

**MINISTRY OF THE STATE FOR ANTIQUITIES OF THE A.R. EGYPT**  
**CENTER FOR EGYPTOLOGICAL STUDIES**  
**OF THE RUSSIAN ACADEMY OF SCIENCES**

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**RUSSIAN UNDERWATER ARCHAEOLOGICAL MISSION TO ALEXANDRIA**

**Final report on the fifth season**  
**(05–29 May, 2014)**



**CAIRO**  
**2014**

The fifth season of the Russian Underwater Archaeological Mission to Alexandria has been carried out by the Center for Egyptological Studies of the Russian Academy of Sciences from 05 to 29 May, 2014.<sup>1</sup>

The main goals of the season included attesting the state of preservation and mapping of the breakwater charted by G. Jondet at the beginning of the 20<sup>th</sup> century, the reconnaissance of the line of the reefs closing the Bay of Anfushi, the reconnaissance of the second line of the submerged reefs situated at a distance of 1 kilometer from the shoreline, the reconnaissance of the reefs in Agami region and, finally, trying to find an error in the positioning of the points as per the data of the side-scan sonar surveys of 2011 and 2013.

### 1. Studies of the main breakwater of the port of Eunostos.

The position of the large breakwater that protected the port of Eunostos in Antiquity and charted by G. Jondet at the beginning of the 20<sup>th</sup> century perfectly corresponds to the space photo and can be traced over the distance of 1300 m in front of Ras El Tin Naval Base (Figure 1).

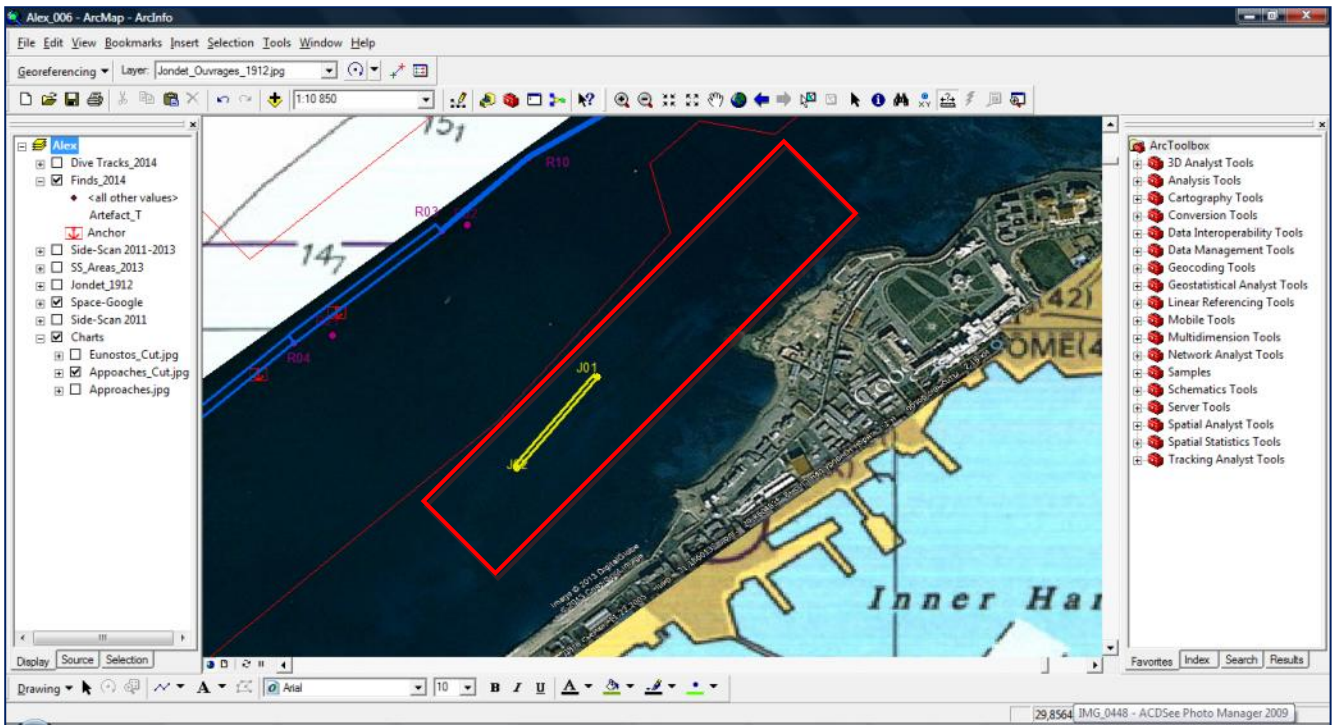
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\* The Center for Egyptological Studies of the Russian Academy of Sciences would like to thank H.E. Mohamed Ibrahim, the Minister of the State of Antiquities; Dr. Aly el-Asfar; Mr. Hany Abu el-Azm and all staff of the Foreign Missions Department of the MSA; Dr. Mohamed M. Abdel Maguid and all staff of the Underwater Archaeological Department of the MSA in Alexandria, especially Mr. Mohamed El-Sayed, Mr. Ihab Fahmy, Mr. Bassem Ibrahim and Mr. Saad Ahmed Ahmed, whose help and efforts in proper work of the Mission cannot be underestimated.

