

EUROPEAN VEGETATION SURVEY

15th Workshop

**“VEGETATION IN AGRICULTURAL LANDSCAPES”
and
“NATURA 2000”.**

CATANIA
24th - 27th of March 2006

DEPARTMENT OF BOTANY

University of Catania

- A FIELD GUIDE TO THE ANAPO VALLEY -

Salvatore Brullo, Riccardo Guarino, Pietro Minissale, Giovanni Spampinato, Valeria Tomaselli

A FIELD GUIDE TO THE ANAPO VALLEY

1. Introduction

The Hyblean territory, forming the South-Eastern part of Sicily, consists of a large plateau, mostly formed by Miocene limestones. The whole territory is well characterized, in the Sicilian context, by unique traits, featuring the landscape, the natural history and the human culture.

From the geological viewpoint, the Hyblean plateau is a foreland belonging to the African plate. It is joint to the rest of the island by the plain of Catania-Gela, formed by Tertiary and Quaternary sediments filling an important tectonic fault. The highest point of the Hyblean territory is Mt. Lauro (987 m a.s.l.), a flattened volcano, inactive since the end of Pliocene, covering the NW part of the Hyblean plateau.

The calcareous nature of the relief makes possible to meteoric water to flow following subterranean ways due to karst phenomena: in fact, the Hyblean plateau is made of karstic plains with dolines and sink holes. Karst phenomena make the whole Hyblean territory rich of springs, many of them gushing around the basement of Mt. Lauro, or from karstic springs at the sea level.

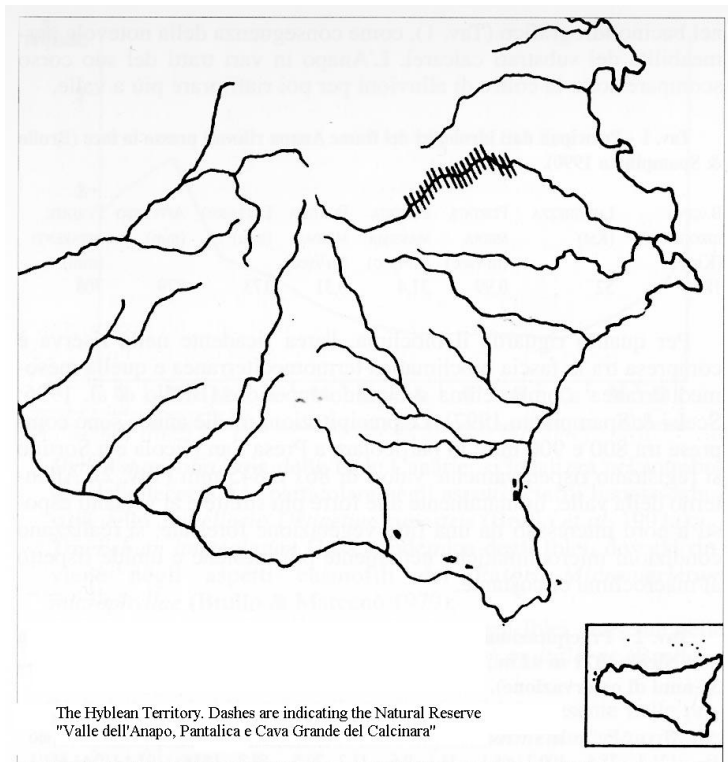
The watercourses crossing the Hyblean territory form a radial pattern centred in Mt. Lauro. The thick network of eroded furrows departing from the watershed makes water swiftly flow into canalized little brooks, which exert an impressive erosive strength. The whole Hyblean plateau is broken off by deep canyons, often with vertical walls, locally named “cave”. The erosion along the riverbeds is still very active, often forming swifts and natural pools, the biggest of which represent a tourist attraction during the balneal season.

The Anapo River is one of the most important Hyblean watercourses, with a catchment basin of 180 km², on the Eastern part of the plateau. Its origin is around the southern flank of Mt. Lauro and the outlet of the river is in the Porto Grande of Syracuse, after a 52 Km long eastward course.

The middle trait of the river, for a length of 12 km, between the villages of Cassaro and Sortino, since 1997 belongs to the regional natural reserve “Pantalica, Valle dell’Anapo e Cava Grande del Calcinara”, while the outlet is included since 1982 in the natural reserve “Fiume Ciane e Saline di Siracusa”.

The name Anapo originates from the ancient Greek language and means “invisible”, because most part of its final course flows underground, further down from the natural reserve until the outlet.

The Hyblean landscape has been deeply modified by a millennial human activity. The primeval vegetation, dominated by evergreen and deciduous oak-woods, nearly disappeared, and has been substituted by cultivations, pasturelands and terraced groves. The trait of the Anapo River included in the natural reserve represents one of the most well preserved biotope of the Hyblean territory,



where an astonishing variety of vegetation types can be observed, moving from the summit plateau to the riverbed. The access to the Natural Reserve and its general management is controlled by the Sicilian Forestry Department. There are several trails crossing the Reserve, the main one being a white road along the valley floor, where an old railway connecting Syracuse to Vizzini worked until 1956.

The importance of the area is also due to important archaeological remains, including thousands of tombs, dating to the Neolithic age (13th – 8th century b.C.), that are spotting the vertical cliffs along the canyon. The valley also includes a Greek aqueduct (Acquedotto Galermi), still working, and several Byzantine rupestrian villages and sanctuaries.

2. Physical traits of the Anapo Valley

The territory of the Natural Reserve, ranging between 180 and 700 m a.s.l., is dominated by Oligo-Miocenic limestones and calcareous marls forming the series of Palazzolo, laid on Miocenic marls belonging to the series of Tellaro. Layers, foldings and faults characterize the impressive rock outcrops along the slopes of the valley.

The Anapo River has an average flow of 1 m³/sec (Brullo & Spampinato, 1990). As it happens to several Hyblean rivers, the Anapo flow doesn't change much during the summer period, being the river fed upon karstic springs. Even during the rainy season, floods are not disruptive. This is proofed by the occurrence of well-preserved riparian forests.

Following the Rivas-Martinez's bioclimatic classification, the Natural Reserve comprises a thermo- to mesomediterranean subhumid bioclimate (Brullo et al. 1998; Scelsi & Spampinato, 1998). The average rainfall is between 800 and 900 mm/yr. The inner parts of the valley, however, are experiencing cooler and moister microclimates, especially on north-facing slopes, that often are covered by dense holm-oak woods.

