EASTERN KORINTHIA ARCHAEOLOGICAL SURVEY

Revised proposal to the American School of Classical Studies

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The Korinthia was one of the most important hubs of trade and transport in the ancient Greek world, a source of raw materials and manufactured goods exported throughout the Mediterranean, and a rich agricultural region. The Eastern Korinthia Archaeological Survey Project proposes to carry out a multidisciplinary regional study in this historically rich region. The project will greatly expand upon previous scholarly research and add to the theory and practice of archaeological survey in an environmentally sensitive area.

The research will allow a broad-based reassessment of this region and will have significant repercussions for our understanding of the history of the entire Mediterranean basin. Few would question the proposition that the Korinthia was one of the most important centers of the Mediterranean world (from antiquity until modern times) and our project will allow, for the first time, an examination of questions that can only be posed by a multidisciplinary survey project.

The Eastern Korinthia Archaeological Survey will have as its primary research orientation the issue of how the people of this region interacted with their immediate surroundings, with their neighbors in Greece, and with other parts of the broader world. Previous archaeological work in the Korinthia has been heavily focused on excavation in the city of Ancient Korinth, the port at Kenchreai, and the Panhellenic Sanctuary on the Isthmus, and it is noteworthy that there has been, until now, no systematic archaeological survey in this region. The present project will draw on a variety of sources of information, including surface survey, to be able to elucidate human history in the region in a manner that previous projects that have been unable to address. Moreover, the results of this research will have a wide audience among those who seek to understand the long-term processes that affect economic and political change, as well as those interested in human impact on the physical landscape. The project will also have an important “public” component, as it seeks to involve the inhabitants of the study area, and the broader public in general, in an ongoing dialogue about the questions of the survey project. We also seek to make use of recent advances made in regional survey and to contribute further advances through innovative applications of geological science, geophysical studies, sampling strategies, and the application of computer-based information systems.

Intensive surface survey of the eastern Korinthia is planned for 1999-2001 not only as a project of major archaeological and historical importance but as a necessity in the face of large-scale development throughout much of the region. Thus this application to survey is also made with some urgency; to act before the opportunity is lost and to provide critical information to those agencies responsible for the management of the cultural resources of the region.

A. STUDY AREA

The eastern Korinthia has been selected as the object of study in this project because of its historical importance as part of one of the most significant regions in every period of Greek history and because it allows the exploration of the broad-based research questions described in the next section. The region can be described in terms of the natural drainage basins listed below (see Figure 1) and each basin will receive a full geomorphologic study including studies of soil movement, tectonics, coastal morphology and evolution, paleobotanical sampling where feasible, mineralogical profiling, raw-materials sourcing and dating of land forms.

Basin	**Sq. Km.**
Examilia	34.44
Isthmia	30.13
Lower Galataki	21.37
Sophiko-Korphos	42.44
Almiri-Katakali	42.56
Saronic Coastal Basin	35.18
Total	**206.12**

The choice of these boundaries is a balance between the need to survey areas under threat of development and the necessity of encompassing a region of sufficient size and defined by natural boundaries that will answer our research questions concerning the development of the eastern Korinthia throughout its long history. Thus, the portion of the study area north of Oneion includes the ancient routes of passage between Ancient Korinth, the Isthmus, and Kenchreai. The areas south of Oneion are drainage basins feeding isolated, discrete coastal bays and allow us to study areas that are more isolated from the main routes of overland passage.

Within the areas we have defined above, the choice of units to be surveyed will be based on a number of criteria: the threat of development, the gazetteer of known sites and our own discoveries, representative samples from diverse environmental and topographic conditions, representative samples of the range of artifact densities, and geomorphologic indicators. Areas most under threat of development will receive a higher priority for survey, focusing particularly on the development taking place along the expanding transportation corridors.

B. RESEARCH QUESTIONS

The region has been a major point of passage throughout its history: the land link connecting the Peloponnesos and the mainland to the north, a center for trade between the Aegean and the west, and the site of a Panhellenic sanctuary that developed in large part because of its geographic position. Considering the number of excavated sites in the region as well as the large number of sites that have been noted in walking surveys, it is surprising that such an important activity has not yet been undertaken. In fact, archaeologists have been calling for an intensive surface survey of the Korinthia for more than 75 years.[1] Carl Blegen's observations on the prehistory of the Korinthia conducted in 1915-16 were among the first, but remain even today one of the most informative studies of the region.[2] The most comprehensive survey completed to date was made by James Wiseman during the 1960s, initiated by his study of the Classical and Hellenistic fortification walls.[3] His work described the visible ancient remains through the Roman period, identified several previously-unknown sites, and he assembled the literary and epigraphic sources. Similar to Wiseman's work is the ektistic study of Sakellariou and Faraklas. This work provides information about additional archaeological sites and attempted to map and understand the environmental and regional context.[4] None of these earlier projects, however, attempted to collect artifacts or describe their distribution across the landscape in a systematic way that would allow the long-term development of the region to be thoroughly assessed.[5] At the conclusion of his study, Wiseman described the need for a regional survey

> A systematic survey of the entire Corinthia by a team including a surveyor, a geologist, and an archaeologist, . . . is still needed. . . . In particular, ancient roads need to be more closely defined, detailed maps of several regions and sites are needed, and all caves and possible rock shelters need to be looked at closely. . . . Corings are needed to provide samples for determining, if possible, changes in the natural environment. And there is still too little known about the ancient exploitation of the natural resources of the Corinthia in different periods. We are only beginning to be able to study settlement patterns in the Corinthia.[6]

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[1] Blegen 1920, p. 8; Wiseman 1978, p. 143; Salmon 1984, p. 19; Rutter 1974.

[2] See entries under Blegen in the bibliography.

[3] Wiseman 1963; 1978.

[4] Sakellariou and Faraklas 1971.

[5] In addition, no one has addressed the remains dating from the end of the Roman era to modern times.

[6] Wiseman 1978, p. 143

In the intervening years, there has been no reason to alter this assessment. Meanwhile, opportunity for study of the region as a whole has been rapidly disappearing.

The particular foci for research will vary for different epochs, but the overarching question is the relationship between the eastern Korinthia, its main urban center, and the broader Mediterranean world. For example, was the countryside cultivated mainly to serve the needs of an urban population or to produce a surplus for export? If the latter, who was responsible: public officials, wealthy landowners, or individuals with small holdings?[7] Any of these possibilities may be in use at a given period. If the function of the agricultural sector changed over time, how can we track the process? Equally relevant is the exploitation of natural resources such as fine limestone, iron ore, and high-grade clay. Construction and reconstruction of the harbors at Kenchreai and Lechaion, and the famous Diolkos road across the Isthmus with lesser harbors at each end, provide some clues to Korinthian commercial interests, and to a greater extent there is the evidence of the roads that linked the city to its region. We will seek to define through time the patterns of habitation and workshop activities and their relationship to the transportation network of the eastern Korinthia. The results of the survey will be of utmost importance to historians of Greece in all periods, who address social and economic questions, and others who are interested in explanations of change throughout time and how different regions interact with one another.

The project seeks to address this primary research question through application of a number of analytic tools described in detail in further sections. In general these will involve the characterization of the settlement pattern in the eastern Korinthia and measure its dependence on or independence of the main urban center in Korinth. This will involve the identification of population centers that may have provided a central focus for the region (in one period or another) and thus posed a counter to Korinth. In addition, we will measure and weigh the number and significance of objects (chiefly pottery) of local, versus "foreign" origin and the degree to which the eastern Korinthia had production and distribution centers and mechanisms that were independent of those of Korinth itself.

