



# ABSTRACTS

WEDNESDAY, OCTOBER 2

Hein B. Bjerck & Silje E. Fretheim  
**Welcome to the Marine Ventures Symposium**

1 – Peter Woodman\*

**Fast Ferry to Kirkenes or slow boat to Dublin?**

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Western/Northern Norway and Ireland represent two peripheral regions on the Atlantic fringe. One might expect that they would have two similar histories of initial colonisation by sea but in fact they have very different stories. Sometimes the difficulties of marine navigation are held out as the major inhibiting factors. One might question whether besides the availability of appropriate technologies for movement and resources procurement, other factors had an important role. In particular, did productivity in the Irish Sea basin at the beginning of the Holocene slow up movement across the Irish Sea? How much were Mesolithic communities spreading west through England and Wales land based, and was Ireland, with its limited resources, a viable location where long term settlement was a real option?

2 – Mattias Petterson\* & Roger Wikell\*\*

**To the end of the world – Recent results about seal hunters in the Ancylus Lake, 10000 years ago**

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After the last Ice Age land uplift created vast archipelagos in the Baltic Sea. One of these island worlds was situated in Eastern Middle Sweden, were an archipelago stretched from the mainland to the east, 120 km out in the Ancylus Lake phase of the Baltic Sea. At the end of the chain of islands the authors have performed an archaeological project with surveys of marine cultural landscapes.

The early seascape is rich in Mesolithic sites. At some sites we have conducted excavations. The hard data results, including a rich lithic material, burnt seal bones, burnt seal fat ("blubber concrete"), hut foundations close to good natural harbours, highlights a specialised marine lifestyle 10 000 years ago. The sites represent the colonisation phase in this region.

We will present the archaeological results and discuss them in terms of relations both to the seascape itself and to other contemporary marine cultures in Scandinavia.



3 – Daryl Fedje\* & Duncan McLaren\*

**Hakai, a Late-glacial to Early Holocene Paleoshoreline ‘Sweet Spot’ on the West Coast of Canada**

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Archaeological and palaeoenvironmental investigations in the Hakai Passage region of the central Pacific coast of Canada have identified an area of relatively stable shorelines extending to at least 13,000 calendar years ago. The local sea level record for this ‘hinge area’ has been developed through integration of data from isolation basins, stratigraphic sections and archaeological sites.

Preliminary archaeological work in this area has established good evidence for maritime adaptation, on these paleoshorelines, extending to at least 11,500 years ago.

This work has been funded by the Tula Foundation, Heriot Bay, Canada.

4 – Jan Magne Gjerde\*

**Marine Ventures in Stone Age rock art of Fennoscandia**

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In rock art research there has been/still is a general assumption and interpretation that the boats depicted in rock art are not real but cosmological depictions of boats. This paper will look into the marine ventures in Stone Age rock art where the boat depictions are reconsidered as part of a real and cosmological world.

Boats and the sea were important parts of Stone Age life evidenced by the numerous coastal settlements, inhabiting the seascape. The indirect evidence of an advanced marine technology is the settlement record from the numerous islands along the Norwegian coastline. The boat was a vital conveyance connected to hunting and fishing at sea, in rivers and lakes inland. Adding to this they were important in journeys to and from important places in the Stone Age landscape as means of transportation of people or goods.

In a recent study of Stone Age rock art in northern Fennoscandia I found the earliest boat depictions to be about 7000 years old, dating to the Late Mesolithic, 1000 years older than previously argued. The oldest boats are the so-called elk head-boats. The stem is an elk-head making the boat appear as an elk. The rock art record of boat depictions from north-western Russia and northern Norway is especially abundant, but boat depictions from the rest of Fennoscandia will also be discussed. The Stone Age boat depictions include driving and hunting of birds and reindeer, halibut fishing, seal hunting and whale hunting. At times the fishing and hunting gear are depicted in the rock art. Adding to this there are depictions of people carrying boats and perhaps “dancing” next to the boats. This may be accompanied by rituals connected to boats and seafaring as described in ethnographic accounts, e.g. the annual launch of the boat before the whale hunt amongst the Inuit.



The boats depicted are most likely skin-boats with a striking resemblance to the Inuit umiak-boat where the boats were made by a spant covered by large game animal skin (elk, reindeer, seal or whale).

No overview of the Stone Age boat depictions exists. Comprehensive fieldwork conducted during the last years has given me the opportunity to study the different boat depictions, the boat types and its connected activities. This makes it possible to present an overview of the diversity of marine activities represented in the Stone Age rock art. Boats may be representation of cosmological journeys; however this paper will focus more on the actual activities depicted in the rock art as representations of real events in the past. I am not discarding the cosmological interpretation of the boat since a boat depiction may refer to both the cosmological and the real. Amongst hunter-gatherers, in the ethnographic record, there is no clear-cut separation between the real and the imaginary. Thereby, in Stone Age rock art there are strong indications that the depictions are intertwined representations depicting and denoting both real and cosmological boats.

5 – Evguenia V. Anichtchenko\*

#### **Arctic sail**

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For thousands of years sails propelled the history of many civilizations. While it is commonly accepted that the invention of sails as a general technological concept was a global event that occurred in different places at different times, and was not necessarily a result of diffusion, the origin of this technology in indigenous Arctic and subarctic regions remains a question. Is the appearance of sail in the indigenous circumpolar north always a result of a contact with “industrial” societies? Or did the Native peoples of the North know it prior to such contacts? How does the use of sail manifest itself in indigenous watercraft and what are its benefits and limitations in the Arctic maritime environment? Based on archaeological data, Native lore, and ethnographic collections from Siberia, Alaska, Canada and Greenland this talk invites consideration of the meanings and implications of sail for the indigenous cultures of circumpolar regions. Some comparative examples are also drawn from the canoes of the aborigines of Tierra del Fuego.

