

THE UNDERWATER ARCHAEOLOGICAL AND HISTORICAL HERITAGE OF GIBRALTAR

Darren Fa / The Gibraltar Museum

Mensun Bound / Oxford University MARE

Clive Finlayson / The Gibraltar Museum

Javier Lario / Dpto. de Geología. Museo Nacional de Ciencias Naturales. C.S.I.C.

Introduction

Gibraltar's rich and varied heritage has been the subject of a great many books, articles, documentaries and other media (Finlayson & Finlayson, 1999 & references therein). A large part of this heritage has doubtless stemmed from Gibraltar's unique location at the meeting point between the Atlantic Ocean and the Mediterranean Sea. The Rock and its hinterland therefore have had important connections with the sea from the earliest of times, and it is no surprise to find that a good deal of Gibraltar's links are maritime. A joint team from the Gibraltar Museum, Oxford University MARE, and Museo de Historia Natural de Madrid are working together on a number of projects (assisted by local diving clubs and individuals) to explore and further develop our understanding of this maritime history.

The object of this short communication is to outline a small number of these ongoing research projects.

Underwater Geological Features and their use by Early Humans

Zazo *et al* (1999) identify a number of raised beach levels in and around Gibraltar. These are evidence of periods when sea levels were higher than today. However, the last 65 kyr have been characterised by dramatic fluctuations in the earth's climate, as illustrated by the Greenland Ice Core record (GRIP, 1993), with drops in sea level down to 130m below present levels (Chappell & Shackleton, 1986; Zazo, 1999).