Techniques for conducting such a survey have been developed and refined over the past thirty years or so, as has the theoretical framework in which surveys are most usefully conducted. We now have a better idea about questions that can be realistically addressed, of the significance of objects collected through field walking, methods for mapping architecture and features in the landscape, use of satellite images, ground-penetrating remote sensing techniques,

[7] Garnsey, et al. 1983; Engels 1990.

geomorphological study of landscape formation, and geochemical analyses of soil.[8] Published material from excavation at four major sites in the region will greatly aid identification of local and imported pottery, lithics, metals and other artifacts on which broader conclusions of survey depend. Thus, we believe we have the methods and resources to accomplish our goals.

Settlement Patterns and Period-specific Studies

Prehistoric activity in the study area prior to the Bronze age is poorly understood, and for the Korinthia as a whole no remains have been found earlier than the Neolithic. There is no reason, however, to suspect that the advantages of the region would not have attracted early populations, so the survey may well supply evidence for earlier activity. There is, however, ample evidence from all phases of the Neolithic and Early Helladic periods in Ancient Korinth and in sites concentrated near the northern coastal plain.[9] Within the study area there was an extensive occupation of the EH period along the ridge north of Hexamilia, perhaps centered at Gonia, where C. Blegen excavated in 1916.[10] Areas immediately to the east and west of Gonia also have been noted as having EH sherds, suggesting that an area several hundred meters long may have been the site of a large EH community.[11] Isolated EH deposits at Isthmia show the presence of activity farther to the east.[12]

Our understanding of the transition from the Early to Middle Helladic periods in the Korinthia is problematic. While the settlement at Korinth appears to have been abandoned or destroyed at the end of EH II, and Korakou at the end of EH III, Gonia appears to continue without a break into the MH period.[13] The lack of evidence for occupation in the excavations at Korinth after EH II has been used to suggest a connection with the destruction of other sites in the NE Peloponnesos during the same period. The survey may provide evidence on population fluctuations and movements throughout the region, and we may be able to determine to what degree Gonia served as a central place in the MH period. At the present time there is a general lack of information on the MH period throughout the study area.

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[8] See Doukelis 1994 for recent essays on survey and methodology.

[9] Salmon 1984, pp. 8-19, includes a summary of the evidence for prehistoric activity in the Corinthia.

[10] Blegen 1920.

[11] The site of Yiriza is located a few hundred meters west of Gonia, and Voukiana a few hundred meters to the east. Blegen 1921, 1930; Wiseman 1963, p. 273.

[12] See Smith 1955 for an EH deposit. Broneer 1973, pp. 6-7.

[13] Salmon pp. 13-15.

The survey is also expected to provide additional information that will allow a more accurate assessment of the impact on the Korinthia of the growth of Mycenaean civilization. Late Helladic remains through III B are found on sites in the northern coastal plain and there are several sites that have a significant concentration of LH in the study area, especially Perdikaria where there are the remains of Cyclopean masonry.[14] While the region seems to have reached a population peak during the LH III B period, it is not known whether the small communities have independent economic and political status or whether a degree of central control was established either locally or from the Argolid. At the present time there are LH remains known within the study area at many locations, including Gonia, Perdikaria, Isthmia, and Kenchreai.

The most often-cited evidence for central control is the remains of a fortification wall across the Isthmus, but the interpretation of these relatively short segments of wall as parts of a continuous fortification must be reexamined.[15] A critical appraisal of Broneer's conclusions is included in Morgan's *Isthmia* VIII. Recent cleaning and study by project members of one of the wall segments that extends along the SE side of the valley below the Rachi settlement suggest that its ashlar masonry is more likely historical in date. It seems the characteristics and position of other portions of the wall are too varied to represent a single act of planning and execution. A major interest of the project is an examination of the function of these wall segments.

Information on the historical periods within the study area is extensive, and only a brief mention of representative questions can be made here. Some of these questions are formed by the research of team members in the Hellenistic Rachi settlement near the Sanctuary of Poseidon, which is the only recent investigation of a settlement in the study area. The University of Chicago excavated portions of six houses and has documented the chronology of the settlement and its overall configuration and development.[16] The survey project will continue to work toward understanding the relation of the community to the sanctuary and the economy of the region. Aside from the olive pressing installations in the settlement itself, what is the evidence for production of oil elsewhere in the Korinthia? Is the growth seen at Isthmia in the early Hellenistic period (e.g., the Rachi Settlement and a new stadium) indicative of prosperity throughout the region or unique to the sanctuary? In the Argolid it has been suggested that agricultural productivity increased in the second half of the 4th century.[17] In the region of Patras,

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[14] Blegen 1920, p. 7.

[15] Broneer 1961, 1966, 1968; Kardara 1971; Salmon 1984, p. 19; annual reports of U. of Chicago field work in 1996-97.

[16] Anderson-Stojanovic 1996.

[17] Jameson, et al. 1994.

the town expanded and the number of rural sites increased in the same period.[18] To what extent was the economy of the Korinthia affected by the Macedonian hegemony?

Doukellis suggests that until the end of the Hellenistic period small villages in the Korinthia were often clustered on cult places.[19] Were rural groupings in the period after the foundation of the Roman colony at Korinth still in the Classical and Hellenistic tradition? What was the reaction of the Roman colonists who came to be installed in a region of small villages with a rural economy and how does the situation in the Korinthia relate to the pattern of settlement in early Roman Greece noted in other areas? More information is also needed on the role of Roman extra-urban villas in the economy of Greece; were these independent economic and social entities or tightly linked to the agricultural and economic role of the city?[20]

In the Argolid and elsewhere in Greece it has been argued that there was a remarkable increase in population and prosperity in the later Roman period, beginning ca. A.D. 400 and lasting nearly 200 years. This seems to be a part of a renaissance in the late Roman Empire in the East which is also revealed in recent work on pottery from surveys and excavations. There appears to be a dramatic contrast between the amount of local trade ca. A.D. 350 and the upsurge in pottery and trade ca. A.D. 450. We will seek to identify evidence for this renaissance in the eastern Korinthia, if any.

Other surveys in Greece have generally failed to find evidence of habitation in the early Byzantine period (7-9th centuries). We are fortunate in that we will have access to newly identified ceramic information from the excavations at Korinth at at Isthmia, which may help us place this little-known period literally on the map. We will be able to test the hypothesis, derived from the text of the so-called Chronicle of Monemvasia, that the mountainous eastern coast of the Peloponnesos remained in imperial control, while the interior fell into the hands of invading tribes. We will also seek to investigate the apparent phenomenon of a Middle-Byzantine efflorescence in the southeastern Korinthia (in the area of Sophiko-Korfos) and its connections with developments in the central part of the region.

The events of the Fourth Crusade (1202-05) brought the Korinthia once again into close touch with Western Europe, and we might well posit a division between the city of Korinth and its hinterland. Already we can see significant differences in the ceramic assemblages from the two areas, and we will want to test this hypothesis further We will also seek remains of

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[18] Petropoulos and Rizakis, 1994, p. 203.

[19] Doukellis, 1994.

[20] Rothaus, 1994.

Frankish architecture, towers, and deserted villages, and we will study cadastral division of the region through the Ottoman archives of the 15th-17th centuries. How was the distribution of villages affected by warfare between Franks, Turks, and Byzantines? The earliest Ottoman census was taken in 1466; does it show for the Korinthia a recolonization of the area that is evident in Eastern Boeotia? Is there the same rising population growth from 1506 to 1540 to 1607?