<sup>1</sup> Team members: Dr. Galina A. Belova — Director of the Mission; Mr. Saad Ahmed Ahmed and Mr. Haitham Ibrahim Mohamed Abd el-Halim — Inspectors of the MSA; Dr. Alexander A. Belov — Archaeologist; Mr. Alexander Butenko — Underwater Archeologist, Head of Diving Works; Dr. Sergey V. Ivanov — Egyptologist, Photographer; Mr. Bernard Boismoreau — Chief Navigator; Mr. Andrey Markelov — Technical Diver; Representative Officers of the Egyptian Navy.

Two team members that have actually arrived in Alexandria could not take part in the mission because of the lack of all necessary permissions caused by an administrative error (Mr. Andrey Prosvirin, Dr. Sabine Laemmel). They maintained valuable land-based support for the active team members.

The expedition has been based on board of the MS 'Meto-5' while MS 'Saddam Hussein' has been used as an auxiliary boat.

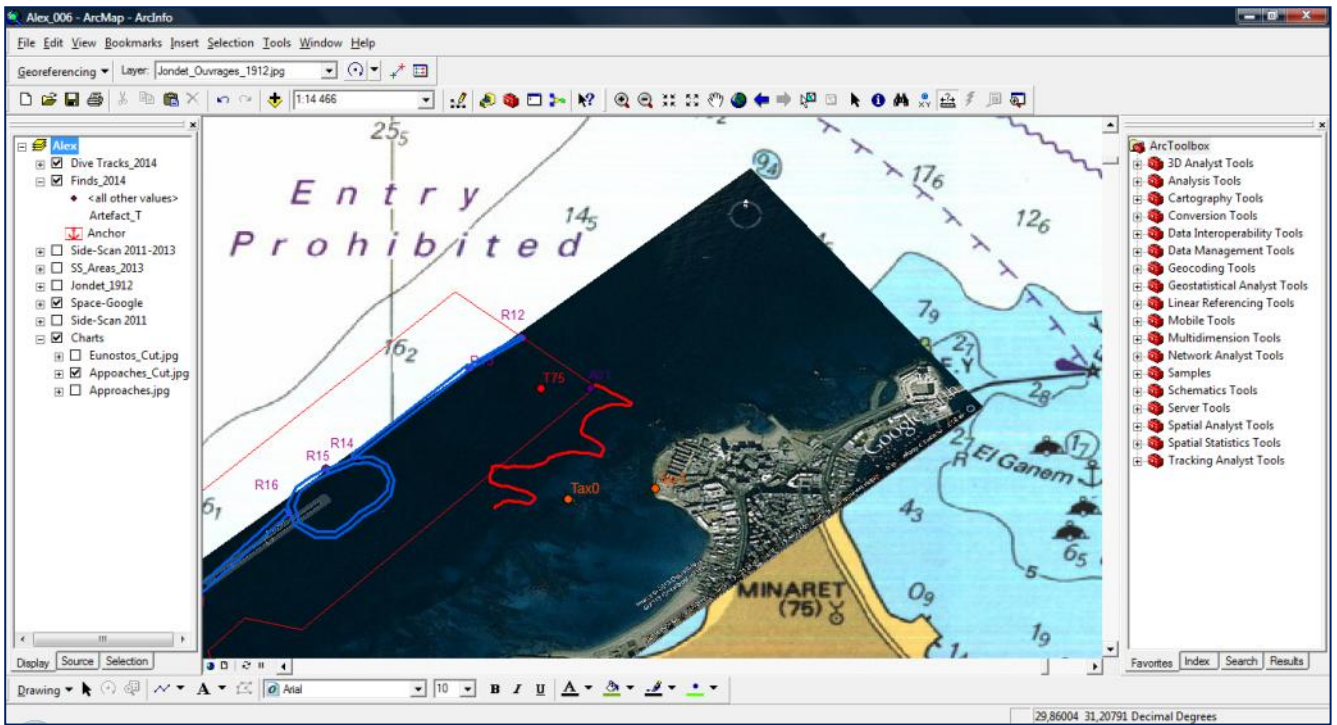


**Figure 1. Two walls of the Ras El Tin breakwater on a space photo (red rectangle) and the region studied during the reconnaissance dive of RIEC (yellow rectangle).**

During the reconnaissance dive the team has studied some 370 meters of the exterior and inner walls of the breakwater. Several transverse crossings gave an idea of the state of preservation of the breakwater in section. Although some blocs are not in place and are dispersed around the main lines of the structure (the phenomenon more pronounced in its SW part) the breakwater is in a very good state of preservation. The initial plan of the mission was to chart the modern state of the breakwater by modern cartographic methods (total station survey based on the promontory of Anfushi). Unfortunately this time it was not possible because of the lack of all necessary permissions from the side of the Egyptian Navy and the Coast Guard. Hopefully this survey can be out carried during the next seasons.