6 – Jason Rogers\*

#### **Icescapes: (Ant)Arctic Maritime Archaeology**

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Among the least theoretically developed sub-disciplines of archaeology are those relating to maritime and underwater archaeology in the Arctic context. Although underwater investigations have been carried out in Arctic waters, there has never been an attempt to develop a theoretical approach oriented specifically towards underwater and coastal maritime cultural resources of the Arctic and circumpolar regions. The uniqueness of the region’s physical and environmental conditions are partly to blame, as are the logistical considerations and expenses of working in remote and sparsely



inhabited polar areas. (Similar issues confront researchers at the southern “top of the world”, although chronologically the South Polar Region has had a more limited human presence.) Impending – and indeed currently occurring – climatic changes to these regions make research imperative in all areas of Arctic and Antarctic physical, environmental, and social sciences. This presentation, as a preliminary effort, broadly seeks to connect the physical and environmental contexts of human occupation of the Arctic Ocean and its islands, archipelagos and continental margins (prehistoric, historical, and modern) with human impacts and influences over the same chronological expanse. The goal of this contextualization is an accurate understanding of the potential range of Circumpolar site types and formation processes.

7 – David R. Yesner\*

**Synthesizing the coastal zooarchaeological records from Early Holocene Russian Far East and Japan**

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Sociopolitically complex maritime hunter-gatherers appeared first in areas of the North Pacific relatively free of sea ice in the Early Holocene. These include areas south of the Amur River in northern Primorie, Russian Far East (the "Early Neolithic," and areas south of the northern Hokkaido seacoast in northern Japan. It also includes areas south of the Kvichak River in Bristol Bay, southern Bering Sea, Alaska. Technologically, these cultures began with microblade and small biface traditions, developing unilaterally and bilaterally-barbed harpoons and toggling harpoons. In terms of subsistence, they show progression from nearshore fishing and shellfish collection to sea mammal hunting, including taking small whales. This process culminated at the time of the so-called Jomon marine transgression and subsequent stabilization of early Holocene sea level rise. On the Primorie side, the crisis in the marine economy that followed (in the Late Neolithic and Bronze Age) gave rise to pressures for the acceptance of agriculture, following the model developed for southern Scandinavia by Peter Rowley-Conwy. Where northern Chinese-derived cultigens were less available and pressures for acceptance of agriculture were attenuated (in the Japanese archipelago, and especially northern Hokkaido), this process was delayed, and intensification of maritime hunting and gathering occurred in the transition from the Jomon to the Okhotsk culture. These issues have a bearing on the origins of whaling, North Pacific bear ceremonialism, and Ainu people.



## THURSDAY, OCTOBER 3

8 – Omar Reyes Báez\*, César Méndez Melgar\*\*, Manuel San Román Bontesii\* & Flavia Morello Repettoii\*

### **Search for maritime hunter-gatherer evidence in the shifting coastal lines of the western Patagonian channels (43°– 47°S, Chonos Archipelago, Chile)<sup>1</sup>**

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The Patagonian archipelago presents complex and expensive access logistics. Navigation is the only means of survey and recording of archaeological sites in this insular system that is 1600 km long and adds up more than 19000 km of coastline. Partial exceptions are found in the geographic extremes of this extensive archipelago (Chiloé Island/ Reloncaví Sea in the North and Otway Sea/Beagle Channel in the South) where cities and roadway development have enabled access and systematic investigation of marine hunter-gatherer sites of Middle and Late Holocene age. On the contrary, the northern Patagonian archipelago between Guafo Island (43°S) and Taitao Peninsula (47°S), known as Chonos Archipelago (XI Region of Aysén), has with 400 km along the Pacific and scarcely been approached by systematic archaeological research programs.

Advances of an archaeological investigation that, with a wide spatial scale, looks forward to contributing to the discussion of peopling, dispersion and occupational characteristics of the Pacific coast of the southernmost extreme of South America are presented. In the study area, sea adapted human occupations are at least one thousand years younger c. 5500 years BP than those recorded in the extreme southern archipelago with near 6500 years BP in zones like Otway Sea/ Strait of Magellan and Beagle Channel.

Specific survey strategies contemplating coastline morphological changes, especially due to tectonics, will be implemented to search for marine hunter-gatherer evidences and better record the ancient occupations in this territory. Survey strategy and evaluation of sea line changes consider: 1) Identification and recording of landforms and paleo-coasts with emphasis on shoreline changes 2) Sets of radiocarbon dating of shellmidden campsites, material culture and identified landforms and 3) Archaeological site emplacement and conservation state (e.g. sites eroded by tides, uplifted fishing corrals).

Preliminary results point out that all discovered contexts are either in the coastline, immediate to the shore, or in the intertidal. Radiocarbon dates (N=37) hardly surpass 3000 years BP (with ~360 years reservoir effect) in eroded shellmiddens with lithic artifacts in intertidal area (lanceolate projectile points, fishing weights and stone axes), some of which are made on obsidian derived from Chaitén volcano source located more than 400 km up North. Formation and postdepositional processes that may be influencing the archaeological record and its preservation in this region has guide us to question if this was one of the last peopling areas in South America, as chronology

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<sup>1</sup> Proyecto FONDECYT N° 1130151





shows, or active tectonic dynamics that have transformed these coastlines affect the capacity of recording older evidence and constitutes a bias problem.

Aiming that the recovered information contributes to the discussion of maritime peopling velocity, its chronology, technological and subsistence patterns and above all that this process is not limited to the early occupation phase but spans along time, understanding peopling as a continuous use of spaces.

9 – Manuel San Román Bontesii\*, Omar Reyes Báez\* & Flavia Morello Repettoii\*  
**Maritime hunter-gatherers from Southernmost Patagonia, South America: timing, changes and cultural traditions during the Holocene<sup>2</sup>**

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The Pacific coast of Patagonia, the southernmost extreme of South America (47°–56°S latitude), is part of the vast archipelagic system occupied in historical times by Alacaluf and Yamana indigenous groups. These marine hunter-gatherers maintained their traditional lifestyles until the XIX and early XX centuries. Numerous ethnological studies recorded aspects of their culture, becoming important worldwide references. A synthesis of modern knowledge of the peopling of this region is presented, covering different topics of human occupation during c. 7.500 cal yrs BP. Our work will focus on two thematic: First, the appearance of specialized marine adaptation groups in Patagonia and their probable origins, chronological frame, archaeological record and the potential bias caused by differential preservation of ancient coastlines. The data is addressed in relation to alternative hypotheses that have been used to explain the origin of these human societies, one being local source and adaptation of existing terrestrial hunters and the second recons migration of specialized groups along the coast.