Likewise, the modern history of the Korinthia, after the establishment of an independent Greek state in 1830, raises important questions. Phenomena such as the abandonment of Ancient Korinth and the foundation of New Korinth, construction of the Korinth canal, the rise of the Piraeus as a major shipping center, and the development of industry along the shores of the Saronic Gulf should have had a major impact on history and settlement in the Eastern Korinthia. The construction of new transportation links—the railroad, bus lines, and more recently modern new highways and a high-speed rail link— presumably also had significant effects on settlement, as did the broader change from a traditional to a modern way of life. The material evidence from the survey area will be used to illuminate these changes and provide a dimension that cannot be seen from the written evidence alone.

Systems of Passage

Location was a determining factor in the use of the Korinthia, lying as it does at a crossroads of land and sea communications between Greece and the eastern and western Mediterranean. It is a simple point that is abundantly evident today in the multiplication of roads and railroads and projected harbors and factories. Yet geographical determinism hardly provides a satisfactory answer to the important issues confronting anyone who is concerned with ancient and modern Greek history.

The Korinthia appears to derive its strength from its function as a point of passage for people, goods, and services, and the development of the primary and secondary roads throughout the historical periods is an important aspect of our study. Although only a few isolated fragments of road bed have been uncovered, the settlements, tombs, and the lay of the land often serve as an indication of their general location. The primary roads north of Mt. Oneion are those connecting the three major nodes of the region (the Sanctuary of Poseidon, Kromna, and Kenchreai) to each other and to Ancient Korinth. In particular, a road was a major feature of the Sanctuary of Poseidon, where it appears that the cult at Isthmia was first established in the early Iron Age as a roadside shrine. Oscar Broneer documented numerous beds for this well-traveled road at the northern edge of temenos, and about 2 km. west of the sanctuary he uncovered a portion of its path from Korinth, adjacent to what may have been a hero shrine or cenotaph of the

4th c. B.C. (West Foundation).[21] In recent years project members have done additional work on the road systems of the sanctuary, clarifying their chronology and relationship to the development of the sanctuary.[22]

The road from Korinth and the Leukon pass to Isthmia (via Kromna) not only appears to have been the most important route leading northwards from the Peloponnesos but also may have served as a prominent location for monuments designed to be seen on the approach to the sanctuary.[23] The substantial number of Greek and Roman tombs that appear to line its path near Kromna and Hexamila might support this interpretation.[24] The exact path of the road leading westwards from the sanctuary and north across the Isthmus has not been determined. One of the goals of the project will be to trace this with more precision making use of remote sensing techniques to map the road's location and using the data from surface materials as a means of studying the nature of activities along its path.

In a similar manner we hope to investigate the routes leading to Kenchreai, Korphos, and the secondary harbors that dot the coastline between them. The comparison of artifact quantities, types, and their distribution along these various routes to the ports serve as measures of internal and external traffic. This data might also allow us to assess the relative amount of marine versus terrestrial traffic into the more remote harbor and coastal sites. There has been little previous work at these locations, and we intend to test, among other things, the hypothesis that these were largely self-sufficient and isolated, rather than dependent on larger urban centers. Investigation of these sites should help to clarify the important but little documented marine routes in the eastern Korinthia.

The harbor at Kenchreai has been subjected to multiple incidents of seismic activity and landscape change, including subsidence. Recent research has identified a close correlation between the geological and archaeological evidence for these events and the site provides an excellent case study for regional response to catastrophic environmental change.

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[21] Broneer, 1973, pp. 117-122, pl. 81. The road bed was traced for a distance of *ca.* 65 m. and is located immediately south of the West Foundation. Another portion was found *ca.* 240 meters farther east.

[22] Gebhard and Hemans 1992; 1998.

[23] Archaic roof tiles from at least five small-scale buildings have been recovered in areas immediately west of the central sanctuary; Hemans 1994, pp. 61-74.

[24] Wiseman 1978, pp. 66-69.

Natural Resources

The study of the natural resources and their use in the ceramic, metal, and stone industries of the region continues the work of several colleagues. During the 1970s and early 1980s Rostoker and Gebhard (see bibliography) conducted a materials analysis project of the artifacts from the excavations at Isthmia. In addition to compositional analysis, they studied the manufacturing techniques of the metal objects and the Archaic clay roof tiles, and conducted studies of the techniques of limestone carving. The survey will extend these previous studies by attempting to locate the sources of these raw materials, and will examine the relationship between these sources and the development of nearby settlements.

Evidence for the use of Korinthian building materials and workmanship at other Greek sites is extensive; the best documented examples being Epidauros and Delphi.[25] Building accounts at both these sites demonstrate that Korinth was one of only a few city states that could provide both the materials and labor for large-scale building projects. The quarrying and shipping of limestone during both Greek and Roman times must have been one of the largest industries of the region. Quarries adjacent to Kromna, for example, appear to be the largest in the Korinthia, and the survey project may be able to determine to what extent the settlement owed its existence to this trade. Smaller quarries have been noted on the south side of the Hagios Demetrios ridge, above Kenchreai, on the Rachi ridge, and near the eastern terminus of the Late Antique Hexamilion wall, where it appears to have supplied stone for constructing the wall. In recent years Christopher Hayward has completed a study of the geology of the Isthmian central sanctuary, and is conducting an extensive study of the limestone quarries that is attempting (along with other objectives) to match the stone used in the buildings of Korinth, Isthmia, Delphi, and Epidauros to their quarry sources. The survey will expand this work by studying the relationship of the quarries to the nearby settlements.

Clay beds are an abundant resource in the Korinthia, and the production of terracotta tiles, pottery, sculpture and other items provide the most impressive evidence for Korinthian exports in the Archaic through Hellenistic periods. Interestingly the production of roof tiles was often at the construction site, and Korinthian craftsmen appear to have carried the raw clay with them for this purpose.[26] By sampling the clay beds from this area of the Korinthia and studying

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[25] Burford 1969. Corinthian exports for building materials can be traced in terracotta rooftiles as well as in the use of Corinthian limestone, for example nearly 70% of the roofs at Delphi from the 7th to 4th centuries B.C. were made of Corinthian clay; LeRoy, 1967. See also Salmon 1984, pp. 117-127 for an account of Corinthian exports.

[26] Salmon 1984, p. 121.

their composition and other properties, we hope to identify the range of clays used in the manufacture of specific types of terracotta products.

Similarly the project hopes to discover locations of metal working and possibly sources of iron ore in the area. Although these have not been previously identified, study of the iron smelting at the Sanctuary of Poseidon suggests sources exist close at hand.[27] It is possible, for example, that the area surrounding Sideronas was either a source of iron or a center of iron working. The name suggests a connection and iron slag has been noted in the vicinity.[28]

Timber is among the more difficult commodities to document, but poses a particularly interesting problem since Korinthians were major producers of ships and supplied timber for building projects outside their territory. Despite the prominence of the region in these activities, scholars disagree over whether the Korinthia had forests throughout most of her history that would produce large construction timbers. Meiggs argues that the sources used by Korinthian craftsmen were the western colonies, northwest Greece, or Arcadia.[29] It is, however, striking that Korinth's immediate neighbor to the west, Sikyon, was also a major supplier of timber and Burford takes the view that the timbers supplied to the building program at Epidauros in the 4th c. B.C. were grown in the Korinthia and Sikyonia.[30] Even if the Korinthia was largely deforested by Classical times, local supplies may have been available earlier. The project has located a number of areas suitable for pollen coring, and the analysis may well provide additional evidence on the types of wood available in the area as well as document changes in the forest cover.