3. Flora

The Anapo Valley hosts several species of biogeographic interest. The endemic component is represented by:

- *Urtica rupestris* Guss., restricted to the Eastern part of the Hyblean plateau, a noticeable Tertiary relict, taxonomically isolated, with some affinity with *Urtica morifolia* Poir., a Canarian endemic. It grows in shady places, often in dense holm-oak woods and in sciaphilous shrubbery (*Scutellario-Urticetum rupestris*).
- *Trachelium lanceolatum* Guss., Hyblean endemic, growing on shady vertical cliffs (*Putorio-Micromerietum microphyllae*).
- *Helichrysum scandens* Guss., Hyblean endemic, occurring in the garigue on sunny rocky slopes (*Helichryso scandentis-Ericetum multiflorae*).
- *Helichrysum hyblaeum* Brullo, Hyblean endemic, occurring in perennial dry grasslands on sunny steep slopes (*Helichryso-Ampelodesmetum mauritanici*).
- *Ophrys biancae* (Tod.) Macchiati, a rare Sicilian endemic, occurring in perennial dry grasslands ascribed to the class *Lygeo-Stipetea*.
- *Calendula suffruticosa* Vahl. ssp. *gussonii* Lanza, Hyblean endemic (Ohle 1974), growing on sunny rocky slopes.
- *Odontites bocconeii* (Guss.) Walpers, a Sicilian endemic linked to rupestrian habitats, in the Anapo Valley found in the *Putorio-Micromerietum microphyllae*.
- *Scutellaria rubicunda* Hornem., Sicilian endemic, sharing the habitat of *Urtica rupestris* (*Scutellario-Urticetum rupestris*).

- *Cymbalaria pubescens* (Presl) Cufod., Sicilian endemic, growing on shady and moist rock outcrops.
- *Verbascum siculum* Miller, Sicilian endemic, growing along trampled road sides, paddocks and overexploited pasturelands.
- *Antirrhinum siculum* Miller, endemic to Southern Italy and Sicily, in the Anapo Valley found on both stone-walls (*Antirrhinetum siculi*) and rocky faces (*Putorio-Micromerietum microphyllae*).
- *Aristolochia clusii* Lojac., endemic to Southern Italy and Sicily, in the Anapo Valley found in the holm-oak woods (*Doronic-Quercetum ilicis*).
- *Brassica incana* Ten. and *Dianthus rupicola* Biv. ssp. *rupicola*, both endemic to Southern Italy and Sicily, in the Anapo Valley found on rocky faces (*Putorio-Micromerietum microphyllae*).
- *Lamium pubescens* Sibth., endemic to Southern Italy and Sicily, in the Anapo Valley found in the riparian forest along the watercourse (*Platano-Salicetum pedicellatae*).

Other meaningful floristic records, testifying the fresh microclimate of the valley floor, are some nemoral species, quite rare in Sicily, being the only records restricted to the mountains forming the northern rib of the island, and to the Anapo Valley and few other Hyblean canyons. Here, they probably came during the Pleistocenic glaciations and are now surviving in the coolest places of the valley. They are:

- *Doronicum orientale* Sibth. and *Epipactis microphylla* (Ehrh.) Swartz, SW-European and European-Caucasic orophyte, in the Anapo Valley found in the holm-oak woods (*Doronic-Quercetum ilicis*).
- *Sanicula europaea* L. and *Mercurialis perennis* L., both typically found in beechwoods, and in the Anapo Valley restricted to few places, in the riparian forest along the watercourse (*Platano-Salicetum pedicellatae*).
- *Ostrya carpinifolia* Scop., E-Mediterranean and Caucasian element, in Sicily extremely localized, in the Anapo Valley found on steep, north-facing slopes colonized by holm-oak woods (*Ostryo-Quercetum ilicis*).
- *Phyllitis scolopendrium* (L.) Neuman, a remarkably sciaphilous and hygrophilous species, rare in Sicily, in the Anapo Valley found on wet rocky faces (*Thamnobryo alopecuri-Phyllitidetum scolopendri*).

In the Anapo Valley, some E-Mediterranean species having in E-Sicily the westernmost limit of their distribution range are also present. They are:

- *Platanus orientalis* L., constituting the riparian forest along the watercourse (*Platano-Salicetum pedicellatae*), locally endangered by a virulent epidemic of the so-called plane cancer, caused by *Ceratocystis fimbriata* fo. *platani*.
- *Galanthus reginae-olgae* Orph., sporadic element of the holm-oak woods (namely *Doronic-Quercetum ilicis*).
- *Ferulago nodosa*, frequent in perennial dry grasslands ascribed to the class *Lygeo-Stipetea*.
- *Salvia fruticosa* Miller and *Phlomis fruticosa* L., character species of the Hyblean maquis *Salvio-Phlomidetum fruticosae*.
- *Sarcopoterium spinosum* (L.) Spach., character species of the Hyblean garigues ascribed to the class *Cisto-Micromerietea*. This species in Sicily is restricted to the Hyblean territory, where it is quite common. Its westernmost outpost is in Sardinia (Capo Sant'Elia, Cagliari).
- *Putoria calabrica* (L.) Pers., character species of the Hyblean chasmophytic vegetation (*Putorio-Micromerietum microphyllae*).

The Hyblean territory is also floristically characterized by a pool of S-Mediterranean species, not found elsewhere in Sicily, such as:

- *Aristolochia altissima* Desf., a rare evergreen liane, restricted to Algeria and SE Sicily, forming a tangle at the margin of the woods (*Rubo-Aristolochietum altissimae*).

- *Micromeria nervosa* (Desf.) Benth., found in the garigue on sunny steep slopes (*Cisto-Micromerietea*).

4. Vegetation

The vegetation of the Natural Reserve reflects the articulated topography of the Anapo Valley, providing suitable habitats to a rich mosaic of plant communities, from the vertical cliffs to the natural pools in the riverbed. Such an interesting biotope attracted several botanists, that contributed to the knowledge of the flora and vegetation of the valley (Barbagallo *et al.*, 1979a, 1979b; Bartolo *et al.*, 1989, 1990; Brullo & Marcenò, 1979, 1985; Brullo *et al.*, 1989, 1993a, 1993b, 1996; Brullo & Spampinato, 1990; Fichera *et al.*, 1990; Minissale, 1995; Minissale *et al.*, 1991).

The valley floor is colonized by a riparian forest dominated by *Platanus orientalis* and *Salix pedicellata*, character species of the *Platano-Salicetum pedicellatae*, ascribed to *Platanion orientalis*. In this association, the following species are also frequent: *Salix alba*, *Populus nigra*, *Populus alba*. The shrub layer is dominated by *Nerium oleander*, *Ficus carica*, *Tamarix gallica*, *Sambucus nigra*, *Hypericum hircinum*, *Vitis vinifera* var. *sylvestris*, *Clematis vitalba*, *Hedera helix*, *Calystegia sylvatica*, *Solanum dulcamara*. The herbaceous layer includes: *Lamium pubescens*, *Melissa romana*, *Symphytum bulbosum*, *Alliaria petiolata*, *Carex pendula*, *Carex remota*, *Equisetum telmateja*, *Brachypodium sylvaticum*, *Agrimonia eupatoria*, *Euphorbia amygdaloides*, etc..

The *Platano-Salicetum pedicellatae* is often fringed by a tangled shrubbery, rich in species of the *Pruno-Rubion ulmifolii*, that together with *Aristolochia altissima* are characterizing the *Rubo-Aristolochietum altissimae*.

The shores of the river are colonized by helophytic vegetation, including the *Helosciadietum nodiflori*, the *Cyperetum longi* and, more sporadically, the *Sparganietum erecti*. Next to the end of the Natural Reserve, at the widening of the valley and of the riverbed, *Typhetum angustifoliae* and *Phragmitetum communis* are also found. The natural pools along the riverbed are often colonized by the *Zannichellietum obtusifoliae* and by dense populations of *Chara* sp.. Where the hydrodinamism is stronger, the riverbed is colonized by bryophytic vegetation: *Oxyrrinchietum rusciformis* and *Fontinaletum antipyreticae*.

