

VALE BOI ARCHEOLOGICAL PROJECT: INVESTIGATING THE EARLIEST ANATOMICALLY MODERN HUMAN OCCUPATION IN SOUTHERN IBERIA (PORTUGAL)

Course ID: TBA (to be posted by December 15, 2017)

July 1-July 28, 2018

FIELD SCHOOL DIRECTORS:

Prof. Nuno Bicho, Universidade do Algarve (nbicho@ualg.pt)

Dr. Joãoascalheira, Universidade do Algarve (jmascalheira@ualg.pt)



INTRODUCTION

The timing and genesis of Anatomically Modern Humans (AMH) and the emergence of cognitive complexity related to *Homo sapiens* is one of the more interesting topics in prehistoric archaeology. Evolutionary genetics and the fossil record indicate that the emergence of *Homo sapiens* happened in Africa sometime around 200,000-160,000 years ago during the Middle Stone Age and corresponding to a limited genetic diversity that can be explained by a population bottleneck during that time. In Europe the scenario is very different and believed to have occurred with the arrival of our own species to Eastern Europe sometime around 45,000 years ago (corresponding to the beginning of the Upper Paleolithic) with the replacement of the Neanderthals and their culture (the Middle Paleolithic). Within this paradigm, the assumption is that Neanderthals went extinct and replaced by AMH. This paradigm also assumes that AMH and Neanderthals were two different species, marked by a substantial difference in their cognitive capabilities and incapable of cross species procreation.

Two archaeologists, McBrearty and Brooks, described a list of 26 traits reflecting modern behavior. Among those traits, indicating 'modernity' are the production of bone tools and beads, the use of pigments and decorated ochre, lithic heat treatment, the use of marine resources, the appearance of artistic and symbolic expression, and the inclusion of marine and aquatic resources into human diet. Theoretically, the lack of these traits separates Neanderthals from AMH. Recent research from southwestern Iberia, however, shows that Neanderthals had some 'modern' cognitive capabilities: 50,000 years ago Neanderthals started to make shell and bone beads used ochre, marine resources, and frequently lived in coastal settings. Finally, we know today that many Europeans have some Neanderthal

genes in their genetic code, indicating that at least some mixing took place during the time of the transition between the Middle to the Upper Paleolithic.

The site of Vale Boi, located in the southern Portuguese coastal zone, offers excellent opportunities to investigate the transition/replacement process of Neanderthals by AMH. The site consists of intact early Upper Paleolithic deposits with exceptional organic material preservation, including both faunal and floral materials. These superb preservation qualities enable research that focuses on subsistence and technology, as well as symbolic behavior – research that is based on body ornament and art remains found at the site. Moreover there is some evidence that Neanderthals may have used the site. These facts stand out since sites in Portugal and Southern Iberia with this kind of large and diverse artifact and faunal collections dated to the early Upper Paleolithic, and where Neanderthal occupation might still be preserved, are rare.

Vale Boi was discovered in 1998 during regional survey by a team from the University of Algarve, University of North Texas and Arizona State University. Excavations began in 2000. Vale Boi is over 10,000 m² with three main areas of occupation: the Rockshelter and the Terrace, both living areas, and the Slope, where a series of midden deposits are found. The complete Upper Paleolithic regional sequence is known at the site - this includes early and late Gravettian, Protosolutrean, Solutrean, and Magdalenian, covering a time span between ca. 33,000-13,000 years ago. In addition there are Epipaleolithic and early Neolithic horizons and evidences of a Mesolithic presence dated to between 10,000-7,000 years ago.

For the 2018 season, students will work on the Terrace section of Vale Boi in the lower layers dated to the first anatomically modern human occupations. They will excavate, recover and record all lithic artifacts, faunal remains and beads. In the lab, students will wash and catalog the recovered materials and carry out preliminary analyses of lithic materials and faunal remains.