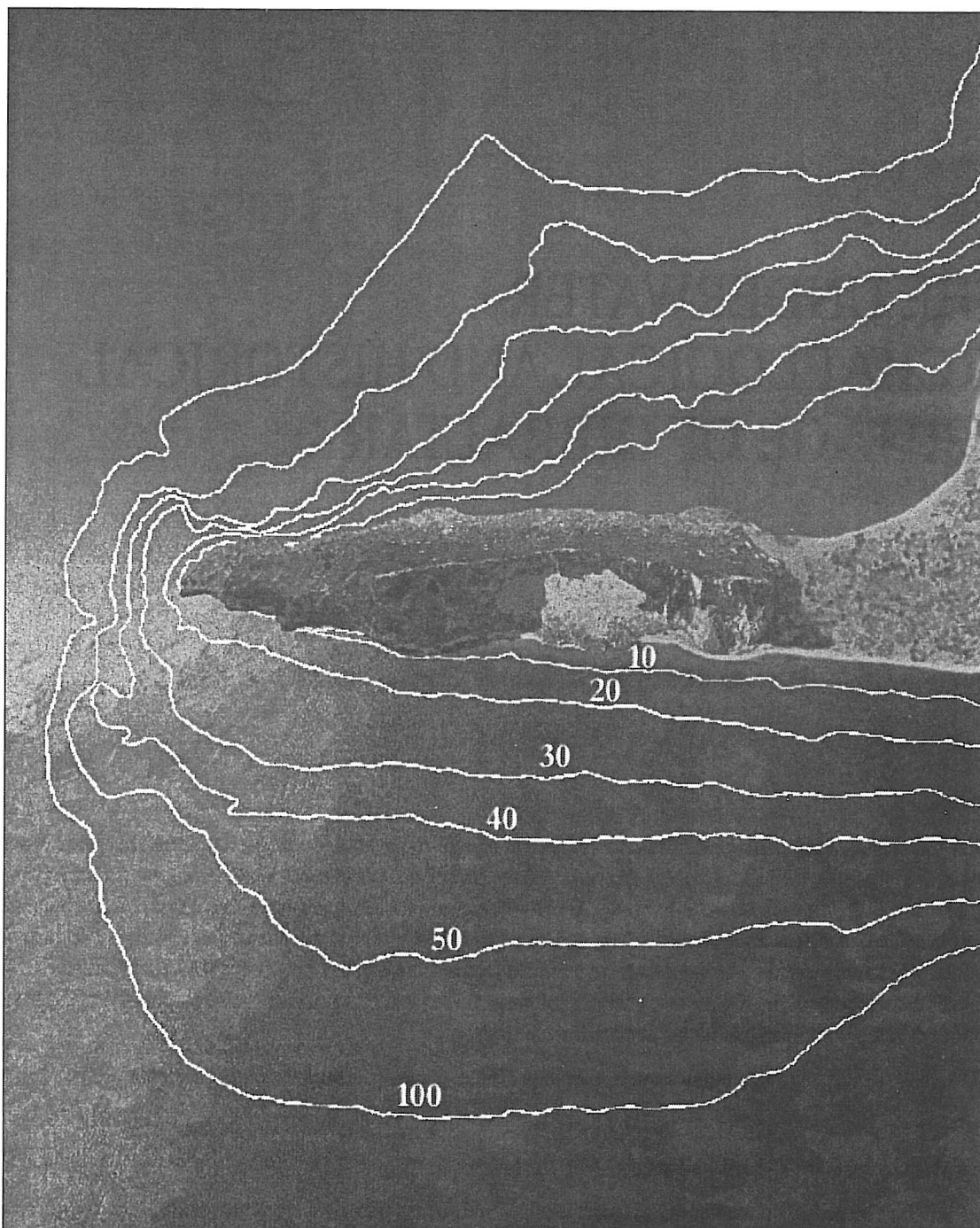


Figure 1. Rock of Gibraltar (with modern developments removed) and showing the present-day underwater contours at 10, 20, 30, 40, 50 and 100 metres below psl. Such an expanse of additional area would have been uncovered during glacials. Note that these do not extend to the maximum drop in sea level of -130m, which would have significantly extended the emerged area, and that these contours are (at least for the east side) minimal values, as they do not allow for the effects of erosion by waves and currents which must have taken place since they were last above water.

Flemming (1972), identifies terraces around Gibraltar or notches that extend as continuous features for 50 – 100m below present sea levels (psl). He proposes that all underwater notches and other small features down to 35m were probably caused by oscillations during or after the penultimate marine transgression (Deperet, 1906; Hey, 1955, 1969; Zeuner, 1959; Fairbridge, 1961; Butzer & Cuerda, 1962).

Rate of erosion were probably higher on the east side (as evidenced by fetch calculations (Flemming, 1972; Fa, 1990; 1998; 2000). Even after a drop of 100m, fetch would drop by more than 50% on the west side, but remain effectively the same on the east. This would explain the lack of submerged cliffs on the east side, where rates of erosion would have been higher than the rate of sea level rise, causing the cliffs to be eroded back as the sea rose. This is in contrast with the relatively gentle gradient above sea level but relatively steep gradient on the west side of the Rock, as predicted by the reduced fetch.

Recent evidence from the Red Sea has highlighted extensive use of the coastal zone as a resource (Walter *et al.*, 2000) and more importantly, as potential routes for migrations for early humans (Stringer, 2000). Further work in this area could prove to be of tremendous importance with regard to settling some of these debates.

The Red Sea discovery is of interest because it reveals the potential for underwater work in areas that were once exposed when colder conditions trapped a large volume of seawater in the polar ice caps. The evidence of consumption of marine molluscs 40 thousand years ago is in fact from Vanguard Cave here in Gibraltar and this site is specifically mentioned in Stringer (2000) as one of the key sites. The period under study (65kyr till present) corresponds to Oxygen Isotope Stages (OIS) 3-1, during which Neanderthals were present in the area up till around 31 kyr (Barton *et al.*, 1999; Pettitt & Bailey, 2000). Gibraltar then had a much more extensive coastline than is presently the case, which provided a great variety of ecosystems for seasonal exploitation by the Neanderthals, from cliffs through savannah-type grasslands to estuarine and fully marine coastal environments (Finlayson & Giles Pacheco, 1999; Finlayson *et al.*, 2000). Here we had then, during extended periods of glaciation, a Rock that was surrounded by a large plain of up to 45 square kilometres which was occupied by early peoples, and which is now underwater.