The moist and shady rupestrian habitats next to the watercourse, are colonized by the bryopteridophytic vegetation of *Adiantion*, in the Anapo valley represented by five different communities. *Eucladio-Adiantetum*, *Adianto-Cratoneuretum commutati*, *Adianto-Cratoneuretum filicini*, *Thamnobryo alopecuri-Phyllitidetum scolopendri*, *Homalio lusitanicae-Adiantetum*. the *Adiantetea* vegetation is often surrounded by a dense maquis, colonizing very steep and shady sites, dominated by *Bupleurum fruticosum*, *Rhamnus alaternus*, *Pistacia terebinthus* and *Hippocrepis emerus*, described as *Hippocrepido-Bupleuretum fruticosi*.

The steep slopes forming the flanks of the canyon are colonized by holm-oak woods of three different typologies: *Doronico-Quercetum ilicis*, *Ostryo-Quercetum ilicis* and *Pistacio-Quercetum ilicis*.

To the first one, the climatophilous woods of the Anapo Valley are ascribed. In this woods, *Urtica rupestris*, *Scutellaria rubicunda* and *Cymbalaria pubescens* (Presl) Cudof. are frequently found, as well as *Aristolochia clusii*, *Lamium pubescens* Sibth., *Doronicum orientale*, *Ruscus aculeatus*, *Phyllitis scolopendrium*, *Galanthus reginae-olgae*. The shrub layer includes several lianes, such as *Smilax aspera*, *Rosa sempervirens*, *Tamus communis*, *Hedera helix*, *Rubia*

peregrina, *Asparagus acutifolius*. The canopy is formed by *Quercus ilex*, *Q. virgiliana* and *Fraxinus ornus*.

The second type of holm-oak wood colonizes the steepest and shadiest slopes and is characterized by the occurrence of *Ostrya carpinifolia*, a species very rare in Sicily, where it is localized in canyons and gorges.

The third one is substituting the previous ones in the higher part of the valley, where the direct solar radiation and the drought become more intense. Under this conditions, the rare and mesophilous species characterizing the above mentioned holm-oak woods progressively disappear, being substituted by ubiquitous members of the Mediterranean maquis, such as *Pistacia lentiscus*, *Olea europaea*, *Ceratonia siliqua* and *Myrtus communis*.

Large parts of the valley slopes are covered by plant communities dynamically linked to the holm-oak woods, resulting from the land use: the natural vegetation was periodically burnt to obtain pasturelands. At present time, in the Anapo Valley, it is possible to observe all the stages of the biological succession verging to the recover of the holm-oak woods. The heliophilous maquis *Salvio-Phlomidetum fruticosae* is very frequent, as well as the *Helichryso-Ampelodesmetum mauritanici*, a dense perennial grasslands dominated by *Ampelodesmos mauritanicus* a big fire-tolerant caespitose grass.

The edaphoxerophilous vegetation includes the *Oleo-Euphorbietum dendroidis*, commonly occurring on steep rocky slopes, and the dry grasslands of *Hyparrhenietum hirta-pubescentis*. Both these associations are fringing the frequent rock outcrops, that are colonized by a rupestrian garigue, *Helichryso-Ericetum multiflorae*, restricted to the E-Hyblean territory, characterized by *Erica multiflora* and *Helichrysum scandens*, growing together with *Phagnalon rupestre*, *Coronilla valentina*, *Cistus creticus*, *C. salviifolius* and *Corydorthymus capitatus*.

The impressive rocky faces are dwelled by the *Putorio-Micromerietum microphyllae*, a chasmophytic vegetation characterized by *Odontites bocconeii*, *Dianthus rupicola* ssp. *rupicola*, *Antirrhinum siculum*, *Micromeria microphylla*, *Trachelium lanceolatum*, *Putoria calabrica*, *Scabiosa cretica* and *Silene fruticosa*. As the previous one, this association is also restricted to the Hyblean territory.

5. Anthropic impact and history of soil exploitation

Presence of man in the Hyblean territories dates back to the lower Palaeolithic Age (100,000 years BP). Recent excavations in the natural caves (especially Grotta Spinagallo, next to Siracusa) allowed the finding of Palaeolithic animal remnants (*Elephas falconeri*, *Ursus spelaeus*, *Rhinoceros merckii*) and flintstone weapons in Chelleian and Musterian style. Also abundant findings, in the caves near Sortino, Melilli, Ispica, Rosolini, Pachino, dating back to Neolithic, have been brought to light.

During Bronze Age, deforestation activity and cultivation of slopes began, although most of the original forests probably lasted until the Roman period. As a matter of fact, Greeks were not particularly charmed by the inhospitable appearance of the inner part of the Hyblean territory, preferring to settle in coastal sites (Bernabò Brea, 1982). Greeks visited, however, the Anapo Valley: along the river, a Greek aqueduct is still working. It was issued by the Syracusan dictator Hieron the first, and accomplished at the end of the fifth century b.C. It conveys part of the waters of the Anapo River and its main tributary, the Calcinara River, towards the town of Siracusa. The Greek aqueduct consists of a tunnel, on average 180 cm high and 80 cm broad, carved into the limestone along the left side of the above mentioned rivers. One of its branches, feeds until now the fountains of the Nymphaeum, above the Greek theatre of Siracusa. In the Hellenistic period, the scenes in the theatre were moved by means of water engines connected with the Nymphaeum.

The area between the Anapo and Calcinara Rivers includes the Necropolis of Pantalica, left by local settlers ("Siculi") that inhabited that area between 1200 and 700 b.C.. The name Pantalica is probably derived from the Arabic word "Buntharigah" that means "cave". This word is certainly referred to the thousands of tombs carved in the rock faces along the flanks of the valleys. In the topmost part of Pantalica, there is the basement of a building, the "Anaktoron", consisting of a big megalithic structure with a layout similar to that of the Mycenaean palaces. The Anaktoron originated a big archaeological debate on its function, still unknown. The most probable hypothesis looks at the Anaktoron as a fortified granary. The area of Pantalica was also inhabited during the early Medieval Age, as testified by the Byzantine rupestrian villages and by the small rupestrian sanctuaries dedicated to "St. Nicolicchio" and "St. Mucidario" and by the so called "Cave of the Christus' Cross".

6. Faunistic notes

Palaeontological researches indicate that many macromammals were present in the Hyblean territory until the beginning of Pleistocene; records of cave bears (*Ursus spelaeus spelaeus*), cave hyenas (*Crocuta crocuta spelaea*), dwarf rhinoceros (*Rhinoceros merckii*), dwarf elephants (*Elephas falconeri*), leopards (*Panthera pardus*), wolves (*Canis* cf. *mosbachensis*), aurochs (*Bos primigenius*) have been found. During Roman age, the red deer (*Cervus elaphus*) and the fallow deer (*Dama* sp.) were still surviving. Up to the 1885, the monk seal (*Monachus monachus*) was recorded in the many marine caves. At present, among macromammals, only few wild boars (*Sus scrofa*), porcupines (*Hystrix hystrix*) and red foxes (*Vulpes vulpes*) survive in the Hyblean territory.

