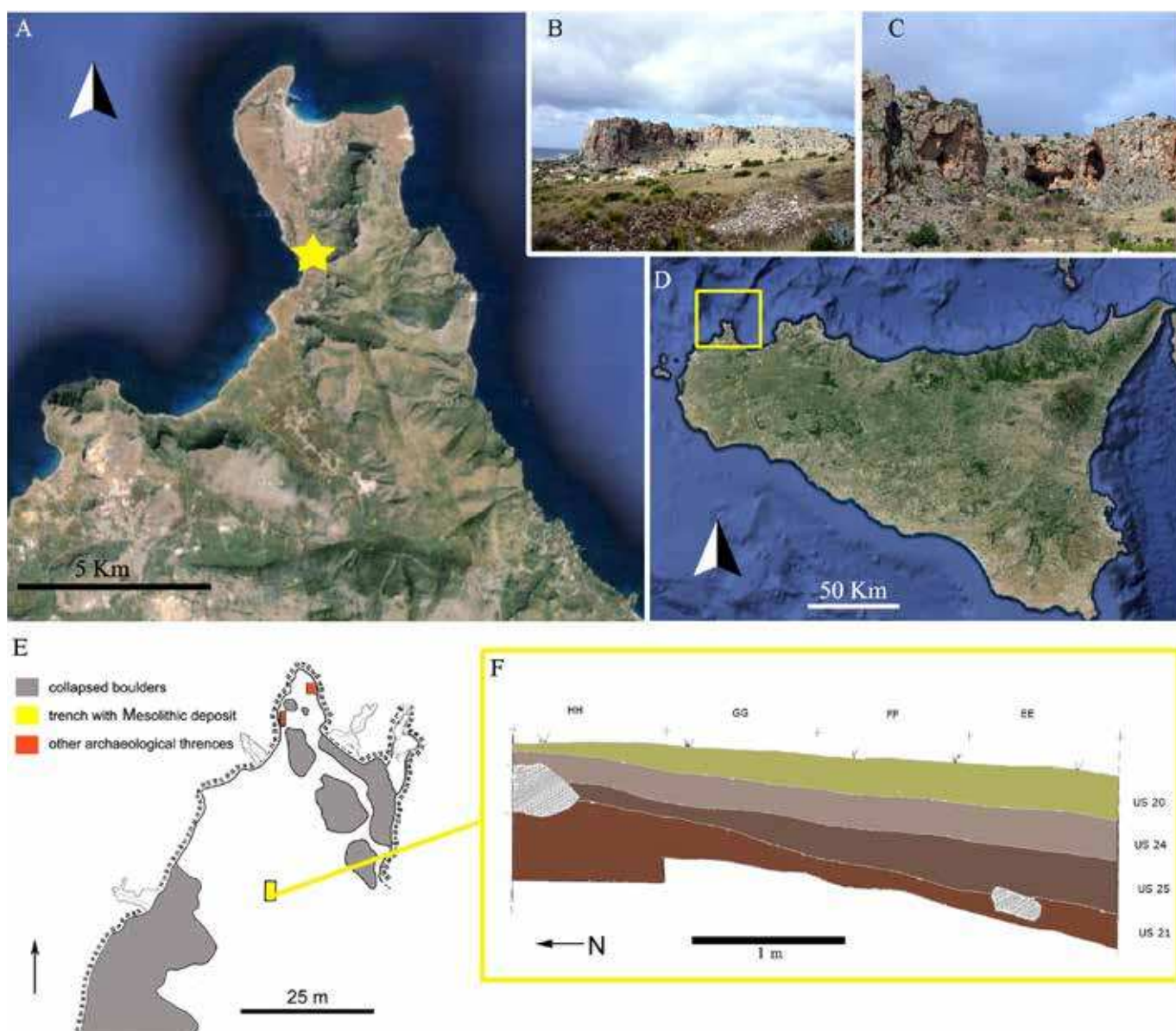


Fig. 1 - Gruppo dell'Isolidda. A-D- the site and its location; E- plan of the site and position of trench n. 2 excavated on the slope below the caves; F- stratigraphic sequence drawn from the section east of trench n. 2. / A-D- il sito; E- pianta del sito e posizione della trincea 2 aperta sul pendio sottostante le cavit ; F- sequenza stratigrafica della sezione est della trincea 2