## 2. The reconnaissance of the line of the reefs closing the Bay of Anfushi.

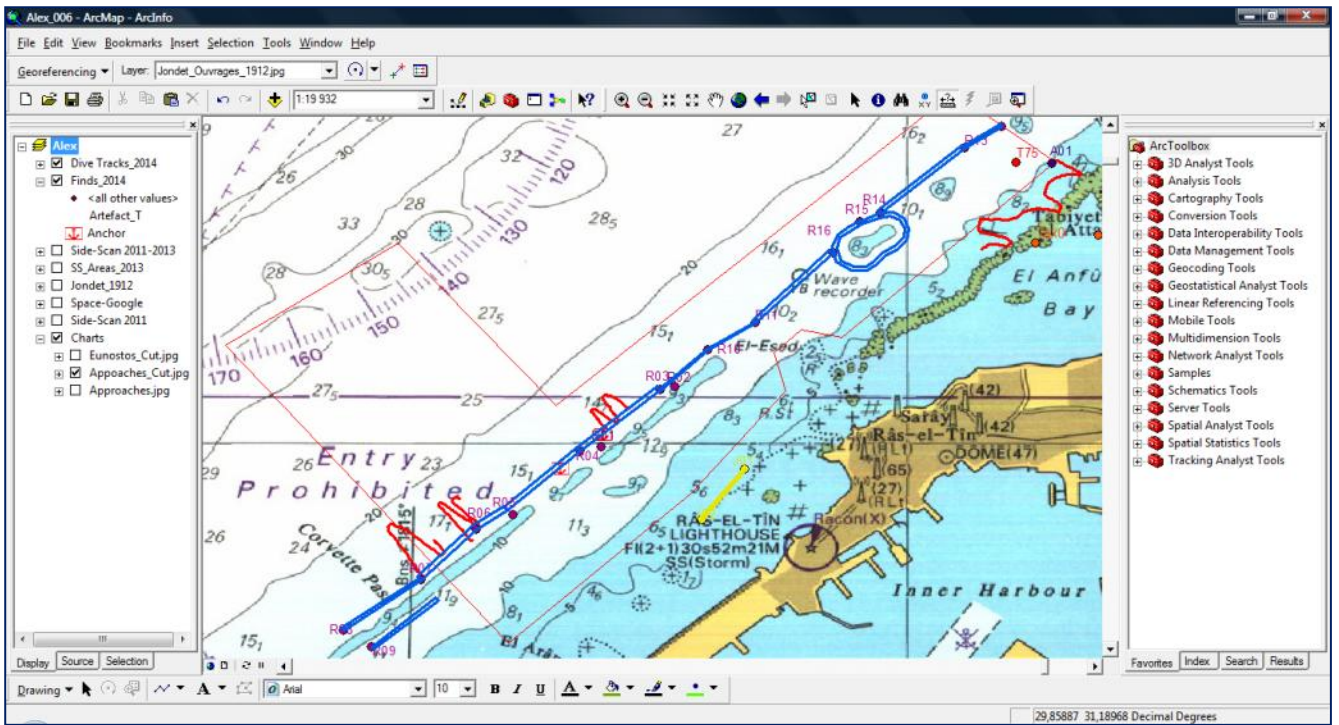
Several reconnaissance dives performed by the team members in this region (Figure 2) revealed no traces of ancient navigation. Most probably these reefs corresponded to the coast of the Island of Pharos in Antiquity and, thus, this area does not seem very promising for further exploration.



**Figure 2. Track of the dive following the line of the reefs closing the Bay of Anfushi (red line).**

### 3. The reconnaissance of the second line of the submerged reefs in Anfushi region.

A second line of the submerged reefs in Anfushi region is situated at a distance of about 1 kilometer from the shoreline and is parallel to it. The depth over the top of the reef is about 9-12 meters while its foot is situated at 18.5-19 meter depth. The foot of the reef has been explored from the NW limit of the concession of RIEC to the *Corvette Pass* on the modern chart that makes a distance of about 4.5 km. In addition some part of the inner side of the reef has been studied as well. Several dives were aimed at the reconnaissance of the deeper region at the seaward side of the reef extending till the isobaths of about 20 meters (Figure 3).



**Figure 3. Reconnaissance of the second line of the submerged reefs in Anfushi region. Regions covered by the survey are colored in blue and separate diving tracks are shown by a red line.**

In contrast to the first line of the reefs, this region shows traces of ancient navigation.

At point F01 (31,200407 N; 29,851828 E) a Roman lead anchor stock (90 x 10 x 4 cm) and lead reinforcement collar from the same anchor (45.5 x 9 x 8 cm)



