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EXTREMITIES IN TOURISTIC EXPLOITATION OF CAVES: THE CASE OF "PSYCHRON CAVE" (PSYCHRON, CRETE, GREECE)

By

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ABSTRACT

The absence of planning and the opportunistic exploitation of caves in Greece have caused several social and environmental problems some of which are non-reversible. In this contribution we examine and criticise the touristic exploitation of one of the most important Greek caves; the cave of Psychron (Lasithi, Crete). Archaeological and zoological data published during the last century are reviewed. Legislation for the protection is and the management practice are cited. The dramatic results of the so far exploitation are presented and discussed. Finally, certain suggestions are provided for the minimisation of the problems and for the application of a management practice that will lead to a sustainable development.

ΣΥΝΟΨΗ

Η ανυπαρξία σχεδιασμού και η καιροσκοπική τουριστική εκμετάλλευση των σπήλαιων στην Ελλάδα έχουν δημιουργήσει πολλά κοινωνικά και περιβαλλοντικά προβλήματα, αρκετά από τα οποία είναι μη αντιστρεπτά. Σ' αυτήν την παρουσίαση εξετάζουμε μία ακραία περίπτωση τουριστικής εκμετάλλευσης σπήλαιου αυτήν που εφαρμόζεται τις τελευταίες δεκαετίες στο σπήλαιο του Ψυχρού (Οροπέδιο Λασιθίου, Κρήτη). Γίνεται ανασκόπηση των αρχαιολογικών και βιολογικών δεδομένων που έχουν δημοσιευθεί τον τελευταίο αιώνα. Περιγράφεται το νομικό καθεστώς προστασίας του σπήλαιου και η διαχειριστική πρακτική που εφαρμόζεται τις τελευταίες δεκαετίες. Τέλος, παρουσιάζονται και συζητούνται τα δραματικά αποτελέσματα της μέχρι σήμερα διαχείρισης και διατυπώνονται προτάσεις που θα αμβλύνουν τα προβλήματα και θα αναδείξουν το σπήλαιο σε ένα σημαντικό αναπτυξιακό παράγοντα.

Introduction

The last 30 years there is an increasing interest for touristic exploitation of caves in Greece. So far exploitation by means of charging the entry occurs for 11 caves, attracting more than half million tourists per year. Some dozens of caves all over Greece are regularly visited by numerous local and foreign tourists.

The touristic arrangement and management of Greek caves have caused several environmental and social problems which in some cases are severe. More than 95 photosynthetic organisms have established big populations in the cave of Perama(Ioannina Dep.) because of improper lighting (Anagnostidis et al 1981). Some of

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the larger colonies of bats known in Greece have been expelled from the cave of Alistrati (Serres Dep.) because of the improper enclosure of the natural entrance and the disturbance by visitors (Paragamian 1992). Vandalism occurs in several caves because of the insufficient or absence of guarding. Severe environmental and social problems have been caused from the exploitation of the cave of Psychron (Lasithi Dep.) (Paragamian 1989).In all cases, the lack of sufficient infrastructure, the improvised management and the strict economic exploitation have put aside almost all the ingredients required for a sustainable and equally balanced development. In this article, we outline the dramatic results of the touristic exploitation of one of the most important and most degraded Greek caves, the famous cave of Psychron known also as "Diktaion Andron". We examine the causes and make recommendations for restoration and appropriate management.