C. METHODOLOGY

A major impetus for doing the survey at this time and one of the reasons for such a large research agenda is the extent of recent development in the eastern Korinthia. In recent years a major new highway has been built through the area and a high-speed railway along the same route is under construction. Commercial and residential development, which had already increased tremendously in recent years, is expected to increase even more in the years to come as a result of these new transportation projects. Thus, although the situation has not progressed to a point where archaeological survey is unfeasible, a unique window of opportunity is presented here. Local archaeological officials and the praefecture of the Korinthia are aware of the pressure impending growth will place on archaeological and historical sites. By collecting and analyzing

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[27] Rostoker and Gebhard 1980, 1981a.

[28] Wiseman 1978, p. 132, n. 24, reports the observation by R. Stroud on the small island at the eastern end of the bay.

[29] Meiggs 1982, p. 130 and n. 50.

[30] Burford 1969, p. 177, n. 2.

our survey data within the next few years, we will have the opportunity to help local Greek officials develop a management plan for the cultural resources of the region.

The threat of development has made us cognizant of the need to record as much information as possible. Consequently, we have adopted a highly intensive collection strategy and methods that address fundamental problems in survey design. One of the most serious problems in survey design has been the identification of meaningful study (or tract) units, and understanding alterations in the landscape that affect the interpretation of artifact distribution. This is being addressed by the careful integration of geomorphological information into the collection strategy. The geomorphological study (described below) will also assess the impact of long-term land use on the landscape. Another methodological concern is the problem of collecting statistically valid information on materials that are present in either extremely high or low amounts. We are addressing this by using a processing strategy that attempts to quantify (in an appropriate manner) virtually all the artifacts we encounter (see Artifact Processing and Analysis below).

In addition the project will make use of a sophisticated Geographic Information System (GIS) that will integrate the topographic, environmental, geomorphologic, and cultural data. The GIS system (see below) allows us to compare data in overlay and graphic formats making the analysis of large and diverse quantities of information significantly more efficient. Other components of the project are the mapping of sites, the use of geophysical remote sensing techniques to map subsurface features, and experiments that will assess the efficiency of our methods and monitor our progress toward achieving our research goals (see below).

Geomorphologic Studies

The interpretation of artifact data is not possible without an understanding of the geologic processes that have affected their distribution. For example, it is clear that surface sediment and soil has shifted over the past 10,000 years, transporting the cultural materials within it. Previous surveys have, generally speaking, been unable to describe and characterize this phenomenon and this has affected the broader archaeological conclusions they have been able to draw. The Eastern Korinthia Archaeological Survey, by contrast, will base its collection and analytic processes, in part, on geomorphological information, allowing us much greater precision and accuracy in drawing archaeological conclusions. Similarly, our assessment of the location and types of agricultural uses and the natural resources is highly dependent on a finely-scaled assessment of the geology and topography of the landscape. Discerning areas that have been deforested, where erosion and deposition has occurred, and where soils have been degraded is also a key element in assessing land use in the ancient economies. In fact, the project is an ideal

vehicle for the study of the impact of land use on the physical landscape. Our geomorphological study is unusual in that it is fully integrated into, and inseparable from, the methods and research goals of an archaeological survey. [31] This approach is built on a study conducted by team members in Cyprus (as part of the Sydney Cyprus Survey Project), and experience gained from surveys on other continents, and is in contrast to the common practice of having the archaeology and geoarchaeology as parallel studies in a multidisciplinary program.[32] In other words, the archaeology and the geology inform each other rather than having discrete goals and interests.[33] The geomorphological study provides a rich data set for understanding when and where people were on the landscape and how they have used that landscape over millennia.

The geomorphic study will consist of nested areas of increasing focus, from lower resolution study of entire drainage basins, to high-resolution studies of individual landscape elements (e.g., small tributary valleys, coastal units, or hillslope areas). The spatial distributions of artifacts across a landscape require many levels of interpretation before they can be used to reconstruct settlement patterns. At the most fundamental level, the reconstruction of settlement patterns requires a geomorphological understanding of small- and large-scale landscape changes as each object or feature is reworked by geological processes after its deposition.[34]

A geomorphologic understanding of the landscape provides a context for determining the relevance of archaeological materials, without which the potential for misinterpretation is immense. Unless this understanding is incorporated into all our analysis, we cannot hope to provide a secure interpretation of the human landscape.[35] To be specific: 1) knowing the geologic context of an artifact provides the survey team with a framework for determining if the artifact is in situ (i.e. deposited in a cultural context) or reworked by geologic processes; 2) incorporating geomorphologic mapping at the same scale as the archaeological survey is fundamental to understanding the evolution of artifact distribution and the interpretation of the function of "sites;" 3) establishing the age of landscape surfaces relative to the times of land use allows us to accurately interpret the archaeological relevance of sterile surfaces (be they depositional, erosional, or never occupied); and 4) reconstruction of the earlier physical landscape allows for the understanding of the environmental context of sites and features.

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[31] Jameson et al, 1994; van Andel, 1994; van Andel and Runnels, 1987; van Andel et al, 1990

[32] Wells, 1998

[33] An example of an integrated project is the Nikopolis Survey. See Wiseman 1992, 1993, 1994.

[34] Binford, 1992; Waters, 1996; Wells, 1998

[35] Wells, 1998

Our experience suggests that once the landscape is morphologically and chronologically stratified the success rate in finding artifacts increases dramatically, [36] but more importantly the integration of archaeological and environmental history will allow us to interpret the long-term human impact on the physical landscape.[37] The goal of our interdisciplinary framework is to re-create ancient landscapes that reflect the cultural, economic and environmental history of the Korinthia. The results should deeply enrich our understanding of human-landscape interactions.

Field Collection

Field teams will be composed of 5 field walkers and a geomorphologist, guided by a team leader with previous survey experience. Prior to any collection of materials, geomorphological units will be identified and described, and the tracts will follow the boundaries of those units. The geomorphological units will generally be small, based on, for example, local drainage conditions and soil changes. In laying out tracts we can thus avoid creating units in which artifacts from disturbed contexts are collected with those from primary contexts of deposition, with the result that we will have a meaningful basis on which to compare results within and among survey units. Thus, in contrast to most previous projects, which have defined tracts by agricultural field boundaries or some type of grid arbitrarily superimposed on the landscape, our collection units will more accurately reflect uniform cultural deposits. In addition to characterizing the tract geomorphologically, surface visibility, ground cover, and other information will be recorded (see Figure 2, the Tract Survey Form).

The spacing of field walkers will be at 10-meter intervals with a field of view of 2 meters. Thus, the normal pick-up coverage within each tract will be ca. 20%. All easily portable materials will be collected. Some types of artifacts, such as roof tiles and bricks which are present in high numbers and easily identified, can be sorted in the field, making an accurate count of the total numbers of each type. Non-portable objects and features will be flagged and information about them recorded after collection has been completed. All lithics will also be collected, understanding that stone tools in this region, which are made of local chert, are difficult to identify. Each walker will keep a running count on the numbers of artifacts using a double clicker-counter.

