Landscape Archaeology in the Territory of Nikopolis

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Introduction*

The Nikopolis Project is an interdisciplinary archaeological investigation which has as its broad, general aim the explanation of the changing relationships between humans and the landscape they inhabited and exploited in southern Epirus, from Palaeolithic to Mediaeval times.[1] Specifically, the Project has employed intensive archaeological survey[2] and geological investigations[3] to determine patterns of human activity, and to reconstruct what the landscape was like in which those activities took place. This undertaking in landscape archaeology has led to new insights into the factors that underlie changes in human-land relationships, in some instances over a short time-span, but particularly over the long term.

There were annual field seasons during the summers of 1991-1994,[4] followed by study seasons in Epirus in 1995 and 1996; research and analyses of the primary data have continued since that time, along with the writing of reports. The survey zone (Figs. 1, 2) extends from the straits of Actium at the entrance to the Ambracian Gulf north to Parga, and from the Louros river gorge to the Ionian seacoast, including the entire *nomos* (administrative district) of Preveza, a modern town on the Nikopolis peninsula. On the east the survey zone extended along the northern coast of the Ambracian Gulf into the *nomos* of Arta, so that the deltaic, lagoonal area of the Louros river was included, but not the city of Arta (the ancient Ambracia). Since the survey zone is about 1,200 square kilometers, far too large an area for a complete intensive survey, we chose to sample each of the different environmental zones: coastal plains, inland valleys, mountainous terrain, and upland valleys. We were guided in our selection of areas to survey by acquired knowledge of the region, ranging from geomorphology to direct observation of current conditions of the landscape. The advice of our geomorphologists, for example, enabled us to avoid surveying areas of recent alluviation where ancient remains (if any) would have been covered over and not detectable, although we did survey some areas to test negative indications from geomorphology or satellite imagery. We did not select for survey fields so densely covered with vegetation that ancient remains, if there, could not be detected, but we did return to survey some such fields in another year or season when the vegetation was less thick. The field work included both "siteless" and on-site survey, involving transects within large regions and intensive sam-

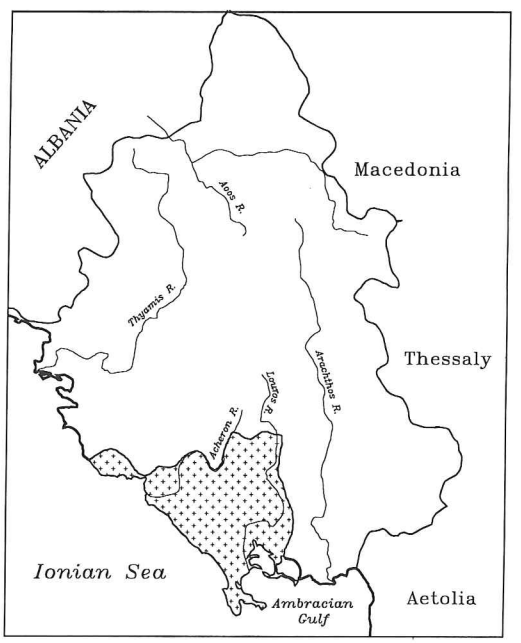


Fig. 1. Map of Epirus with adjacent regions; the survey zone is marked by crosses.

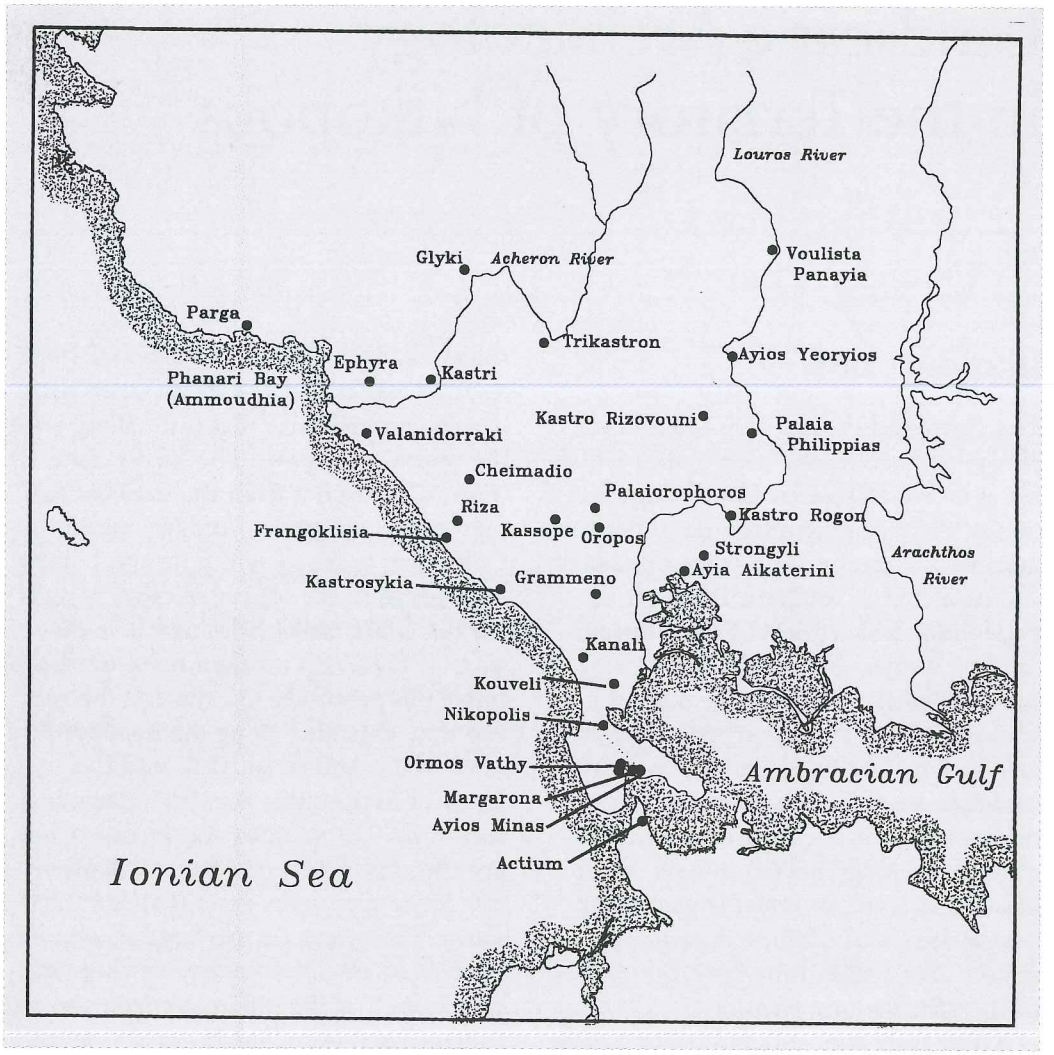


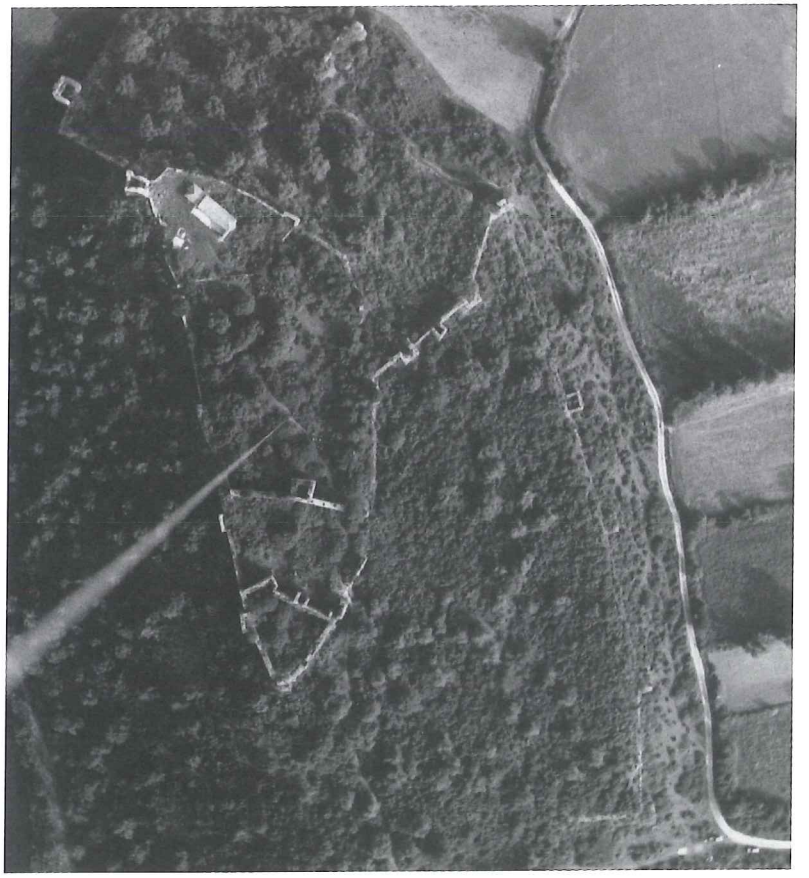
Fig. 2. Map of project area with selected sites discussed in text.

pling, or complete coverage, of human-activity areas ranging from small single-activity sites to extensive settlements. In addition, one fortified town site (Kastri, in the lower Acheron valley) was selected for complete, intensive urban survey.[5]

Multispectral (MSS) and panchromatic imagery of the survey zone, acquired from the French satellite company SPOT prior to field work in 1991, proved useful in a variety of ways. As a component-layer in some of the computer-aided maps we have generated as part of the Project's Geographic Information System (GIS), it adds details of current landcover and other features of the terrain (Fig. 3). The imagery was also helpful in defining zones for surface survey, but we had little success with it in developing spectral signatures[6] of archaeological features. A major problem was that the smallest detectable feature of the imagery (that is, its resolution) was 20 m in MSS and 10 m in panchromatic, too large for most archaeological features, although the resolution was at the smallest scale available for our research at the time. Because of the resolution and the inability of this type of sensor to penetrate dense vegetation, which covered much of our survey zone, we had not expected the imagery to be of significant value in the detection of ancient sites. The imagery was able, however, to detect eroded Pleistocene landscapes, which our field teams then located on the ground with the aid of Global Positioning System (GPS) units[7] and 1:5,000 topographic maps; prehistoric stone tools were found by ground-truthing teams at five areas visited in this manner (Stein and Cullen

Fig. 4. Kastro Rogon, the ancient Bouchetion. View from a tethered blimp at elevation of ca. 600 m. North is at the top of the photo. Photo by J. Wilson and Eleanor Emlen Myers.