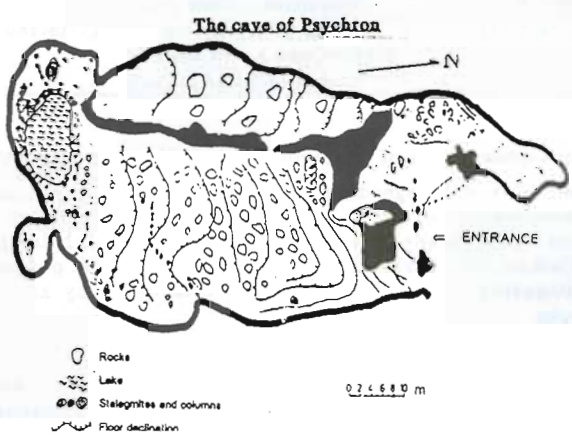
Description of the cave

The cave is situated 2 Km SW of the village Psychron (Lasithi plateau), at 1,025m altitude. It was partially explored and mapped in 1963 (Petrochilou 1963) and 1970 (Platakis 1973a). It is comprised from two main sections that were separated by roof breakdown. Archaeological evidence showed that the entrance of the south section was closed by fallen rocks some time between Late-Minoan III and the Geometric period until it was reopened in Roman times. The north section is a horizontal chamber 35m long, 18m wide and 8m high.

The south section is slopping. The entrance is 14m wide and 8m high. The following chamber is 85m long with 35m average width, 15m average height and 37m depth. At the deepest part, there is a small lake (16m x 7m) surrounded by impressive decoration. At the west side of the lake there is a small chamber. A narrow passage on the northern wall leads to a chamber of 60m in length and 7m average width. This chamber escaped the attention of the first explorers.

The archaeological record

The cave was first explored by Halbherr and Hatzidakis in 1883. Evans visited Psychron in 1895 for the first time. In 1896 he made a probe excavation of sixteen square meters discovering numerous objects. The following year, 1897, Demargne visited the cavern and conducted a trial excavation. The summer of1900, Hogarth made the last excavation of the site for the British School of Athens.



The excavations brought to light very rich findings (Hogarth 1900 and Boarman 1961) (TABLE 1) indicating that Psychron cave served as a cult place for considerable time periods, from Early Minoan times to sixth century B.C. (Tyree-Loeta 1975). The most notable findings are stone offering tables, a bronze votive plaque, bronze and terracotta figurines, bronze votive blades, bronze daggers and knives, arrow-heads and fibulae.

TABLE 1. Summary of the findings in Psychron cave.

ERA	FINDINGS
Early Minoan (3000-2200 B.C.)	Burials.
Middle Minoan (2200-1550 B.C.)	Terracotta figurines.
Middle Minoan II (1900-1700 B.C.)	Sherbs and scarab seal.
Middle Minoan III (1700-1550 B.C.)	Two-handled bowls and single-handled cups.
Middle Minoan III-Late Minoan I (1,700-1450 B.C.)	Seven stone offering receptacles, one serpentine offering table with Linear A inscription incised on top, twenty-nine bronze votive double axes, several hundred bronze votive blades.
Middle Minoan III-Late Minoan III (1700-1025 B.C.)	Numerous bronze daggers. Many shreds and votive seals.
Late Minoan (1550-1025 B.C.)	Two full-sized bronze double axes.
Late Minoan I (1550-1450 B.C.)	Bronze and terracotta bulls and rams, bronze votive plaque, bronze male and female votaries.
Late Minoan III (1400-1025 B.C.)	Bronze male and female votaries, three bronze daggers or knives, arrow-heads, two terracotta bull rhyta and relief pithoi.
Late Minoan III-Sub-Minoan (1700-950 B.C.)	Numerous single-edged bronze knives, bronze fibulae, numerous bronze needles, nearly a hundred bronze tweezers.
Protogeometric (950-810 B.C.)	Pottery.
Geometric (810-710 B.C.)	Pottery, one seal stone (?), bronze male and female figurines, bronze and terracotta bulls, several fibulae.
8th to 7th century	Numerous bronze pins.
7th century	Pottery, terracotta bulls, terracotta and bronze plaques, one arrow head.
6th century	Bronze calf and pottery.

Soon after the excavations of Psychron in 1899, Hogarth claimed that he had found the Diktaian cave· the legendary birth-place of Zeus. All researchers who followed in the examination of the findings and the written sources, showed that Hogarth's estimation was arbitrary (Evans 1921-35, Marinatos 1941, Nilsson 1950, Willets 1962, Faure 1964, Platakis 1965, Tyree-Loeta 1974 and others). Local people, as expected, proudly adopted Hogarth's claim that was finally established by all tourist guides, periodicals and books.