After collection is completed on the tract a number of other operations will ensue. The area will be photographed and non-portable objects and features (such as walls or worked stone) will be described and, if warranted, the mapping team will later draw these for further study. The

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[36] Knapp et al, in review; Wells, 1998; Wells and Noller, in review

[37] van Andel and Runnels, 1987; vanAndel and Zangger, 1990

total numbers of artifacts will be recorded on the Tract Form. Further processing and analysis of the materials is described below.

The position of tract units will be recorded on paper prints of the aerial photography, 1:5,000 scale maps, and by using the digital global positioning system at the center of the tract. Field recording is to be done primarily with standardized forms, but accompanied by a written narrative in a field notebook that will be transferred into a text file to accompany the database. Forms will be archived in binders after entry into the database. Most field photography will be digital and integrated within the database, but digital photography lacks sufficient resolution for publication. Thus, conventional film photography will supplement the digital in the field.

There are several collection parameters that can vary based on the density of artifacts without altering our ability to derive statistically comparable data. By varying these parameters we can avoid the problem of overburdening our processing system. Thus artifacts of unusual abundance can be collected proportionally, and the spacing and field of view of field walkers can be altered within well-defined parameters (see Experimental Studies, below).

Artifact Processing and Analysis

Processing and analysis will normally be conducted in two stages. During preliminary processing the artifacts are washed and assigned unique numbers that link them to their provenience and other information. At this stage a provisional identification and date is assigned and entered into the database. During the second stage of analysis a more precise identification is recorded and the description of the object completed.

A key feature in the structure of our database is what we call the “ChronoType” system. In our parlance, a ChronoType is a particular type of object (whether that be a stone hand axe, a ceramic bowl, etc.) that is notable for being both recognizable, distinct from all others, and for having a specific temporal range. For convenience we express this date as B.C. and A.D., but the database keeps track of this as a positive or negative integer. The ChronoType system is open-ended and hierarchically arranged, so that new ChronoTypes (especially objects with more refined definitions) can be added at any time and so that changes in chronology or definitions can be automatically made as knowledge increases. For example, our database has both ‘Fine Ware - Roman’ and ‘African Red Slip.’ The former is a ChronoType used only when a ceramic specialist knows by virtue of fabric analysis and surface treatment that (s)he is looking at a piece of fine ware pottery from a broad span of time but definitely Roman. As such it is not very tightly defined in time. African Red Slip, however, is much more specifically dated, though it too is a Roman Fine Ware. In addition, it is possible to add each of the "forms" of African Red Slip

ware, along with the bibliographical and other information associated with each. During processing all the artifacts that are retained will be required to have a ChronoType assigned to them. By insisting that each object is assigned a ChronoType, we create data with a very robust and consistent naming scheme, which is vital for further analysis.

One of the advantages can be seen, for example, when an archaeologist wants to study the spatial distribution of ceramics for the range of dates 100 A.D. to 200 A.D. The database would supply information on both the African Red Slip and Fine Ware-Roman ceramics, and the distribution of the two types of wares can be statistically compared to see if there is a correlation. Similarly the distribution of coarse and cooking wares can be compared with the fine wares, and the differences might suggest the location of specific types of activities. The ChronoType system also helps in dealing with the different chronological systems that are used to define different classes of data, by resolving different dating schemes in positive and negative integers. For example, an archaeologist can query the database for all materials (coins, lithics, Carbon 14 samples) that correspond to a specific range of time. Yet another advantage is that the use of a ChronoType system allows us to quickly process "undiagnostic" ceramics that are present in large quantities. These can be quickly sorted, making a total count, and a few representative samples can be retained. The remainder can be discarded, avoiding the burden of completely processing thousands of unidentifiable artifacts.

Geographic Information System

The project will integrate the use of a comprehensive GIS in planning, analytical and publication phases. The survey Geographic Information System will be a multi-functional tool that will allow integration of multiple data sets, including topographic, environmental, geomorphologic and cultural data that will be continuously updated during the course of the project. Aerial photographs, satellite imagery, and topographic data are already being entered into the system.

The project GIS is much more than a mapping tool, serving as a means to integrate and evaluate diverse data sets. This allows analysis and modeling based on multiple variables in quantities impossible to analyze with more traditional methods. It also serves to make diverse and large quantities of information available to the project members in a georeferenced and queryable manner. Thus, survey tracts, site locations, roadways, landuse information, landform data and other information will all be available as separate or related bodies of information. The GIS system allows us to compare data in overlay and graphic formats making the analysis significantly more efficient.

Satellite remote sensing data will also be integrated into the GIS. This will greatly facilitate visualization of the Korinthia as a geographic and environmental unit, and the use of multispectral data will assist in the creation of a probabilistic model for the location of sites. Satellite data is also a key component in mapping present vegetation and land use.

The GIS is instrumental in allowing the different specialists of the project access and understanding to the work of their colleagues, and streamlines the execution of an interdisciplinary project. For example, geomorphologic data will be stored in the GIS so that field team leaders will be able to access this data directly, which in the past would have required meeting directly with the geomorphologists. Use of the GIS also allows for correlation and scheduling ease of project components, since the induction of data into the GIS will allow different specialists to visit discrete locales at different times yet still share information effectively. Portions of the GIS will be made available via the World-Wide Web in incremental stages during the project and in published format after its completion.

Geophysical Remote Sensing

Geophysical survey will be conducted with three objectives: to trace the road system, to define the horizontal and vertical depth of settlement deposits, and to help define the major natural and man-made depositional changes throughout the region in conjunction with the geomorphologic study. The two latter studies will be particularly important as a test of information provided from surface artifacts that defines the physical extent of settlements. Specifically we plan to use an electromagnetic conductivity meter. The instrument records soil conductivity to an effective depth of 6 meters, which is ideal for measuring the widely varying depth of deposits in the study area, and its ease of use make this a good option for recording relatively large areas quickly. Subsurface conditions in this portion of the Korinthia are almost ideal for this instrument. Beneath the surface soils, the region is composed of layers of marl with very high conductivity and layers of limestone with very low conductivity. The contrast between these two types of layers is significant because it allows a relatively accurate determination of the actual depth of fill that overlies them. Use of this instrument in the sanctuary of Poseidon has allowed us to trace the road bed that descends from the central plateau of the sanctuary, to discover the depth and extent of a subsurface gully at the east edge of the temenos, and to document the intact, but buried south embankment of the Archaic/Classical stadium. Thus we already have considerable experience using the instrument under the conditions we will encounter in the regional survey.

During the 1997 study season we also collected conductivity data across an area southwest of the Later Stadium at Isthmia. The overall configuration of the area suggested the

hypothesis that it may contain the remains of the ancient hippodrome, and the geophysical survey was conducted with the hope that the data would provide additional evidence for assessing the function of this large tract. To test this area we collected data in transects 150-250 m. in length. Each line included at least one area of marl or bedrock near the surface that provided a base-line measurement for measuring the depth of fill across the remainder of the transect. The general procedure is one that we will follow during the regional survey. Preliminary analysis of the data seems to confirm our hypothesis that the ancient hippodrome was located here and we are now preparing our findings for publication.

In 1997 we were able to collect data over an area of ca. 3,000 sq. meters in 6 days. We plan to do a similar amount of work in each of the three survey seasons, allocating 5-10 days per season to test the types of areas described above. Based on our previous experience, it is likely we will be able to increase the spacing between our measurements and achieve the same results. Thus the total amount of area we expect to be able to test is estimated at ca. 15,000 sq. meters. The field work and analysis will be conducted under the direction of Apostolis Sarris of the Center for Geophysical Prospection and Remote Sensing of Crete.