Fig. 3. Northern SPOT satellite mage. The Acheron and the Louros, the two principal rivers of the project area, have been enhanced.



1994; Wiseman 1996). Other types of remote sensing, especially aerial photography and geophysical prospection, also were employed by the Project, and proved to be of significant value, as discussed below, for the study of all time periods.

The Nikopolis Project takes its name from the Roman imperial urban center of the region, a central concern of this conference. In this paper I focus on some of the results of the survey that contribute to an understanding of the changes that took place from Hellenistic and Roman times to the Mediaeval period, and on the methodologies and techniques employed by the Nikopolis Project.

North Coast of the Ambracian Gulf

A flat, partly deltaic plain extends south from the abrupt ends of Mt. Rokia and Mt. Stavros (west of Rokia) some 12 km to the swampy north shore of the Ambracian Gulf, which is separated from the main body of water by a series of lagoons. The plain stretches further northwest and west to Mt. Zalongo and the Nikopolis peninsula. The three mountains terminate a series of Mesozoic limestone ridges, separated by fertile basins, that served as natural corridors of varying convenience for traveling between north and south in Epirus and which were open both in prehistoric and historical times. The easternmost corridor within our survey zone is the gorge of the Louros river, which now, at its exit from the gorge, curves sharply to the northwest and follows the edge of Mt. Rokia for some four km before turning west and finally almost due south to empty at last into the gulf by the Tsokalio lagoon, less than four km northeast of the Mazoma, as the embayment by Nikopolis has been called since the early 9th century (Soustal 1981, 204). The plain now is widely cultivated, both drained and irrigated by a series of canals, some of which were dug as recently as the 1960s. The most imposing site in the region is Kastro Rogon (S/S91-1), the ancient Bouchetion, a fortified town on a low elevation

above the right bank of the Louros near the foot of Mt. Rokia. The earliest remains found date to the 6th century B.C., but the town may have existed earlier; it is one of four colonies founded in Epirus by the southern Greek city of Elis.[8] Its well preserved Classical fortifications were successively refurbished and expanded in Hellenistic and Medieval times, and have now been documented by the Project in aerial photographs at different elevations from a tethered blimp (Fig. 4).[9] Another important site, a Roman villa and Hellenistic farmstead, lies about 3.2 km to the southwest at the northern foot of Mt. Mavrovouni near the village of Strongyli (S/S91-10).[10] The Nikopolis Project conducted repeated surveys at, and in the vicinity of, both sites. The earlier site at Strongyli was probably a fortified farmstead of the 2nd century B.C.; the lower part of a tower with handsome trapezoidal masonry on the exterior and with interior rooms constitutes the principal visible remains of the farm. During the first three centuries of the Roman Imperial period, a large villa estate with mosaic floors in the main building, a bath house, and facilities for the production of olive oil (Fig. 5) covered the low elevation above the tower.[11]

A program of geologic coring and geomorphologic studies by Zhichun Jing and Rip Rapp in this region, coupled with archaeological survey, had some rather startling results. Jing and Rapp have shown that the period from about 2,500 B.C. until the 5th century A.D. was a time of maximum marine transgression in the Ambracian embayment, so that the north shore of the gulf lay at the foot of Mts. Stavros and Rokia, and there was no floodplain (Fig. 6). Mt. Mavrovouni, including the Hellenistic farmstead and early Roman villa at its foot, was the largest island in the bay, and even the hill of Bouchetion was a small island, 65-75 meters above sea level, separated from the mainland by a narrow stretch of water, which could have been bridged. A smaller island (elev. 54 masl) southwest of Strongyli, where there is a church of Ay.

Fig. 5. Olive mills at villa of Strongyli.

Aikaterini (S/S92-31), also was inhabited both in Roman times and in Late Antiquity. The Louros river during that period flowed directly into the sea northeast of the modern village of Nea Kerasous on a foothill of Mt. Rokia. The infilling of the embayment began by the 5th century when tectonic uplift of the Nikopolis peninsula, in progress for millennia, at last began to accelerate erosion already being caused by cultural factors along the western side of the gulf. At about the same time, as relative sea level had ceased to rise, the sediments carried by the Louros (perhaps in greater quantity) began to form a deltaic plain so that the mouth of the river moved progressively further to the south and southwest. Jing and Rapp have also shown that sometime between the 10th and the 15th century, after much of the northern and western part of the embayment had became swampy marshland and lagoons, the Louros was diverted by human means into its current channel, running north alongside Kastro Rogon (see Fig. 4) and following the course described in the preceding paragraph.[12]

The diversion of the river's course served two purposes: it drained part of the coastal swamp, thereby providing additional farmland, and it provided a canal, navigable by small ships, between the Ambracian Gulf and Rogoi, as Bouchetion was called by (at least) the late 9th century (Soustal 1981, 251-252). The new channel enabled Rogoi to become a harbor town as it had been during Greek and Roman times when, as Bouchetion, it lay on the edge of the open water of the bay. It served then as a commercial port, small though it was, linking sea-borne traffic

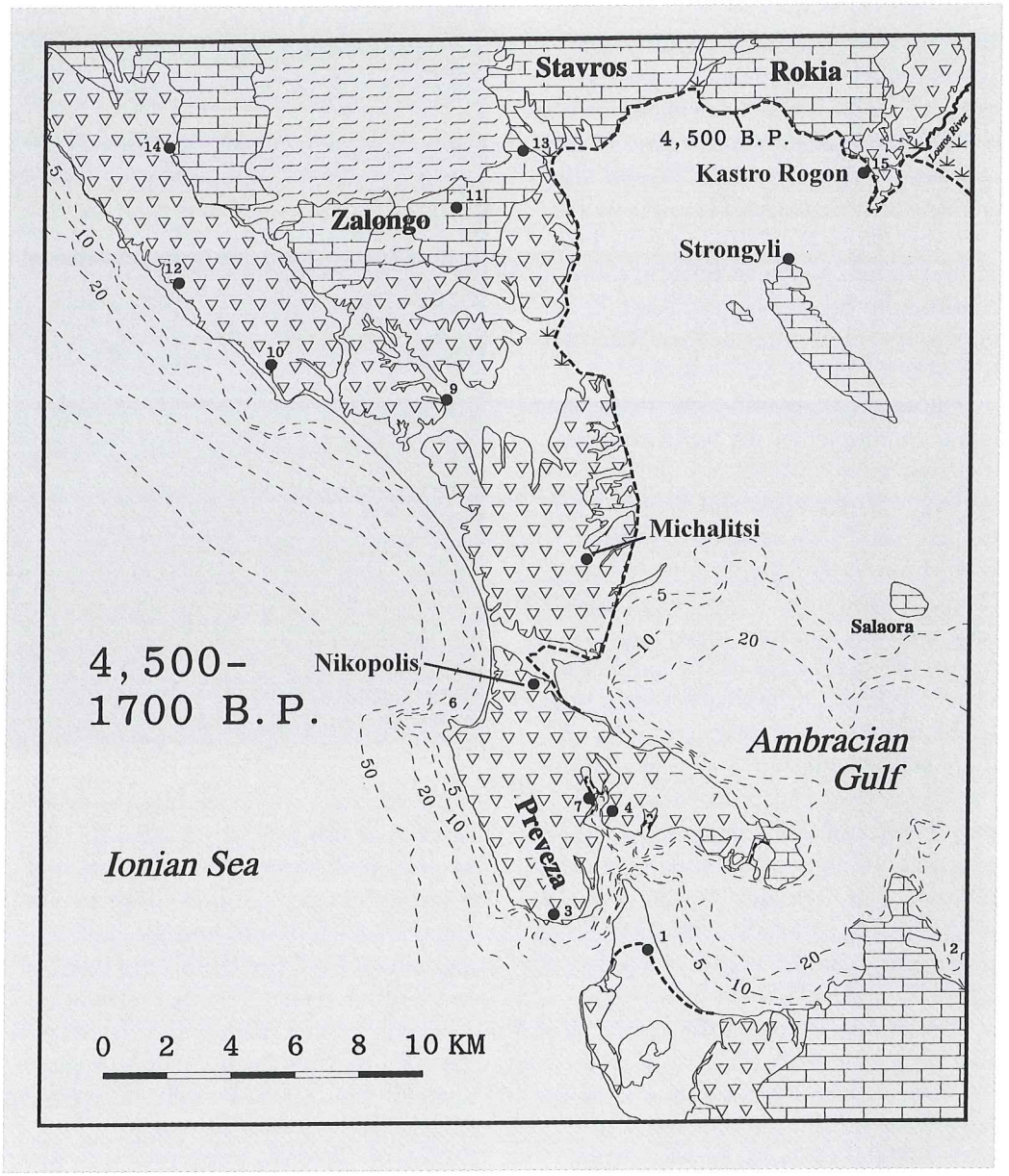


Fig. 6. Map of north coast of Ambracian Gulf: Maximum Marine Transgression, 2500 B.C. to 300 A.D. Map by Zhichun Jing and George (Rip) Rapp, Jr.

