

SKYLLIS

€ 7,50

Zeitschrift für maritime und limnische Archäologie und Kulturgeschichte

15. Jahrgang 2015 Heft 2



Inhalt

Vorwort 111

The ancient submerged landscape of the Protected Marine Area
of Santa Maria di Castellabate
Salvatore Agizza 112

Flood control at Lipari Harbour
Evidences of rapid late Holocene submergence of the eastern coast of Lipari Island (Italy)
Giorgio De Guidi - Eugenio Nicotra - Philippe Tisseyre - Sebastiano -Tusa 121

Living by the sea, building in the sea
Underwater researches in Roman maritime villas on the Tyrrhenian coast of Italy: the villa of Gianola
Michele Stefanile 133

The Fortress under the Lake
The Case of Mazallakkar in Sicily
Francesca Oliveri 139

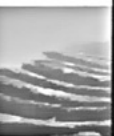
Continued Investigation of the Great Osijek Bridge
Roko Surić - Marina Simičić 143

Der Sturm der Seevölker und die Seeschlacht im Nil-Delta
Hans Wilhelm Daehnhardt - Hristomir Smilenov Hristov 151

The Zaton Boat 2 (Croatia)
A Dendroarchaeological Investigation
Nili Liphshitz - Šmiljan Glušević 158

Interdiscilinary research at the early medieval site of Zólte in Poland
Wojcech Kulesza 161

Late Hanseatic seafaring from Hamburg and Bremen to the North Atlantic Islands
With a marine archaeological excursus in the Shetland Islands
Philipp Grassel 172

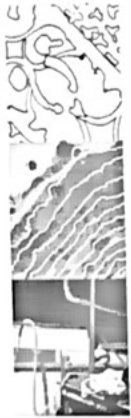




- 183 **A pole structure and a wooden shipwreck in the Baltic Sea**
Two sites off the coast of Rostock, Germany
Isabel Therese Nittel



- 189 **Excavation and conservation of the German ship ERZENDEL RAPHAEL**
Roman Prokhorov - Igor Galayda - Andrey Lukoshkov



- 192 **The Akko Tower Wreck (Israel)**
A multidisciplinary research project based on underwater archaeology
Deborah Cvikel

- 196 **Coastal survey of archaeological sites using drones**
Dimitrios Skarlatos - Eleni M. Savvidou

- 205 **Watercourse and water area archaeology**
Options of underwater archaeology in different underwater environment in the Czech Republic
Barbora Machová



- 211 **Das Bücherbrett**

Titelmotiv

Orthophotomap of Agia Napa coastal site created from initial depths, with GCPs (yellow triangles) overlaid with the marina construction plan.

*Aus: Dimitrios Skarlatos - Eleni M. Savvidou,
Coastal survey of archaeological sites using drones,
Abb. 10.*

Living by the sea, building in the sea

Underwater researches in Roman maritime villas on the Tyrrhenian coast of Italy: the villa of Gianola (Formia – LT)

Michele Stefanile

Abstract –The villae maritimae along the Tyrrhenian coast of Italy are important testimonies of the Roman architecture during the Late Republican and Imperial Ages: their analysis allows us to understand how the Romans were able to build directly on rocky coasts and jagged promontories, often deeply changing the natural landscape. Despite a long and fruitful tradition of studies on the subject, the scholars rarely worked on what now lies below the sea level, where, actually, a considerable part of the most remarkable structures is.

The Southern Latium Underwater Survey, established inside a cooperation agreement between the new Underwater Archaeology Research Unit of the University of Napoli "L'Orientale" and the Soprintendenza Archeologica del Lazio, aims at reconsidering the maritime villas of Southern Latium, and at increasing our knowledge through data coming from underwater contexts.

In September 2013, a first campaign of underwater surveys took place in Gianola, in the submerged part of a huge villa. Building techniques and decorative elements suggest a first phase during the 2nd century BC. A big fishpond was documented, with very interesting artefacts related with the closing system of the tanks and with the mixing of freshwater and salty water, for a more profitable fish breeding.