Secondly we propose a cultural sequence for the area, based on the study of coastal archaeological sites. This includes three sets of technological and economic features, grouped in consecutive time blocks and characteristic cultural material assemblages: a) Englefield tradition (7500–6000 cal yrs BP), b) Ponsonby tradition (5700–3200 cal yrs BP) and c) Punta Baja tradition (<2500 cal yrs BP). Discriminant archaeological elements of each assemblage are related with lithic and bone industries, both instrument design and manufacturing techniques, as well as trends of different use of raw materials and subsistence patterns.

Finally, our sequence proposal for archaeological marine hunter-gather settlement in the region will be discussed in relation to peopling trajectories, in the sense of whether or not we can argue cultural continuity in technological and economic traditions. Modern research has raised the discussion that Patagonian population was characterized by marked homogeneity, stability and cultural continuity, assuming that technological changes could be explained as minor or irrelevant modifications and/or innovations occurring through time. In this paper we argue that differences express changes that are best understood when considering the emergence of different cultural traditions, based on variations in information circulation, social interaction and their spatial scale of

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distribution over time. This in turn can be related to exchange or transport of artifacts, ideas or knowledge and people, including migration processes.

10 – Alfredo Maximiano Castillejo\*

**Determination potential passages for Modelling Kawesqar mobility in Fuego–Patagonia: the prehistoric Canoeists’ Passage Project**

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PreCaPas – financed by JPI Santander Universidad; in collaboration with Instituto del Hombre Austral. UMAG – is based on the application of geo-computing tools for detection, description and contrast about potential geographical passages: variety of terrestrial routes which connect remote areas in use from the early Holocene to the mid-nineteenth century, that might have been worn by Kawesqar People (hunter-gatherer groups in the Fuego–Patagonia region of Chile).

In this southern region, the heuristic value of a passage would be more that a route to shorten the considerable distances involved in coastal navigation or to avoid certain geographic obstacles (e.g. dense forested, line of a glacier, high roughness, etc.). Of course, passages are only possible when a number of barriers exist in addition to a series of motivations (i.e. access to exogenous raw materials, exchange of individuals and prestige goods, spread of ideas and knowledge, and so on) for connections between members of the same collective or between different social groups (Prieto *et al.* 2000). The canoeist’s passages, as well as being an expedient solution for transport routes, enabled the palaeo-landscape to be structured, facilitating intra-groupal and inter-ethnic interaction. It is very likely that they would have played a significant role in communication and exchange networks amongst these social collectives, whose way of life was focused on the exploitation of littoral resources through continuous transhumance by coastal navigation (Emperaire 1963; Bayley & Parkington 1988). The project aim is to solve a problem of archaeological visibility: How to recognize and find possible routes associated with these passages. To answer this question, we have adopted archaeological spatial prediction as our basic methodology (Fry 2004; Mehrer & Wescott 2006; Verhagen & Whitley 2012).

Therefore, the prediction of locations and the comparison of possible passages will be able to establish vital new information about the potential mobility of these collectives, impacting on aspects of the perception and visibility of certain hidden archaeological evidence that might be related to the palaeo-landscape and determinates social procedures, such as the presence or absence of habitat sites (Maximiano *et al.* in press), quarries, burial places, differential growth forest motivated by the presence of buried remains of poles, concentration of artistic evidence like rock art and petroglyphs... The initial phase at PreCaPas was revisited ethnographical cases which made quantitative characterization of these ethnographically-attested passages, and with this information level and others variables (ecological, geographical and social) make spatial predictions of potential passages locations within the study area.

Last advances will be presented at Marine Ventures (potential passages location, palimpsest problems, methodological details...) However, we are interesting in discussing more than these outcomes in the next question: Is it possible to move



Kawesqar issues into others scenarios for addressing specific problems about mobility during the Palaeolithic and Mesolithic periods (i.e. the Scottish and Norwegian coastlines)?

11 – Lisa Rankin\* & Amanda Crompton\*\*

**Kayaks and chaloupes: Labrador Inuit and the seascapes of inter-cultural contact**

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By the sixteenth century the Inuit had colonized much of the coast of Labrador. In southern Labrador Inuit had access to plentiful marine resources, but they were also drawn to this region by the seasonal presence of Basque and French fishers and whalers with whom they traded and raided for a variety of European commodities. What began as opportunistic exchanges soon developed into an increasingly elaborate annual venture which had to be worked into their seasonal round. Such trade was a substantial marine venture. Inuit produced and prepared surplus marine products such as baleen, sea mammal furs and oils which they exchanged for iron, ceramics and if possible, boats. Goods were transported to and from communities along the Labrador coast by sea, and much of the trading (and raiding) took place aboard European vessels. This intensive annual trading cycle ultimately permeated the lives of Inuit throughout Labrador who largely organized themselves to participate in this new global economy. In this paper we will explore how this new marine-based economy impacted the lives of the Inuit in southern Labrador: affecting their daily life, settlement structure, and group identity relations to other Inuit communities in northern Labrador.

12 – Amanda Crompton\* & Lisa Rankin\*\*

**Chaloupes and kayaks: European mariners and the seascapes of inter-cultural contact**

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The Atlantic Ocean knit together diverse groups of people in an increasingly dense set of connections. Between the sixteenth and eighteenth centuries, French fishermen undertook longcours trans-Atlantic journeys in the quest for marine resources. Some of these ships were drawn to the beaches of southern Labrador, where they engaged in a summer-long cod fishery. Their presence was only a seasonal one, and at the end of the summer, fishermen returned to home markets in France with their preserved catch. Their seasonal appearance on Labrador's beaches and nearshore waters drew the attention of Inuit groups living in the region, and trade relationships quickly developed between the two groups. These cyclical, yearly encounters between French and Inuit became a predictable, if often volatile occurrence. In this paper, we will explore how the seasonal rounds of these two maritime-focused groups intersected. Specifically, we will examine where and how the trade occurred, how European fishermen began to expect and anticipate these exchanges, and how Inuit traders had an important impact on the lives of European fishermen.