were found (

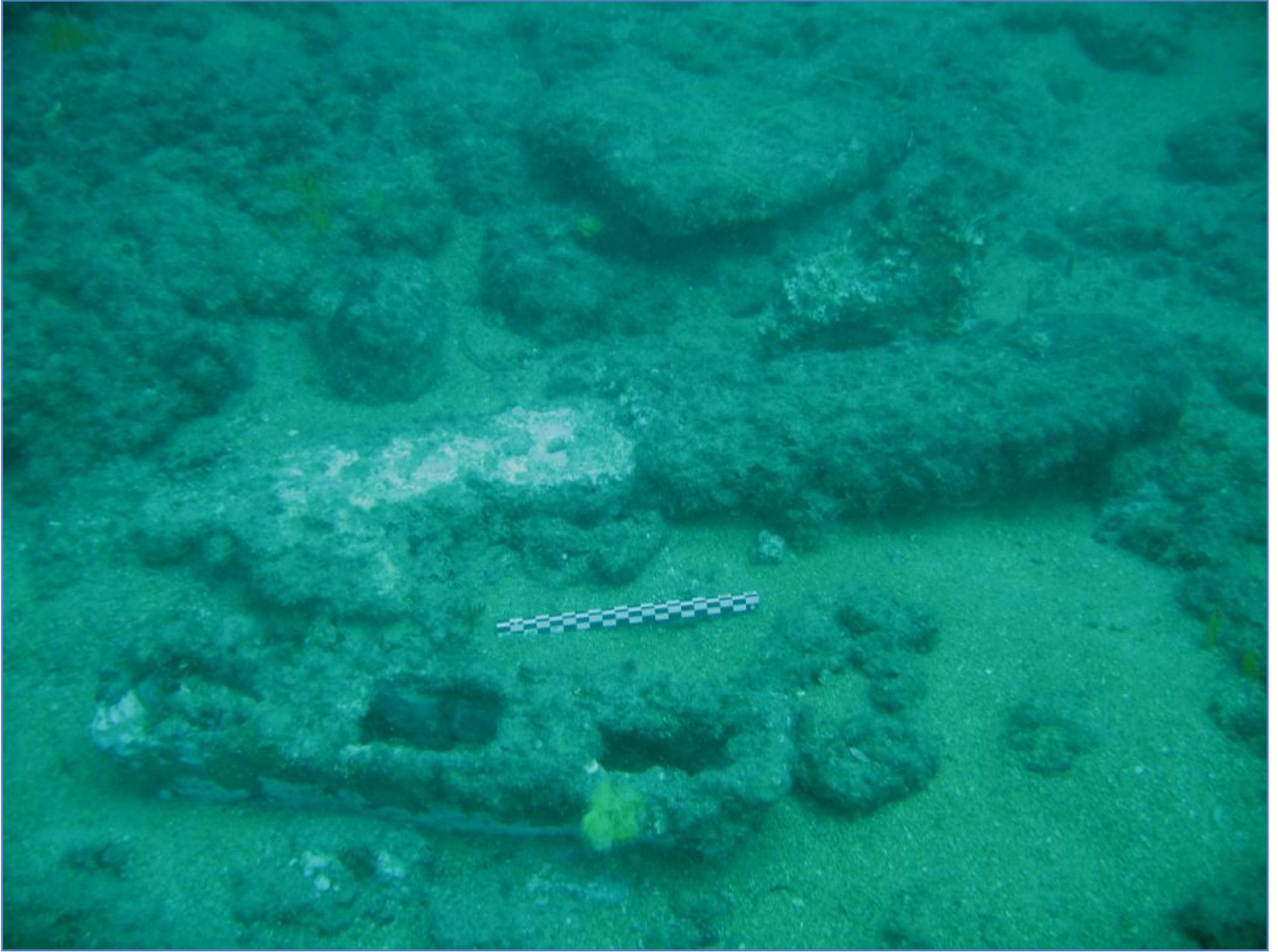


Figure 4, Figure 5). These artifacts can be dated between the middle of the 2nd century BC to the end of the 3rd century AD.