Tab. 1 - Gruppo dell'Isolidda. Stratigraphic scheme and chrono-cultural sequence. The radiocarbon dates were calibrated with the OxCal 4.2 software (Bronk Ramsey & Lee 2013), using the Marine13 curve (Reimer et al. 2013). The reservoir correction of the calibrated ages is based on the estimate of the reservoir effect by Siani et al. (2000) for Sicily ($\Delta R = 71 \pm 50$ 14C yrs). / Schema stratigrafico e sequenza crono-culturale. Le date radiometriche sono state calibrate con il software OxCal 4.2 (Bronk Ramsey & Lee 2013), usando la curva Marine13 (Reimer et al. 2013). La correzione dell'effetto reservoir delle date calibrate è basata sulla stima del "reservoir effect" elaborata da Siani et al. (2000) per la Sicilia ($\Delta R = 71 \pm 50$ 14C yrs).

LAYER	SPIT	MAIN DIAGNOSTIC ARTEFACTS AND SUBSISTENCE REMAINS	CULTURAL ATTRIBUTION OF STONE TOOL INDUSTRIES	AMS CHRONOLOGY (¹⁴ C BP)
SU 24	14	Ipermicro and micro trapezes	Early Neolithic/Late Mesolithic or Early Neolithic	-
		Very few obsidian flakes		
		Very few undeterminable pottery sherds		
SU 25	15 upper	Few marine mollusc shells	Early Mesolithic with intrusive Late Mesolithic or Early Neolithic elements	-
		Few ipermicro and micro lithic armatures		
		Two ipermicro trapezes		
SU 25	15 lower	Very few obsidian flakes	Early Mesolithic	(OxA-18069)
		Marine mollusc shells		
		Ipermicro and micro lithic armatures		
		Small centripetal and facial cores		
SU 25	16 upper	Marine mollusc shells	Late Epigravettian and Early Mesolithic	8620±45
		Rare large wild mammal remains		
		Ipermicro and micro lithic armatures		
		Small centripetal and facial cores		
		Upper Palaeolithic elements		
		Abundant marine mollusc shells		
SU 21	16 lower	Engraved <i>Columbella rustica</i> shell	Late Epigravettian and Early Mesolithic	(9430-9080 yrs cal BP; 2σ)
		Rare large wild mammal remains		
		Ipermicro and micro lithic armatures		
		Small centripetal and facial cores		
		Upper Palaeolithic tools and cores		
SU 21	17 upper	Marine mollusc shells	Late Epigravettian and Early Mesolithic	8785±45
		Rare large wild mammal remains		
		Upper Palaeolithic tools and cores		
		Some Mesolithic elements		
SU 21	17 lower	Marine mollusc shells	Late Epigravettian	-
		Few large wild mammal remains		
		Upper Palaeolithic stone industry		
SU 21	18 and 19	Upper Palaeolithic stone industry	Late Epigravettian	-

Mesolithic stone tools found in the archaeological deposit; SU25-spit 15 lower yielded exclusively Early Mesolithic industries, while in the level above it (SU25-spit 15 upper) two trapezes and a rare intrusive obsidian flakes were recovered, probably coming from the overlying layer (SU 24). SU 24 was characterized by the occurrence of trapezes dating back to the Late Mesolithic or Early Neolithic.

Ams radiocarbon dating

AMS radiocarbon dating was undertaken at the Oxford Radiocarbon Accelerator Unit on three shells of the marine mollusc *Phorcus turbinatus* from the two lowermost stratigraphic units. The dates all fall within the Early Holocene and are consistent with the archaeological stratigraphy and the Early Mesolithic stone tool assemblages. The calibrated ages of the dates on the shells from SU 21-spit 17 upper (OxA-18071), SU 25-spit 16 upper (OxA-18070) and SU 25-spit 15 lower (OxA-18069) overlap and suggest that the bulk of the deposit accumulated during the Mesolithic (~9520-9000 yrs cal. BP) (Tab. 1)

Mesolithic stone tool assemblages

The archaeological deposit of trench 2 contained over 7000 lithic items, including almost 1200 retouched tools and 100 cores, attributable to the period spanning from the Late Epigravettian to the Early Neolithic. As mentioned above (see section 1 and Tab. 1), with the exception of the lowest spits of SU21 (spits 19-18 and 17 lower), Mesolithic lithics has been found throughout the archaeological sequence, often mixed with finds of other periods. The lithic retouched tools and cores that can be ascribed almost exclusively to the Early Mesolithic are those from SU25-spit 15, although this assemblage may also contain a few intrusive artifacts from the layer above (spit 15 upper).