Micromammals are more abundantly represented: the edible dormouse (*Myoxis glis*), the garden dormouse (*Eliomys quercinus*), the Etruscan shrew (*Suncus etruscus*), the wood mouse (*Apodemus sylvaticus*), the house mouse (*Mus musculus*), the black rat (*Rattus rattus*), the hedgehog (*Erinaceus europaeus*) and three bat species (*Myotis myotis*, *Rhinolophus ferrum-equinum*, *Vespertilio serotinus*) are found.

Avifauna is very rich, consisting of both migratory and permanent species. In the past it must have been even more abundant, considering that, from 900 AC to the beginning of 1900, the trade of rock partridges (*Alectoris graeca*) and woodcocks (*Scolopax rusticola*) was one of the principal supporting activities for the Hyblean villages. Among birds we will note here the most significant species, starting with the many diurnal and nocturnal birds of prey, as the peregrine (*Falco peregrinus*), that nests on the high rocky cliffs of the canyons. Among the diurnal birds of prey, and besides the peregrine, ospreys (*Pandion haliaetus*), Eleonora's falcons (*Falco eleonora*), Montagu's harriers (*Circus pygargus*), buzzards (*Buteo buteo*) and sparrowhawks (*Accipiter nisus*) live here. Nocturnal predatory birds are the little owl (*Athene noctua*), the scops owl (*Otus scops*) and the barn owl (*Tyto alba*).

Migratory birds, which can be seen especially during spring, are mostly passerines, such as the song thrush (*Turdus philomelos*), the turtle dove (*Streptopelia turtur*), the woodpigeon (*Columba palumbus*), the nightingale (*Luscinia megarhynchos*), the bee-eater (*Merops apiaster*), the garden warbler (*Sylvia borin*), the swallow (*Hirundo rustica*), the house martin (*Delichon urbica*) and the hoopoe (*Upupa epops*). The main permanent species are house sparrows (*Passer domesticus*), blackbirds (*Turdus merula*), chaffinches (*Fringilla coelebs*), blackcaps (*Sylvia atricapilla*), Sardinian warblers (*Sylvia melanocephala*), goldfinches and greenfinches (*Carduelis carduelis* e *C. chloris*). Finally, many species of gulls (*Larus* spp.), nest on the high coastal cliffs.

Reptiles are represented by two species of geckoes (*Hemidactylus turcicus* and *Tarentula mauritanica*), three of snakes (*Coluber viridiflavus*, *Elaphe quatuorlineata*, and *Natrix natrix*), by the green lizard (*Lacerta viridis*) and by the very common lizard *Podarcis sicula*. Amphibians are represented by the edible frog (*Rana esculenta*), the green frog (*Hyla arborea*) and by toads (*Bufo bufo* e *B. viridis*).

The abundance of invertebrate species is largely unknown and even for the most popular families, i.e. coleopterans and lepidopterans, updated researches are lacking. Among beetles it is not rare to find the brilliant green rose chafer (*Cetonia aurata*) and *Tropinota hirta*, the rhinoceros beetle (*Oryctes nasicornis*) and the long-horned oak beetle (*Cerambix cerdo*). Among butterflies, the most striking species are the red admiral (*Vanessa atalanta*), the painted lady (*Cynthia cardui*), the swallowtail (*Papilio machaon*), the oleander hawk-moth (*Daphnis nerii*), the *Marumba quercus*, and the great peacock moth (*Saturnia piri*).

7. Syntaxonomic scheme

Quercetea ilicis Br.-Bl. 1947

Quercetalia ilicis Br.-Bl. 1936

Quercion ilicis Br.-Bl. 1936 em. Brullo, Di Martino & Marcenò 1977

Doronico-Quercetum ilicis Barbagallo, Brullo & Fagotto 1979

Ostryo-Quercetum ilicis Lapraz 1975

Pistacio-Quercetum ilicis Brullo & Marcenò 1985

Oleo-Quercetum virgilianae Brullo 1984

Erico-Quercion ilicis Brullo, Di Martino & Marcenò 1977

Mespilo-Quercetum virgilianae Brullo & Marcenò 1985

Pistacio-Rhamnetalia alaterni Rivas Martinez 1975

Oleo-Ceratonion Br.-Bl. 1936 em. Rivas Martinez 1975

Oleo-Euphorbietum dendroidis Trinajstić 1974

Salvio-Phlomidetum fruticosae Barbagallo, Brullo & Fagotto 1979

Hippocrepido-Bupleuretum fruticosi Brullo, Minissale, Scelsi & Spampinato 1993

Querco-Fagetea Br.-Bl. 1937

Populetales albae Br.-Bl. Ex Tchou 1948

Platanion orientalis I. & V. Karpati 1961

Platano-Salicetum pedicellatae Barbagallo, Brullo & Fagotto 1979

Crataego-Prunetea R. Tx. ex Rivas-Goday 1964

Prunetalia spinosi R. Tx. 1952

Pruno-Rubion ulmifolii O. Bolòs 1954

Rubo-Aristolochietum altissimae Brullo, Minissale, Scelsi & Spampinato

Cisto-Micromerietea Oberd. 1954

Cisto-Ericetalia Horvatic 1958

Cisto-Ericion Horvatic 1958

Helichryso-Ericetum multiflorae Brullo, Minissale, Scelsi & Spampinato 1993

Lygeo-Stipetea Rivas-Martinez 1978

Hyparrhenietalia Rivas-Martinez 1978

Avenulo-Ampelodesmion mauritanici Minissale 1995

Helichryso-Ampelodesmetum mauritanici Minissale 1995

Saturejo-Hyparrhenion hirtae O. Bolòs 1962

Hyparrhenietum hirta-pubescentis A. & O. Bolòs & Br.-Bl. in A. Bolòs 1950

Asplenietea trichomanis (Br.-Bl. In Mejer & Br.-Bl. 1934) Oberd. 1977

Asplenietalia glandulosi Mejer & Br.-Bl. 1934

Dianthion rupicolae Brullo & Marcenò 1979

Putorio-Micromerietum microphyllae Brullo & Marcenò 1979

Adiantetea Br.-Bl. 1948

Adiantetalia Br.-Bl. ex Horvatic 1934

Adiantion Br.-Bl. ex Horvatic 1934

Eucladio-Adiantetum Br.-Bl. 1952

- Adiantum-Cratoneuretum commutati* Privitera & Lo Giudice 1986
Adiantum-Cratoneuretum filicini Brullo, Lo Giudice & Privitera 1989
Homalio lusitanicae-Adiantetum Puglisi 1994
Thamnobryo-Phyllidetum scolopendrium
- Phragmiti-Magnocaricetea** Klika in Klika & Novac 1941
- Nasturtio-Glycerietalia** Pignatti 1953
- Glycerio-Sparganion** Br.-Bl. & Sissing in Boer 1942
Sparganietum erecti Philippi 1973
- Nasturtion officinalis** Géhu & Géhu-Franck 1987
Helosciadietum nodiflori Br.-Bl. (1931) 1952
- Phragmitetalia** (W.Koch 1926) em. Pignatti 1953
- Phragmition communis** W.Koch 1926
Scirpo-Phragmitetum W.Koch 1926
Phragmitetum communis (W.Koch 1925) Schmale 1939
Typhetum angustifoliae (Allorge 1921) Pignatti 1953
- Magnocaricetalia** Pignatti 1953
- Magnocaricion elatae** W.Koch 1926
Cyperetum longi Micevski 1957
- Potametea pectinati** R. Tx. & Preising ex Oberd. 1957
- Parvopotametalia** Den Hartog & Segal 1964
- Zannichellion pedicellatae** Schaminée *et al.* 1990 em. Pott. 1992
Zannichellietum obtusifoliae Brullo & Spampinato 1990
- Plathypnydio-Fontinaletea antipyreticae** Philippi 1956
- Lepidodictyetalia riparii** Philippi 1956
- Fontinalion antipyreticae** W. Koch 1926
Fontinaletum antipyreticae Kaiser 1926
- Plathypnydion rusciformis** Philippi 1956
Oxyrrhinchietum rusciformis Gams ex v. Hubschmann 1953