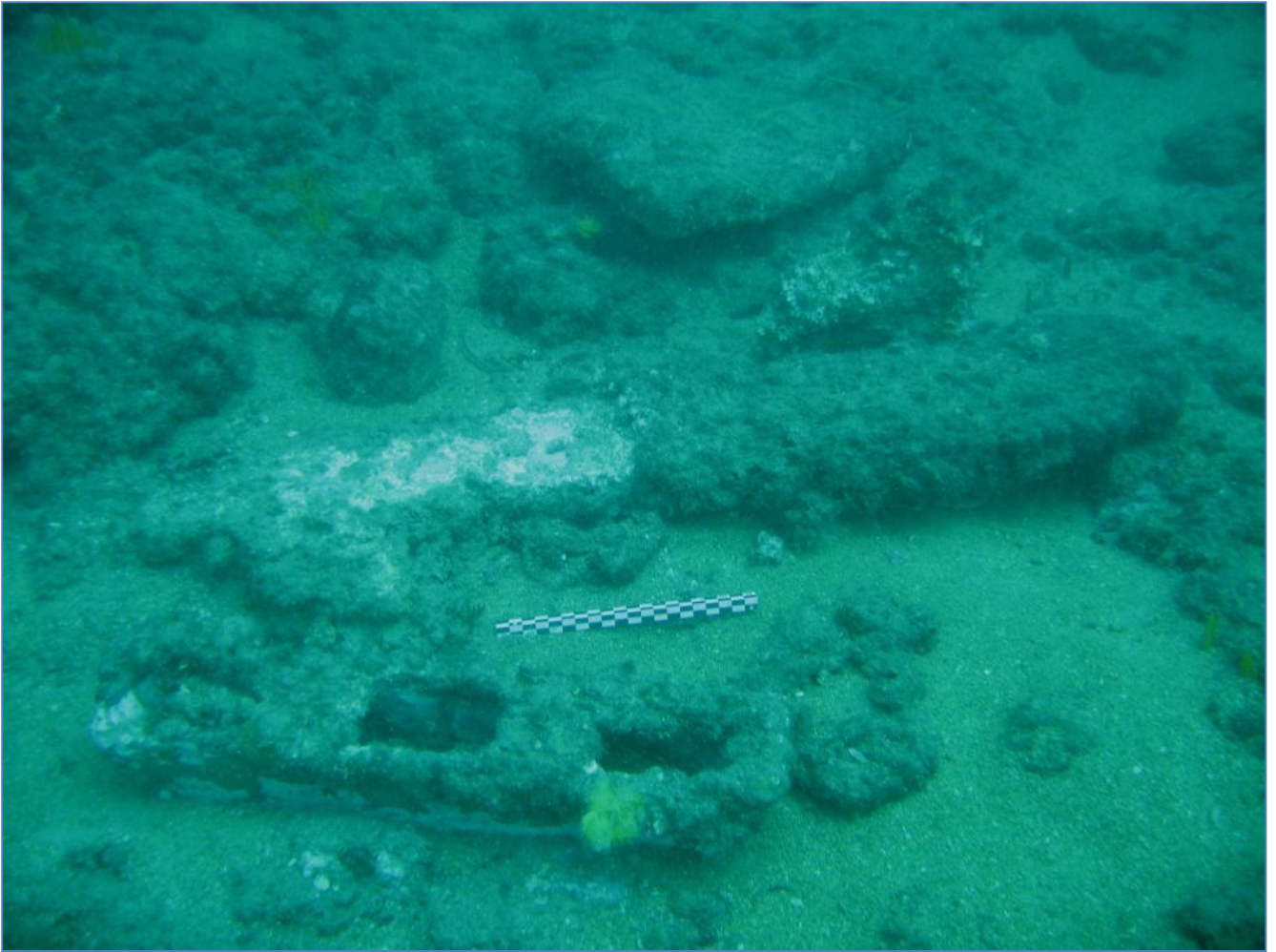
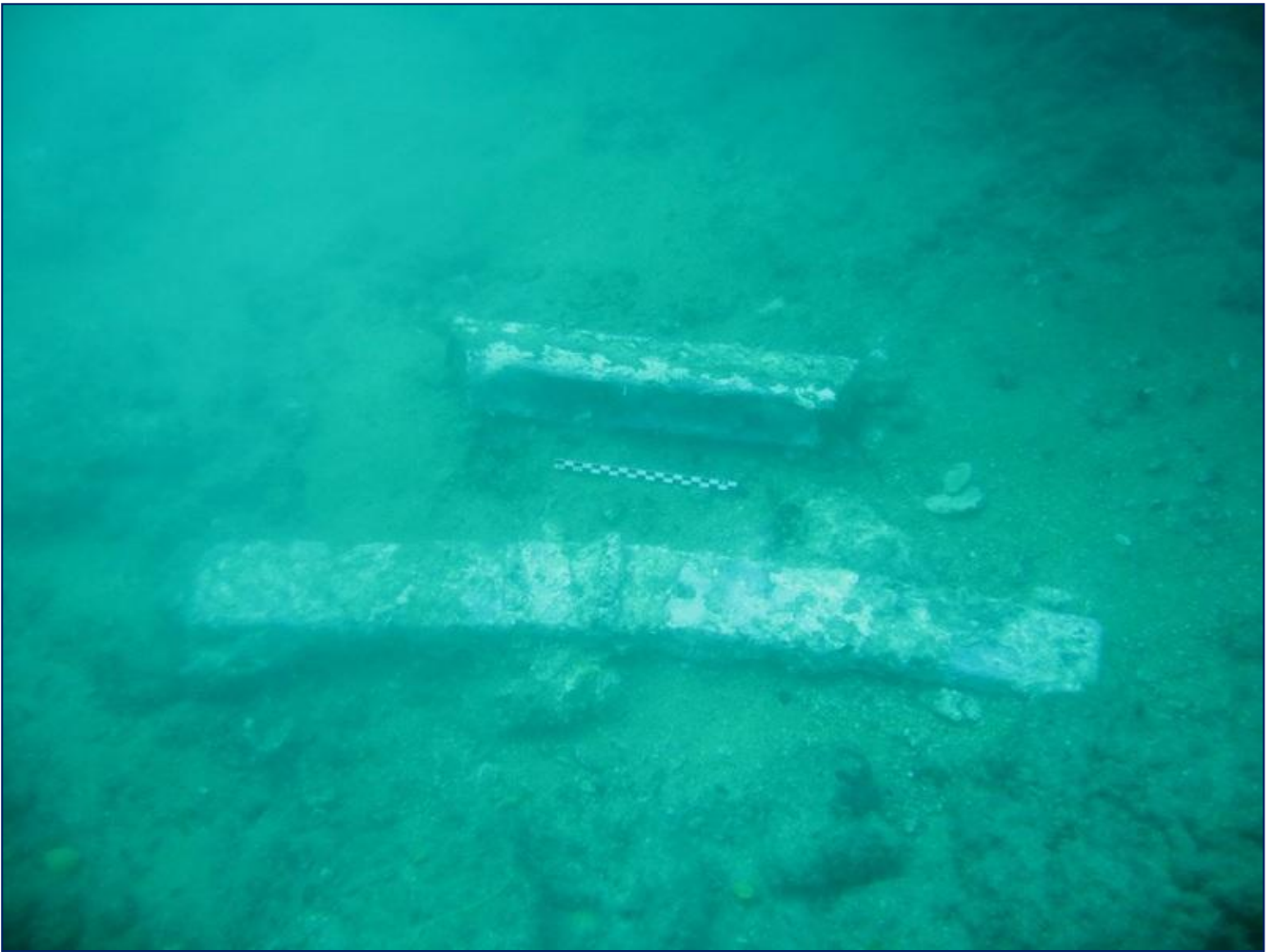