A number of submarine caves and features are currently under study by this team. Fig. 2 outlines the location of a number of these which have been investigated to date. These sites are important in that they allow us an insight into the extent of

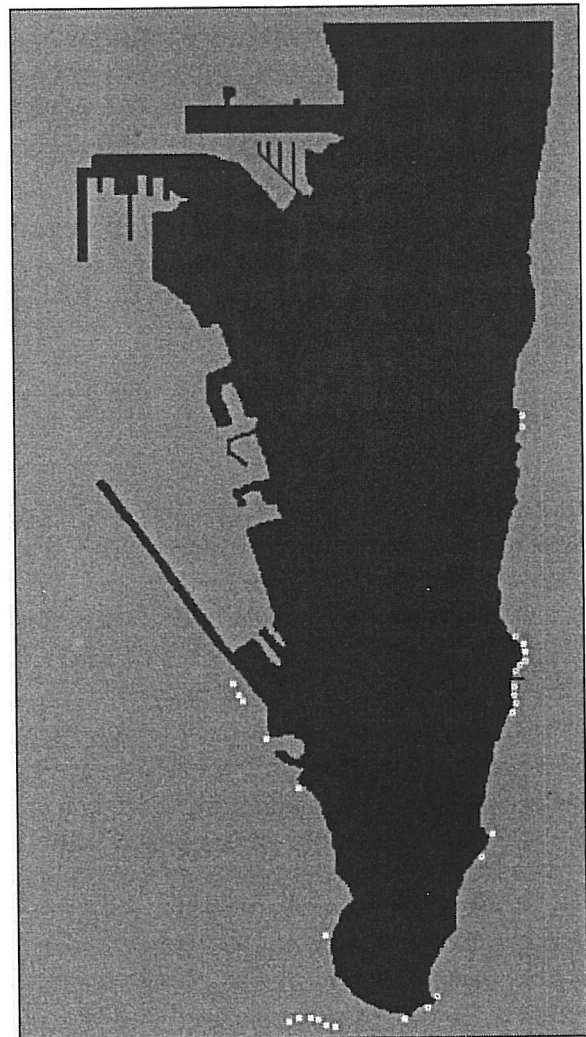


Figure 2. Approximate location of marine caves found in Gibraltar. Closed squares indicate totally submerged caves, whereas open squares represent caves that are only partially submerged.



Figure 3. A selection of some of the Phoenician and Roman anchors at the Gibraltar Museum.

The Cannon Pile

In 1992 a joint team composed of Oxford University MARE, The Gibraltar Museum, DEGUWA (a German maritime archaeological organization) and Bangor University's Maritime Archaeology Department began a new survey of potentially interesting submerged archaeological sites around Gibraltar, under the direction of Mensun Bound of Oxford University MARE.

The main site worked on during the campaign was a large deposit of iron cannon and shot in 27-29m off the west side of the Detached Mole, commonly referred to as the 'cannon pile'. The site itself contains a large spread of cannon with no obvious pattern to their orientation and a large mound of cannon balls with several protruding cannon that covers

available resources such as shelter that were available to the Neanderthals (other important features, such as concreted sand dunes and submerged freshwater upwellings, are also under investigation). Secondly, a number of these caves could possibly still contain original material and could therefore be excavated in the future.

The Bay as an Anchorage

Over a number of years now, evidence of the use of the Bay by ancient peoples has been provided by the large number of both Phoenician (stone) and Roman (lead) anchors that are currently housed in the collection of the Gibraltar Museum.

Fig. 3 shows a photograph of some of these anchors and Fig. 4 (numbers 1&2) show the location of most of the finds (Palao, 1982; *pers. obs.*). Current work involves the mapping of locations where these anchors have been found so as to establish a plan of anchorage sites. The clear aggregation in the area off Europa Point, although in part probably due to sampling intensity in this vicinity, is best explained as a sheltering spot where ships sailing into the Mediterranean would try to wait out the fierce levanter storms until it was safe for them to continue eastwards. That so many should have been lost in a relatively small area is testament to the intensity of these storms.

Future projects will include the accurate mapping of the location of further finds, which together with more accurate dating of these anchors, will allow us to establish whether there were changes in the use of the Bay over time.

approximately 256 m². It has been suggested that these are the remains of one of the floating batteries (Palao, 1981) dating from the 'Grand Attack' of September 1782 that took place during the Great Siege (1779-83).