The zoological record

Several zoologists have surveyed the cave of Psychron during the last 40 years. The published data concerning the cave's fauna comprised of 2 snails, 4 copepods, 1 isopod, 4 spiders, 4 orthopters and 2 carabid beetles (TABLE 2).

Both snails are endemic. *Oxychilus minoicus* is extended to eastern Crete (Riedel 1968 and 1992) while *O. amaltheae* in known only from this cave (Riedel & Subai 1982 and Riedel 1992). The authors remarked that the population of *O. amaltheae* in 1982 was very small and should be protected. The 4 species of copepods have been collected from the lake in the deepest part of the cave (Lindberg 1956 and Chappois 1956).

The troglobitic isopod *Shcizidium perplexum* is known from several caves of southern Crete. The population in Psychron cave is very small due to touristic exploitation (Paragamian et al 1987).

The orthopteran species, with the exception of *Gryllomorpha dalmatina* which is an accidental, are relatively common in Cretan caves. *Troglophilus spinulosus* and *Discoptila lindbergi* are known from numerous caves all over Crete while *Dolichopoda paraskevi* is known from caves of the central and the eastern parts of the island (Chopard 1957, Boudou-Saltet 1978, Kollaros et al 1987 & 1991).

All spiders are known from several sites all over Crete (Roewer 1959, Brignoli 1971, Senglet 1971).

The 2 carabid beetles have been collected by Lindberg and identified by Coiffait (1955).

The published data represent only a small portion of the cave's fauna. Many more invertebrate species inhabit the cave, all in small populations (for example, *Trichoniscus cavernicola*). I have observed 2 species of bats (*Rhinolophus ferrumequinum* and *R. hipposideros*). Few individuals from each species hibernate in the western chamber during winter. The fauna of the cave is under study and will be presented soon.

GASTROPODA	
Oxychilus minoicus	t
	ph
Oxychilus amaltheae #	t
	ph
COPEPODA	
Paracyclops fimbriatus	t
	ph
Acanthocyclops crassicaudis	t
	ph
Maraenobiotus vejdofskyi	t
	ph
Moraria sp.	t
	ph
ISOPODA	
Schizidium perplexum	t
	b
ARANEAE	
Lepthyphantes brignolianus	t
	ph
Drassodes lapidosus	t
	ph
Hoplopholcus labyrinthi	t
	ph
Amaurobius claustrarius	t
	ph
ORTHOPTERA	
Discoptila lindbergi	t
	ph
Gryllomorpha dalmatina	a
	c
Dolichopoda paraskevi	t
	ph
Troglophilus spinulosus	t
	x
COLEOPTERA	
Bembidion parnassium	t
	x
Platyderus graecus	t
	ph

TABLE 2. List of the known species inhabiting the cave of Psychron (ac, accidentals; tx, trogloxens; tph, troglopiles; tb, troglobians; # cave's endemic).

Legislation

The cave of Psychron, as many other caves in Greece, is under international and national legislation, directions and decisions. All caves are protected in Greece since 1981 when the convention for the protection of the word-wide cultural and natural heritage of the U.N. (17-21.11.1973, Paris) became national law (1126/32:10.2.1981). In 1983, the Ministry of Cultural Affairs and Sciences of Greece decided (ΑΡΧ/ Α1/Φ45/ 18378/650) to classify caves in the category of monuments, thus, protected by the 5351/32, national archaeological law. The Central

Archaeological Council of Greece nominated twice the cave of Psychron as an "important archaeological site" (3/22.3.1976 and 43/17.11.1980). As an ecosystem, the cave of Psychron, is considered protected area by two directions of E.E.C. (79/409 and 92/43).

Management and results of the so far touristic exploitation

The cave of Psychron attracts an increasing number of tourists since early 60's. Touristic attraction is based on the advertisement of the cave as the birth place of Zeus. The touristic management of the cave was undertaken by the Ministry of Cultural Affairs and Sciences of Greece. Thus, the cave of Psychron became the first and only out of 11 show caves that is under Ministry's direct responsibility. Twenty years later, the number and the dimensions of cultural, social and environmental problems that resulted from the touristic management, have exceeded at great extent the economical benefits.