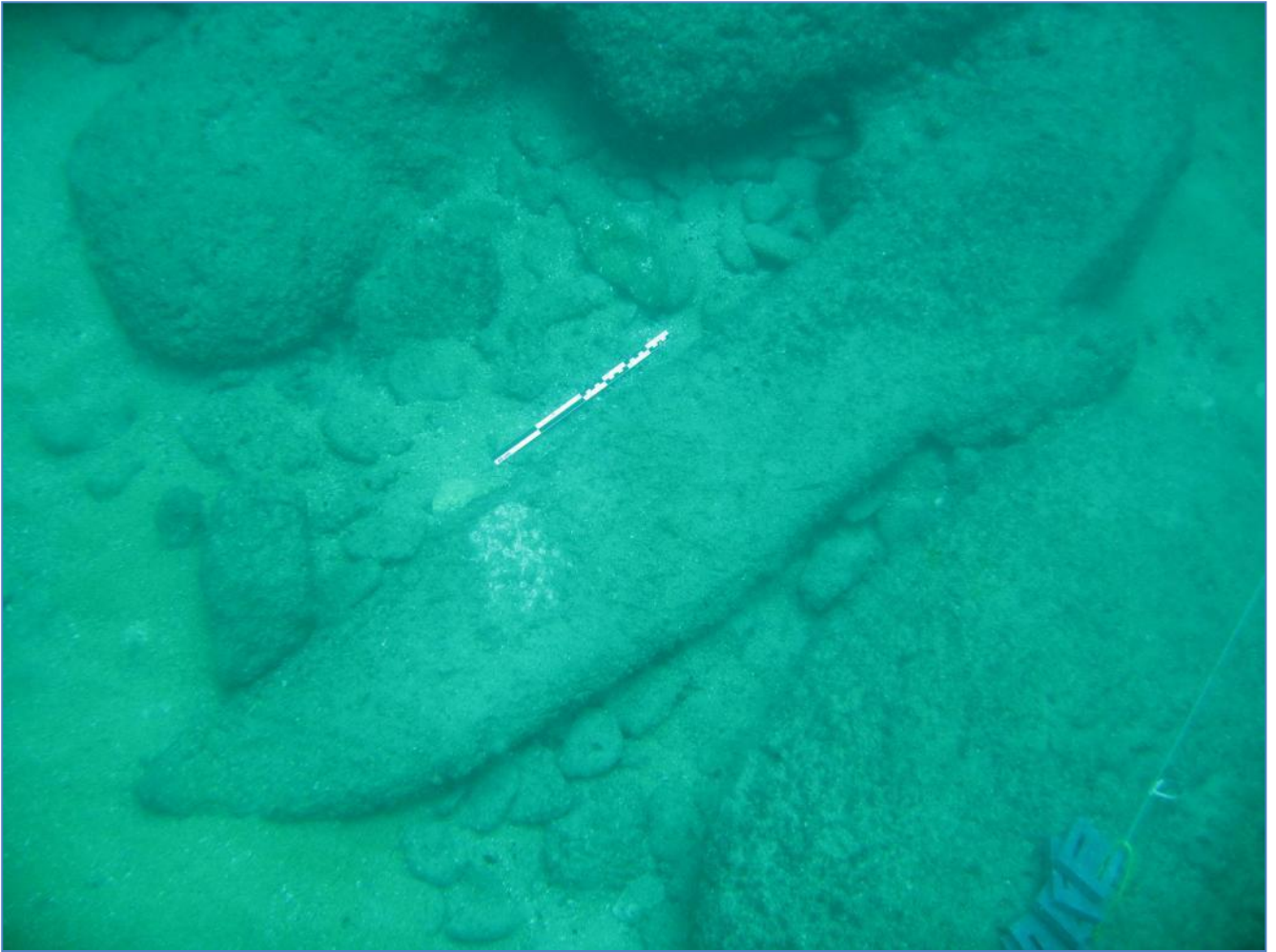
Figure 4. Roman lead anchor stock and lead reinforcement collar *in situ*.



**Figure 5. Roman lead anchor stock and lead reinforcement collar after cleaning.**

Limestone stock of a Greek type from a wooden anchor was discovered at point F03 (31,198748 N; 29,849712 E). Its dimensions are 231x35x17 cm (Figure 6, Figure 7). The latest known examples of these anchor stocks are dated to the middle 4<sup>rd</sup> century BC. The weight of this anchor stock is estimated at 320 kg.





**Figure 6. Limestone stock of a Greek type from a wooden anchor at the time of its discovery.**



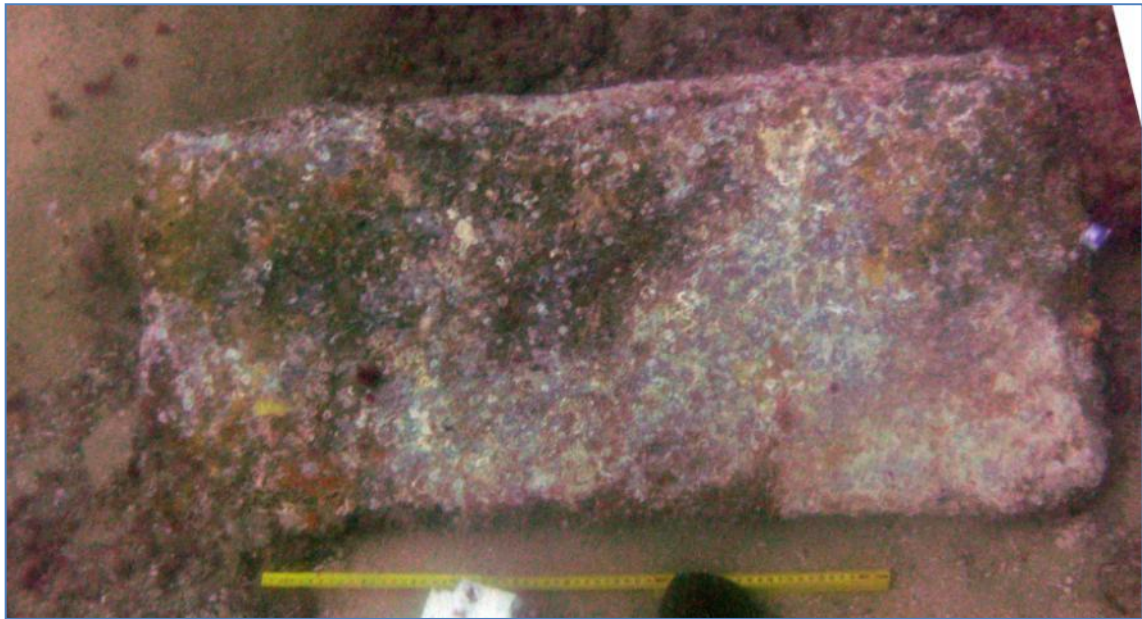
**Figure 7. Limestone stock of a Greek type from a wooden anchor after cleaning.**