ACADEMIC CREDIT UNITS & TRANSCRIPTS

Credit Units: Attending students will be awarded 8 semester credit units (equivalent to 12 quarter credit units) through our academic partner, Connecticut College. Connecticut College is a private, highly ranked liberal arts institution with a deep commitment to undergraduate education. Students will receive a letter grade for attending this field school (see grading assessment and matrix). This field school provides a minimum of 160 direct instructional hours. Students are encouraged to discuss the transferability of credit units with faculty and registrars at their home institutions prior to attending this field school.

Transcripts: An official copy of transcripts will be mailed to the permanent address listed by students on their online application. One additional transcript may be sent to the student's home institution at no additional cost. Additional transcripts may be ordered at any time through the National Student Clearinghouse: <http://bit.ly/2hvrkl>.

COURSE OBJECTIVES

The objective of this field course is to provide students with a great scientific experience of archaeological field and laboratory methods. It is expected that students will better understand how archaeology is practiced in the field and how it provides a window into our shared past, offering the possibility to gain basic understanding of the evolution of the human species and our cultural complexity. Thus, this course has three primary goals:

1. To provide students with a practical working knowledge of **archaeological field methods**, specifically archaeological excavation in Stone Age contexts and digital technologies applied to Archaeology;

2. Introduce students to **laboratory analytical methods**, artifact cataloging, and conservation; and
3. To introduce students to the **intellectual challenges presented by archaeological research**, including research design, the interpretation of data, and the continual readjustment of hypotheses and field strategies with regard to information recovered in the field.

The field course will take place in the Paleolithic Site of Vale Boi, in the Algarve, southern Portugal. Students will spend most of their time on archaeological excavation and the field laboratory.

Students will participate in the following research activities:

Excavations: Students will participate in guided excavations at selected areas of the Vale Boi site using a series of state-of-the-art field and computer techniques.

Recording: Students will participate in recording stratigraphy, filling out excavation forms, making topo plans and elevations, 3D mapping, maintaining an excavation notebook, writing a report and recording finds.

Laboratory: Scheduled lab tasks will include washing, sorting, photographing and analyzing Stone Age artifacts and faunal remains. If students show interest, they may assist in specific analysis potentially leading to participating in the international publication of the results.

Cataloging: Students will participate in sorting and cataloging archaeological materials using new software systems.

The course begins on Sunday, July 1 and will meet every weekday and for a half-day on Saturdays until July 28. A series of short lectures by project specialists and invited guests, mostly during the first three days of the project, will provide the cultural and archaeological background to the fieldwork.

The Vale Boi Field School is a project supported by the University of Algarve and provides training for graduate and undergraduate students in the latest archaeological techniques. The field school is an opportunity to work together with an international team of archaeologists in order to increase student's knowledge and gain practical archaeological experience. It is a wonderful way to experience archaeology first hand, and decide whether it is something you want to spend your life doing. Field school experience is an important addition on your CV if you decide to apply for graduate work in archaeology.

This field school forms part of a larger research project directed by Prof. Nuno Bicho and Dr. João Cascalheira (Interdisciplinary Center for Archaeology and Evolution of Human Behavior at University of Algarve, Portugal) on the appearance, adaptation and evolution of Anatomically Modern Humans, both in Europe and Africa. Your work within the field school will be part of publication effort engaged by the two directors.

DISCLAIMER – PLEASE READ CAREFULLY

Archaeological field work involves physical work in the outdoors. You should be aware that conditions in the field are different than those you experience in your home, dorms or college town. This archaeological field school operates at a typical coastal valley environment in Southern Portugal and thus, archaeological field work in Vale Boi is physically demanding. During the day, temperatures under the shadow fluctuate around the 80s. However, under the sun they may reach over 100° F. Humidity is relatively low and mosquitoes and/or flies may be close to the excavation area, as well as some dust. Although the excavation area is protected by a UV shelter, in order to be protected from sunburn and/or insects it is highly advisable to work in light long pants and t-shirt at the site.

If you have any medical concerns, please consult with your doctor. You are welcome to consult with the

project directors on all other matters.