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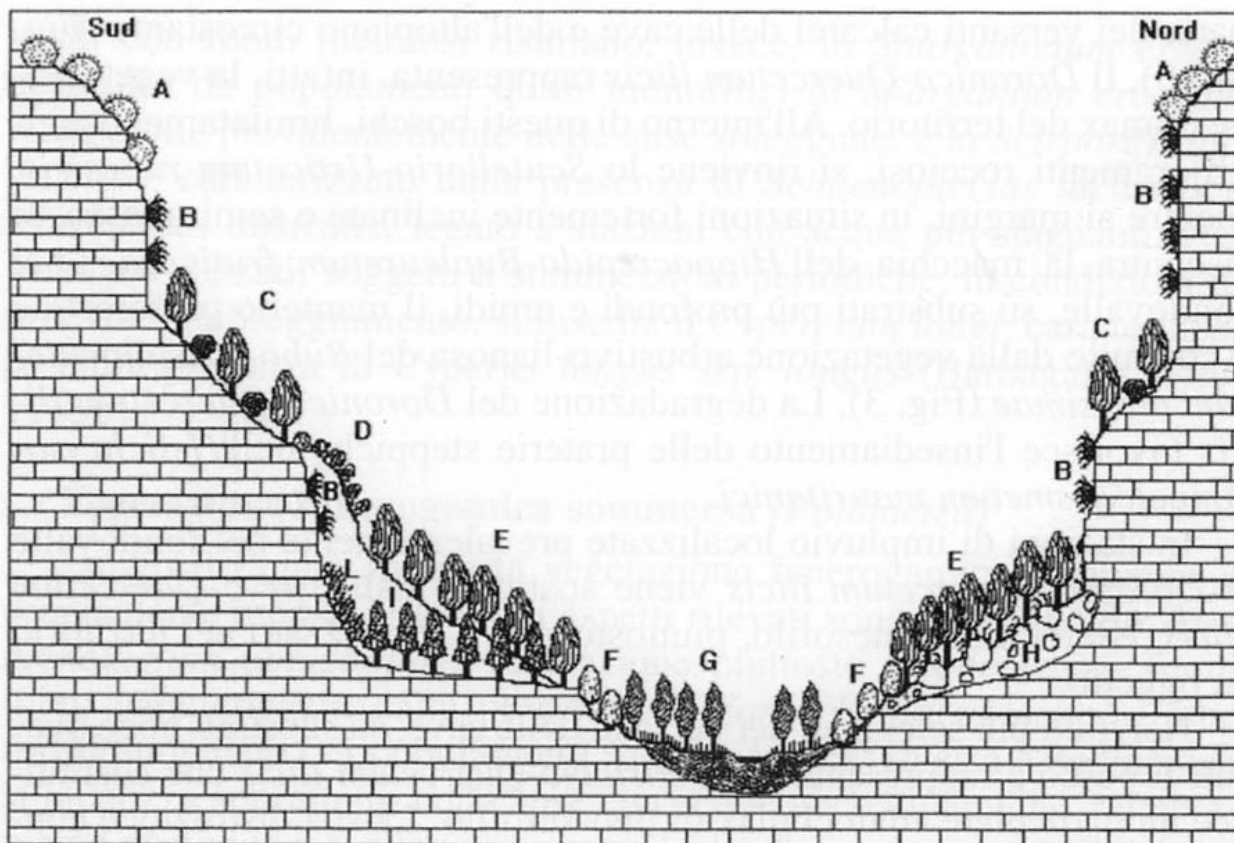


Fig. 3 - Transetto della vegetazione della Valle dell'Anapo. A - *Oleo-Euphorbietum dendroids*; B - *Putorio-Micromerietum microphyllae*; C - *Pistacio-Quercetum ilicis*; D - *Helichryso-Ericetum multiflorae*; E - *Doronico-Quercetum ilicis*; F - *Hippocrepido-Bupleuretum fruticosae*; G - *Platano-Salicetum pedicellatae*; H - *Scutellario-Urticetum rupestris*; I - *Ostryo-Quercetum ilicis*; L - *Rubo-Aristolochietum altissimae*.

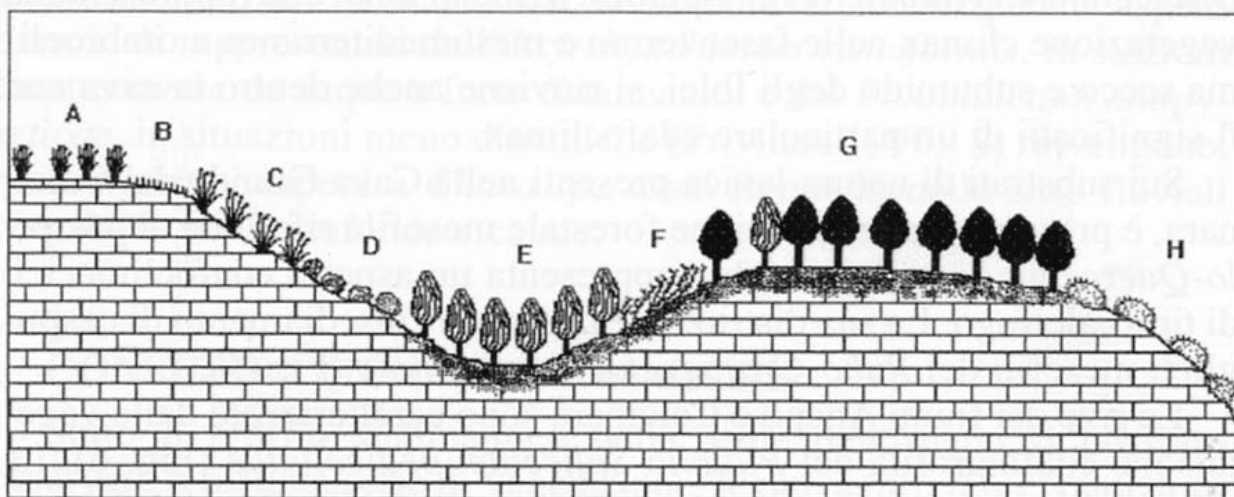


Fig. 4 - Transetto della vegetazione presso Cava Grande del Calcinara. A - *Mespilo-Quercetum virgilianae*; B - *Pistacio-Quercetum ilicis*; C - *Doronico-Quercetum ilicis*; D - *Platano-Salicetum pedicellatae*; E - *Scutellario-Urticetum rupestris*; F - *Rubo-Aristolochietum altissimae*; G - *Hippocrepido-Bupleuretum fruticosae*; H - *Putorio-Micromerietum microphyllae*; I - *Helichryso-Ampelodesmetum mauritanici*; 1 - vulcaniti; 2 - calcari; 3 - alluvioni.