Fig. 2 (number 3) shows the location of the cannon pile and Fig. 4 shows a working plan of the site prepared in 1992. It numbers thirty-nine cannon (currently still incomplete, as some smaller pieces still remain to be mapped) all of which are heavily encrusted. At least four different sizes of both cannon and iron shot were noted.

Unfortunately, there was insufficient time to adequately excavate the area, and as no evidence of a ship was found, although no trial trenches were attempted. However, the lack of any evidence of associated ship material and other factors, such as the high number of cannon (over 40, which is believed to be more than carried by the floating batteries) and the appearance of mortar shot (not carried by the floating batteries) suggest three possibilities (Bound & Finlayson, 1995):

1. That these extra items were held in reserve (Drinkwater, 298) or formed part of the ballast, a common practice in those days;
2. That they came from British gun boats (Drinkwater, 288-297);
3. That they cannon and shot have been simply dumped on the seabed as refuse.

It is intended to continue the programme over the next few years in an attempt to determine which of the above (if any) are correct, and perhaps raise some of these cannon for conservation.

Other Projects

A number of other maritime-related projects are currently underway and are at various stages of development. They are listed below:

- An inventory of existing and search for new wrecks around Gibraltar (collaborator: Mr Philip Smith, BSAC National Instructor & BSAC 317S Dive Club);
- Preliminary underwater excavation of the 18th and 19th – century anchorage off Rosia Bay (collaborator: Mr Philip Smith);
- A search for one of the Italian WWII two-man submarines or 'Chariots', (collaborator: Mr Dennis Santos);

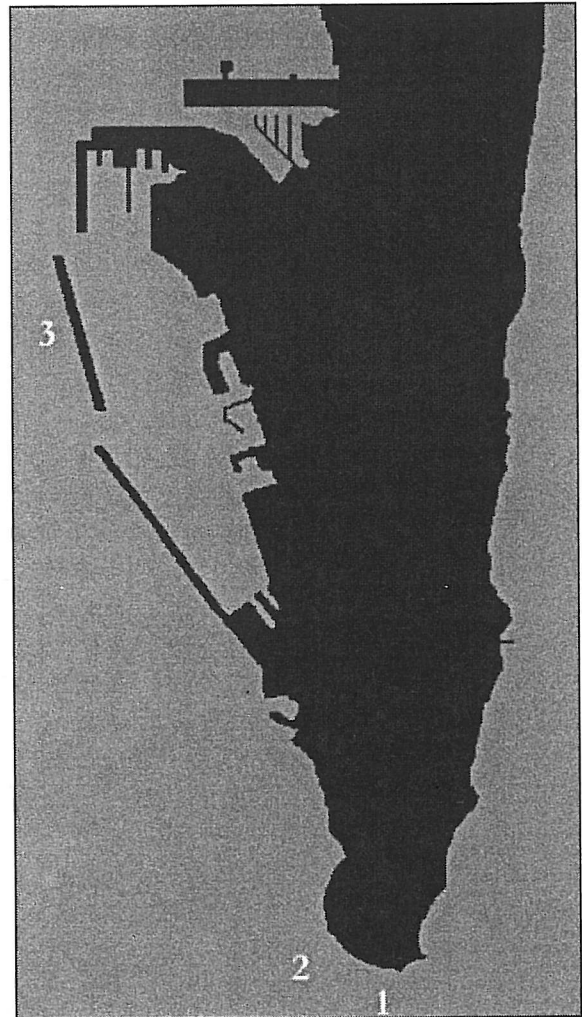


Figure 4. Approximate locations of sites where Phoenician and Roman anchors have been found (1, 2) and the Cannon Pile (3).