13 – Hein B. Bjerck\*

**The Marine Ventures project. Comparative perspectives on the dynamics of early human approaches to the seascapes of Tierra del Fuego and Norway**

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"Marine Ventures" focuses on the similarities and differences in the cultural developments in the two coastal areas, on different sides of the world, but also with many common features: Seascapes of Patagonia and Scandinavia. The lack of cultural relations between these distant areas implies two completely independent trajectories towards seascapes and marine adaptations, which display a cultural dynamism that is of global archaeological interest.

The emergence and development of marine adaptations is a central academic focus – interaction between social structure, dwellings and boats, the structure of dwelling sites and logistics. The project includes field trips and archaeological investigations in Norway and Tierra del Fuego, specifically Cambaceres, Estancia Haberton at the Canal Beagle. One of the four work packages in the project is a comparison of how cultural heritage provided and managed in Argentina and Norway, Parque Nacional Tierra del Fuego and the Vega World Heritage site in Nordland, Norway. The project is owned by NTNU Vitenskapsmuseet and funded with support from [the Research Council of Norway, Latin America program](#) (Project no 208828).

14 – Heidi Mjelva Breivik\*; Hein B. Bjerck\*\*; A. Francisco J. Zangrando\*\*\* & Ernesto L. Piana\*\*\*\*

**Exploring complimentary sources to marine hunter-gatherer lifestyles within the Marine Ventures project**

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Archipelagic environments with islands and skerries, channels and fjords are regarded as highly productive habitats. These seascapes were carved out by the glaciers over thousands of years ago and are found along the rocky shores of Scandinavia, Great Britain, America and East Asia. In Norway and Tierra del Fuego we have traces of marine hunter-gatherers that reach back thousands of years. These two regions are the subject for the following comparative study of marine hunter-gatherer lifestyle within the Marine Ventures project. In addition to the environmental parallels the study areas also carry cultural similarities: a dependence of boat for logistics and foraging is obvious through the occupation of small islands, and a nomadic lifestyle is evident through temporary house constructions and repeated use of the same areas. Moreover, hunting of seals has been suggested as the driving factor in the initial colonization phase, and there seem to be a targeted use of the most favorable areas. However, the traces left by the marine hunter-gatherers differ between the comparative regions: While in Norway we only have lithics and traces after tents and fire places, there is a large zooarchaeological record available from Tierra del Fuego. Additionally, ethnographic sources elaborate on the diverse aspects of the lifestyle of the marine foragers.



The present paper will explore how these complimentary sources can be used to study differences and similarities in marine hunter-gatherers' use of landscape and resources in two geographically distant areas. Can we establish connections between ethnographic and archaeological sources, and between archaeological imprints and hunter-gatherer lifestyles?

15 – Magnhild Molund Husøy\* & Elisabeth Forrestad Swensen\*\*

**Marine Ventures and Thomas Bridges' Yamana–English Dictionary**

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The “Yamana–English Dictionary” is compiled by Thomas Bridges, a British missionary who lived among the “canoe people” in The Beagle Channel of Tierra del Fuego in the late 19th century. Bridges knew their language as well as their lifestyle in great detail, and the dictionary offers a unique opportunity to study the Yamana traditions and adaptation in their own words, so to speak. This is the basis for the MA projects of Magnhild Molund Husøy and Elisabeth Forrestad Swensen. Husøy will explore how the dictionary relates to settlements and dwellings, and Swensen will study marine adaptation. Hopefully, the study also will produce interesting perspectives that are relevant to the Norwegian Stone Age marine foragers.

16 – Silje E. Fretheim\*; Ernesto L. Piana\*\*; Hein B. Bjerck\*\* & Atilio Francisco J. Zangrando\*\*\*\*

**Dwellings and societal changes among marine foragers in Norway and Patagonia – a study of technological choices in housebuilding traditions**

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While the pioneer marine foragers along the Norwegian coast (11 500–10 000 cal. BP) seem to have relied solely on light, fairly small campsite shelters or tents, remains of permanent dwellings in the form of pit-houses with solid wall mounds show up on coastal sites around 9500 cal. BP, and become increasingly more common towards the end of the Mesolithic (c. 6000 cal. BP). Average floor sizes also increase markedly. This shift in housebuilding traditions is seen to reflect overall societal changes towards a less mobile, more territorially bound lifestyle, and also an economy resting on a wider range of local resources. The placing of Late Mesolithic base camps (8500–6000 cal. BP) near stable fishing grounds, and the first occurrence of stone fishing sinkers on sites after c. 9000 cal. BP, suggest that fishing gained importance in this period. This, in turn, implicates a relative loss in economic significance for the hunting of seals, believed to be a crucial recourse for the coastal pioneers.

In Patagonia, zooarchaeological material from coastal sites along the Beagle Channel between c. 7000 cal. BP and recorded historical time suggests intensification in fishing at the expense of hunting sea and land mammals (guanacos and pinnipeds), starting c. 1000 cal. BP. However, there is little in the archaeological or ethnographical material to



indicate a corresponding change in settlement patterns or fishing technology within the same period. The dwellings also seem to have remained the same: Light, uniformly sized hut structures covering an unmodified or occasionally leveled floor area, surrounded by circular mounds of shell-midden material interpreted as mere waste rather than constructional elements of the dwellings.

According to Pierre Lemonnier, social logics unrelated to technology tend to play a significant role in technological choices. A changing natural environment, a shift in economy or an exposure to new knowledge and ideas by cultural contacts – all these are essential factors in explaining changes in material culture, but they cannot demand change that is incompatible with cultural views, and they do not determine the direction or success of the technological choices that are made.

In this paper, we will consider and compare the factors that may have affected the different technological choices in housebuilding traditions among the marine forager of Patagonia and Norway respectively, taking into account that apparent non-change in the material culture may also be regarded as a choice. We also want to explore general ideas concerning the relationship between dwellings and societal changes, and how choices in housebuilding traditions may have affected the marine foragers in Patagonia and Norway in the long term.