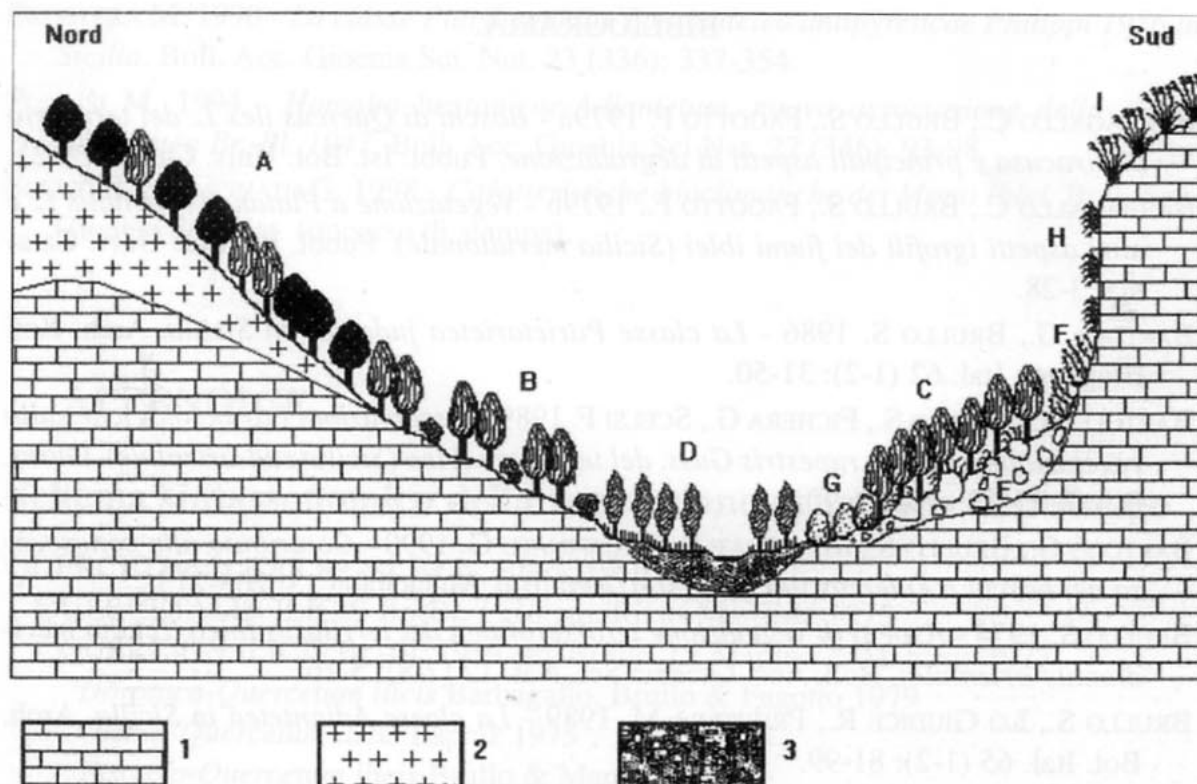


Fig. 5 - Transetto della vegetazione dell'altopiano prospiciente la Valle dell'Anapo. A - *Hyparrhenietum hirto-pubescentis*; B - *Trachynion distachyae*; C - *Helichryso-Ampelodesmetum mauritanici*; D - *Helichryso-Ericetum multiflorae*; E - *Doronico-Quercetum ilicis*; F - *Rubo-Aristolochietum altissimae*; G - *Oleo-Quercetum virgilianae*; H - *Oleo-Euphorbietum dendroidis*; I - *Hyparrhenietum hirto-pubescentis*.

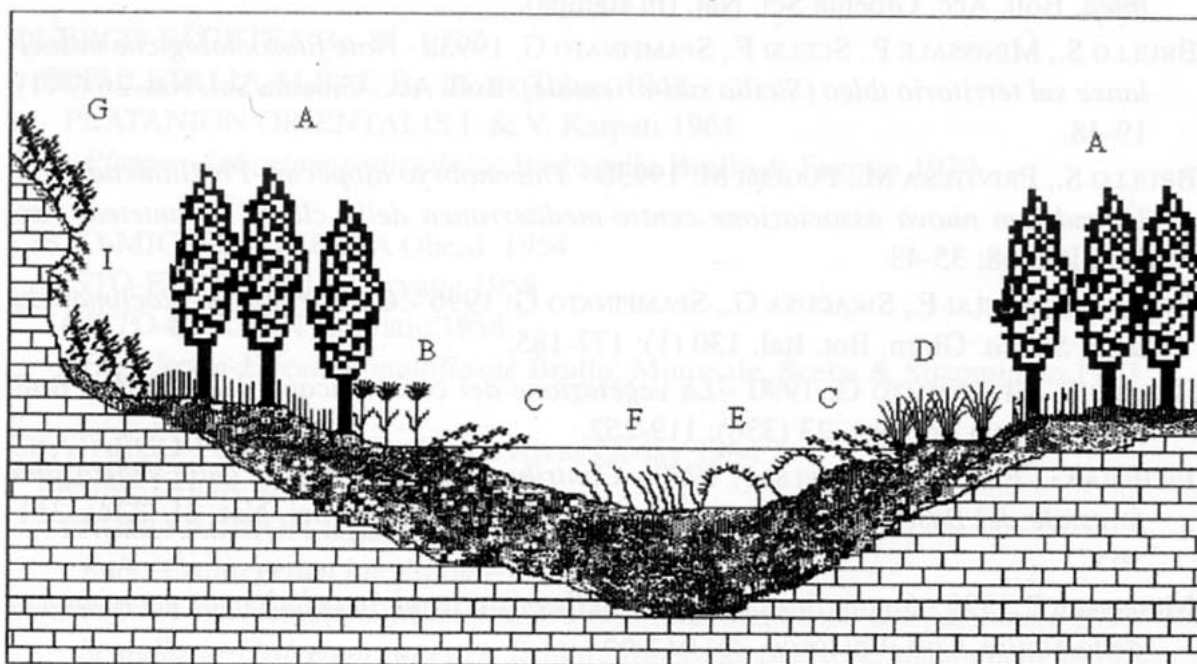


Fig. 6 - Transetto della vegetazione presso il corso del Fiume Anapo. A - *Platano-Salicetum pedicellatae*; B - *Cyperetum longi*; C - *Helosciadietum nodiflori*; D - *Sparganietum erecti*; E - *Oxyrrhynchietum rusciformis*; F - *Zannichellietum obtusifoliae*; G - *Rubo-Aristolochietum altissimae*; I - *Adiantion*.