PREREQUISITES

There are no prerequisites for participation in this field school. This is hands-on, experiential learning and students will study on-site how to conduct archaeological research. Archaeology involves physical work and exposure to the elements and thus, requires a measure of acceptance that this will not be the typical university learning environment. You will get sweaty, tired and have to work in the outdoors. Students are required to come equipped with sufficient excitement and adequate understanding that the archaeological endeavor requires real, hard work – in the sun, on your feet, and with your trowel. The work requires patience, discipline and attention to detail.

LEARNING OUTCOMES

On successful completion of the field school, students will be able to:

- Understand the different elements of an archaeological field excavation and prehistoric material culture analyses
- Apply standard excavation methods to archaeological contexts
- Use standard recording techniques to document excavation results
- Undertake preliminary processing of archaeological artifacts
- Undertake preliminary analysis of archaeological lithic artifacts and faunal remains

Excavation will follow previous methodology used at the site with a 1 m² grid system and measurement provenience with three dimensional coordinates of artifact, samples and archaeological features using total station equipped with EDM, directly connected to a PDA where data are stored and organized. The measurements are both precise to within 1 mm, and accurate, since all the measurements are relative to the same point that is connected to standard geographical coordinates (latitude and longitude). Also, this system allows a faster and more comprehensible view of artifact distributions *in vivo*, while still in the field.

Laboratory Work is a key part of our archeology strategy and an integral part of the field school. It includes inventory, classification and initial study of artifacts and faunal remains found at the site. There will be a series of lectures on the analytical procedures and specialists will teach and follow all lab work carried out by the students.

Many tasks at the lab will use free software developed specifically for archaeology by Harold Dibble and Shannon McPherron (www.oldstoneage.com), namely Newplot and E4. These will help to standardize processing of the artifacts, as well as organize storing. E4 is the basis for lithic and faunal analyses formatted for the specific needs at Vale Boi.

GRADING MATRIX

- 40%:** Participation – Attend and participate in each scheduled day (excavation, lectures and laboratory).
- 30%:** Field notes – Keep a field notebook that will be submitted and evaluated at the end of the field school.
- 30%:** Final Report – A written report that includes the description of all activities occurred in both the field and in the lab, a synthesis of the results of the year field season and a preliminary interpretation of the finds within the context of the local and regional prehistory. This report should also include a description of the field and lab methods.

TRAVEL & MEETING POINT

Algarve is served at the main city of Faro by a national railway line that comes from Lisbon (the capital of Portugal) as well as by the Faro International Airport (FAO). The airport connects with all major European cities, so coming from the US students may fly to Faro via any of the main European connection points (London, Paris, Brussels, Amsterdam, Frankfurt, Berlin, Dusseldorf and Lisbon, among many others).

Students should arrive in Faro on July 1. There will be two meeting points. The first at the Faro International Airport and the second at the Faro train station, both at 11.30am. Students must inform the project directors which point they will use. Project staff members will meet students and will drive the team to Budens, a small town located 2 kms west of the Vale Boi site, about one hour drive from Faro.

If you missed your connection or your flight is delayed, please call, text or email the project director(s) immediately. A local emergency cell phone number will be provided to all enrolled students.

Please note that the Field school will end on July 28, and the whole team will be driven back to Faro early in the morning with an expected arrival at 8pm.

VISA REQUIREMENTS

Portugal is a party of the European Schengen Visa Agreement. As such, US citizens may enter Portugal for up to 90 days for tourist or business purposes without a visa. Your passport should be valid for at least 6 months after your designated departure date.

Citizens of other countries should check the Portuguese Embassy website page at their home country for specific visa requirements.

ACCOMMODATIONS

Students will live in a comfortable, but modest, field house in the small town of Budens, located a couple kms from the site of Vale Boi. Conditions at the field house are basic, with electricity, drinking water and hot water for showers (please be prepared and bring bathing suits for showering, because sometimes students may have to use outside showers). Students will sleep on bunk beds so should bring either bedding or sleeping bags (or both). Night temperatures are comfortable with rare cold or hot nights. There are two large communal rooms, divided by gender, each with its own bathrooms. In addition there is a large communal eating room. Students will prepare their own breakfast and light lunch from supplies provided by the project. A cook will prepare dinner. The daily diet in Southern Portugal is Mediterranean diet and includes a wide diversity of food elements, including fish, shellfish, pork, beef, chicken, fresh vegetables, bread, beans, pasta, rice and potatoes. Although there is a wide diversity, it is nearly impossible to prepare dinners for specialized diets such as vegan, kosher, etc. It is possible to handle lactose intolerant meals, but those need special preparation.