with the inhabitants scattered among the inland valleys and along the fringes of the flood plain. The town ranked above Arta in the 10th-12th centuries and remained a major city on the north shore of the gulf until Preveza, founded in the late 13th century and refounded by the Turks in the late 15th century,[13] superseded it as a seaport and administrative center, as Arta had as both an ecclesiastical and administrative center. Rogoi for awhile was the repository of celebrated holy relics. In 1436 Cyriacus of Ancona visited Rogoi, where he saw both the remains of St. Luke the Evangelist and the head of Anna, mother of the Virgin Mary, and on St. Luke's day (18 October) in 1448 he went from Arta to Rogoi expressly to pray to St. Luke.[14] The relics of St. Luke had been brought by ship to Rogoi by a French captain who had stolen them during the sack of Constantinople in 1204; they remained at Rogoi by orders of the Duke of Kephallenia who purchased them from the Crusader.[15] The occasional details provided by Cyriacus of his travels along the northern coast of the Ambracian Gulf reveal that the Louros (which he consistently called the Acheron) had been diverted before his first visit in 1436.[16] It seems likely, further-

more, that the new river channel was in place by 1204, inasmuch as the French captain sailed to Rogoi and (expressly) stopped "in the harbor."[17] Although there is no mention of the Louros river in the original Greek account, the French captain must have navigated his ship up the new channel to Rogoi because the bay around Rogoi had been filled in some centuries before, as Jing and Rapp have shown, and the Louros did not flow by Rogoi until after it was diverted.

The increasingly unhealthy, unpleasant living conditions on the north shore of the Ambracian Gulf that accompanied the infilling of the embayment beginning in the late 4th or 5th century, combined with the arrival of the Slavs in Epirus in the 6th century and a recurring pestilence (discussed below), were likely major factors in the sharp drop in the number of sites of all kinds in southern Epirus from Late Antiquity to Mediaeval times: and there is little evidence for occupation in the 7th and 8th centuries. Most of the new Mediaeval foundations were ecclesiastical communities, and often they were not placed in the older Roman towns. We might consider the possibility that some of them were founded as part of a policy of agricultural development in a largely abandoned landscape. In the coastal area of the Ambracian Gulf, Rogoi was revived, as we have seen, and was a bishopric by the late 9th century;[18] the monastery of Kozyle above the western edge of the new marshy plain was founded in the 10th or early 11th century;[19] the monastery of Ay. Varvara at the foot of Mt. Stavros near the modern town of Stephani, and close to the right bank of the Louros, was built in the 12th century above the ruins of a 6th-century church;[20] and the monastery at Pantanassa in the Louros river gorge near its mouth was founded in the 13th century.[21] It may be possible to view the diverting of the Louros river – perhaps in the late 9th or early 10th century, and no later than the end of the 12th century – as part of a larger, long-term effort, guided by the ecclesiastical communities, to bring economic life back to the land by the establishment of fisheries in the lagoons;[22] by diverting and controlling the Louros and possibly constructing other canals to convert the coastal swamp into productive agricultural land; and by making Rogoi a river port. A similar role for ecclesiastical communities in a sparsely populated landscape has recently been noted in Anglo-Saxon Britain, in the Po Valley of Italy, and in other parts of western Europe (Balzaretti 1996; Wiseman 1997, 14). Indeed, the role of ecclesiastical communities in the revival of the countryside and the rise of urbanism in western Europe, is currently a topic of active scholarly debate. The results of our survey in southern Epirus suggest that Greece may make some contributions to that debate.

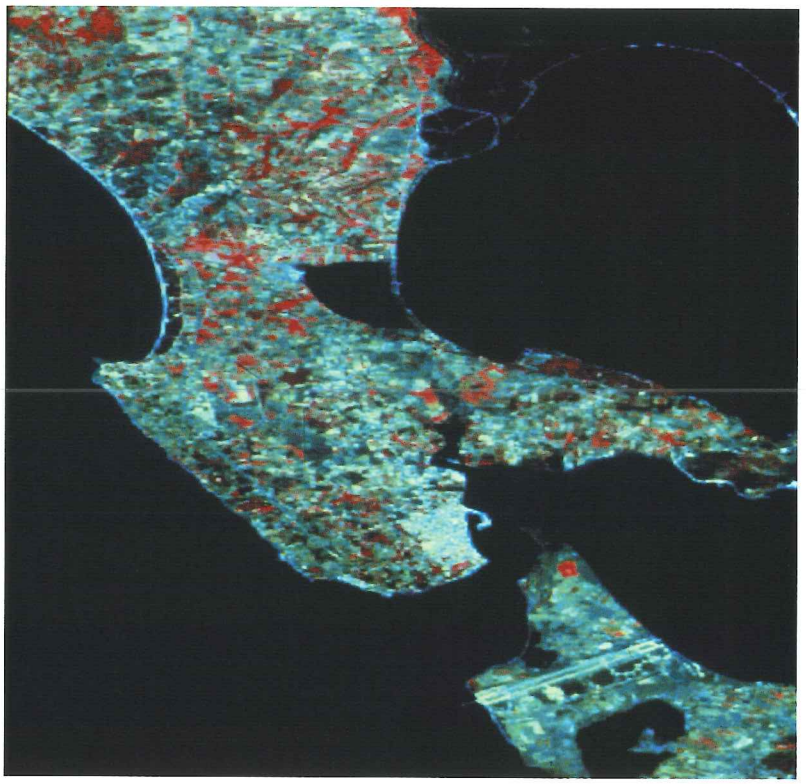


Fig. 7. SPOT satellite image of the Nikopolis peninsula and the Straits of Actium.

P. N. Doukellis (1990) found traces of centuriation in the orientation and size of fields in the plain of Arta and extending at least to the mouth of the Louros gorge; he associated the cadastral arrangements with the founding of Nikopolis.[23] Noting that some of the drainage canals in the central and western plain follow the same orientation as that of his proposed centuriation,

he suggests that the Roman founders of Nikopolis also undertook the draining of swamps in the plain. Although he shows on his overall map of the plan (his Map 3) only scattered traces of the cadastral orientation in the western part of the plain, he seems inclined to extend the network at least to include the Roman villa at Strongyli (Doukellis 1990, 275). Since the geologists and archaeologists of the Nikopolis Project did not extend their investigations east of the survey zone, we cannot speak with authority about Doukellis's claims for the central and eastern plain. The Arachthos river, however, does have a much heavier discharge than the Louros,[24] so that alluviation in the eastern part of the north shore presumably began earlier and proceeded at a more rapid pace than in the west. If the southeastern part of the plain had formed by the late 1st century B.C., as Doukellis believes, the founding of Nikopolis would have provided a reasonable occasion for the centuriation. Intrigued by his hypothesis, and considering it possible that Roman surveyors might have extended centuriation lines across the water to include the island of Mavrovouni, we sought traces of the cadastral arrangement in radar imagery acquired in 1998 from Canadian RADARSAT. Using a variety of filtering techniques on the imagery, Cordula Robinson of Boston University's Center for Remote Sensing, in collaboration with Carol Stein and Wiseman, found that the orientation of field boundaries along Mt. Mavrovouni and in the area of Strongyli, as well as some roadways and canals in the area, do indeed follow the approximate orientation Doukellis noted (Wiseman, Robinson, and Stein 1998). The orientation, however, is about the same as the line of the ridge of Mavrovouni, the dominant topographic feature of the region, which should be expected to have influenced the orientation of field boundaries on its slopes and at its foot. What is more, the module of 710 m could not be found. The orientation of Mediaeval and modern field boundaries or other features in the reclaimed marshland of the Louros delta could have been influenced by a pre-existing network in the plain of Arta, but further work is needed for confirmation. It would be particularly useful to have a geomorphologic study of the plain of Arta to determine its extent at different times from antiquity to the present. We did detect shadow lines in the radar imagery that appear to be the course of the Louros river before it was diverted, as well as the possible shoreline, but the latter certainly requires confirmation by a coring program extending into the plain of Arta.

The Nikopolis Peninsula

The Nikopolis peninsula (Fig. 7) is connected to the mainland by a low-lying isthmus, currently only 2.3 km wide, which was an open channel connecting the Ionian sea and the Ambracian Gulf during prehistoric periods of maximum marine transgression (before ca. 6000-7000 B.P), but by Roman times was narrower even than it is today. Continuous tectonic uplift of the peninsula and erosion of the hillsides to the north have combined to move the eastern shoreline further east; as a result, during Roman times the Mazoma embayment may have extended 500 meters or more inland (Jing and Rapp 2000, in press), and could have served Nikopolis as a small harbor close to its north wall. Ships coming from the Ionian Sea, however, after passing thorough the Actium Straits would have had to sail around the Ay. Thomas peninsula, which extends some 6.5 km eastwards into the gulf, before they could enter it. A far more important harbor for Nikopolis lay along the shores of Ormos Vathy (="Deep Harbor"), a two-pronged inlet on the south side of the Ay. Thomas peninsula at its juncture with the Nikopolis peninsula. Jing and Rapp (2000, in press) have shown that the western prong in Roman times extended further inland towards Nikopolis, and archaeological survey teams of the project have found extensive remains of settlement throughout the Roman period and Late Antiquity all along the shores of

Ormos Vathy. The Project has identified the main harbor town (SS93-8), whose ancient identity is unknown, on the west bank of Ormos Vathy, about 2.5 km south of Nikopolis, covering more than 16 ha. and probably extending under buildings of the northeastern suburb of Preveza. Special activity areas within the harbor town discovered by the Project include a locus for extracting purple dye[25] and storage facilities by the harbor. On the shore opposite the southern end of the harbor town stood a large Roman bath (SS93-24), perhaps drawing its water from a nearby spring that still supplies visitors to the area. The substantial ruins of the bath are around and under the Church of Zoodhochos Pygi and a taverna along the shore below a resort hotel; the region, called Margarona, is reached now by a bridge across the entrance to Ormos Vathy from the Preveza side. There is some architectural evidence for an earlier (Late Antique) church below the modern church, but excavation would be required to confirm this hypothesis.