Of the whole stone tool assemblage recovered at Isolidda, only the Mesolithic finds will be discussed here, in our account of the main techno-typological features of the assemblage and of the most significant lithic artifacts.

The Mesolithic stone tool assemblages (Fig. 2) are made on good quality flints, locally collected mainly in secondary deposits

(shores and riverbeds), in the form of pebbles and cobbles (Collina 2006 and 2012).

In SU 21-spits 17 upper and 16 lower (Fig. 2, E and D) and SU 25-spits 16 upper and 15 lower (Fig 2, C and B) an intensive exploitation of cores, through both facial (unidirectional and bidirectional) and centripetal reduction schemes, attests a production aimed at obtaining ipermicro (up to 15mm)- and micro (16-25mm)-blanks (bladelets, laminar flakes, flakes) for making armatures. In these levels, among the retouched artifacts, some unilateral backed points (some of which are curved) and short triangles, are present. These might be assignable to one of the local Mesolithic facies defined as "Epigravettian-tradition facies" (Lo Vetro & Martini 2012; Martini & Lo Vetro in press). Some artifacts are also compatible with the local Sauveterrian-like facies, such as: an ipermicro double-baked point, ipermicro short triangular backed points, "tectiform" (roof-shaped) end-scrapers, and very small facial and centripetal cores. These items are comparable with those from Perriere Sottano (Aranguren & Revedin 1998) and Grotta d'Oriente (Martini *et al.* 2012b). A nosed end-scrapers with two lateral notches from SU 25-spit 16 upper (Fig. 2, n. 25) is comparable to the items from the Early Mesolithic levels of Grotta dell'Uzzo (Piperno 1985; Guerreschi & Fontana 2012).

SU 24 (Fig. 2, A) yielded a dozen of ipermicro trapezes, some of which made on very regular pressure flaking bladelets, comparable to the Late Mesolithic (Castelnovian) and Early Neolithic items from Grotta dell'Uzzo (Collina 2012). Pressure flaking is also attested by the occurrence of few symmetric and thin bladelets and few microburins.

Mesolithic subsistence strategies and seasonality of mollusc exploitation

Subsistence strategies at the site involved the exploitation of large mammals and intertidal molluscs. Large mammal exploitation was mainly oriented towards *Cervus elaphus* and *Sus scrofa*. Intertidal molluscs were collected on nearby rocky shores and are mainly represented by *Phorcus turbinatus* and different species of *Patellidae*. A peak in the minimum number of individuals (MNI) is observed in SU 25, although intertidal molluscs occur throughout the sequence, with no substantial changes in species composition (Shannon index) (Fig. 3).