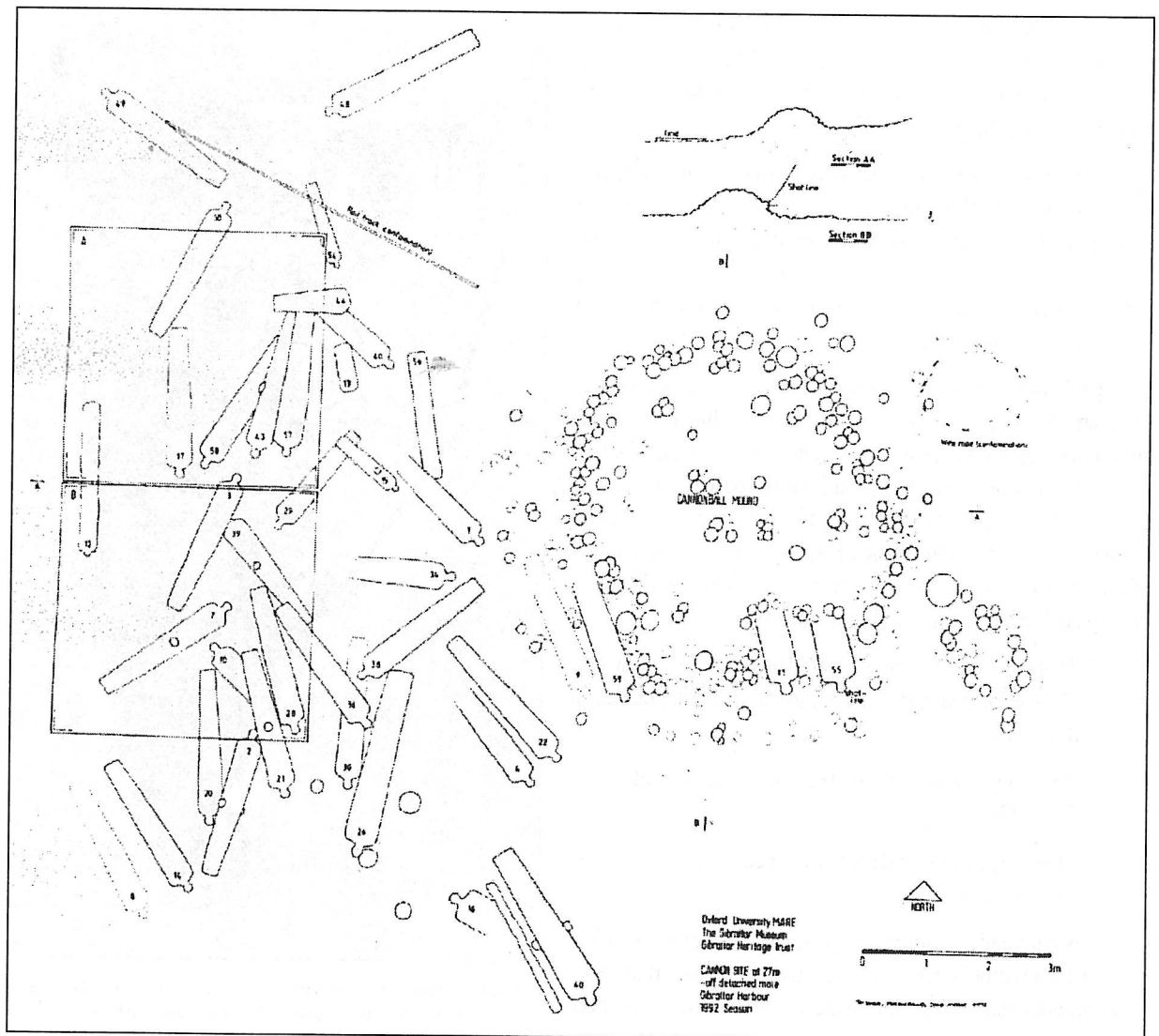


Figure 4. Site plan of the 'cannon pile' produced from the 1992 survey. Reproduced with kind permission from Bound & Finlayson, (1995).

- Accurate mapping of the underwater portion of 'Crystal Cave' a now submerged cave system with numerous stalagmites and other formations (collaborators: Dr Javier Lario & Mr Philip Smith)
- An inventory of our 'floating heritage', ships and boats that are still with us from bygone days (part of a Mediterranean-wide project of the Association of Mediterranean Maritime Museums);
- The setting up of a cultural database that will include traditional shipbuilding and fishing techniques (director: Mrs Geraldine Finlayson, Director of the John Mackintosh Hall, as part of a Gibraltar Museum Database Project).

Concluding Remarks

We have described three of the main projects currently underway and outlined a number of other avenues of enquiry and information acquisition. It is hoped that these will continue to shed light on the extensive and varied maritime history of our small peninsula.

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