Topographic Survey

The features and topography of most currently-known sites in the region have not been properly recorded, and the expansion of development is likely to threaten the integrity of many of these sites in the immediate future. For this reason, as well as to document these sites for our own research, it is imperative that adequate plans be made of these features and sites.

This field drawing is estimated to require a separate team of three people working continuously over the three years of the project. Topographic maps of the major sites will be drawn at the appropriate scales to record all the available information. For example, we anticipate surveying the extensive Neolithic settlement north of Hexamilia at a scale of 1:500, and detailed stone-for-stone drawings of walls and other features will be drawn at scales as large as 1:20. Survey control for the overall region can be built and maintained, from the national survey markers, the GPS, and satellite imagery.

Experimental Studies

The experimental archaeology program of the Eastern Korinthia Archaeological Survey has two essential components. The first, including experiments that measure our efficiency and recovery rates, is one of self-examination. By monitoring our performance in the field and in the lab, we will gauge how effectively we will be able to put our research design into practice. The second component will allow us to gain insight into the subtleties of the surface manifestations

of archaeological remains. Both these components, as important as they are, are underrepresented in survey archaeology literature. Our research will be one step in filling this lacuna.

Efficiency Experiments

The methodological approach of the project, as outlined in previous sections, is ambitious. Our field teams will be assigned a complex array of data gathering procedures which include archaeological, geological, geographical, environmental, and practical components for each tract. The primary benefit of such a system is increased precision in our data. But there is a trade-off. As each tract will require more time to finish, consequently, a smaller number of tracts can be surveyed than with less time-intensive methods.

The efficiency experiments, to be conducted at the beginning of the first field season, will address this issue by examining the time it takes to implement our procedures in a variety of field conditions. Tasks will be adjusted to minimize the amount of time anyone spends idle, thus minimizing the overall time it takes to complete a tract. We will then assess whether or not our data collection strategies will allow us to reach our overall goal of covering 20-25 square kms. during the first season of fieldwork. If our ideal data collection strategy proves too time consuming, we will adjust aspects of it accordingly. Variables which will be examined include fieldwalker spacing, fieldwalker scope (i.e., width of observed area in a pass), collection procedure (e.g., total, proportional, or selective), artifact sorting (in field, in lab, or a combination), the utility of grab samples, and overall tract sizing and definition. In addition, these variables will be factored in the assessment of the comparability of tract and POSI (Place of Special Interest) data and also for potential biases created by different approaches.

An important part of the project will involve total collection of tracts that we have covered using our standard team spacing, to determine, by experimental means, what percent of visible objects we are actually identifying in the field.

Seeding Experiments

During the second part of the first season, a set of experiments will be conducted to measure a team's performance in artifact discovery. Fields devoid of artifacts will be "seeded" with known quantities of pottery in specific spatial distributions. General visibility conditions will vary from field to field. The variables affecting artifact recognition that will be controlled and monitored include vegetation cover, background confusion (stones and other non-artifacts which may be visually similar to sherds), surface soil texture and treatment (ploughing and

irrigation, for instance, influence sherd obtrusiveness), and direction of light (early morning glare in wheat stubble, for example, can severely limit visibility).

Teams will walk these fields as if they were regular units, marking with flags, the location of all artifacts seen. The number and location of discovered artifacts will be compared to the number and location of total artifacts in each field. These figures will give us an idea of what percentage of total possible finds are actually discovered. The data will also allow us to attempt to quantify the relative influence that visual conditions have on sherd discovery, e.g., is background confusion a greater hindrance to sherd discovery than vegetation cover? How much more do you find with the light to your back than when walkers face the sun?

A previous set of seeding experiments, conducted by project member R. Schon while part of the Sydney Cyprus Survey Project, examined the effects of vegetation cover, and demonstrated that while surface visibility was a factor in sherd discovery its influence was not linear. Two fields of identical size, but different vegetation were seeded with an identical number of sherds. One field had a ground visibility of 40%, while the second had a ground visibility of 80%. Four teams walked each field. The results consistently showed that while in each instance more material was recovered from the second field the difference was far less than two-fold. In calculating relative densities of tract material from the entire survey, we were then better able to assess the influence of surface visibility.

The survey's experimental archaeology program will create a visibility/sherd obtrusiveness index which better reflects the ground surface variability that fieldwalkers encounter as they look for artifacts. Understanding of the fieldwalker-ground surface interface, which is critical to our survey's aims of precise and accurate data recovery and analysis, has yet to be addressed by survey archaeology in an adequate manner. The results of our experiments should shed a great deal of light on the factors that influence artifact discovery, and the results will enable more consistent tract to tract comparability of data.

Resurvey

Due to the constant alteration of the landscape by people and nature, surface evidence of human behavior is often ephemeral. Buried archaeological remains can be exposed by a plough one year, and wiped away by a bulldozer the next. Artifacts buried by hillslope soil erosion may become exposed when a stream cuts through this sediment at a later time. To gain a better understanding of the changing conditions of surface artifact exposure, part of our research design is to resurvey a selected number of tracts over the course of the project. By revisiting and collecting data on these tracts over multiple years, we will attempt to assess the impact that year to year land use processes have on surface artifact exposure. Such processes include farming

practices: ploughing, letting fields go fallow, and irrigation, development activities: bulldozing and house construction, and also our own activities as archaeologists: the removal of artifacts from their surface contexts. Monitoring such changes will allow us to keep tabs on the consistency of our field data as well as allowing us to target specific areas for future research where we have cause to believe that certain remains are threatened.

Interpretation of Data

After initial collection has begun, our field strategies and the processing and analysis of data will be monitored to address potential problems with our methods before, or as, they arise. We will be looking for biases in our procedures that may influence ultimate analysis and interpretation, as well as monitoring the efficiency of our procedures. To best succeed in achieving our goals, our system from start to finish must operate efficiently.

A potential problem may be illustrated in the handling of a POSI. We may encounter a scatter of artifacts so dense and spatially extensive that sampling it in the same manner as most other tracts or POSIs would generate far more material than previously encountered. Using our regular methods would consume much larger amounts of field time, artifact processing time, and computer input time without providing proportionally increased information from our data. Alternative collections strategies, which remain consistent with our methodological approach, may be invoked to generate more manageable quantities of materials without compromising our ability to interpret this data. One way to ensure that these alternate collection strategies remain consistent with our standard methods would be to simulate certain scenarios of data availability. We can assess whether our interpretations would have been different if we had followed a method that generated more or less data than what we actually collected.

D. SCHEDULING

The Eastern Korinthia Archaeological Survey proposes three seasons of field work in 1999, 2000, and 2001. Field campaigns will be conducted for approximately seven weeks in each of these years, from the middle of June through the first week of August. We intend to complete the majority of artifact collection during the first two seasons of the project, leaving opportunity during the third season for more problem-oriented field studies, and to pursue questions that arise while interpreting the data. Thus, the analysis of the distribution of artifacts, geomorphologic data, and other categories of data will lead to a gradual shift of emphasis from large-scale data collection toward studies aimed at testing hypotheses and refining our interpretation of those data.

At the completion of this three-year project, a comprehensive preliminary report on the results will be prepared for submission to *Hesperia*. Thereafter, the project plans two additional years of study (continuing the active collaboration of senior staff) to allow for the completion of detailed specialist studies and the integration of those studies into a comprehensive picture of the cultural, economic, and environmental history of the eastern Korinthia.