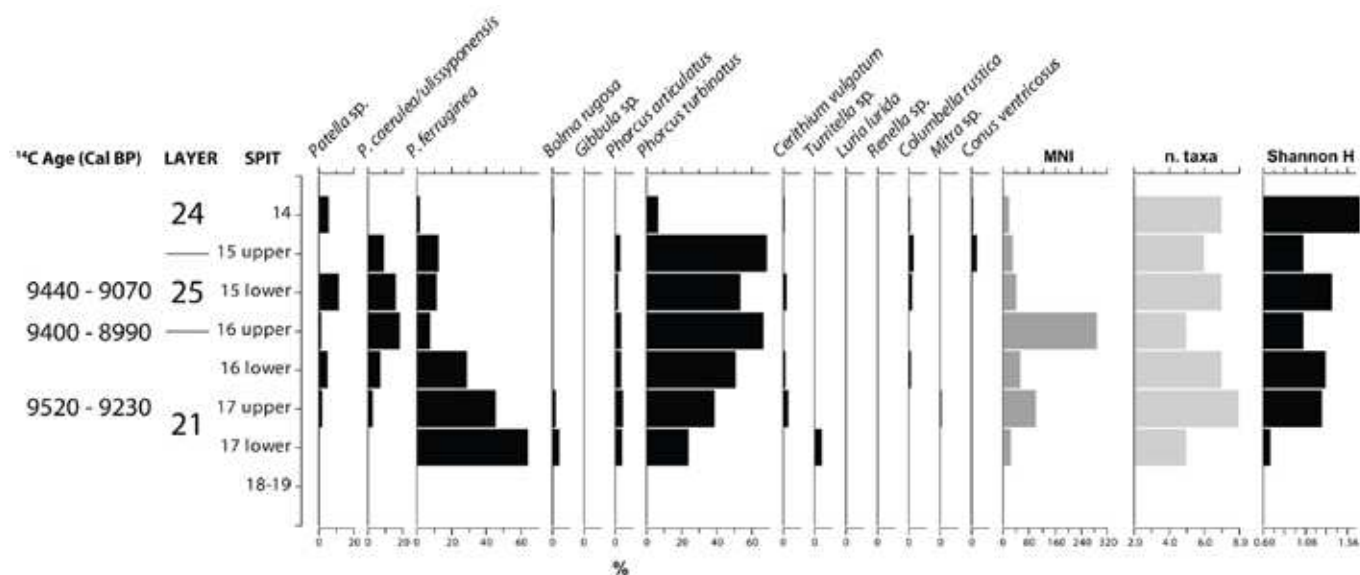


Fig. 3 - Gruppo dell'Isolidda. Rench 2. Marine molluscs. The minimum numbers of individuals (MNI), the number of taxa and the Shannon index are also reported on the right. / Trincea 2. Molluschi marini. Sulla parte destra dell'istogramma sono riportati il numero minimo degli individui, (MNI), il numero dei taxa e l'indice Shannon.