An accumulation of rifles and pistols dating to the middle 19<sup>th</sup> century has been observed at point F04 (31,191753 N; 29,840533 E). Some dozen of these objects have been lifted from the bottom on the initiative of the Underwater Department of SCA and under the supervision of inspector Saad Ahmed Ahmed (Figure 8).



**Figure 8. Pistol discovered at the foot of the sea reef along the peninsula of Ras el Tin. Photo of Saad Ahmed Ahmed.**

Several separate slabs of schist measuring about 95-76 cm in length, 46-37 cm in width and 1,5-4 cm in thickness were found at the point F05 (31,214379 N; 29,869487 E) (Figure 9). At the moment it is difficult to determine the origin and the possible date of these objects.



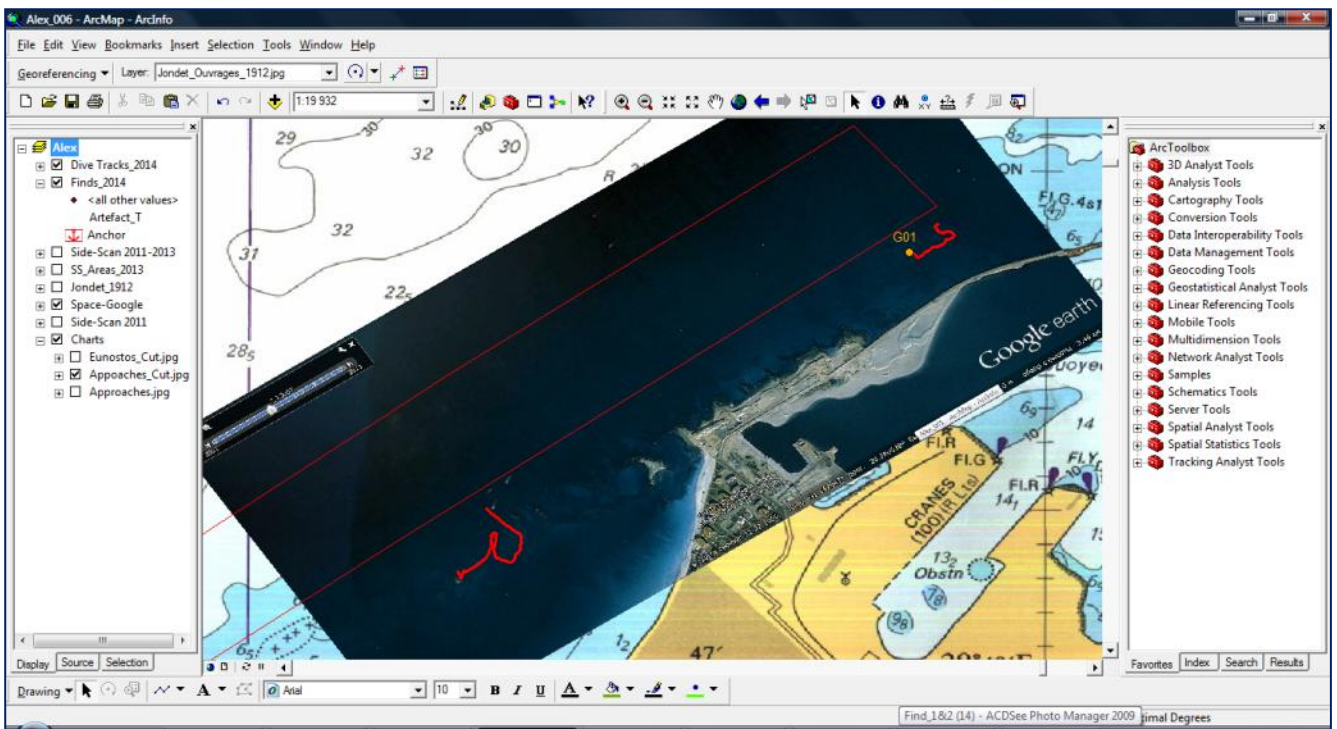
**Figure 9. Slabs of schist discovered at the point F05.**

The reconnaissance of the regions to the seaward from the reef will be continued during the next season.