Students will prepare their own breakfast in the dig house at 7.30am and we will leave for the field at 8.00am. A light lunch will be individually prepared at the dig house at 1:00pm, when we gather for a break from excavations until 3.00pm. Work in the field concludes each day at 6:00pm. There will be a few daily lectures in the late afternoons. At 6:00pm we will get together in the labs to discuss the day's work. Every work group gives a brief report on the results, problems and successes. During these meetings we will discuss results and interpretations. You are urged to contribute information and suggestions. Dinner is typically served at 8:00pm to the group as a communal meal.

COMPUTERS, MAIL AND CELL PHONES

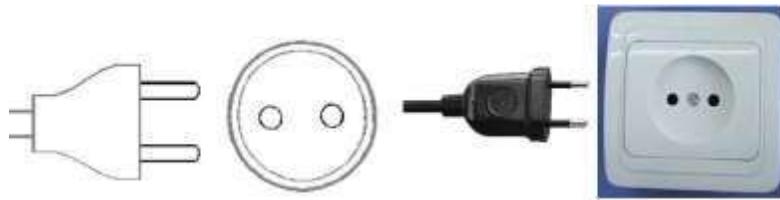
You are encouraged to bring your own laptop or tablet to prepare your final report, and also a phone to keep in contact with loved ones at home. The dig house does not have Internet, but if you have an

unlocked telephone, you can purchase a local telephone/data SIM card. Unlocked US quad band and smart phones will work in Portugal. Basic cell phones can also be purchased in Faro or other main town in Algarve.

To be contacted in Portugal, your family must dial +351 (if they call from the US) before the number. A week before the start of the field school we will forward an emergency number in case someone from home needs to contact you.

Another option to get online is to buy a USB modem for 3G Internet connection at any local telecommunications office.

More generally, where electronics are concerned, Portugal has different plugs from the US, with a plug with two circular metal pins and operate on 220V / 50Hz. The plug looks like this:



You should check all of your electronics before you arrive to make sure that they will work in Portugal.

COURSE SCHEDULE

Field work is between 8 am and 6 pm with a break for lunch between 1 and 3 pm at the dig house. Dinners are served usually at 8.00 pm. All lectures are 60 minutes

Sunday, July 1	11.30 am: Meeting at the city of Faro (airport or train station). 12.00 pm: Drive to Budens 1.30 pm: Lunch 3.30 pm: General introduction to the project. Get settled in. 8.00 pm: Dinner
Monday, July 2	10.00 am: Lecture 1. Prehistory of Algarve 10.30 am: morning break 11.30 am: Lecture 2. Introduction to Regional Geology 1.00 pm: Lunch 3.00 pm: Field trip to the surrounding towns of Vila do Bispo and Sagres and local beaches
Tuesday, July 3	
Morning	8.00 am: Meet minibus to Vale Boi and opening of the archaeological site 11.45 am: Return to the dig house 12.00 am: Lecture 3. Field methods: excavation and recording at Vale Boi 1.00 pm: Lunch
Afternoon	Students are divided into two groups Group A. 3.00 pm: Lecture 4. Introduction to lithic analyses 4.30 pm: Lecture 5. Introduction to faunal analysis: recording animal bones 5.30 pm: Handling artifacts and fauna

Group B.
2.45 pm: Meet minibus for drive to the excavation site of Vale Boi
6.00 pm: Return to the dig house.

Wednesday, July 4
Morning

Group A
8.00 am: Meet minibus for drive to Vale Boi
1.00 pm: Return to the dig house.