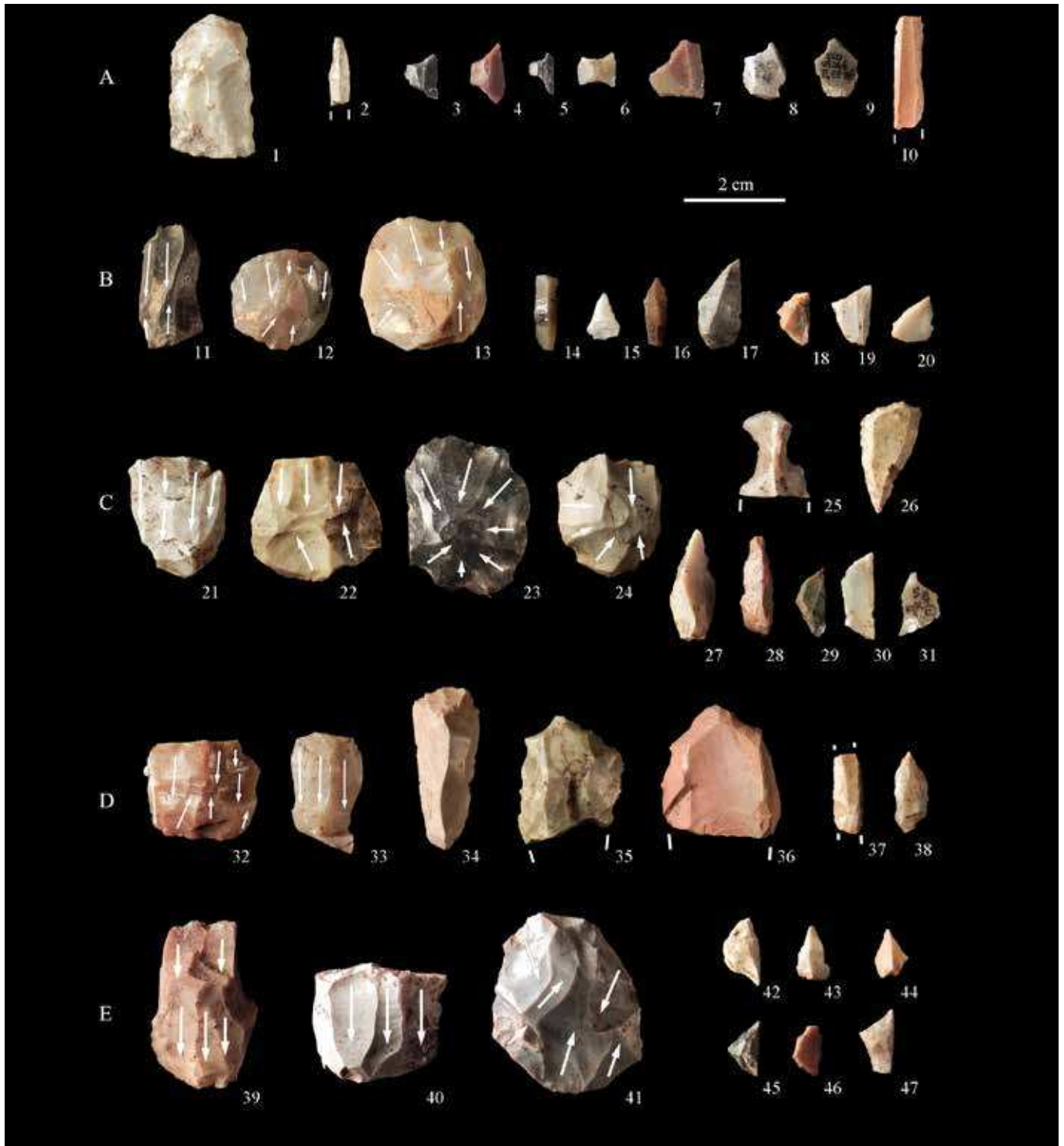


Fig. 2 - Gruppo dell'Isoldida. Mesolithic stone artefacts from trench 2. A: from SU 24, 1- tectiform (roof-shaped) long end-scrapers, 2- backed point, 3-7- trapezes, 8-9- microburins, 10- pressure knapped bladelet; B: from SU 25-spit 15 lower, 11- facial reduction method core, 12-13- centripetal reduction method cores, 14- truncated bladelet, 15-17- backed points, 18-20- triangles; C: from SU 25-spit 16 upper, 21-22- facial reduction method cores, 23-24- centripetal reduction method cores, 25- long end-scrapers, 27-28- backed points, 29- triangle, 30- trapeze, 31- microburin; D: from SU 21-spit 16 lower, 32-33- facial reduction method cores, 34- long end-scrapers, 35-36- tectiform (roof-shaped) end-scrapers, 37- backed point, 38- fragment of backed tool; E: from SU 21-spit 17 upper, 39-40- facial reduction method cores, 41- centripetal reduction method core, 42-44- backed points, 45-47- triangles. / Manufatti litici mesolitici dalla trincea 2. A: da US 24, 1- grattatoio frontale lungo, 2- punta a dorso, 3-7- trapezi, 8-9- microbulini, 10- lamella a pressione; B: da US 25-taglio 15 inferiore, 11- nucleo a sfruttamento frontale, 12-13- nucleo a sfruttamento centripeto, 14- troncatura, 15-17- punta a dorso, 18-20- triangoli; C: da US 25-taglio 16 superiore, 21-22- nuclei a sfruttamento frontale, 23-24- nuclei a sfruttamento centripeto, 25- grattatoio frontale lungo, grattatoio a muso evidenziato, 27-28- punta a dorso, 29- triangolo, 30- trapezio, 31- microbulino; D: da US 21-taglio 16 inferiore, 32-33- nuclei a sfruttamento frontale, 34- grattatoio frontale lungo, 35-36- grattatoi frontali tettiformi, 37- punta a dorso, 38- frammento di dorso; E: da US 21-taglio 17 superiore, 39-40- nuclei a sfruttamento frontale, 41- nucleo a sfruttamento centripeto, 42-44- punta a dorso, 45-47- triangoli.