17 – Atilio Francisco J. Zangrando\* & Angélica M. Tivoli\*\*

**Channels, islands and faunal variability. A zooarchaeological perspective of the human use of seascapes in the archipelago of Tierra del Fuego**

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On the Southern tip of South America, as in many similar archipelagos in high latitudes of the world, archaeological and ethnographical records reflect one of the most extreme human marine adaptations. High or exclusive dependence on marine resources is often seen as the most conspicuous factor to define a marine adaptation. In this paper, we assume that such argument is often decoupled from specific ecological contexts, and human adaptation to the sea is not isomorphic. Much of the variability in faunal assemblages can be explained by the spatial distribution of animal resources.

We adopt a biogeographical approach to examining the archaeological expressions of hunting and fishing practices in different settings of the archipelago of Tierra del Fuego. First, we analyze the current distribution and diversity of animal resources which were potentially used by hunter-gatherer strategies to identify spatial units with different conditions to human subsistence. Then we explore subsistence patterns grouping and comparing zooarchaeological assemblages among the different spatial units.

Although technological assemblages inform similar hunting and fishing capabilities between the explored areas, the zooarchaeological analysis shows that there was a wide variation in subsistence patterns between offshore islands, channels and open coasts of main islands. The former are characterized by an exclusive use of marine resources, and especially of low-ranked prey, while the human subsistence in other seascapes involves



the fluent use of marine vertebrates but also a considerable exploitation of terrestrial mammals. Finally, this study also suggests that site distribution at a regional scale is highly informative about subsistence patterns and foraging activities in seascapes, even under conditions of no conservation of organic remains.

18 – Hein B. Bjerck\*; Heidi Mjelva Breivik\*\*; Ernesto L. Piana\*\*\* & Atilio Francisco J. Zangrando\*\*\*\*

**Exploring pinnipeds as a prime motivator in the colonizing of the skerry-fjord seascapes of Patagonia and Scandinavia**

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Walrus originate from the Old Norse hrosshvalr, “horse whale”, a telling illustration of pinnipeds as a hybrid animal in a hybrid habitat in the land-sea transition. Most likely, pinnipeds were important pull factors for the terrestrial hunter-gatherers that dared the venture of marine foraging in the northern and southern seas in early Holocene. Pinnipeds are mammals that represent a similar resource as the terrestrial megafauna, with a familiar combination of meat, bone, skin, blood, sinews, and fat. And they may be hunted on shores (or winter ice), with more or less the same methods and equipment as terrestrial animals.

The development of marine foraging in Northern Europe seems to happen in parallel with the colonization of the Scandinavian seascapes, around 11 500 cal BP. The earliest sites are without organic preservation, but environmental information and site locations indicate that pinnipeds were the prime target in the colonizers’ subsistence. There are indications that seals not only provided food and a supply of raw materials for tools and equipment. The hunters may also have depended on blubber for heating winter dwellings, resulting in a tight relationship to pinnipeds. This seal-dependent subsistence pattern demanded a highly residential mobility based on tents and boats, family groups constantly on the move to new kill sites and campsites. This is in agreement with the hundreds of early Mesolithic small campsites that are documented in coastal Scandinavia – in contrast to the more stable settlement system in the fish-oriented subsistence of the Middle and Late Mesolithic periods.

This cultural trajectory towards a marine lifestyle may have a parallel in southernmost South America. The earliest marine foragers in Patagonia are found in Tierra del Fuego, in the Argentinean part of the Beagle Channel, c. 7500 cal BP. The earliest shell middens include abundant remains of pinnipeds, fish and sea birds, and a fully developed tool kit for marine foraging. However, there are also evidence of older coastal sites without shell midden deposits (Tunel, Imiwaia, Binushmuka, c. 8000–8500 cal BP). At present, it is debated if these sites are related to terrestrial hunter-gatherers – or a pinniped-based, pre-shellfish marine adaptation similar to Scandinavia.



In this discussion, we will explore the nature of pinnipeds, and how this animal may relate to and influence the development of early marine foraging systems – technology, logistics, and settlement structure.

## FRIDAY, OCTOBER 4

19 – Carola Flores\*, Diego Salazar\*\*, Valentina Figueroa\*\*\*, César Borie\*\*, Laura Olguín\*\*, Philippe Béarez\*\*\*\*, Felipe Fuentes\*\*\*\*\*, Sandra Rebolledo\*\*, Hernán Salinas\*\*, Mónica Bahamondes\*\*

### **The development of early specialized maritime economies in the coast of the Atacama Desert, Chile: Interpreting a six-thousand year process (11000–5000 cal BP).**

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In this paper we present our current understanding of the historical process of human adaptation on the coast of the Atacama Desert focusing on the early development of specialized maritime economies. Our research is located in northern Chile, specifically in the area of Taltal (25°S). The study area is characterized by present-day hyperarid conditions and absence of permanent sources of fresh water, but at the same time it is a rich ecosystem, with high coastal and marine productivity and abundant availability of minerals and lithic raw materials.

Our presentation will describe the peopling of this coastal area and will analyze the development of a specialized maritime adaptation during the Early and Middle Holocene, as well as its transformation and virtual disappearance at the beginning of the Late Holocene. We will focus on specific variables, such as technology, subsistence, type of residential occupation and mobility (settlement patterns), identifying continuities and transformations.

A fully developed specialized maritime economy was achieved in the area of Taltal around 8000 years cal BP. It was characterized by a settlement pattern of low residential mobility, with a diversified subsistence strategy but also focused on key resources and a sophisticated technology (fishhooks, harpoons, boats, nets, etc.) well adapted to the capture and processing of these resources.

We will discuss about the social implications of this subsistence and economic organization and the role that certain specific resources – such as oceanic fish, subtidal mollusks and iron oxides – played in the processes of technological specialization and increasing social complexity during the Middle Holocene.

Lastly, we will present our hypothesis regarding the end of this socioeconomic system (ca 5000 cal BP) and the profound transformations that occurred within local coastal societies during the Late Holocene.