Inhalt –Die villae maritimae (Meervillen) längs der tyrrhenischen Küste Italiens sind wichtige Zeugen der römischen Baukunst der späten Republik und der Kaiserzeit: durch ihre Analyse verstehen wir, wie die Römer direkt auf Felsenküsten und schroffen Vorgebirgen bauen konnten, wobei sie oft die natürliche Landschaft tiefgehend veränderten.

Trotz einer langen, fruchtbaren Forschungstradition auf diesem Gebiet ist selten über das unter dem Meeresspiegel Liegende gearbeitet worden, wo sich derzeit ein beträchtlicher Teil der bemerkenswertesten Anlagen befindet.

Der Unterwasser-Survey Süd-Latium, gegründet im Rahmen einer Kooperation zwischen der neuen Forschungseinheit für Unterwasser-Archäologie der Universität Neapel "L'Orientale" und der Soprintendenza Archeologica del Lazio, bezweckt ein Neustudium der Meervillen Süd-Latiums und eine Vermehrung unserer Kenntnisse durch Ergebnisse der Kontexte unter Wasser.

Im September 2013 fand ein erster Unterwasser-Survey in Gianola im versunkenen Teil einer riesigen Villa statt. Bautechnik und Schmuckelemente legen eine erste Bauphase im 2. Jh. v. Chr. nahe. Dokumentiert wurde ein großes Fischbecken mit sehr interessanten Verschlussvorrichtungen der Behälter und Mischung von Süß- und Salzwasser zwecks einträglicherer Fischzucht.

The villae maritimae

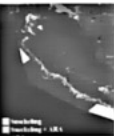
Les Romains dont la réputation de peuple terrien constitue un des thèmes majeurs de leur littérature, ont mis au point une forme particulière d'habitat, la villa maritima. Simple paradoxe ou, au contraire, suprême victoire de la terre sur la mer, cette notion n'a jamais fait l'objet d'une étude d'ensemble [---]' (Lafon 2001).

With these words X. Lafon opened his ambitious monographic study

for the series of the École Française de Rome, on the Roman maritime villas of Italy: a wide research in which for the first time (in spite of an already rich literature on the subject) it was possible to read a systematic survey on the phenomenon of a typical category of great residences, which flourished particularly along the Tyrrhenian coast of Italy since the time of the Late Republic, and often characterized by a complex architecture, with splendid terraces dominating the sea, private thermal baths, big

storage rooms, small harbors and coastal facilities with piers in opus pilarum, and pools, and ponds for the breeding of fishes and for the shellfish farming.

In this single catalogue, rich of data and accurate information, although not lacking in inaccuracies, all archaeological structures identified as villas along the coasts of the Italian peninsula were collected together. There was also a deep discussion on the meaning of these particular mansions, together with



a report on all the previous studies and a list of all the considerations commonly accepted on the respective owners of the villas.

The abundance of the archaeological remains preserved to this day along the Tyrrhenian coasts – and particularly along the coast of Latium and Campania – in fact, along with the remarkable persistence of toponyms and geographical indications, sometimes very strongly evocative, often led to the identification of famous places reported by ancient sources in the seaside villas recognizable among the ruins. Already at the time of J. D'Arms (1970) the scientific debate on the owners of these great structures could count on a vast range of attributions, connecting the sites with some of the most eminent people of the Roman society.

Only in a few cases, however, the discovery of some epigraphic evidence (mostly *fistulae aquariae*, water pipes) established with sufficient certainty a relationship between the ruins emerging on the territory and their former, renowned inhabitants. For many villas, while of undoubted importance in terms of their archaeological remains, the connection with the most prominent *gentes* of late republican Rome, is still very doubtful and requires further studies.

Nevertheless, not only epigraphic research requires more effort. Today underwater archaeology has the tools and the ability to understand whole sections of maritime villas surprisingly neglected so far because of the mere fact of being now submerged below sea level.