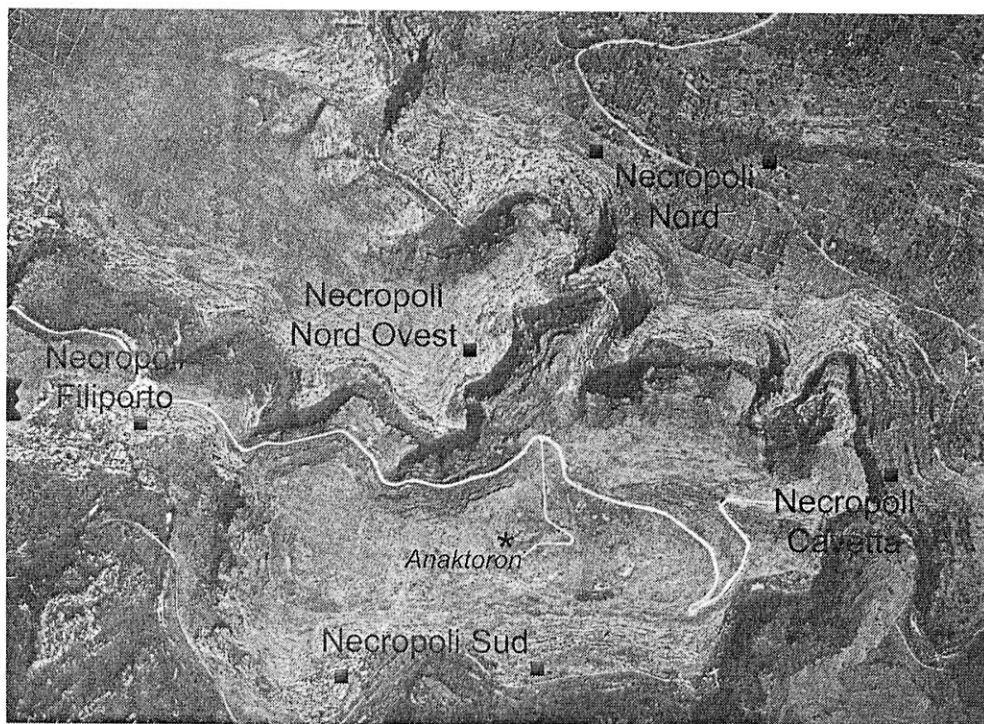


Fig. 1 – Foto area dell'area archeologica di Pantalica con indicazione dell'*anaktoron* e dei gruppi di necropoli (dopo Voza 1980).

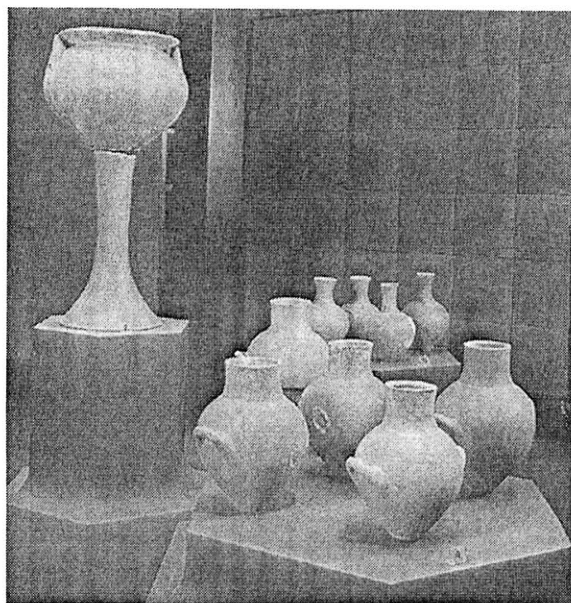


Fig. 2 – Vasi a stralucido rosso della cultura di Pantalica Nord dal Museo Paolo Orsi di Siracu-



Fig. 3 – Brocchetta della tomba 133 N di Pantalica (da LA ROSA

Pantalica - Pottery in Mycenaean style

Original Mycenaean pottery

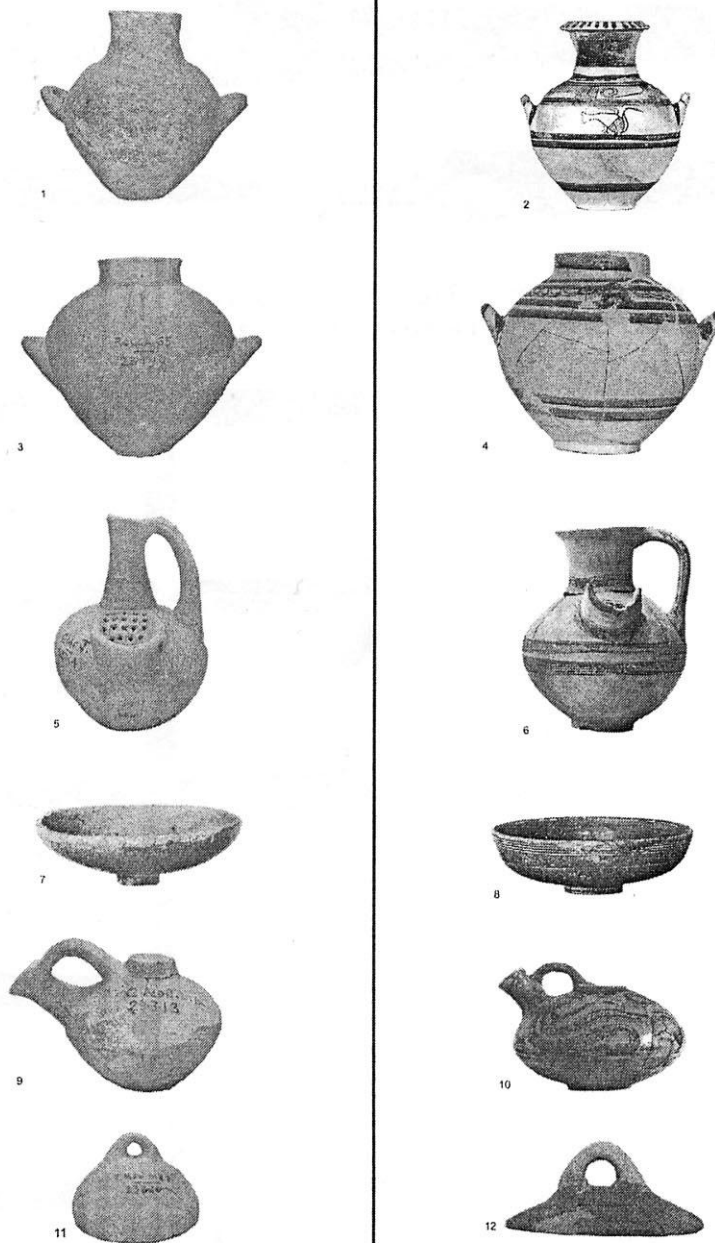


Fig. 4 –Tavola comparativa tra le sei principali forme di derivazione micenea della cultura di Pantalica Nord, in ordine a sinistra: anfora inv. 21263, hydria inv. 23199, teiera a crivello 23314, patera (ORSI 1912), askòs 23313, coperchio a campana inv. 23320, ed i corrispondenti prototipi micenei, a destra in ordine: FS 58, FS 64, FS 155 (DÖHL 1973), FS 208, FS 195, FS 335 (FURUMARK 1992).