In 1976 the Ministry of Cultural Affairs and Sciences of Greece began charging visitation to the sacred cave. During 1992, about 110.000 tourists visited the cave. In 1993 as well as 1994 there was a small increase of visitors' number (120.000 tourists).

Visitors reach the cave by a 15 minute walk on a stone-made path or by riding hired mules. The path although seriously damaged, remains unrepaired for many years.

The descent into the cave is difficult. There is no electric lighting while the twenty-year old path is damaged and very slip. Each tourist has to buy 2-3 candles from the guides to be able to move in the cave. More than 1.5 tones of candles are burned each year resulting a wax layer on the floor and soot cover on the cave's walls and decoration. After our severe remarks, the use of candles was reduced during the last 2 years, but cave's guides were using gas lamps instead!

As expected the cave's ecosystem has been affected negatively. The populations of the troglobitic species of the cave are extremely low. The copepods that lived in the small lake up to 1995, are vanished and the survival of the cave's endemic snail, *Oxychilus amaltheae*, is doubtful.

Tourist guiding in the cave is insufficient and ineffective. All local guides are untrained and most of them can hardly speak foreign languages. Additionally, all the information that tourists get about the cave, varies from ridiculousnesses to scientific inaccuracies.

In spite the fact that the cave of Psychron is one of the most important sacred caves of ancient Crete, the last decades it is used as a bazaar rather than a management tool for sustainable development. Visitors do not have the opportunity to feel, to see or to listen about the sanctity of a place where religious human activities were taking place for thousands of years, although they pay for it.

Undoubtedly E.C. and Greek law for the protection of the environment and the cultural heritage were rudely and yet unpunishly violated. After our numerous lectures, press conferences, articles published in the press and a written question to the European Parliament, the Ministry of Cultural Affairs and Sciences was forced to proclaim a study for the cave's electric illumination.

Recommendations

As most -if not all- management practices in areas of touristic interest in Greece, touristic exploitation of Psychron cave applied without management plans, causing both social and environmental problems. In order to conserve the cave's natural environment and insure that its touristic exploitation will be a contribution to a sustainable development, the following should be taken into consideration:

The present condition of the cave must be recorded and evaluated in detail. The sensitive and vulnerable sites should be located and strictly protected. Proper suggestions are needed for the recoverable damages that affect the cave's biota and

speleothems. The recorded data should be used as a basis for monitoring the cave's environment.

The management practice must be determined within the management framework of the Lasithi plateau. A plan must be adopted that will strictly serve certain developmental principles (educational, cultural, financial, etc.) with respect to the environment conservation. The management must be profitable. Profits should be used to preserve and improve the infrastructure, for monitoring the cave's environment, to support scientific research in the cave and support local activities (cultural, educational, athletic, etc.). No management plan would be effective unless it is extensively discussed with the local community in order to achieve a social agreement for the potential that will result and the necessary limitations.

The cave should be managed by an administrative body established from the Psychron community, under the Ministry's supervision. It is obvious that the Ministry of Cultural Affairs and Sciences is not a capable manager of the cave, having full responsibility for the dramatic present conditions.

The infrastructure for visitation needs repairing and improving with respect to environment conservation. The path that leads to the cave should be repaired. The rooms that have been builded for hiring mules and selling tickets must be removed and replaced with aesthetically acceptable and functional ones. The cave must be cleaned from the candle waists. The path needs repairs and improvements. Sodium lamps of low pressure should be used for the illumination of the cave (yellow light does not favour photosynthetic organisms). A room for visitor's information must be arranged next to the ticket's room. The sanctity of the cave and the characteristics of its natural environment should be demonstrated with photos, explanatory notes, exhibits, etc. The cave-guides should receive the proper training for the sufficient guiding of the visitors. about the cave.

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