In addition, we will post annual reports, publications, and other information on the project web site at http:/eleftheria.stcloudstate.edu/eks/.

E. PERSONNEL

Administration

The directors of the project are Timothy E. Gregory, Ohio State University, and Frederick P. Hemans, Wichita State University. Gregory has been the Director of the Ohio State University Excavation Project at Isthmia since 1987, and Hemans has been the Assistant Director of the University of Chicago Excavations at Isthmia since 1987. The two directors are jointly responsible for all aspects of the project, including coordination with Greek authorities, fund-raising, planning, overall administration and the assignment of duties, and publication. Elizabeth Gebhard, Director of the University of Chicago Excavations at Isthmia, will serve as a senior advisor to the survey.[38]

STAFF: Publication and Research Responsibilities

Virginia Anderson-Stojanovic. Department of Fine Arts, Wilson College, Chambersburg, PA. The relationship of the Rachi settlement to its surrounding landscape. Identification and study of Hellenistic and Roman pottery, and ceramic expertise to assist in determining the chronology and function of sites during the Hellenistic and Roman periods.

Karim Arafat. Department of Classics, Kings College, London, UK. Identification and study of Archaic pottery. Ceramic expertise to assist in determining the chronology and function of sites during the Archaic period.

Lita Diacopoulos. Department of Prehistoric and Historical Archaeology, University of Sydney, Australia. Modern ceramic identification and study. Cultural Resource

[38] The University of Chicago Excavations at Isthmia and the Ohio State University Excavation project will continue to submit annual reports on the progress of ongoing activities at Isthmia to the ASCS.

Management. Contemporary Archaeology. Collaboration with S. Sutton on modern settlement formation.

Timothy Gregory. Department of History, Ohio State University, Columbus, OH. Byzantine-Ottoman ceramic identification and study. Byzantine-Ottoman settlement patterns. Collaboration with Rothaus on the settlement patterns for the Late Roman through Byzantine periods.

Christopher Hayward. Department of Mineralogy, The Natural History Museum, London, UK. Studies to augment his ongoing research on the ancient quarries within the Korinthia. Hayward's ongoing studies include: the description of all surviving ancient quarries and the tracks associated with the quarries. Quarry layout and extraction techniques. Provenance of the stone used in monuments in the Korinthia, Delphi, and Epidauros. Quarry ages as described by provenance data. The relationship between the quarries and the major transportation routes within the region.

Frederick Hemans. School of Art and Design, Wichita State University, Wichita, KS. The study of Archaic-Roman settlement patterns in collaboration with Anderson-Stojanovic, Arafat, Risser and others. Collaboration with Sarris and others on geophysical work. The relationship of the Isthmian sanctuary (7th c. B.C. through imperial Roman times) to the surrounding region.

Liane Houghtalin. Department of Classics, Philosophy, and Religion, Mary Washington College, Fredericksburg, VA. Identification and study of coins.

P. Nick Kardulias. Department of Sociology and Anthropology, College of Wooster, Wooster OH. Pre-Neolithic studies; flaked and ground stone tools; ethnoarchaeology (in collaboration with Sutton and Diacopoulos).

Nathan Meyer. Senior Systems Analyst, The St. Paul Company, Minneapolis, MN. Archaeological theory and survey design (in collaboration with Tartaron, and other staff); recording and information systems; computer resources.

Jay Noller, Department of Geology, Vanderbilt University, Nashville, TN. Terrestrial geomorphology, soils and pedology, neotectonics.

Daniel Pullen, Department of Classics, Florida State University, Tallahassee, FL. Neolithic to Middle Helladic settlement patterns and ceramics study. Ceramic processing coordinator.

Eduard Reinhardt, School of Geography and Geology, McMaster University. Coastal geomorphology, harbor sites, marsh stratigraphy.

Martha Risser, Department of Classics, Trinity College, Hartford, CT. Identification and study of late Archaic and Classical pottery. Ceramic expertise to assist in determining the chronology and function of sites during the later Archaic and Classical periods.

Richard Rothaus, Department of History, St. Cloud State University, St. Cloud, MN. Harbor sites and coastal geomorphology (in collaboration with geomorphology team). Late Roman/Early Byzantine settlement patterns in collaboration with Gregory. GIS in collaboration with others. Geophysical remote sensing in collaboration with Sarris and others.

Apostolos Sarris, Center of Geophysical Prospection and Remote Sensing, Institute of Technology and Research, Rethymnon, Crete, Greece. Geophysical remote sensing collaboration with Hemans, Rothaus, the Geomorphology team and others as appropriate.

Robert Schon, Bryn Mawr College. Experimental studies and methodology.

Susan Sutton, Department of Anthropology, Indiana University-Purdue University. Study of modern settlement patterns. The formation and transformation of rural communities and regional settlement systems in modern Greek history.

Thomas Tartaron. Center for Materials Research in Archaeology and Ethnography, Massachusetts Institute of Technology, Cambridge, MA. Archaeological theory and experimental archaeology (with Meyer, and other staff), Late Helladic and Geometric settlement patterns.

Lisa Wells, Department of Geology, Vanderbilt University, Nashville, TN. Geomorphology and erosion studies, methodological integration of geomorphology and archaeologic surveying, coastal evolution.

Consultants

Panagiotis Doukellis, Ionian University

Michael Fotiadis, University of Ioannina

Babis Kasimis, University of Patras

James Redfield, University of Chicago, Director of the University of Chicago/Indiana University Excavations at Kenchreai

David Romano, University of Pennsylvania

James R. Wiseman, Boston University

F. CONTACTS WITH GREEK AUTHORITIES AND THE PUBLIC

Survey activities are being conducted in close cooperation with the 4th Archaeological Ephoreia of Greece, and extensive consultation has taken place with Mrs. Elisavet Spathari, Ephor of Prehistoric and Classical Antiquities, 4th Ephoreia, Nauplion, Greece, as well as with Mrs. Zoe Aslamatzidou, Epimelitria. In addition, the project is in contact with local authorities, such as Mr. Pavlos Pavlou, mayor of the Demos of Loutraki, to ensure continued good relations and their support of our activities.

The project also realizes that modern development is rapidly impacting the Korinthian natural and cultural environment, and that the discovery of archaeological evidence can often lead directly to its destruction. We have made plans to address this issue by collaborating with Greek government agencies, especially the Archaeological Service and local governments, in the preparation of a management plan for the preservation of the antiquities in this region. The proposal will emphasize the potential for the survey to provide environmental and cultural information for the region that will help in planning for future activities.

The project seeks to involve the general public—both in Greece and without—in a way that is unusual for archaeological projects. Thus, aside from traditional scholarly publication, the project seeks public involvement and interaction on the following levels: with governmental authorities (mentioned above); with the people of the survey area, who are in daily contact with the landscape and the antiquities; with the younger generation of people in the survey area; and with the broader public in Greece, America, and elsewhere. This interaction on the first three levels will include "give and take," as we seek to learn from local inhabitants about their environment and as we involve them directly in our work through lectures, demonstrations, popular publications (newspapers, etc.), and hands-on demonstrations of the working of the survey. At the most general level we will write articles designed for the general public (in both Greek and English), we will encourage mass-media coverage of the project, create Internet sites, and discuss the survey area in view of preparations for the Athens Olympics of 2004.