The entire Ay. Thomas peninsula received much attention from the Project's survey teams and is discussed at length by Carol A. Stein in another paper presented at this conference. As an additional observation on the utility of remote sensing and GIS in survey, however, I note here that her plotting of some of the archaeological activity areas surveyed by the Project fall along lines that provide some supporting evidence for the centuriation of the Nikopolis peninsula, including Ay. Thomas, as proposed previously by scholars making use of aerial photography (Cladas 1975; Doukellis 1988).

Michalitsi and Areas North of the Nikopolis Peninsula

The largest Greek-period town discovered in the vicinity of Nikopolis lies north of the peninsula on Kouveli hill (SS93-12), reached by a major road that served travelers from at least Classical Greek times through the Turkish period. The road ascended from the region of the Mazoma and along the hill of the Augustan Victory Monument, to run along the north-south ridge known as Palaiosteno from which both the sea and the gulf are often visible; it is still used to provide access to farmlands, especially those on the slopes of the eroded hills, including Kouveli, that descend eastward to the plain of Grammeno and the north shore of the Ambracian gulf, to which the old road eventually led. The road, especially on Palaiosteno, was lined with ancient graves, many of which must have been for the inhabitants of the site at Kouveli; another major cemetery of Classical to Hellenistic times lies on the lower slopes to the southeast in a region known as Marathia (SS93-19) on the outskirts of the modern town of Michalitsi, where built tombs in family plots, one marked by a marble statue of a lion, were excavated in the 1960s and 1970s.[26] The town itself was centered on the upper slopes of Kouveli and was occupied at least from the Archaic period through Hellenistic; during the Roman period and Late Antiquity; Mediaeval and post-Mediaeval material (a Turkish-period pipe, diagnostic glazed sherds) was also found, especially on and near the peak. The region was intensively surveyed (Fig. 8),[27] and over 13,000 artifacts were counted.

Much work was focused on defining the nature and extent of the site, as the effects of erosion and slope wash, identifiable by visual examination, became evident in artifact densities, which were consistently lower downslope. From the site itself it is possible to see that the natural drainage of the entire Michalitsi area is towards the lagoonal area of the Ambracian Gulf, and there can be no doubt that much of the infilling of the western portion of the bay was from deposits of these hills that washed and slid down the slope. One memorable example that illustrates some aspects of the process is at a brick factory, abandoned some 15-20 years ago, located just off the main paved road from Preveza to Arta, about 500 meters west of the turnoff to Michalitsi. In the clay quarry behind the factory in 1995, I observed a landslide running west to east was carry-

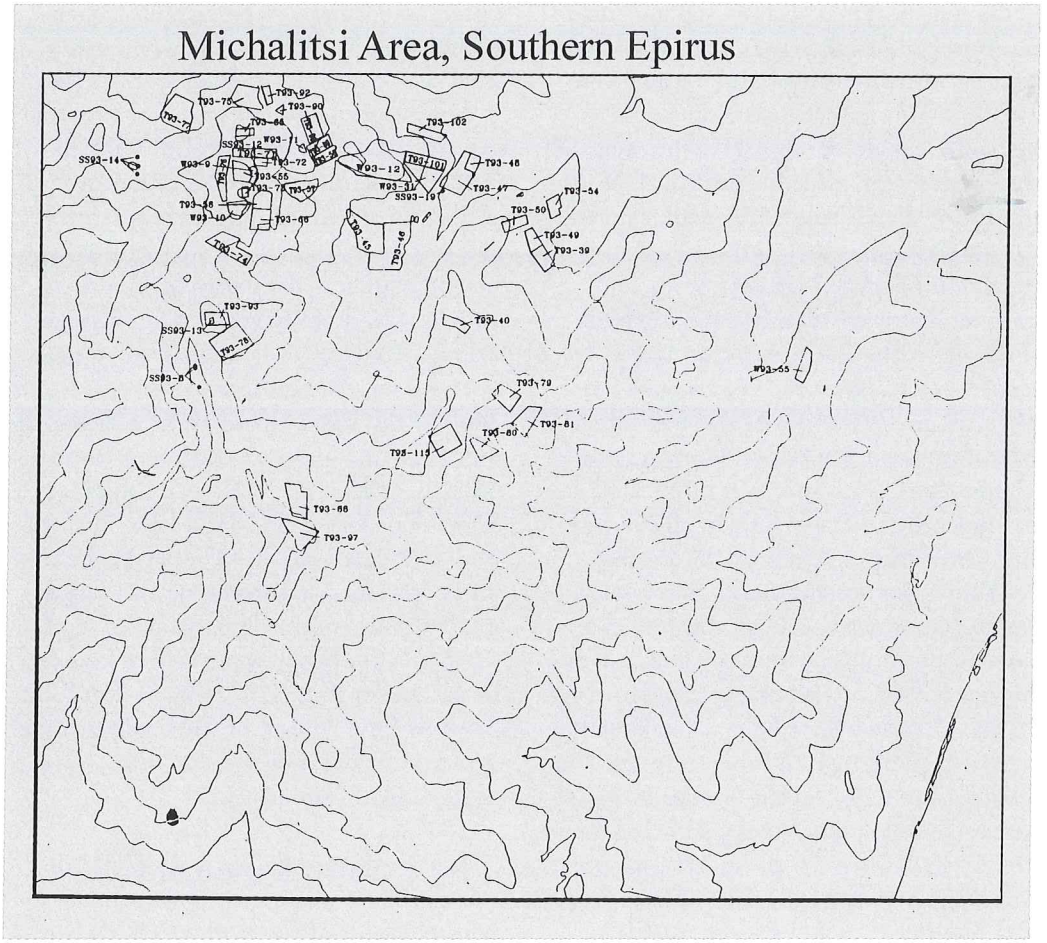


Fig. 8. Kouveli site near Michalitsi. AutoCAD drawing showing contour lines and locations of survey units.

ing shrubs and even olive trees with it, creating a new slope in the quarry on its way to the bay. On a visit to Kouveli itself with some of the senior staff in 1995 we noted that a farmer had recently brought earth (along with potsherds!) from some other place to create a small garden. Unfortunately, as Tjeerd van Andel pointed out to us, the farmer had placed his garden on the edge of an active gully, and within a few years the new earth, and the potsherds, will wash away down the gully to the lower slopes. In other areas terrace walls retain planted fields, and they will retard erosion, but only so long as someone tends the walls. These observations may serve as an example of how ancient material from one place gets transferred to another, and then by erosion to yet another place; the example also illustrates the problems of interpreting the significance of a limited amount of cultural material found on the surface of the ground any place. It is critically important to try to understand the factors, whether geomorphologic or cultural or other, that may have influenced the location of cultural artifacts observed or collected in archaeological survey. The evidence from the site at Kouveli points to an area of about 6,125 square meters, which does not include outlying sites, such as a habitation area some 350 m to the south, or the cemeteries. Few remnants of structures were visible above ground, and there was no trace of a town wall.[28] Artifact distribution revealed little about special-activity areas. Magnetometer survey, on the other hand, was conducted in 1993 by John Weymouth (University of Nebraska) in two areas near the peak where some 40 pieces of iron slag had been collected on the surface. He detected in one field five significant anomalies, suggesting smelting activities and possibly an associated structure at depths of 2-3 m below the surface.

Geophysical prospection was also used at a number of other sites, and with a variety of instrumentation; the results were usually highly informative and useful. It helped to locate, for example, the walls of the predecessor, probably built in Late Antiquity, of the church of Ay. Minas on the Ay. Thomas peninsula, and resulted in the detection of buried cisterns, walls, and paths at Kastri (S/S94-20), the fortified townsite in the lower Acheron valley discussed below. Apostolos Sarris, staff geophysicist in 1994, now of the Institute of Mediterranean Studies on Crete, conducted geophysical prospection in selected areas not only of Kastri, but of all the fortified townsites surveyed by the Project.

Above the northern end of the long, sandy Nikopolis beach on the Ionian coast, a promontory with ancient remains by the modern town of Kastrosykia overlooks what may have been a small anchorage in Hellenistic and Roman times. The principal remains on the promontory are several architectural blocks, some of them reused in the church of Ay. Pelagia, which are mainly of Roman imperial date, as are the few graves noted nearby (Dakaris 1971, 95; Hammond 1967, 49). Further north along the coast a particularly interesting Roman site is that of Frangoklisia (SS93-27), west of modern Riza and overlooking the coast by the lovely little harbor known as Artolithia. Walls of brick and concrete have long been noted here (they are difficult to miss, since some are preserved to a height of 3 m!), and the remains had previously been identified as a nymphaeum (Chrysostomou 1982). The Project conducted a brief survey in the area in 1993, which was followed by cleaning, study, and drawing of the visible walls and floors by the Greek Ephoreia (Zachos 1993). The walls belong to an extensive architectural complex, including a bath, that must have served as the residence of a wealthy landowner during at least the Early Roman period; most of the pottery found during the Greek investigations dates from the 1st to the 3rd centuries A.D., and the Project recovered also material of Late Antiquity. Excavation would be required to determine if Frangoklisia, like the villa at Strongyli, had a predecessor during the Hellenistic period.