Shells of *Patella ferruginea* dominated the marine mollusc remains in SU 21 (Fig. 4), which is associated with lithic assemblages typical of the Late Epigravettian and Early Mesolithic. It is also worth noting that this species underwent a substantial decrease in size from SU 21 (60.6 ± 5.3 mm) to SU 25 (46.6 ± 10 mm). As *P. ferruginea* living in protected areas today (51.9 ± 1.9 mm) are larger than those recovered in SU 25, it can be hypothesized that during the Early Holocene this species was subject to either environmental or anthropogenic pressures. *Phorcus turbinatus* was the most intensively collected species during the accumulation of SU 25. Most of the shells are partially broken or had their apex removed likely for the extraction of the molluscan flesh.

Oxygen isotope analyses

To investigate the seasonality of site occupation, we undertook oxygen isotope analyses on 28 shells of the intertidal gastropod *Phorcus turbinatus* according to established methodologies (Mannino *et al.* 2007, 2008; Colonese *et al.* 2009). Molluscs were exploited in every season, but mainly in autumn and winter, with few summer



Fig. 4 - Gruppo dell'Isolidda. Trench 2. *Patella ferruginea* from SU 21-spit 17 upper. / Trincea 2. *Patella ferruginea* da SU 21-taglio 17 superiore.

and rare spring collections. This suggests that hunter-gatherers were at the site regularly, although with the evidence at hand it is hard to establish whether this was a result of frequent short visits or more prolonged year-round occupation (Fig. 5).

Modified marine shells: personal ornaments

Marine shells were modified and likely used as personal ornaments by the occupants of the site, as attested by perforated shells of *Columbella rustica* retrieved mainly from SU 25 (spits 15 and 16), and SU 24. One shell of *Columbella rustica* (SU 25-spit 16 upper) had several parallel incisions on the body whorl (Fig. 6; Martini *et al.* 2012a). Use-wear traces suggest that this shell was suspended or attached to clothing. This is a remarkable find since it bears very similar ornamentations to worked shells of *Columbella rustica* from other Mesolithic sites in Sicily: Grotta dell'Uzzo (two specimens, Tagliacozzo 1993), Perriere Sottano (one specimen, Aranguren & Revedin 1998) and Grotta d'Oriente (one specimen, Cilli *et al.* 2012). The latter shell is associated either to the Late Mesolithic of Castelnuovian tradition or to the Early Neolithic (Martini *et al.* 2012b). Taken together, this evidence suggests that there was an established shell ornament tradition shared by Mesolithic groups living across Sicily.

Conclusions

The site of Isolidda was occupied from the end of the Upper Palaeolithic to the Early Neolithic, similarly to many cave sites in NW Sicily. However, the main occupation phase coincided with the Early Mesolithic (upper spits of SU 21 and SU 25) when hunter-gatherers exploited terrestrial mammals and marine molluscs, the latter also for ornamental purposes. In these levels, although Mesolithic and Late Epigravettian lithic artifacts are partly mixed, due to site for-