Group B.
8.00 am: Lecture 4. Introduction to lithic analyses
10.00am: Lecture 5. Introduction to faunal analysis: recording animal bones
12.00 am: Handling artifacts and fauna from Vale Boi

Afternoon

2.45 pm: Meet minibus for drive to Vale Boi
3.00 pm: New groups start excavation and lab work
6.00 pm: Return to the dig house.

Thursday-Friday (July 5-6)

8.00 am: Meet minibus for drive to Vale Boi
8.00 am: Excavation and lab work
1.00 pm: Return to the dig house – lunch
2.45 pm: Meet minibus for drive to Vale Boi
3.00 pm: Excavation and lab work
6.00 pm: Return to the dig house.

Saturday (July 7)

All day field trip to Silves, Portimão and Faro (Archaeological and historical sightseeing)

Sunday (July 8)

Day off

Monday-Friday (July 9-13)

7.45 am: Meet minibus for drive to Vale Boi
8.00 am: Excavation and lab work
1.00 pm: Return to the dig house – lunch
2.45 pm: Meet minibus for drive to Vale Boi
3.00 pm: Excavation and lab work
6.00 pm: Return to the dig house.
9.30 pm: Lecture 6. Introduction to Human evolution

Saturday (July 14)

7.45 am: Meet minibus for drive to Vale Boi
8.00 am: Excavation and lab work
1.00 pm: Return to the dig house – lunch
Free afternoon

Sunday (July 15)

Day off

Monday-Friday (July 16-20)

- 7.45 am: Meet minibus for drive to Vale Boi
- 8.00 am: Excavation and lab work
- 1.00 pm: Return to communal house – lunch
- 2.45 pm: Meet minibus for drive to Vale Boi
- 3.00 pm: Excavation and lab work
- 6.00 pm: Return to the dig house.
- 9.30 pm: Lecture 7. Introduction to the study of prehistoric beads (Mr. Lino André)

Saturday (July 21) All day field trip to Évora (Archaeological and historical sightseeing)

Sunday (July 22) Day off

Monday-Wednesday (July 24-26)

- 7.45 am: Meet minibus for drive to Vale Boi
- 8.00 am: Excavation and lab work
- 1.00 pm: Return to the dig house – lunch
- 2.45 pm: Meet minibus for drive to Vale Boi
- 3.00 pm: Excavation and lab work
- 6.00 pm: Return to the dig house.
- 9.30 pm: Lecture 8. Introduction to Report Writing (–Dr. João Cascalheira and Prof. Nuno Bicho)

Thursday (July 27)

- 8.45 am: Meet minibus for drive to Vale Boi
- 9.00 am: Closing of the site
- 11.30 am: Return to the dig house
- 1.00 pm: Lunch
- 3.00 pm: Preparation of final report

Friday (July 28)

Day off

Saturday (July 29) All day: Preparation and delivery of final report

Sunday (July 30) 7.00 am: Return to Faro

EQUIPMENT LIST

- | | |
|---------------------------------------|-----------------------------------|
| ✓ Shower towel | ✓ Sunscreen |
| ✓ Beach towel | ✓ Sunglasses with UV protection |
| ✓ Swim suite | ✓ Light working boots |
| ✓ Light jacket or rain coat | ✓ Shower sandals |
| ✓ Light cotton work pants | ✓ Personal medication (as needed) |
| ✓ Sleeping bag and pillow | ✓ Canteen or water container |
| ✓ Long and short sleeve cotton shirts | ✓ Wide brim hat or head cover |

✓ Insect repellent

✓ Daypack/backpack

MANDATORY READINGS

Bicho, N.

2006 *The prehistory of Algarve*. Tomar: Instituto Politécnico de Tomar (bilingual edition in Portuguese and English).pp. 85- 106.

Bicho, N., Cascalheira, J., Marreiros, J. Pereira, T.

2015 Rapid climatic events and long term cultural change: The case of the Portuguese Upper Paleolithic. *Quaternary International*, doi:10.1016/j.quaint.2015.05.044, pp. 1-14.

Bicho, N., Marreiros, J., Cascalheira, J., Pereira, T., Haws, J.