20 – Maria Joaquina Coelho Soares

**Rethinking the Mesolithic of the Sado Palaeo-Estuary (Portugal) semi-sedentary hunter-gatherers**

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The author presents a synthesis about the Mesolithic of the Sado palaeoestuary, building a model of socio-economic dynamics in a long-term perspective, and in the wider context of the neolithization in Southern Portugal.

At the time span of 5700–4500 cal BC, when the adoption of agriculture and domestic animals took place, two major lifestyles coexisted in the South of Portugal:

1) Coastal-adapted hunting-fishing-gathering societies, which developed “high” degrees of sedentism and a correlated increasing population density – ecological/demographic imbalance. This trend required an intensification of the Mesolithic broad-spectrum economy, with the earliest adoption of domestic species. The new food resources have been integrated in the traditional subsistence system, achieving a typical mixed economy;

2) Affluent foragers organised in a demographic equilibrium sustained by a richer set of natural resources in the Tejo and Sado estuaries, avoiding to adopt the food-production economy, they kept for about one thousand years their Mesolithic hunting-fishing-gathering economy, with storage. Among these groups, only the ceramic containers, from the “Neolithic package”, had been adopted (according to its vantages for storage) during the evolved Early Neolithic (transition and first half of the V millennium cal BC).

21 – Antonieta Jerardino\*; Nicholas Wiltshire\*\* & Timm Hoffman\*\*\*

**Cultural boundaries, environmental variables and biogeographic ranges: characterizing settlement at Soutpansklipheuwel, a rocky outcrop on the West Coast of South Africa**

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Archaeological research along the West Coast of South Africa has unveiled a diversity of Holocene adaptive strategies as shown by the different type, size, composition and distribution of sites and their faunal and artefactual contents. Some differences and similarities are apparent between the northerly semi-desert of Namaqualand and the more central Lamberts Bay and Elands Bay areas. On first impression, this archaeological variability seems to relate to environmental gradients, human demographics and related divergent economic developments, and perhaps also to different contexts for cultural contact between indigenous populations. However, differences between Namaqualand and the central parts of the West Coast need to be assessed more closely in order to understand the influence of environmental and



cultural/ behavioural variables that could have shaped them and their geographic interaction. Sampling of locations near Lamberts Bay and the southern parts of Namaqualand has become vital. Here we present first observations on a survey and broad chronology at one such locality, namely Soutpansklipheuwel (SPKH) outcrop.

First results reveal a millennia-long history of occupation until recent historical time. An advantageous concurrence and combination of resources on and near this location explain the repeated use of SPKH. Besides a productive marine environment and hunting grounds, the presence of seasonally available water and an ample supply of fuelwood were probably central to the attraction of SPKH. These resources probably became more important during dry climatic periods such as the Medieval Warm Epoch. At the general level of analysis applied here, there are some initial differences and similarities between SPKH and the semi-desert of Namaqualand. The dominance of limpets, with consistent contributions of *Scutellastra argenvillei*, in the composition of SPKH and Namaqualand shell middens seems to relate to a known South African West Coast biogeographic pattern where these taxa become more common to the north along semi-exposed rocky shores. The diversity of lithic raw materials at SPKH is greater than in the rest of the Elands Bay/ Lamberts Bay area and could well indicate proximity to a variety of raw material sources. The use of particular lithic raw materials, on the other hand, might indicate preferences similar to those of Namaqualand groups. The analysis of the sampled material and further excavations at SPKH and other sites located between Lamberts Bay and southern Namaqualand should help in gaining better insight as to how these two regions connect with each other and whether this contact changed through time.

22 – Per Persson\* & Steinar Solheim\*\*

### **Marine adaptation in Norwegian Mesolithic – A venture or a safe and secured fjord-living?**

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Marine ventures has been discussed as one of the scenarios for the pioneers coming to Norway in Late Glacial times. Still finds from the pioneer period lack organic remains and interpretable traces of dwellings. To a great extent this period still remains open for speculations.

During 2010–2012 the Museum of Cultural History has excavated several sites dated to the Middle Mesolithic (8300–6300 BC) in the western parts of the Oslo fjord region. This has provided us with an opportunity to discuss several aspects of the period. The sites are undisturbed and show diversity in lay out, size and organisation. This allows for well-founded interpretations of the Middle Mesolithic society, settlement systems and economy based on empirical data of high quality.

The main aim of this paper is to present an overview of the Middle Mesolithic settlement pattern and economy in the Oslo fjord region. Two quite different sites dated to c. 7500 BC will be presented as case studies. One is a well dated dwelling structure at the site Hovland 3. The site will be of importance in discussions of changes from a mobile to a more stable settlement pattern. The other site, Prestemoen 1, has provided



us with a preserved fauna material. Codfishes dominates among the bones and all fishes found have been possible to catch with line and hook from land. This allows us to discuss the economy and subsistence of the period.

There seems to be a shift in settlement pattern in the Middle Mesolithic compared to the preceding Early Mesolithic period. The Middle Mesolithic sites are located in more sheltered areas such as protected coast or fjord systems and freshwater-influenced fjords. There seems to be a strong concentration to marine subsistence and no seasonal migrations inland. In the archaeological assemblages there is an increased use of local stone for tools serving as indications of a more stable settlement pattern.

23 – Knut Andreas Bergsvik\*; Kenneth Richie\*\* & Anne Karin Hufthammer\*\*\*

**The emergence of sedentism in Mesolithic western Norway: A case-study from the rockshelters of Sævarhelleren and Olsteinhelleren by the Hardanger fjord**

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During the millennia preceding the transition to agriculture in northwestern Europe, Mesolithic coastal hunter-gatherer populations utilized the rich marine environments for foraging, fishing, and shellfish collecting, and in many areas, sedentism and territoriality developed as a result of the increased focus on marine resources. In western Norway this process started around 8000 cal BC, and it appears that many groups were fully sedentary by around 4000 cal BC. Until now, however, it has been relatively unclear what the mechanisms driving this process were. In particular, it has been difficult to understand how mobility strategies related to resource procurement changed as a result of increasing sedentism. The key to understanding this is to look at the changing relationship between different types of sites in a settlement system. In this contribution, we will focus on two fjord sites, the rockshelters Sævarhelleren and Olsteinhelleren, which were used for short-term occupations by groups from coastal settlement sites during the period 7000–5000 cal BC. On the basis of faunal and other archaeological materials from these two sites, we argue that activities, procurement strategies and the length of occupation changed significantly during this time period, and this was probably related to changes within the overall settlement system in Mesolithic western Norway.