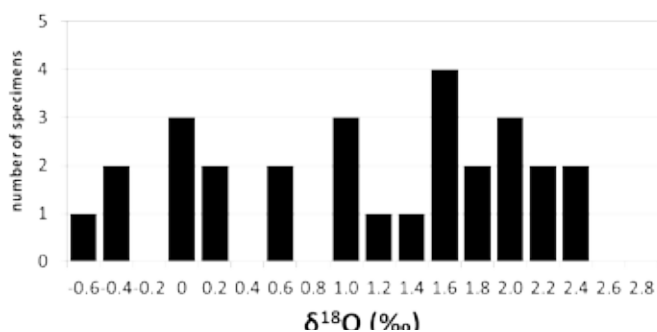


Fig. 5 - Gruppo dell'Isolidda. Trench 2. Oxygen isotope values of edge samples drilled from 28 shells of *Phorcus turbinatus* recovered in SU 21-spit 17 upper, SU 25-spit 16 upper and SU 25-spit 15 lower. The x-axis represents the overall yearly oxygen isotope range recorded on specimens from the site of Isolidda, with the highest values corresponding to the coldest temperatures and the lowest values to the warmest. Intervals in the x-axis are equivalent to around 1.0°C in sea surface temperature ($\delta^{18}O = 0.23\text{‰}$). / Trincea 2. Valori degli isotopi dell'ossigeno dai campioni prelevati al bordo di crescita di 28 conchiglie di *Phorcus turbinatus* rinvenute nelle US 21-taglio 17 superiore, US 25-taglio 16 superiore ed US 25-taglio 15 inferiore. Sull'asse delle ascisse è rappresentato il range annuale dei valori degli isotopi dell'ossigeno registrato su alcuni esemplari dell'Isolidda, con i valori isotopici più elevati corrispondenti alle temperature dell'acqua del mare più basse e quelli più bassi alle temperature più alte. Gli intervalli riportati sull'asse delle ascisse corrispondono a circa 1.0°C nella temperatura di superficie dell'acqua del mare ($\delta^{18}O = 0.23\text{‰}$).



Fig. 6 - Gruppo dell'Isolidda. Trench 2. Shell of *Columbella rustica* with several parallel incisions on the body whorl (after Martini, Lo Vetro, Baglioni et al. 2012). / Trincea 2. *Columbella rustica* con incisioni parallele (da Martini, Lo Vetro, Baglioni et al. 2012).

mation processes, it is possible to recognize stone tool assemblages showing techno-typological features comparable to those from other Early Mesolithic Sicilian sites. Some items might be referred to the local Sauveterrian-like facies, others to the so-called "Epigravettian-tradition facies". A more recent phase is attested in SU 24, in which some elements (trapezes, pressure flaking bladelets) may be referred to a Late Mesolithic (Castelnovian) or Early Neolithic occupation.

The Mesolithic occupants of Isolidda were culturally very close to groups living across Sicily in the early Holocene, as testified by their lithic industries and worked shells, which imply common symbolic repertoires.