2015 Bayesian modeling and the chronology of the Portuguese Gravettian. *Quaternary International*, 359–360:499-509.

Bicho, N., Cascalheira, J. and Marreiros J.,

2009 On the (l)edge: the case of Vale Boi rockshelter (Algarve, Southern Portugal). In *Caves in Context. The Economical, Social, and Ritual Importance of Caves and Rockshelters*, ed. K. Bergsvikand. Skeates. Pp.65-81. Oxbow Books.

Bicho, N., Frederico Tátá, Telmo Pereira, João Cascalheira, João Marreiros, and Vera Pereira

2011 Explosive archaeology: safe demolition in karstic environments. *The SAA Archaeological Record*, 11(4):16-20.

Bicho, N., M. Stiner and J. Lindly,

2004, Shell Ornaments, bone tools and long distance connections in the Upper Paleolithic of Southern Portugal. In *La Spiritualité*, M. Otte (ed.), pp.71-80. Liege: ERAUL.

Bicho, N., Simón Vallejo, M., and M. Cortés

2012 A Solutrean zoomorphic engraved plaquette from the site of Vale Boi, Portugal. *Quartär*, 59:153-164.

Cascalheira, J. and Bicho, N.

2015 On the chronological structure of the Solutrean in Southern Iberia. *PLOS ONE*. 10(9): e0137308. doi:10.1371/journal.pone.0137308.

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2013 Hunter-gatherer ecodynamics and the impact of the Heinrich Event 2 in Central and Southern Portugal. *Quaternary International*, 318: 117-127.

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2007 The use of barcodes in excavation projects: examples from Mossel Bay (South Africa) and Roc de Marsal (France). *The SAA Archaeological Record*, 7(1), 33-38.

Marreiros, J., Bicho, N., Gibaja, J., Pereira, T. and Cascalheira, J.

2015 Lithic technology from the Gravettian of Vale Boi: new insights into Early Upper Paleolithic human behavior in Southern Iberian Peninsula. *Quaternary International*, 359-360:479-498.

Manne, T. and N. Bicho
2011, Prying new meaning from limpet harvesting at Vale Boi during the Upper Paleolithic. In *Trekking the Shore: Changing Coastlines and the Antiquity of Coastal Settlement*, N. Bicho, J. Haws, and L. Davis (eds.). Springer.

McPherron, S. J.P., Dibble, H. L. and Goldberg, P.
2005 *Z. Geoarchaeology*, 20: 243–262.

Tátá, F., Cascalheira, J., Marreiros, J., Pereira, T. and Bicho, N.
2014 Shell bead production in the Upper Paleolithic of Vale Boi (SW Portugal): an experimental perspective. *Journal of Archaeological Science*, 42:29-41.

RECOMMENDED READINGS

André, L and Bicho, N.
2016 Perforation techniques and traces of use on the Mesolithic adornments of the Trench Area at Cabeço da Amoreira Shellmidden (Muge, central Portugal). *Compte Rendu Palevol* 15 (2016) 569–580.

Bicho, N.F.
2000 *Technological change in the Final Upper Paleolithic of Rio Maior*. ARKEOS, Tomar.

Bicho, N and Haws, J.
2008 At the land's end: marine resources and the importance of fluctuations in the coastline in the prehistoric hunter-gatherer economy of Portugal. *Quaternary Science Reviews*, 27:2166–2175.

Bicho, N., Manne, T., Marreiros, J., Cascalheira, J., Pereira, T., Tátá, F., Évora, M., Gonçalves, C. and Infantini, L.
2013 The ecodynamics of the first modern humans in Southwestern Iberia: the case of Vale Boi, Portugal. *Quaternary International*, 318:102-116.

Bordes, F.
1988 *Typologie du Paleolithique Ancien et Moyen*. CNRS, Paris.

Brézillon, M.
1983 *La dénomination des objets de pierre taillée*. IV^{ème} supplément à Gallia Préhistoire. Édition du CNRS, Paris.

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1999 *Zooarchaeology*. Cambridge University Press.
- Rocha, R., Ramalho, M., Manuppella, G., Zbyszewski, G., and Coelho, A.
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