24 – Helge Sørheim\*

**Fishing as a new commercial profession and the dawn for new habitation along the Norwegian coast. Based on excavations in Borgund at Sunnmøre.**

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The twelfth century was an important phase for the development of trade in the Middle Ages. At this time the expansion of Northern European long-distance trade reached Norway. This was a period which some historians have denoted “the commercial revolution of the Middle Ages”. Large-scale trade increased strongly and new types of goods appeared. The peasant tradesmen and proprietor tradesmen were gradually replaced by professional urban merchants. The most important Norwegian export product was “Stockfish”, dried cod that was exported to Europe via Bergen. Fishing



became a commercial profession. The cod fisheries of Lofoten are well known, but also at the coast of Sunnmøre further south, large fisheries were carried on. This was the basis for the emergence of the small medieval town and trade center Borgund. The cod fisheries in the Borgund fiord can be equalized in importance to the Lofoten fisheries in the 16–17th centuries, and as the Borgund fiord cod was caught and dried much closer to Bergen and the European market, it must be regarded just as important as the Lofoten cod for the production and trade also from the first days of the commercial cod fisheries.

As fishing became a main profession this led to settlements at the outmost coast, as near as possible to the fishing grounds, where one earlier could not survive from a way of life based on farming and raising cattle. An example of this can be seen at the excursion of this conference, where the fishing station Grip, hosting 200 inhabitants and with a 15th century stave church, can dimply be regarded at a lonely, small island, 12 km ashore in the Atlantic. When fishing and fish trade became professionalized the settlements and way of life along coastal Norway got a dramatic new dawn.

25 – Aikaterini Glykou\*

#### **Seal exploitation in Baltic Sea during the mid- and late Holocene**

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The presence of different seal species, harp seal (*Phoca groenlandica*), grey seal (*Halichoerus gryphus*) and ringed seal (*Phoca hispida*), during different stages of the Holocene in the Baltic Sea region has been a central archaeozoological topic during the last decades. The harp seal has been most enigmatic, since it is no longer extant in the Baltic Sea region, but that was particularly evident at numerous prehistoric occupation coastal sites during the middle Holocene. Thus, the occurrence of this cold adapted species during a warm climate phase in this region has led to controversy in the interpretation on why it was present and why it disappeared. The alternative explanations to a change in population dynamics in the two seal populations are related to paleoenvironmental changes affecting the ecology of the seals e.g. feeding and breeding strategies, interaction between man and environment e.g. different cultural frameworks and changes in exploitation patterns.

To solve this middle and late Holocene issue in the Baltic Sea we here propose to undertake a systematic interdisciplinary study on the exploitation patterns of seals, in particular harp seals and grey seals, by applying up-to-date archaeological, geochemical, and archaeozoological methods. Our two main research objectives are a) reconstruction of the palaeohabitat of grey and harp seals and b) exploration of the palaeoeconomical significance of seal exploitation. By applying stable isotopic analysis we aim to address the following issues a) exploitation of seals and seasonal hunting b) localization of breeding grounds of harp seals in the Baltic Sea, and c) shifts in migration and foraging patterns of grey and harp seals.



26 – Uwe Sperling\*

**Bronze Age connections across the Baltic Sea. Discussing metalwork as source of maritime contacts in prehistory**

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The Bronze Age (ca. 1800–500 BC) in Northern Europe, in particular in Southern Scandinavia, is characterized by the immense occurrence of bronzes in grave and hoard contexts, leaving no doubt about the social and economic significance of metals in that time. During this period various types of bronze objects (weapons, tools and ornaments), designed in Nordic metalwork tradition, began to appear in the Eastern Baltic region as well (Estonia, Latvia). Thus it is the particular geographical distribution of Nordic bronzes west and east of the Baltic Sea speaking in favour of established cross-cultural contacts, implying shipping and exchange of metals or other commodities overseas. This is also why the Bronze Age has caused great fascination among scholars. The Nordic archaeologist Birger Nerman, for instance, has described the period in question as First Swedish Viking Age (1954), thinking of Scandinavians (from the Mälaren-area and Gotland) sailing eastwards for purposes of trading metals and establishing colonies in the Eastern Baltic. Nowadays this expansionist view is not shared entirely anymore in archaeological research, and there is also growing evidence for eastern impacts in the material culture of the Nordic Bronze Age as well (e.g. Bolin 2004). One might argue if bronze was really the main driving force behind socio-economic developments and maritime communication, as being supposed, even when considering the enormous effort in importing the copper-alloy bronze in prehistoric times. The paper is about to discuss the nature and directions of cross-cultural relations in the Baltic Sea region, and the problems deriving from generalizations in archaeological research when regarding bronze objects as primary archaeological indicators to maritime contacts overseas. In discussing the metalwork as source of maritime contacts the paper is viewing the research into Nordic Bronze Age metalwork from the Eastern Baltic perspective, with focus on recent archaeological investigations in Estonian settlement-sites and metal workshops (Asva and Ridala). It is not only about deducing from archaeological finds how and which ways bronzes might have circulated across or around the Baltic Sea. There also remains the question what the current archaeology actually might tell us about any potential sailing routes and the conditions of navigation in the Baltic Sea during the Bronze Age.

27 – Svein Vatsvåg Nielsen\*; Joachim Åkerstrøm & Jo-Simon Stokke

**Quartz utilization along the coast of southern Norway: Results from a Stone Age Survey in East Agder**

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In the southernmost part of Norway the East Agder County is, as opposed to its neighboring counties, a poorly understood part of the Mesolithic landscape. This is mainly due to a lack of archaeological investigations, which in turn is closely related to a lack of large development initiatives. Over the last 15 years, ongoing infrastructural development has led to an increase in archaeological activities in neighboring counties such as Telemark and Vestfold. The construction of a new highway (E18) along the east coast – from Oslo to Kristiansand, is one such project.