Villae maritimae, as we know, are the result of big efforts and massive architectural works in the adaptation and modelling of the coastal landscape, designed to bend the natural environment to the needs of the construction, and to exploit the characteristics of the territory (bays, shelters, caves, springs) with the aim of that *'suprême victoire de la terre sur la mer'* mentioned by Lafon. A tendency to build in the

close proximity of the sea, if not directly into the water, combined with the geomorphological changes of the Tyrrhenian coasts in the last two thousand years (Schmidt 1970) has meant that today many of these archaeological structures lie below the surface of the water, often at a minimum depth: enough, however, to keep most of the researchers away in the last decades. As a result, there is a lack of archaeological works on some of the most interesting from an archaeological point of view, namely those concerning the land-sea interface and the same maritime front of the villas. It must be said that even when we can count on plans and drawings about some of the semi-submerged structures, as it is the case with many fish ponds, often there is no good connection with the sites on the mainland, or, in other cases, it is the result of surveys carried out during the first half of the twentieth century (see Gunther 1913 for the Pausilypon; Iacono 1926 for some of the villas in the *Formianum*) that could be clearly easily updated applying modern techniques.

Living by the sea, building in the sea

It is now time to consider the *villae maritimae* reversing our perspective (Stefanile 2016), thus exploiting the observation point to which these residences were designed, namely that from the sea. Only from the sea, actually, it is possible to understand the value of the ancient architectural efforts in exploiting the shape and the characteristics of the coast, emphasizing bays and caves, and the difficulties encountered in the construction of buildings so close to the water.

From the sea it is possible to perceive the work of digging the coasts characterized by soft tuff, with the creation of infrastructures in man-made caves and of artificial water fonts, that only the centuries can erode, bringing them again to an almost natural appearance: this is

the case, for example, of Posillipo in Naples, or the Campi Flegrei, or the Pontine islands. From the sea, moreover, it is possible to recognize the difficult work of adapting the rugged coastlines characterized by hard rocks, with masonry cladding and shaping the asperities of the landscape and with bold vaulted passages and bridges and stairs and terraces overlooking the Mediterranean.

The Romans built for the eternity, as it is often said, and did it even in places where wind and storms cut out the rock incessantly. They built even into the water, mimicking in the private docks of their villas the same infrastructures developed for major civil and military ports, piers on *pilae*, pylons made within watertight or flooded frames, according to Vitruvius' dictates (Stefanile 2015).

The Southern Latium Underwater Survey

Since 2013, the University of Naples "L'Orientale", in agreement with the Archaeological Superintendence of Latium, and with the scientific direction of Fabrizio Pesando, has undertaken a project of underwater archaeological documentation of the submerged and semi-submerged structures related to the seaside villas of Latium. During this project, *Southern Latium Underwater Survey*, and thanks to partnerships established with local authorities and institutions, four campaigns of underwater researches have been carried out, with the involvement of students, in the seaside villas of Gianola and Gaeta and in the great imperial villa of Tiberius in Sperlonga (Pesando – Stefanile 2015a; 2015b).

The first underwater researches in the maritime villa of Gianola

The huge villa of Gianola (Cassieri 1995; Ciccone 1990; 1995; 1996), traditionally connected with the figure of Mamurra, the famous

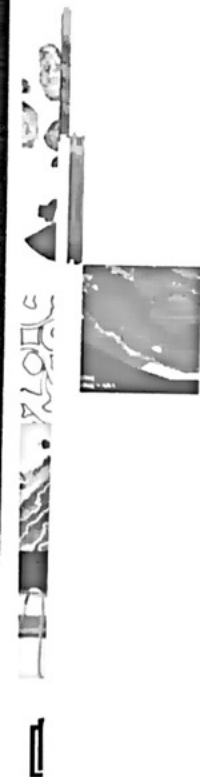




Fig. 1: The villa of Gianola in the Gulf of Gaeta.



Fig. 2: Map of the underwater surveys around the promontory of Gianola.

praefectus fabrum of Caesar in Gaul (McDermott 1983), dominates, with its remains on three altimetric levels, the western sector of a large promontory, not far from the town of *Formiae* (now Formia, LT) (Fig. 1). The most preserved part of the complex, located on the intermediate level, comprises two large basins for the collection of fresh water (Cisterna Grande and Cisterna delle 36 Colonne), several residential rooms and a wide vaulted ramp which allowed direct communication with another residential area, located near the sea, with one or more thermal baths, long porticoes and rooms decorated with sophisticated floors and wall coverings. The structures visible in this part of the villa, characterized by the presence of *opus incertum* and decorations in some cases related to the 1st style, provide elements of great interest for the dating of the entire complex, that can be linked with the earliest stages of the villa *scoperta*.

the Gulf of Gaeta, between the end of the 2nd and the beginning of the 1st century BC. Works in progress in the highest terrace of the villa are now giving strong evidence of a long frequentation of the complex, until the 4th century AD.