References

- Aranguren B.M., Revedin A., 1998 - Il giacimento mesolitico di Perriere Sottano (Ramacca, CT), *Bullettino di Paleontologia Italiana*, n.s., 89: 31-72.
- Baglioni L., Lo Vetro D., Martini F., 2012 - L'arte parietale del gruppo dell'Isolidda (S. Vito lo Capo, Trapani), Atti della XLII Riunione Scientifica dell'IIPP, 'L'arte preistorica in Italia', Trento, Riva del Garda, Val Camonica, 2007, *Preistoria Alpina*, 46, 1: 109-111.
- Bronk Ramsey C., Lee S., 2013 - Recent and planned developments of the program OxCal, *Radiocarbon* 55: 720-730.
- Cilli C., Colonese A. C., Giacobini G., Lo Vetro D., Martini F., 2012 - Nuove evidenze di manufatti in materia dura animale del Paleolitico superiore e del Mesolitico di Grotta d'Oriente (Favignana, Trapani), Atti della XLI Riunione Scientifica dell'IIPP, 'Dai Ciclopi agli Ecisti: società e territorio nella Sicilia preistorica e protostorica', San Cipirello (Palermo), 2006: 1055-1059.
- Collina C., 2006 - Gestione della materia prima e sistemi tecnici alla Grotta dell'Uzzo. Risultati dell'analisi petrografica e tecnologica dell'industria litica dei livelli neolitici, Atti della XXXIX Riunione Scientifica dell'IIPP, 'Materie prime e scambi nella Preistoria italiana' Firenze, 2004: 472-476.
- Collina C., 2012 - Sistemi tecnici e chaînes opératoires alla grotta dell'Uzzo (TP). Analisi tecnologica delle industrie litiche dai livelli mesolitici e neolitici, Atti della XLI Riunione Scientifica dell'IIPP, 'Dai Ciclopi agli Ecisti: società e territorio nella Sicilia preistorica e protostorica', San Cipirello (Palermo), 2006: 447-459.
- Colonese A.C., Troelstra S., Ziveri P., Martini F., Lo Vetro D., Tomasini S., 2009 - Mesolithic shellfish exploitation in SW Italy: seasonal evidence from the oxygen isotopic composition of *Osilinus turbinatus* shells, *Journal of Archaeological Science* 36: 1935-1944.
- Guerreschi A. & Fontana F., 2012 - Prime considerazioni sull'industria litica mesolitica delle trincee A ed F di Grotta dell'Uzzo (TP), Atti della XLI Riunione Scientifica dell'IIPP, 'Dai Ciclopi agli Ecisti: società e territorio nella Sicilia preistorica e protostorica', San Cipirello (Palermo), 2006: 1077-1081.
- Lo Vetro D., Martini F., 2012 - Il Paleolitico e il Mesolitico in Sicilia, Atti della XLI Riunione Scientifica dell'IIPP, 'Dai Ciclopi agli Ecisti: società e territorio nella Sicilia preistorica e protostorica', San Cipirello (Palermo), 2006: 19-48.
- Mannino G., 1962 - Nuove incisioni rupestri scoperte in Sicilia, *Rivista di Scienze Preistoriche*, XVII: 147-159.
- Mannino M.A., Thomas K.D., Leng M.J., Piperno M., Tusa S., Tagliacozzo A., 2007 - Marine resources in the Mesolithic and Neolithic at the Grotta dell'Uzzo (Sicily): evidence from isotope analyses of marine shells, *Archaeometry* 49: 117-133.
- Mannino M.A., Thomas K.D., Leng M.J., Sloane H.J., 2008 - Shell growth and oxygen isotopes in the topshell *Osilinus turbinatus* (von Born): resolving past inshore sea surface temperatures, *Geo-Marine Letters* 28: 309-325.
- Martini F. & Lo Vetro D., in press - Mesolithic in Central-Southern Italy: an overview on lithic productions, Proceedings of Mesolifé International Conference., Selva di Cadore 11-14 June 2014, *Quaternary International*.
- Martini F., Lo Vetro D., Baglioni L., Alisi A., Cilli C., Colonese A.C., Di Giuseppe Z., Locatelli E., Mazza P., Sala B., Tusa S. 2012a, Nuove ricerche a Grotta Racchio-Gruppo dell'Isolidda (San Vito Lo Capo, Trapani): primi risultati, Atti della XLI Riunione Scientifica dell'IIPP, 'Dai Ciclopi agli Ecisti: società e territorio nella Sicilia preistorica e protostorica', San Cipirello (Palermo): 353-366.
- Martini F., Lo Vetro D., Colonese A.C., Cilli C., De Curtis O., Di Giuseppe Z., Giglio R., Locatelli E., Sala B., Tusa S., 2012b - Primi risultati sulle nuove ricerche stratigrafiche a Grotta d'Oriente (Favignana, Trapani). Scavi 2005, Atti della XLI Riunione Scientifica dell'IIPP, 'Dai Ciclopi agli Ecisti: società e territorio nella Sicilia preistorica e protostorica', San Cipirello (Palermo): 319-332.
- Piperno M., 1985 - Grotta dell'Uzzo, in Tusa V., L'attività della Soprintendenza archeologica della Sicilia occidentale nel quadriennio Maggio 1980-Aprile 1984, *Kokalos*, 30-31, 3: 546-549.
- Reimer P.J., Bard E., Bayliss A., Beck J.W., Blackwell P.G., Bronk Ramsey C., Buck C.E., Cheng H., Edwards R.L., Friedrich M., Grootes P.M., Guilderson T.P., Hafflidason H., Hajdas I., Hatte C., Heaton T.J., Hoffmann D.L., Hogg A.G., Hughen K.A., Kaiser K.F., Kromer B., Manning S.W., Niu M., Reimer R.W., Richards D.A., Scott E.M., Southon J.R., Staff R.A., Turney C.S.M., van der Plicht J., 2013 - IntCal13 and Marine13 radiocarbon age calibration curves 0-50,000 years cal BP, *Radiocarbon* 55: 1869-1887.
- Siani G., Paterne M., Arnold M., Bard E., Métyvier B., Tisnerat N., Bassinot F., 2000 - Radiocarbon reservoir ages in the Mediterranean Sea and Black Sea, *Radiocarbon* 42: 271-280.
- Tagliacozzo A., 1993 - Archeozoologia della Grotta dell'Uzzo, Sicilia, *Bullettino di Paleontologia Italiana*, n.s., supplemento al vol. 84.
- Vaufrey R., 1928 - *Le Paléolithique italien*, Archives de l'Institut de Paléontologie Humaine, Mémoire, 3, Paris.