The continued occupation, or eventual reoccupation, of earlier sites in Roman and Late Antique times was noted not only at Strongyli, Kouveli, and the fortified townsites, but also at sites in the interior highlands as, for example, in a small, fertile valley reached by crossing a ridge above the village of Cheimadhio, northeast of Riza. Along the lower northeastern slope of the valley dense accumulations of roof tiles, fine and coarse pottery, loom weights, and other debris of a settlement (SS94-15) were found indicating occupation from late Classical to early Roman times. The marble tombstone of Lysipolios,[29] presumably an inhabitant of the little town (its ancient name is not known) in the 3rd or 2nd century B.C., was found beside a little church of the Panayia, about 220 m northwest of the site, near a spring at the edge of the plain.

The Lower Acheron Valley

The Nikopolis Project developed a broad and intensive program of geologic and archaeological investigations of the lower Acheron river which has shown that the inhabitants of the region lived in a much different setting in Greek and Roman times (and earlier!) than at present. The region became a special focus of the Project because of its complex cultural and geologic history, which presented a number

Fig. 9. Wall of a fortified site (the Nekyomanteion, as identified by S. Dakaris) below the church of John the Baptist at Mesopotamon.

Fig. 10. Aerial photo of Ammoudhia Bay (top left) and coastal region. Part of the village of Mesopotamon is visible at edge of photo to right, and concentric relict beaches are visible in the plain north of the Acheron. Photo by Hellenic Army Mapping Service.

of unresolved problems, and because of the obvious significance of the bay, river, and valley in the economic and social evolution of Epirus.

The lower valley contains one of the most famous excavated sites in Epirus, identified by its excavator as the Nekyomanteion, the "Oracle of the Dead," mentioned both by Homer (*Odyssey* 10.487-574, 11) and Herodotos (5.92). This strongly fortified site with handsome polygonal masonry (Fig. 9), built over in part by a monastery and Church of John the Baptist at the edge of the town of Mesopotamon, was excavated by Sotirios Dakaris during the 1950s and 1960s (Dakaris 1993). On the south the hill overlooks the narrows through which the Acheron flows into its present coastal plain, and on the north it is connected by a rising saddle to the ridge of Ephyra (S/S92-33), an important site of the Late Bronze Age.[30] There is no archaeological evidence of occupation at Dakaris's site earlier than the Hellenistic period, and the polygonal walls, including a tower, are very similar to other fortifications in Epirus; for example, the walls of Kastri, some 4.5 km upstream on the Acheron. Skepticism has grown over the years, and alternative interpretations for the evidence adduced by Dakaris have been offered by other scholars (Baatz 1982, 1999; Haselberger 1980; Wiseman 1998). The overall complex, indeed, resembles fortified farmsteads or elite country residences known in various parts of Greece, including Epirus,[31] and the romantic designation of Nekyomanteion should probably now be abandoned in favor of Ephyra (as suggested in Baatz 1999), the larger ancient site on the nearby ridge, or perhaps Mesopotamon, the modern town with which it shares the hill of the Church of John the Baptist.

Mesopotamon and Ephyra look west across the fertile plain to the small Bay of Phanari, which is now often referred to as Ammoudhia Bay after the little resort town on the beach (Figs. 10, 11). The Acheron river empties into the bay on its south side, and its channel has recently been extended almost to the sea by a rock levee to provide maximum protection for the sandy beach. References in literature indicate the bay was much larger in antiquity than it is today, and the most critical topographic identifications are certain. The bay can only be the *Glykys Limen* ("Sweet Harbor") by the promontory of Cheimerion mentioned by Strabo (7.7.5), who comments that the Acheron river flows into it from the Acherousian Lake, and so sweetens the water of the bay. Although he does not mention the Glykys Limen, Thucydides (1.46) unites all the other topographic features in his description of the bay where the Corinthian fleet of 150 ships anchored before the Battle of Sybota in 433 B.C., an inconceivable

number for the present small and shallow bay. The Glykys Limen is specifically mentioned by Cassius Dio (50.12.2) as the harbor into which Octavian brought his fleet, perhaps 250 ships,[32] in the summer of 31 B.C. before proceeding to the Nikopolis peninsula and the Battle of Actium. As late as 1084 the harbor was still able to accommodate the large fleet of Robert Guiscard of Normandy (Anna Comnena, *Alex.* 4.33). A few small sailboats would now crowd the bay.

Concentric relict shorelines north of the Acheron between Ephyra and the present bay are visible in an aerial photograph (Fig. 10), and indeed can be seen from high vantage points around the bay. They provide further indications that there were significant changes in the shoreline of the bay over time. Dakaris had realized that there had been changes in this landscape over time, and his conclusions (Dakaris 1971, 62, 81-82, 170), based mainly on literary evidence and his own observations, were partly correct, but provided little geologic evidence and there was no chronological control.

As a part of the Nikopolis Project survey, 28 geologic cores were drilled at points throughout the lower and middle valley, from Ammoudhia to the narrows south of Ephyra and from there well to the north on both sides of the two principal rivers, the Acheron and the Vouvos (Fig. 12). The analysis of the cores and their context has resulted in an exemplary study of palaeogeographic change in the Acheron valley over the past four millennia (Besonen, Rapp, and Jing 2000, in press). In brief, by about 2100 B.C., Phanari Bay, with two entrances from the Ionian Sea,[33] was some six km across at its widest north-south distance and nearly as large from west to east, extending several hundreds of meters to the east of the valley constriction by Mesopotamon. The Acherousian Lake formed just east of the valley constriction, at the mouth of the Acheron, sometime after 800 B.C. and before Thucydides mentioned its existence in 433 B.C. By the time of Octavian's visit en route to the Battle of Actium, the lower "Acheron" draining the lake had begun to spill into the bay just east of Mesopotamon. The infilling of the bay along the shorelines and at the mouth of the prograding Acheron proceeded gradually until about 1500 A.D. when the process began to accelerate; the southern entrance was closed and most of the successive relict beaches accumulated in the past five hundred years. The swamp of the Acherousian Lake continued to exist until it was drained earlier in this century.

Fig. 11. View of Ammoudhia and the coastal plain from Ay. Eleni; the ridge of Ephyra is in the center in the distance.

Six transects across the relict beaches were walked by archaeological survey teams in 1993 to test the hypothesis of their recent origin; only 25 artifacts were found in all transects, and all were post-mediaeval with the exception of a single Roman-period handle. Bronze Age, Greek, Roman, and Late Antique sites were found on the island that once had closed the middle of the entrance to the bay (the Ay. Eleni ridge), on Ephyra ridge, and on elevations overlooking both the bay and the floodplain of the Acheron east of the valley constriction. The entire coastal plain seems clearly to be of recent origin.

The most important site east of Ephyra was Kastri,[34] which we have had occasion to mention before. The site is on a prominent hill 107 masl above the Acheron river, which now flows along its eastern and southern sides, but whose course in antiquity and in the Mediaeval period lay to the west below the steepest face of the hill. The entire site covers some 33 ha within a series of three fortification walls enclosing a lower town; an upper town; and an acropolis, where the encircling mediaeval walls rest in part on earlier walls. A

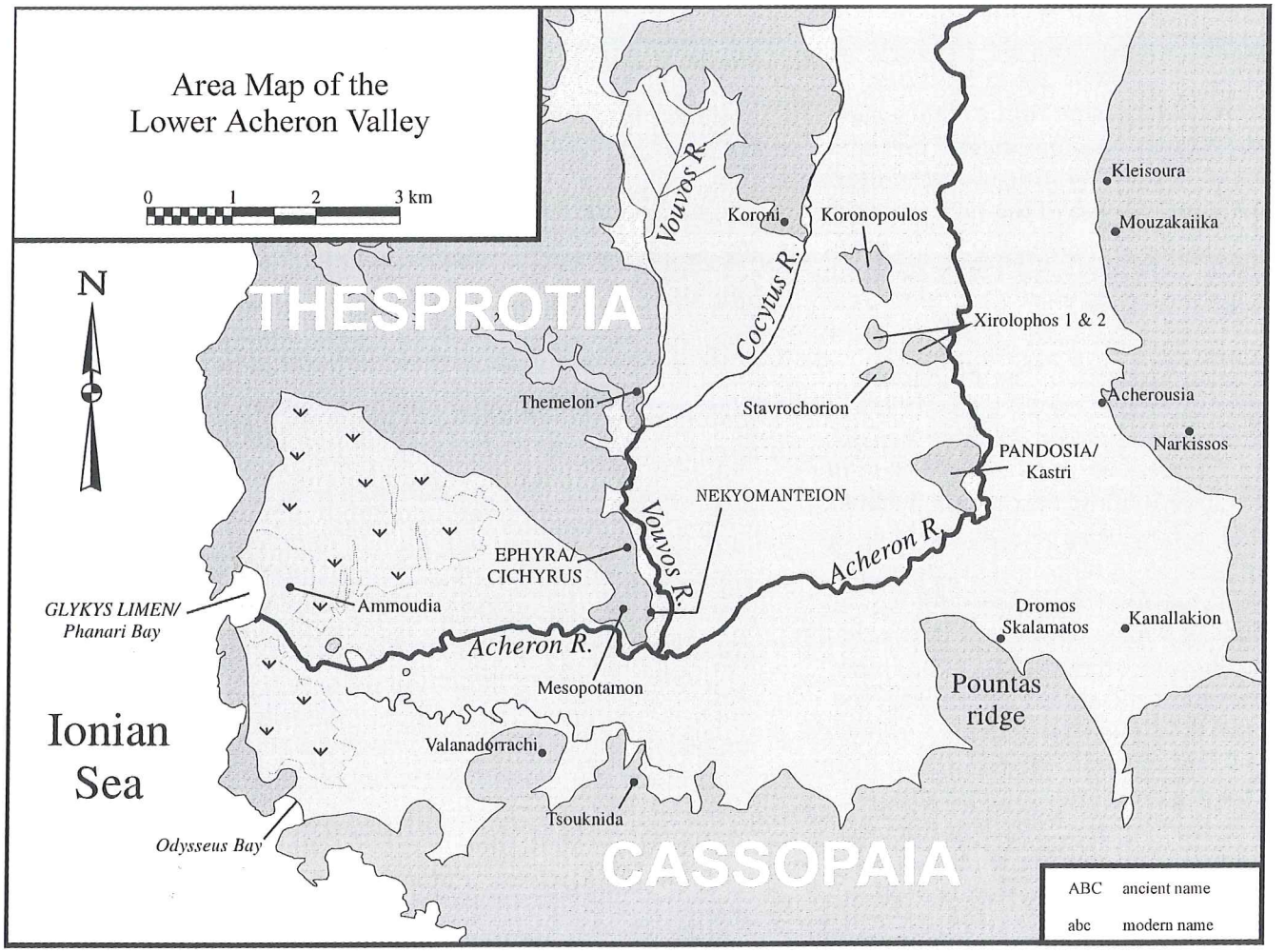


Fig. 12. Valley of the lower Acheron River. Map by Mark Besonen.

post-Mediaeval church of John the Baptist on the highest part of the site is possibly the successor of an earlier church. The lower parts of numerous stone walls are preserved, some of which form the outlines of entire buildings, especially in the upper town, where they would have been used in Hellenistic and early Roman times. We selected the complex site of Kastri for special attention by the Nikopolis Project as the principal component of our program of interdisciplinary urban survey; other large townsites were only sampled.[35] Such intensive survey seemed warranted to complement the detailed study the Project was pursuing through the entire lower valley of the Acheron.