Fig. 3: A student with one of the blocks from the villa, found underwater.



Fig. 4: A piece of a waterchannel from the porticus of the lower terrace.

The underwater researches on the waterfront

Underwater surveys (Fig. 2) carried out in 2014 in the stretch of sea off this area identified numerous architectural elements precipitated into the water. Big stone blocks (Figs. 3-4), very similar to those detected on the mainland in the thermal area and in the lower terrace, are deposited on the seabed and partially covered by sediments, at a minimum distance from the coast and at a low depth (max 2.10 m), because of their size, while smaller items have been dragged by the waves, through the deep rocky channels typical of the submerged part of the promontory of Gianola, and are now trapped in the middle of the rocks. Bricks, complete or in fragments, elements of *suspensurae* from the baths, pottery fragments and marble (Fig. 5) are dispersed everywhere and constitute a precious sample of the large amount of

relatively light material that fell into the sea because of the marine and wind erosion, and that were quickly swallowed up by sand accumulations or dragged by the sea beyond the limits of the promontory.

The impression one gets from the surveys in



Fig. 5: Bricks, elements of *suspensurae* from the baths, pottery fragments and marble.



Fig. 6: The walls of the lower terrace, directly on the sea.



Fig. 7: The big natural cave and the mighty walls on its sides.



Fig. 8: The artificial bridge on the entrance of the cave.

this area, as well as from the measurements made in the nearby basin of the so called *Porticciolo Romano*, is that the change of the sea level, in this part of the Tyrrhenian coast, has been quite moderate; in this sense, useful markers are the exit holes of several channels for water documented in the whole of the waterfront. It is, actually, probably correct the observation by Schmiedt (1972), hypothesizing a modification of about 1 meter from the Roman time. This datum acquires a great interest when looking at the mighty walls built near the thermal complex, and for much of the sea front of the villa: these impressive masonries apparently already at the time of their construction were built at a minimum distance from the water if not directly in the water (Fig. 6).

Mighty walls were also at the sides of a large natural cave (Fig. 7), open to the south, covered by an artificial vault, and by a man made bridge (Fig. 8), partially collapsed into the sea: it is probably a great work of monumentalization for a point strongly evocative of the



Fig. 9: The so-called *Porticciolo Romano*.

natural landscape, trying to recreate a private mythological scenery. A deep crack in the smooth rock of the back wall may possibly indicate the presence of a small spring in the ancient time that would have further increased the symbolic value of the cave.

The cavity, which widens in its emerged part in one room, large but low ceilinged, continues under the limit of the lower terrace of the villa. A narrow, 'chimney', sufficient for the passage of one person, facilitated by the presence of small steps carved into the natural rock, led from this scenic environment to the above *porticus*.

The fish pond

The structures that are currently visible in the bay of the so-called *Porticciolo Romano* (Roman little Harbour) (Fig. 9), located at the mouth of a brief torrential valley, between the eastern limit of the large villa and a rocky point with a bunker of the World War II, mostly date back to a massive reorganization carried out in the thirties of the 20th century by the Marquis Carlo Afan de Rivera, owner of a large estate on the promontory of Gianola. Powerful breakwaters in local rough stone bound with mortar were planted directly over the outer walls of an ancient facility for fish farming (Fig. 10), lowered by the waves to the level of the high tide. Stone stairs carved on both sides of the piers and mooring cleats, well-shaped, completed the modern installations, along with a diagonal wall, used as an external protection for the western part of the port. During these works, it was also carried out a dredging of the basin, to permit the mooring of little boats; on this occasion, many old elements relevant to the inter-



Fig. 10: The ancient fishpond under the modern breakwater.



Fig. 11: One of the blocks for the *cataractae*, reused in the modern walls.