#### 4. The reconnaissance of the reefs in Agami region.

Several reconnaissance dives were performed on the reefs in Agami region (Figure 10). The remains of ancient structures were observed at point G01 (31,154262 N; 29,793366 E). Large blocks of limestone are organized to form a breakwater that extends from the SW to the NE. This ancient breakwater is parallel with the modern one and is situated at 230 m from the shore. In Antiquity it must have protected the harbor from the NW swell. This conclusion is confirmed by the finds of two stone anchors (reported by inspector Saad) in the vicinity of the modern breakwater of Agami.





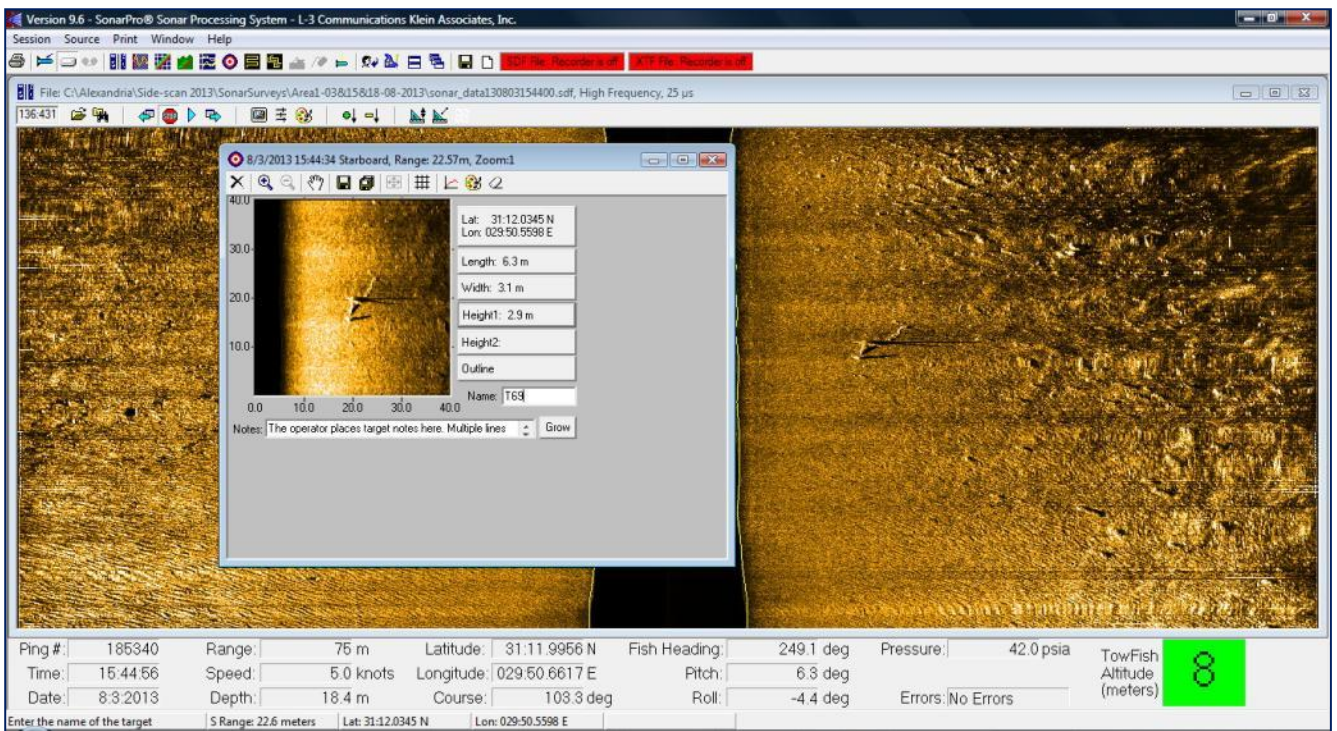
**Figure 10. Diving tracks recorded during the reconnaissance dives on the reefs in Agami region.**

5. Solving data-processing problems of the side-scan sonar data for the region of Anfushi.

The last task of the mission was to try to find the error in positioning of the targets as per the side-scan sonar survey of 2011 and 2013.

It has been noted before that these targets are very difficult to locate despite the high precision of the DGPS system used by the team. Thus several dives were devoted to this task. Some very pronounced object as per the side-scan survey has been selected as a test point (see T69 on Figure 11, probably an anchor about 2.5 m high). After positioning of the buoy on with the DGPS system the divers checked the presence of the target by a circular search. Unfortunately even a search at a 40-meter range did not reveal the object sought-for. The conclusion that can be made is that the data at our disposal does not include the length of the tow-fish cable that can be quite considerable.

We are planning to find the error on the lesser depth in Agami region (targets located at about 10-20 meters) during the next season. Afterwards it will be possible to take this error into account knowing the length of the cable and the course of the research vessel over the target.



**Figure 11. Target T69 of the side-scan survey of 2013 in Anfushi region.**

The next season of the Russian Underwater Archaeological Mission to Alexandria is planned in May, 2015 and will focus on the following objectives:

- 1) To carry out reconnaissance dives on the shoals (depth 2-6 m) between two entry channels leading to the West port of Alexandria looking for possible shipwrecks. In case our survey will have positive outcome we are going to make several test trenches with a standard water dredge;
- 2) To continue visual reconnaissance of the area along the reefs of Anfushi and Ras El-Tin at the depth of 10-25 meters;
- 3) To continue visual reconnaissance of the remains of the ancient breakwater near the cape of Agami;
- 4) To chart the modern state of the remains of an ancient breakwater of Ras el-Tin (first discovered and published by G.Jondet in 1916-21).