The methodology selected for the survey of Kastri required walking a series of consecutive tracts over the entire walkable area using a spacing interval of five meters (Fig. 13). In addition, artifact counts would be taken every thirty meters and a separate sample would be collected for the same area. In this way, we could acquire density counts and collect representative artifact assemblages for cells of thirty meters by fifteen to twenty meters (depending on the number of walkers on a team at a given time). This resolution makes it possible to generate detailed density maps for each period of occupation, and increases the likelihood that spatial functions may be recognized. A total of 119,487 square meters were walked as tracts at this site, comprising more than a third of the site (Fig. 13). About eighty-eight percent of the Upper Town was systematically explored; the remaining twelve percent was unwalkable because of prohibitively dense vegetation. In addition, three walkovers

were completed at the site; one (W94-15) inside the upper acropolis, the other two (W94-29 and W94-30) in the Lower Town, adding more than 25,000 square meters to the area investigated by systematic survey. Several structures were discovered in the course of the survey and they were drawn on a new map of the town, which will be correlated with the density maps of artifacts.

Concluding Observations

Study of the pottery and other artifacts has only recently been completed, so that the analysis of site distribution by time periods is now being refined, including the preparation of maps to show the spread of artifacts across the landscape for indications of activity outside settlements. In this preliminary overview, I focus on larger habitation and special-activity sites, and offer three maps that provide a helpful visual impression of the locations of Roman sites (Fig. 14);[36] Late Antique sites (Fig. 15); and Mediaeval sites (Fig.16). The maps also cover rather long periods of time: 1st century B.C. through the 3rd century A.D. for the Roman period; Late Antiquity, 4th-6th centuries A.D.; and Mediaeval, 7th-15th centuries; not all sites shown were occupied continuously during the periods represented. Even if the 36 Roman-period sites, however, are thus over-represented, it is clear that there was no long-term deserted landscape in Roman times; within a century of the founding of Nikopolis earlier sites were being revived (e.g., Bouchetion and Kouveli) and new sites grew up, especially on the Ay Thomas peninsula where we found little evidence of Classical and Hellenistic settlement. Islands close to the mainland attracted settlers: Strongyli and Ay. Aikaterina in the northern part of the Ambracian Gulf were occupied over several centuries and Kephalos opposite Anactorium at least by Late Antiquity, and Ay. Eleni at the entrance to the great bay at the mouth of the Acheron was occupied as early as the Bronze Age. The slight drop in numbers on the map, then, from Roman to

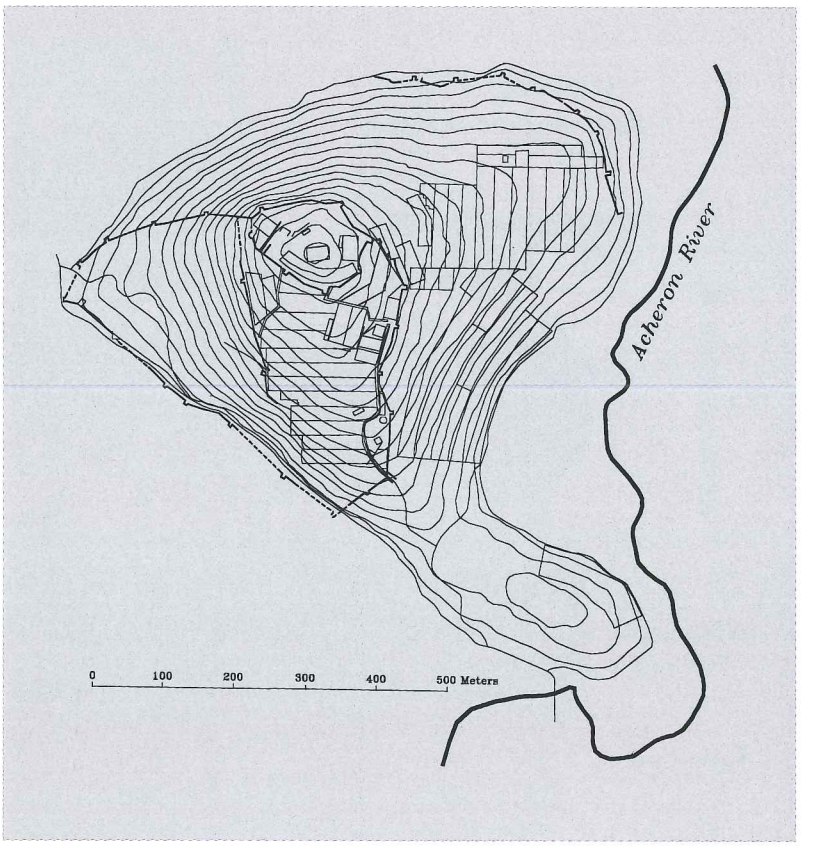
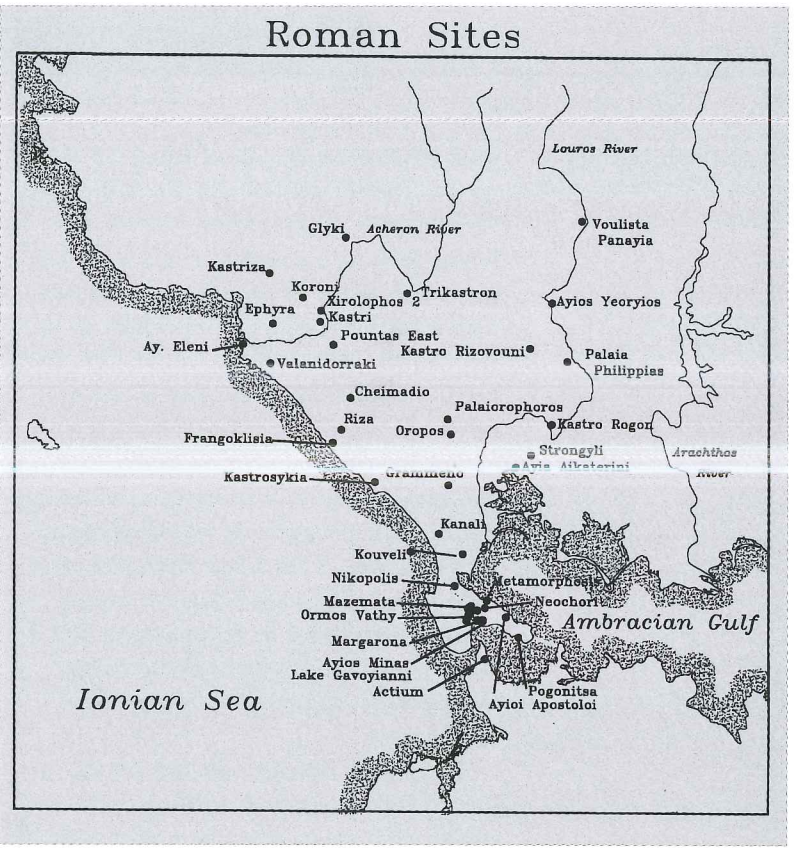


Fig. 13. Map of Kastri showing survey units. Map by Brenda Cullen.