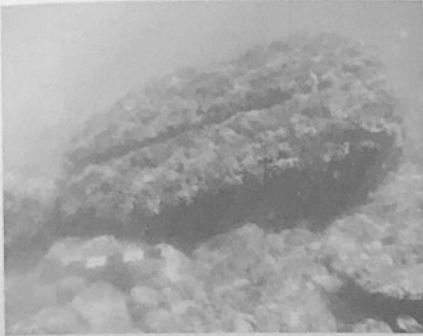


Fig. 12: One of the blocks for the *cataractae*, underwater.

nal partitions of the ancient fish pond were removed, reused in the new walls (Fig. 11) or simply thrown out of the basin (Fig. 12). The underwater surveys allowed to locate and identify a big amount of these blocks, used in the well-known system of the *cataractae*, with the purpose of separating different fishes in different tanks, without creating obstacles to the circulation of the water. Three of these blocks are still *in situ* (Fig. 13), in a peripheric part of the *piscina*, still indicating the precise position of at least two different tanks. In the original position is also a grooved threshold on the seabed (Fig. 14), in the middle of the channel of entrance of the modern harbour, at a depth of 1,40 m. This element is a very important marker for the measurement of the ancient bottom of the basin, at the level of the big mouth of entrance for the salty water.

Despite the great changes above mentioned, it is still possible to reconstruct the ground plan of the ancient fish pond through an accurate documentation of all structures still visible below the modern walls and in the water (Fig. 15). The plant had to belong to the Type II of the classification proposed by Lafon, based on the indications of Columella (De re rustica 8, 1-4), i.e. the kind of fish ponds that were built using natural bays, but also with works of adaptation of the coast and with the installation of masonry.

Some openings created along the perimeter walls gushed out fresh water coming from several natural springs, the existence of which undoubtedly contributed significant-



Fig. 13: The blocks for the *cataractae*, still *in situ*.

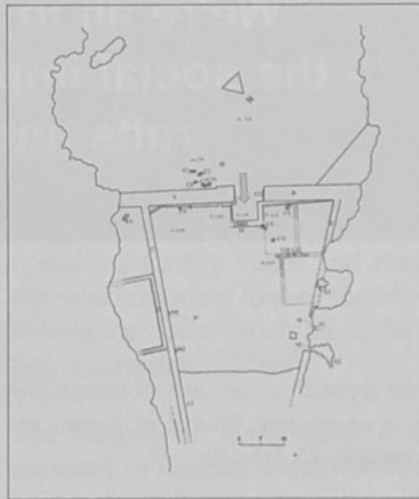


Fig. 15: The ancient fish pond.

ly to the choice of where to install the fish pond. It is known, in fact, that the possibility of mixing seawater and freshwater (*aquatatio*, cfr. Cicero, De officiis 3, 14) was considered of great importance to intensive fish farming, allowing to control the temperature and salinity inside the ponds, and countering the effects of evaporation.

It is very likely, considering the high number of blocks for the *cataractae* found in the area, the numerous openings for the mix of the water and the remains of walls submerged, that the fish pond in the villa of Gianola belonged to the series of the so called *piscinae loculatae*, divided into compartments such as the boxes for the colors used by painters, to borrow a



Fig. 14: The big threshold on the seabed.

famous image by Varro (Res rusticae 3, 17, 4). A type particularly common along the coasts of the Gulf of Gaeta in the 1st century BC.

The size of the plant, covering an area of about 1550 square meters, is significant: while far from the exceptional measures of the largest known Roman fish pond, that of Torre Astura (ca. 15,000 sqm), the *piscina* of Gianola exceeded the average size for most of the known plants in the Tyrrhenian area, which usually comprised between 1000 and 1300 sqm.

Some final considerations

After the first campaigns in Gianola and in the villas of Sperlonga and Gaeta (the results of which are now being produced and published), our knowledge on the waterfront of the huge villas in the Gulf of Gaeta is consistently increasing, helping us to better understand the meaning of these impressive structures, the relationships between public and private architecture (evident, for example, in the realization of private harbours), the sea level changes in a territory in which general phenomena and volcanic movements create big differences also in very close sites.

The work in an intertidal environment is also an extraordinary opportunity for the training of students and new generations of archaeologists: the difficulties in the access to the sites, the hardness in working in very shallow water and the needs for hybrid techniques of documentation, between underwater and land archaeology, are chal-

lenges that should not be underestimated.