G. BUDGET

Year One		
Per diem[39]		
principal staff (15)	7 weeks @ $260 /wk.	$27,300
scholars for ceramics and coins analysis (4)	3 weeks	3,120
survey team leaders (4)	7 weeks	7,280
mapping team leader	7 weeks	1,820
data entry manager	7 weeks	1,820
photographer	7 weeks	1,820
artifact illustrator	7 weeks	1,820
Overseas Travel (7)		8,000
Local transportation		
2 cars @ $40 each per day, 50 days		4,000
2 vans @ $75 each per day, 40 days		6,000
gasoline 4 x 16 liters x $0.90 x 45 days		2,590
Geophysical remote sensing (contract with the Center of Geophysical Prospection and Remote Sensing)		5,000
Processing Supplies		
wooden storage boxes, wooden tags, plastic bags		300
Drafting and office supplies		
paper, ribbons, pens, etc.		300
Photographic supplies		
chemicals and paper		300
Digital photography		
printer supplies and software		500
Field team supplies		
Brunton compasses, 4 @ $250 ea.		1,000
Mobile phones 4 @ $200 ea.		800

[39] Based on previous experience with the costs of food and housing, and with an adjustment for inflation, the project anticipates the average cost per person per week in the first year of the project will be $260. In subsequent years the cost is calculated at $280 and $300 to allow for inflation.

Globe Earth Colors book, 4 @ 15 each		60
50 m tapes, 8 @ $25 each		200
Pin flags (ca. 20 per team) 80 @ 1.50		120
Clickers, double, 24 @ $25 each		600
misc. expendable supplies		
batteries, notebooks, etc.		300
Subtotal Year One		**$75,050**
Year Two		
Per diem:		
principal staff (15)	7 weeks @ $280 /wk.	$29,400
scholars for ceramics		
and coins analysis (4)	3 weeks	3,360
survey team leaders (4)	7 weeks	7,840
mapping team leader	7 weeks	1,960
data entry manager	7 weeks	1,960
photographer	7 weeks	1,960
artifact illustrator	7 weeks	1,960
Overseas Travel (7)		8,000
Local transportation		
2 cars @ $40 each per day, 50 days		4,000
2 vans @ $75 each per day, 40 days		6,000
gasoline 4 x 16 liters x $0.90 x 45 days		2,590
Geophysical remote sensing (contract with the Center of Geophysical		
Prospection and Remote Sensing)		5,000
Processing Supplies		
wooden storage boxes, wooden tags, plastic bags		300
Drafting and office supplies		
paper, ribbons, pens, etc.		300
Photographic supplies		
chemicals and paper		300
Digital photography		

printer supplies and software		500
Field Team Equipment and Supplies		
misc. expendable supplies		
batteries, notebooks, etc.		300
Subtotal Year Two		**$75,730**
Year Three		
Per diem:		
principal staff (15)	7 weeks @ $300 /wk.	$31,500
scholars for ceramics		
and coins analysis (4)	4 weeks	4,800
survey team leaders (4)	7 weeks	8,400
mapping team leader	7 weeks	2,100
data entry manager	7 weeks	2,100
photographer	7 weeks	2,100
artifact illustrator	7 weeks	2,100
Overseas Travel (7)		8,000
Local transportation		
2 cars @ $40 each per day, 50 days		4,000
2 vans @ $75 each per day, 40 days		6,000
gasoline 4 x 16 liters x $0.90 x 45 days		2,590
Geophysical remote sensing (contract with the Center of Geophysical		
Prospection and Remote Sensing)		5,000
Processing Supplies		
wooden storage boxes, wooden tags, plastic bags		300
Drafting and office supplies		
paper, ribbons, pens, etc.		300
Photographic supplies		
chemicals and paper		300
Digital photography		
printer supplies and software		500
Field Team Equipment and Supplies		

misc. expendable supplies	
batteries, notebooks, etc.	300
Subtotal Year Three	**$80,390**
Total Budget	**$230,870**

H. FUNDING

The budget above is considered a minimum for the completion of our research goals. At the present time, the project has submitted an application for funding to the National Endowment for the Humanities. The project will also seek funding from the National Science Foundation, the Institute for Aegean Prehistory, National Geographic Society, as well as private foundations and donors. Previous success with projects supported by outside funding, and the pressing need for the work, make us hopeful that we will gain grant support.

I. FACILITIES FOR PERMANENT STORAGE

All the materials collected in this survey will be permanently stored in the facilities at Isthmia. At the present time these facilities hold the artifacts from the University of Chicago excavations at Isthmia, the joint University of Chicago and Indiana University excavations at Kenchreai, and the Ohio State University excavations at Isthmia. Additional shelves and storage containers will be added to these spaces to accommodate this project. The facilities also include work spaces and equipment for processing and studying artifacts, drawing, and the conservation of materials.

J. PROJECT ARCHIVES

All original field notebooks, forms, and other records will be archived at Isthmia. These will not leave the site, but duplicates will be made for study. Data from both the field and inventory will be compiled in a database for easy retrieval and to allow the manipulation of the data for analysis. Copies of the computer data will also be made for individual scholars working on publication and this electronic data will be properly archived and stored according to contemporary electronic archival principles concerning data migration, etc. Drawings are stored in cabinets, with copies maintained whenever the originals travel for study, revision, or publication. GIS data, drawings, and other data in various forms will also be prepared for publication at St. Cloud State University, Ohio State University, Wichita State University and elsewhere as necessary: copies will be maintained in the Isthmia archives.

K. PUBLICATION TIMETABLE AND FORMAT

The preliminary as well as many of the final reports of the survey results will be prepared as articles for submission to *Hesperia* and other appropriate scholarly venues. We anticipate the completion of brief preliminary reports at the end of each season, and a longer summary report in the year following the completion of the survey. Special studies, such as the results of geomorphologic and geophysical work, methodology, ethnoarchaeology. and cultural resource management issues will be published in various journals as appropriate. As the project progresses we will also carefully consider whether a separate volume of final results is an appropriate format for publication. In addition, we will post annual reports, publications, and other information on the web. The Eastern Korinthia Archaeological Survey has established a web site at http://eleftheria.stcloudstate.edu/eks/.[40]

L. LETTERS OF SUPPORT FROM SPONSORING INSTITUTIONS

(appended)

M. PUBLICATION RESPONSIBILITIES OF PROJECT DIRECTORS

The co-directors of the Eastern Korinthia Archaeological Survey will continue their publication duties with the University of Chicago and the Ohio State University projects at Isthmia. Indeed, a primary responsibility of both these projects continues to be the publication of results of previous seasons' excavations, stretching back to 1952. The *Isthmia* series now numbers seven volumes in print and others are near to submission and only require editorial work. In addition several major articles from Isthmia have appeared in *Hesperia* and other periodicals in recent years, including a series of articles based on the 1989 Chicago excavations in the central sanctuary and the Rachi settlement, and two articles on the Roman Bath, a volume on which is scheduled for completion at the end of 1999. The publication programs of the two Isthmia excavation projects, now well underway, will continue, largely unaffected by the new survey project. Thus, publication of previous work will not be harmed by a new program of survey in the eastern Korinthia, indeed, many questions raised by years of excavation in the Sanctuary of Poseidon can only be answered by a carefully-conceived study of the surrounding territory.

N. VITAS OF PROJECT PERSONNEL (appended)

[40] Both the University of Chicago and the Ohio State University projects at Isthmia maintain web sites at: http://humanities.uchicago.edu/isthmia/ and http://www.acs.ohio-state.edu/history/isthmia/.

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