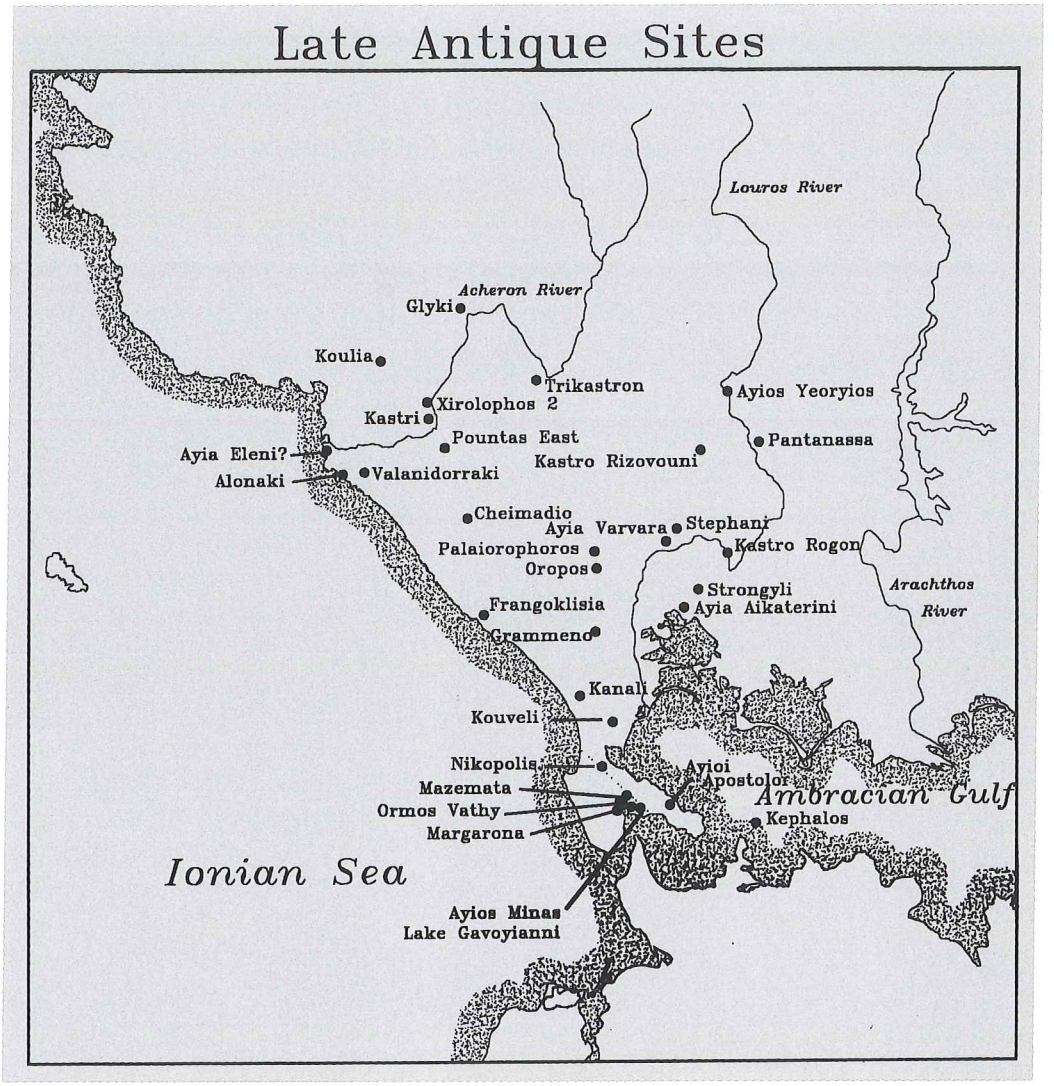


Fig. 15. Late Antique sites in the survey zone. Map by Brenda Cullen and Francisco Estrada-Belli.

Late Antique (30 sites) represents little or no change from Roman times. There may even have been a higher number of sites in the 4th century than either in the 3rd or 6th century; both possibilities are being investigated through our continuing analysis of artifact distribution. The sharp drop in sites seen on Fig. 16 may have been occasioned by a combination of factors, including the increasingly unpleasant environmental conditions along the north shore of the Ambracian Gulf and in the lower valley of Acheron, and the incursions of Slavs, as discussed in an earlier section. A drastic reduction of population is indicated, beginning in the 6th century and continuing until perhaps the 9th century; although emigration (forced or voluntary) doubtless played some role,[37] it is unlikely to have been the sole factor; many Slavs, after all, settled in the land. A likely additional explanatory factor is the first plague pandemic of Europe, a virulent bubonic plague that reached the Mediterranean basin in 541-542 A.D. (Procopius, *BP* 2.22-23; *Secret History* 23.20).[38] The plague epidemics occurred in cycles of 10 to 24 years over the next two centuries, and are estimated to have reduced the population of Europe by 50-60 % (Gottfried 1983, 10-12). Epirus could hardly have escaped the consequences of such a repeated catastrophe that affected all of Europe, but especially the Mediterranean basin. The recovery from the decline in Epirus, beginning in the 9th century, seems to be associated with the establishment of ecclesiastical

Fig. 14. Roman sites in the survey zone. Map by Brenda Cullen and Franscisco Estrada-Belli.

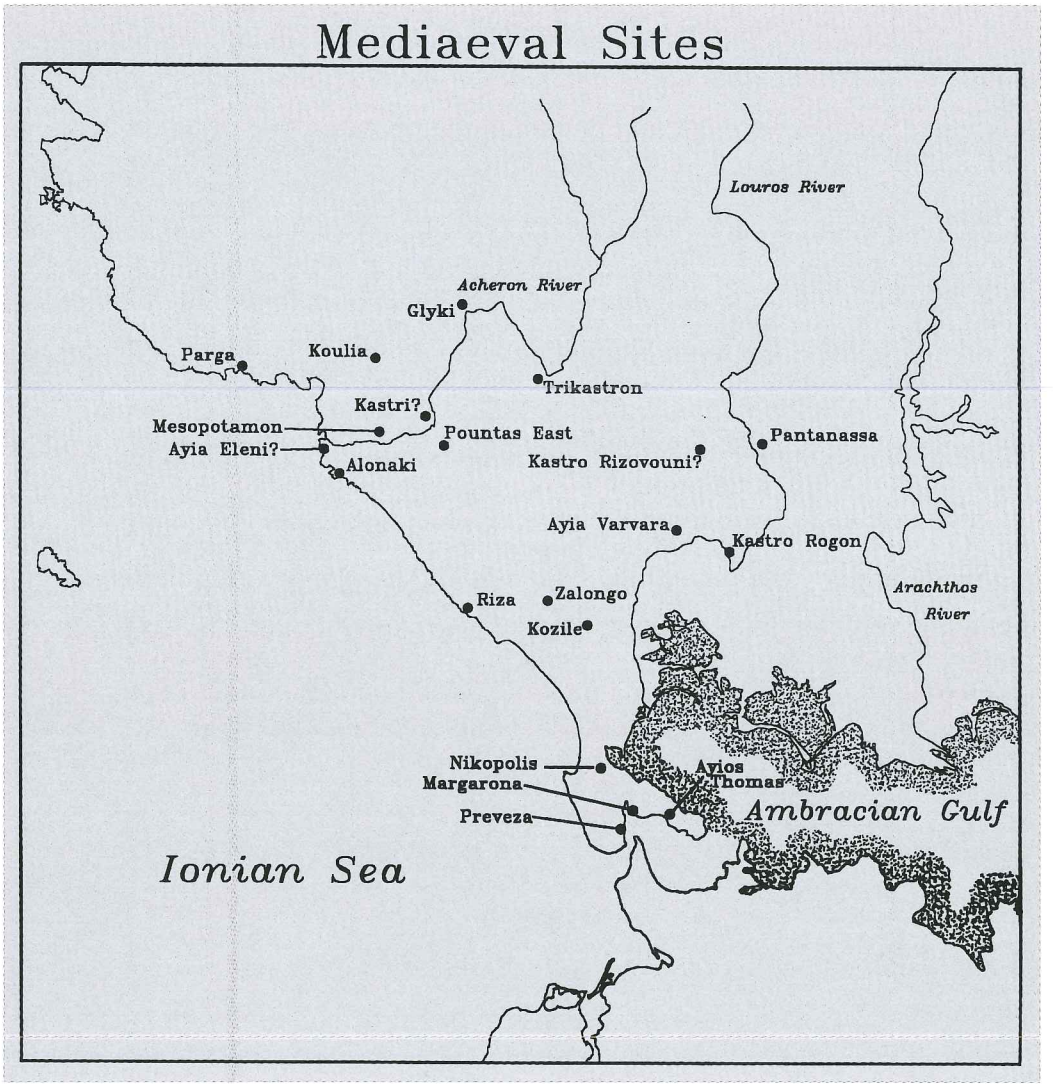


Fig. 16. Mediaeval sites in the survey zone. Map by Brenda Cullen and Francisco Estrada-Belli.

communities across the landscape, and was accompanied by efforts to drain marshes and to increase agricultural land, as in other parts of Europe, especially in the 11th-13th centuries.[39]

Finally, I want to emphasize that the results of the Nikopolis Project reflect the highly interdisciplinary nature of the research. The close cooperation between archaeologists and geologists has made possible a clearer understanding of how humans affected, and were affected by, the landscape and the environment in which they lived in southern Epirus.

Notes

NOTE 1

*It is a pleasure to extend sincere thanks to the Danish Institute in Athens, and in particular to its director Signe Isager and the conference organizer Jacob Isager, for initiating, organizing, and hosting the conference on northwestern Greece, and for undertaking the publication of the papers presented. I acknowledge with gratitude financial support for the Project from NASA, the National Geographic Society, the Institute for Aegean Prehistory, Apple Computer Corporation, Autodesk Inc., Trimble Navigation Company, and a number of private individuals, the FRIENDS OF THE NIKOPOLIS PROJECT, especially Dr. Martha Sharpe Joukowsky and Dr. Artemis A. W. Joukowsky, Mr. James H. Ottaway, Jr., and Mr. Malcolm Hewitt Wiener. I take this opportunity also to express my deep appreciation to the Greek nation in whose land I have had the privilege to study and carry out field work for some four decades.

The project is a joint undertaking of the Department of Archaeology, the Center for Archaeological Studies, and the Center for Remote Sensing of Boston University with two agencies of the Greek Archaeological Service: the 12th Ephoreia of Prehistoric and Classical Antiquities, directed by Angelika Douzougli, and the 8th Ephoreia of Byzantine Antiquities, directed by Frankiska Kephallonitou. The directors of the ephoreias are co-directors of the Project, along with Konstantinos Zachos of the 12th Ephoreia of Prehistoric and Classical Antiquities and the author of this paper. The Project is also sponsored by the American School of Classical Studies at Athens.

NOTE 2

The archaeological survey teams were led by senior staffmembers, primarily Thomas L. Tartaron, Carol Stein, and Brenda Cullen, with a varying number of fieldwalkers (5 to 10 per team), including students in Boston University Archaeological Field Schools (1992-1994), which were integrated into the work of the Nikopolis Project. Geologists often accompanied the surface-survey teams.