At the same time, the menaces affecting these sites, the perennial natural impact of waves, winds, tides, and the increasing human pressure, particularly strong in locations already chosen by the Romans for their beauty, urges us to plan strategies for an efficient documentation of the remains, and for an aware monitoring of the conditions of the sites. In numerous places the *villae maritimae* are now endangered oasis in the middle of tourist resorts, overpopulated coasts, overexploited districts, sometimes protected only by a fence. Their submerged parts, completely open or simply marked by some buoys, are probably the most exposed to the menaces. A complete study of them is the first step towards their protection.

Selected bibliography

- Cassieri, N. 1995: Primi interventi di scavo archeologico e di conservazione nella villa romana di Gianola, in: *Formianum* 3, 27-33.
- Ciccione, S. 1990: Una villa romana a Formia con una originale struttura a tumolo. *Palladio. Rivista di storia dell'architettura e restauro* 5, 5-23.
- Ciccione, S. 1995: La sala ottagonale della "Domus Aurea" a Roma: il prototipo in un ninfeo di Formia, in: *Formianum* 3, 11-24.
- Ciccione, S. 1996: Aspetti archeologici e Paesaggio vegetale. *Parco Regionale di Gianola e Monte di Scauri (Minturno)*.
- Higginbotham, J. 1997: *Piscinae. Artificial Fishponds in Roman Italy* (Chapel Hill).
- Lafon, X. 1981: À propos des villas de la zone de Sperlonga. *Mélanges de l'École française de Rome - Antiquité* 93.1, 297-353.
- Lafon, X. 2001: *Villa Maritima: recherches sur les villas littorales de l'Italie romaine: III^e siècle av. J.C. - III^e siècle ap. J.-C.* (Rome).
- Marzano, A. 2007: *Roman villas in central Italy: a social and economic history. Columbia studies in the classical tradition* 30 (Leiden).
- Marzano, A. - Brizzi, G. 2009: *Costly display or economic investment? A quantitative*

The DEGUWA Annual Conference on Underwater Archaeology 2017

will be held at the

RheinMoselCampus of the
Koblenz University of Applied Sciences
March 17-19, 2017.

The topic will be

**"We're all in the same boat
- the social importance of ships,
rafts and ferries".**

approach to the study of Roman marine aquaculture. *Journal of Roman Archaeology* 22, 215-230.

Marzano, A. 2013: *Harvesting the Sea: The Exploitation of Marine Resources in the Roman Mediterranean*, Oxford Studies on the Roman Economy (Oxford).

McDermott, W.C. 1983: *Mamurra, eques Formianus*. *Rheinisches Museum für Philologie* 126, 3/4, 292-307.

Pesando, F. - Stefanile, M. 2015a: *Rilievi nella parte a mare della villa di Gianola a Formia (LT), Lazio e Sabina* 11, forthcoming.

Pesando, F. - Stefanile, M. 2015b: *La villa maritima di Gianola. Prime ricognizioni subacquee dell'Oriente di Napoli*, *Newsletter di Archeologia CISA* 6, 43-64.

Rustico, L. 2004: *Impianti marittimi per la piscicoltura in età romana*, in: M. Giacobelli (ed.), *Lezioni Fabio Faccenna II. Conferenze di Archeologia Subacquea (Bari)* 119-124.

Schmiedt, G. 1972: *Il livello antico del Mar Tirreno. Testimonianze dei resti archeologici* (Firenze).

Stefanile, M. 2016: *Reversing the perspective. Roman maritime villas from the sea*, in: M. Stefanile (ed.), *ISUR 8: Proceedings of the 8th International Symposium on Underwater Research, Procida-Napoli 2014* forthcoming.

Credits of figures

Fig. 1: courtesy of S. Agizza; Fig. 2: drawing by the author on a Google Earth screenshot; Fig. 3-14 by the author; Fig. 15 drawing by the author.

Address

Dr. Michele Stefanile
Università degli Studi di Napoli "L'Orientale"
Dipartimento Asia Africa Mediterraneo
Piazza S. Domenico Maggiore 12,
80134 Napoli
Italy
mstefanile@unior.it