During the fall of 2012 a survey project led by Aust-Agder County Council was initiated in order to detect and document automatically protected monuments (i.e. physical evidence of human presence predating 1537) located within the corridor of the new road. The planned corridor passed through a landscape spanning from today's sea-level up to a maximum of 130 masl., crossing three large prehistoric fjords on its way. Within this area nearly 70 previously unknown shore bound Stone Age sites have been documented, a large majority of which was dated to the Mesolithic. The assemblages includes mainly lithic material from different raw materials; mainly flint, but also various types of volcanic rock types, and large quantities of fractured quartz. As the use of quartz on Mesolithic shore bound sites in Southern Norway was almost unknown before the survey project, the focus of this presentation will be on the sites containing quartz. In addition to large quantities of debris, cores and microblades were discovered on shore bound sites from all periods of the Norwegian Mesolithic. Sites were dated using shore-level displacement and typological studies. Earlier research has proposed that the exploitation of raw materials and use specific artifact types is closely related to social identity within hunter-gatherer groups. With reference to the results from Motala Ström, Sweden, where a similar raw material pattern was documented, the authors will propose that the use of quartz in Mesolithic East Agder played a mediating role in the production and reproduction of social identity among hunter-gatherers living along the coast.

28 – Birgitte Skar

**She's dead but she won't lie down – the potential of submerged deposits for a wider perspective on Norwegian Mesolithic adaptation**

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A detailed study of field reports, published and unpublished data from archaeological and natural science investigations has been compiled in order to present existing knowledge of submerged Mesolithic settlement along the Norwegian coast, with a special focus on the south coast. The extended Norwegian coast has experienced complex patterns of shoreline displacement due to pronounced land/sea alteration caused by interactions of eustasy and isostasy after the last deglaciation. In three major regions along the coast the regression minimum, particularly during the Boreal chronozone, was below the present sea level. In these three regions – between Kristiansand and Stavanger on the south coast, between Florø and Vigra and into the fjords on the west coast, and along the outer coastline between Lofoten and Sørøya in the north – the existence of submerged Mesolithic settlement remains has been established.

The discovery on the south coast of sub-sea peat layers, a potential grave site near Hummervikholmen, and an ornate pickaxe by Kirkehavn highlights the possibilities for uncovering sites with organic remains below present sea level. Investigations of such sites would greatly enhance our knowledge of Mesolithic lifeways and cultural adaptation in Norway, as organic remains are otherwise very rare at terrestrial Stone Age sites. Given the impact of rapid, modern, landscape interventions in southern Norway, systematic survey of the seabed is strongly recommended. Based on the case studies presented recommendations for further research are outlined.



29 – Hans Harmsen\* & Priyantha Karunaratne

**Coastal hazards, resiliency and the co-evolution of human-natural systems along the southeast coast of Sri Lanka during the middle to late Holocene (ca 5000–1000 cal BC): Preliminary findings of the 2013 Bundala Archaeological Survey**

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The southeast Arid zone of Sri Lanka has been noted as having one of the greatest potentials for prehistoric research with evidence of a microlithic industry over 30,000 years old. At the same time, this area also represents one of the most archaeologically understudied areas on the island—particularly in regard to the degree in which prehistoric humans actively engaged, interacted and modified their landscapes in a highly dynamic lowland coastal context. Preliminary data is discussed of the 20 day Bundala Archaeological Survey conducted in July and August of 2013 from Hambantota to Kirinda. A variety of previously identified and new prehistoric sites were cataloged with many estimated to be activity zones of Mesolithic hunter-gather fisher groups spanning the middle to late Holocene (ca 5000–1000 cal BC) based on their association with Holocene emerged shell ridges. The geophysical character of the southeastern coast presents a unique study area to not only assess the resiliency and adaptive nature of human systems in a peripheral and dynamic coastal environment, but also to illustrate the recursive and historically contingent relationship shared between humans and a changing landscape through time and space. In addition, following the major devastation of the 2004 Indian Ocean Boxing Day tsunami, a renewed interest in identifying prehistoric paleotsunami events along the southeast coast of Sri Lanka has taken place in recent years (e.g. Jackson 2008; Dahanayake and Kulasena 2008; Ranasinage 2010). At present, however, no research has been done to correlate the degree to which prehistoric communities were affected by major catastrophic events of a similar magnitude in the past and how these events may have altered the trajectories of sociocultural organization and cohesion over time.

Studies of this nature are valuable in that they can help to provide insight on the resiliency of modern human communities in coastal areas vulnerable to natural geohazard events.

30 – Esteban Álvarez-Fernández\*

**Marine Resources in the caves with Upper Pleistocene and Holocene levels in La Garma Archaeological Zone (Cantabria, Spain)**

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La Garma is a small hill with a complex karst cave system and some of the most impressive archaeological sites in European prehistory. Some of the caves (El Truchiro, El Mar) were known a century ago, thanks to the research of L. Sierra. However, the discovery of the main part of this site occurred in the 1990s, with the finds in La Garma A and La Garma B. During the exploration of the deeper levels in the cave in 1995, archaeological remains and rock art, dated in the Upper Paleolithic, were discovered in the Lower Passage (the Lower Gallery in La Garma, an occupation floor ascribed to the Magdalenian period, conserved exceptionally well because of the collapse of the original cave entrance). Later, further deposits were found (Caves of Peredo, Valladar,



La Garma C, La Garma D, La Garma Hillfort) to reach a total of ten caves with archaeological deposits and one open-air site.

This paper studies the marine resources (mainly mollusks, but also crustaceans, echinoderms, fish and mammals) from the sites in La Garma Hill, focusing mainly on the marine mollusks recovered from the caves with Upper Pleistocene and Holocene deposits (from the Aurignacian to early Bronze Age): The Lower Gallery in La Garma, La Garma A, La Garma B, La Garma C, La Garma D, El Mar, El Truchiro and Peredo.