NOTE 3

The senior geologists of the Project were George (Rip) Rapp, Jr., Tjeerd van Andel, and Zhichun Jing, joined by an able and distinguished group of colleagues.

NOTE 4

The principal preliminary reports are in the Greek periodical, *Archaiologikon Deltion*: Wiseman, Zachos, and Kephallonitou 1991, 1992, and 1993; a report on the 1994 season is in press. Other reports appeared annually in *Context* and the *Nikopolis Newsletter*, publications of Boston University's Center for Archaeological Studies.

NOTE 5

A systematic, intensive survey unit was designated a Tract (=T) in survey terminology; extensive or scouting reconnaissance was termed Walkover (=W); a find-spot or activity area, large or small, was designated a Site/Scatter (i.e., a "site or a scatter," =S/S). The designations were followed by the year of discovery or entry into the survey archives and an accession number, sequential by year: e.g., Kastro Rogon, discussed in the next section, is S/S91-1. The principles and methodology of the surface survey and documentation are discussed in detail in Wiseman and Zachos 2000, in press, and Tartaron 2000, in press.

NOTE 6

That is, distinctive spectral responses, identifiable in the imagery.

NOTE 7

The Project used both Magellan and Trimble GPS units, which use signals from navigational satellites (21 at the time) constantly orbiting earth to obtain locational data; digital readouts provided UTM coordinates, among other types of information.

NOTE 8

The other three are Elateia or Elatreia, north of the village of Palaiorophoros (S/S91-9) at the eastern edge of Mt. Zalongo; Batiai, probably Kastro Rizovouni (S/S91-6) in the basin north of Mt. Rokia; and Pandosia, in the valley of the Acheron. See Hammond 1967, 57-63 (on Bouchetion), 427, 477-78 (Elean colonies); Dakaris 1971, 134-188 (on all the Elean colonies). Hammond places Pandosia at Trikastron (S/S95-3) in the upper Acheron, north of Palaiorophoros; Dakaris identifies Pandosia with Kastri (S/S94-20) in the lower Acheron valley.

NOTE 9

Similar documentation was made of the Roman aqueduct near its source at Ay. Yeoryios in the Louros River gorge and three other fortified sites: the hilltop site of Voulista Panayia, overlooking the narrows of the Louros gorge; Kastro Rizovouni; and the site near Palaiorophoros (see note 8). The blimp-photography team was headed in 1992 by J. Wilson and Eleanor Emlen Myers and in 1993 by Michael Hamilton, staff photographer in archaeology, Boston University.

NOTE 10

The ancient remains near Strongyli were first noted by Petsas 1950-51; see Hammond 1967, 61; Dakaris 1971, 72, 93, and notes 149 and 287.

NOTE 11

Excavations subsequently conducted by the 12th Ephoreia of Prehistoric and Classical Antiquities confirmed the identification as a Roman villa; see Douzougli 1998. Pottery and coins from the excavations date from Augustan times to the third century; the excavators date the mosaic floors to the late 2nd/early 3rd century.

NOTE 12

Jing and Rapp 2000, in press. I am indebted to Zhichun Jing and Rip Rapp for permission to refer to their results here, and to include their map in this publication as Fig. 6.

NOTE 13
We hear of ships putting in at Preveza in 1292. The Turkish refounding of Preveza probably occurred in 1477/78 or 1486/87, with a subsequent (in 1495) strengthening of the fortifications. The dates and sources are discussed by Soustal 1981, 242, and at greater length by Savvides 1992, 21-38. The fact that Cyriacus of Ancona, who made repeated visits to Nikopolis, Actium, and Rogoi in 1436 and 1448, makes no mention of Preveza may be an indication of the relatively minor significance of Preveza before its refounding by the Turks.

NOTE 14
Shortly afterwards the relics were removed on the advance of the Turks (Arta was annexed to the Ottoman state in 1449); they arrived in Smederevo in 1453. On the travels of Cyriacus of Ancona along the north coast of the Ambracian gulf, see Hammond 1967, 60-61 and App. II, 710-712, with comments on the letters of Cyriacus and their sources.

NOTE 15
The story of the relics of St. Luke is recounted by Hammond 1967, 60-61, based on an account in Greek, written in 1453-58 and edited in 1882.

NOTE 16
Cyriacus records in Epistula IV (11-12 January 1436) his plans to go in a dug-out boat by river (the Louros) setting out from Rogoi to visit Nikopolis. On a subsequent visit in the same year (Epistula V) he refers to crossing the Louros three times. Neither account would make sense unless the Louros had been diverted into its present channel by that time. The Epistulae follow the numbering in Mehus 1742; see the discussion in Hammond 1967, 710-711.

NOTE 17
Hammond 1967, 60-61, gives the Greek text: Τὸ πλοῖον ὁρμᾷ πρὸς τὴν πόλιν 'Ρογὸς καί σταματᾷ εἰς τὸν λιμένα.

NOTE 18
Soustal 1981, 53-54, 251-52 suggests that Rogoi may have been resettled and its fortifications rebuilt at about the same time, all as part of the establishment of the Theme of Nikopolis (by which time the city of Nikopolis was presumably in ruins and largely abandoned) under the Byzantine Emperor Leo VI, which had its administrative and ecclesiastical center at Naupaktos.

NOTE 19
The monastery, which is located about 1 km north of the modern town of Nea Sampsous and 16 km north of Preveza, was mentioned as a bishopric for the first time in 1020; see Soustal 1981, 186-187.

NOTE 20
Personal communication from Varvara Papadopoulou, the excavator.

NOTE 21
Soustal 1981, 225. Excavations by P. L. Vokotopoulos have continued into the 1990s.

NOTE 22
Evlia Çelebi, setting out from Nikopolis for Rogoi in the early 17th century, passed a fishery not far along the coast; Ergolavos 1995, 37. It was probably located where one is still functioning at the edge of the Tsokalio lagoon; Hammond 1967, 61, 247; on fisheries in the harbors of Epirus, see Soustal 1981, 97. The Ambracian Gulf was famous in antiquity for its abundance of fish: Dakaris 1971, 17.

NOTE 23
Doukellis identifies an orientation of 27° west of north and field tracts of 710 m, corresponding to centuriated tracts of 20 by 20 Roman *actus*.

NOTE 24
Piper et al. 1988, 285, where the annual discharge of the Louros is given as $30m^3/s$ compared with $80m^3/s$ for the Arachthos.

NOTE 25
A large mound (ca. 4.5 high and over 16 m. in length) composed almost entirely of shells of *murex brandaris* was found. Dakaris 1971, 17, reports that shells remaining from the extraction of purple dye were found also at Kassope, Palaiorophoros, Rogoi, and Kastri (on the Acheron). There was even a Roman procurator who controlled the purple-dye industry in Achaia, Epirus, and Thessaly in the early 3rd century A.D.: *CIL* III 536, 1-7.

NOTE 26
Vocotopoulou 1970, 41-45; 1973, 220-222, 227. Dakaris 1971, 35, 51, 58, 78, 79, 75. The lion is displayed in the Archaeological Museum in Ioannina (Inv. No. 2594), along with other statuary, architecture, and artifacts from the graves.

NOTE 27
The archaeological survey included 23 tracts and five walkovers.

NOTE 28
The "very few traces of a wall around the settlement" mentioned by Dakaris (1971, 203, note 137) on the "oblong hill" are, I suspect, more of the terrace walls for grave plots near the cemetery at Marathia. Both Dakaris and Hammond (1967, 51) postulate a port of Michalitsi on the Ambracian Gulf, but offer no archaeological evidence and the Project survey found nothing to indicate one in the area.

NOTE 29
Inv. No. NI-94-1; the inscription is in raised Greek letters.

NOTE 30
The site, occupied also in Classical, Hellenistic, and Roman times, was excavated by Th. Papadopoulos in twelve seasons; preliminary reports appeared in *Praktika*, beginning in 1978. The western and southern slopes of the ridge were intensively surveyed by the Nikopolis Project in 1994.

NOTE 31
We have already noted the fortified farmstead at Strongyli. A polygonal tower (SS93-25) studied by the Nikopolis Project near Oropos above the north coast of the Ambracian Gulf may also be part of a country estate.

NOTE 32
Orosius 6.19.8; see the discussion in Murray and Petsas 1989, 134.

NOTE 33
At the present entrance to Ammoudhia Bay and some 2 km to the south, at Kerentza Bay; the long ridge between the two was then an island at the entrance to the bay: see Figs. 10 and 12.

NOTE 34
Dakaris 1971, 164-170 provides a convenient summary of previous knowledge about the site, which he identifies as the Elean colony, Pandosia.

NOTE 35
The methodology described in the next paragraph was also employed in the shorter-term surveys at the other three fortified sites (Kastro Rogon, Palaiorophoros, and Kastro Rizovouni), so that the counts and samples by area may be compared with those from Kastri.

NOTE 36
Kassope, the most important city of the region in Classical and Hellenistic times, is not shown on the period maps; although it was still inhabited in the late 1st century B.C., it seems to have been largely abandoned after the founding of Nikopolis; see Dakaris 1971, 101-133. Kassope was not included in the Project survey. I thank Francisco Estrada-Belli, a colleague at Boston University, for his help with these maps and other graphics for this paper.

NOTE 37
In 603 the bishop and the inhabitants of Euroia (=Glyki on the Acheron) fled before the Slavs to Corfu, taking with them the relics of Ay. Donatos: Chrysos 1981, 74-77; Soustal 1981, 158.

NOTE 38
See also Cameron 1993, 111, 123-124, 164.

NOTE 39
See, e.g., Gottfried 1983, 18-20, and the discussion above of the Ambracian Gulf.

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