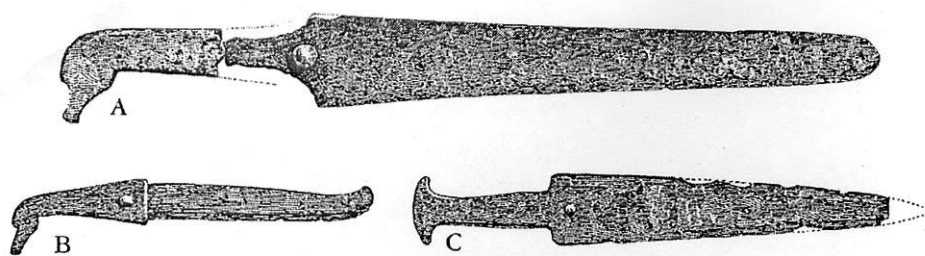
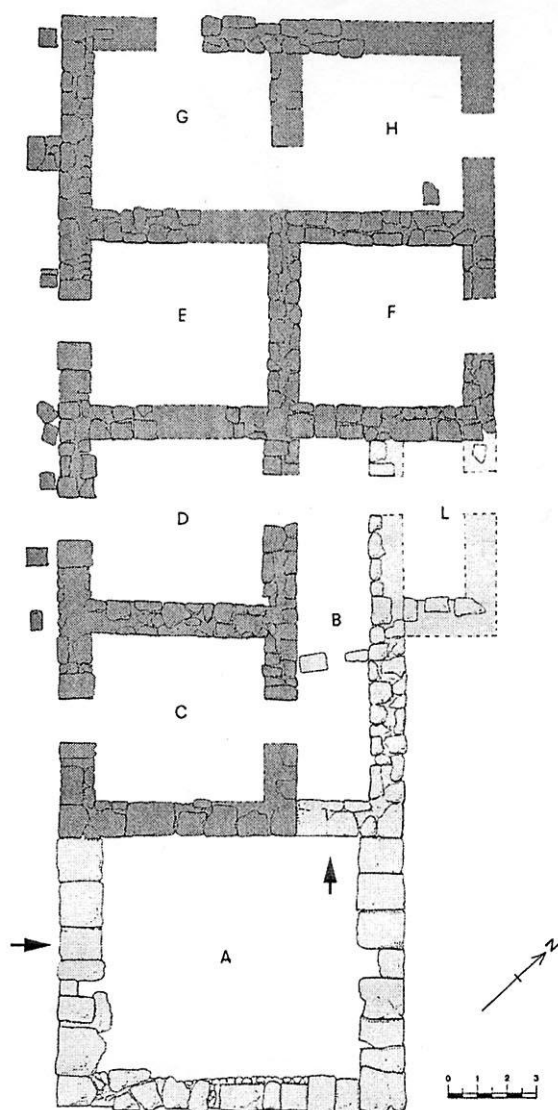


Fig. 5 – A) Spada dalla t. 68 N (ORSI 1899a); B) Pugnale dalla t. 8 N (ORSI 1899a); C) Spada miniaturistica di classe F Sandars dalla t. 48 N (ORSI 1899a).



Anaktoron: a building with a Mycenaean layout in Pantalica

Fig. 6 – Pianta dell'*anaktoron* di Pantalica con l'indicazione delle due principali fasi edilizie (dopo BERNABÒ BREA 1990).

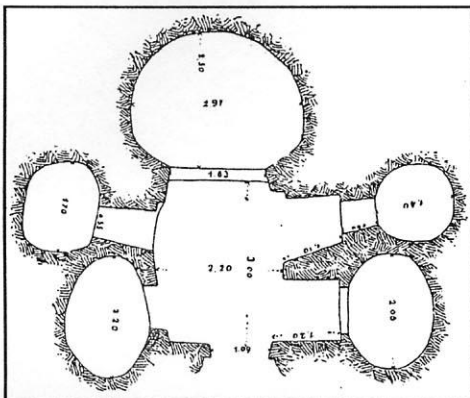


Fig. 12 - Pantalica, tt. 101-105 N (da ORSI 1899).

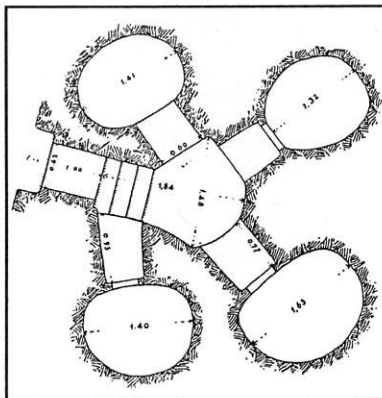


Fig. 13 - Pantalica, t. s.n. Cavetta (da ORSI 1899).

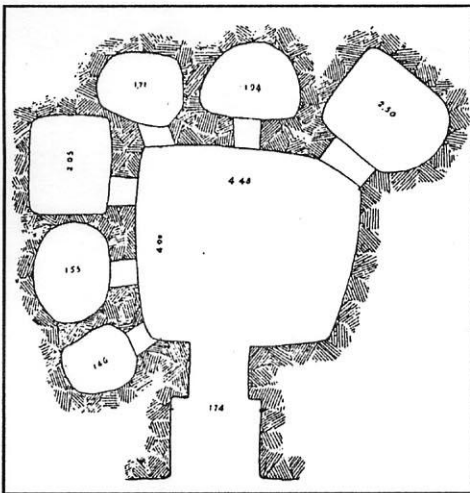


Fig. 14 - Pantalica, t. 56 N (da ORSI 1899).

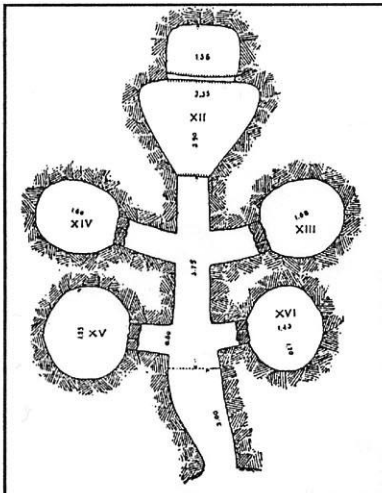


Fig. 15 - Pantalica, tt. 12-16 N
(da ORSI 1899).

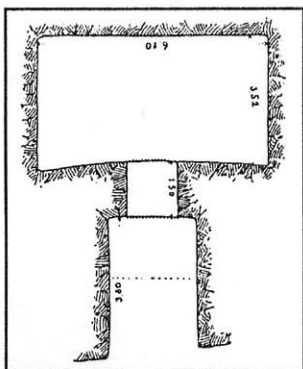


Fig. 16 - Pantalica, t. s.n.
NO (da ORSI 1899).

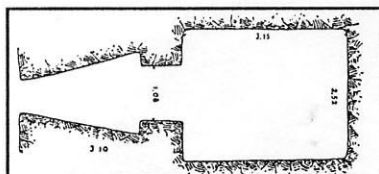


Fig. 17 - Pantalica, t. 22 NO (da ORSI