



REGIONE SICILIANA
Assessorato dell'Agricoltura, dello Sviluppo
rurale e della Pesca mediterranea
Dipartimento dello Sviluppo rurale e territoriale
Servizio 16 - Siracusa
R.N.O. "Oasi faunistica di Vendicari"



REGIONE SICILIANA
Assessorato Regionale
del Territorio e dell'Ambiente
Dipartimento Regionale dell'Ambiente
Sistema Reg.le delle Aree Naturali Protette



**Centro Ibleo
di Ricerche
Speleo-Idrogeologiche**



**UNIVERSITÀ
DI CATANIA**



**Piano Nazionale
Lauree Scientifiche**



**UNIVERSITY
OF BENGHAZI**



**UNIVERSITY
OF TRIPOLI**



**UNIVERSITÀ
DEGLI STUDI DI BARI
ALDO MORO**



**UNIVERSITÀ DEGLI STUDI
DI MESSINA - MIFT**



**UNIVERSITÀ
DEGLI STUDI
DI TRIESTE**



**ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA**



**Museo
Geologico
GEMELLARO**
Università Degli Studi Di Palermo



**UNIVERSITÀ DEGLI
STUDI DI PALERMO**



**Ordine Regionale
Geologi Sicilia**



**SISTEMA DELLE AREE
NATURALI PROTETTE
DELLA REGIONE SICILIANA**



**Karst
Commission**

**ISTITUTO ITALIANO
DI SPELEOLOGIA
Dipartimento BIGEA
Università di Bologna**

MAN and KARST 2026



**INTERNATIONAL SCIENTIFIC CONFERENCE
SEPTEMBER 13th - 19th Special Nature Reserve
Oasi faunistica di Vendicari (SIRACUSA) ITALY**



SSI
SOCIETÀ
SPELEOLOGICA
ITALIANA



EuroSpeleo Projects



**Federazione
Speleologica
Regionale Siciliana**



**Fédération Française
de Spéléologie**



**ENTE FAUNA
SICILIANA
1973**



Città di Noto

Città di Avola

Città di Portopalo



ZRC SAZU



NUACA
NATIONAL UNIVERSITY OF AGRICULTURE
AND FORESTRY OF ARAD



isolive
SERVIZIO SANITARIO

CDM
CLINICA DEL MEDITERRANEO

NK *NK Marina* ^{RSA}
Sicily healthcare experience

C.M.O. IBLEO
CENTRO MEDICO E ODONTOIATRICO

**CENTRO
ANALISI
MEDITERRANEO**

**SALVIAMO
ICARO**
MEDICI SPECIALISTI IN ELETICA



ARGO
software

eVision
Decisional Software



PRO LOCO
MARZAMEMI

Polar
BIBITE IN SICILIA DAL 1953

dipasQuale
Casa del formaggio
Sant'Anna

HiblaSus
I SALUMI DELLA TRADIZIONE
Via Lazio, 64 RAGUSA

CAMPISI
SAFORI DELLA TERRA E DEL MARE DI SICILIA
MARZAMEMI
www.campisiconserve.it

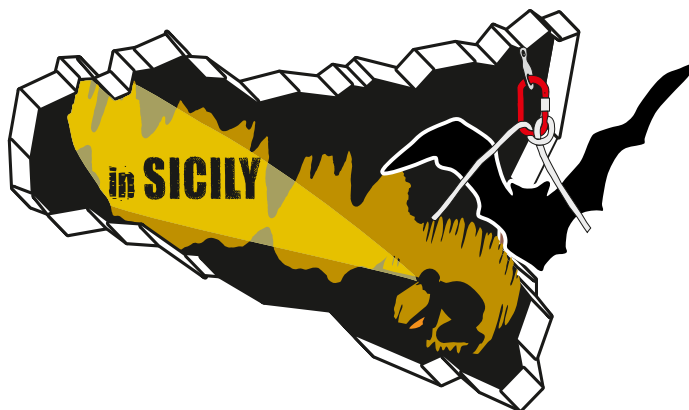
**O.P. VITTORIA
TOMATOES**
LET'S GROW TOGETHER

LATTERIE RIUNITE
DAL 1959

**SIAM
Sicil Acque Minerali
S.P.A.**
Location Contrada Santa Maria
Zappulla sn
97015 Modica (Ragusa)
Sicilia, Italia



MAN and KARST 2026



INTERNATIONAL SCIENTIFIC CONFERENCE
SEPTEMBER 13th - 19th Special Nature Reserve
Oasi faunistica di Vendicari (SIRACUSA) ITALY





INTERNATIONAL SCIENTIFIC CONFERENCE “Man and Karst 2026”

Main Organizers

- * C.I.R.S. ETS - Centro Ibleo di Ricerche Speleo-Idrogeologiche, Ragusa, Italia
- * Assessorato dell'agricoltura, dello sviluppo rurale e della pesca mediterranea
Dipartimento dello Sviluppo Rurale e Territoriale - Servizio 16 Siracusa
- * Dipartimento di Scienze Biologiche, Geologiche e Ambientali, Area Terza Missione, Università di Catania
- * Dipartimento di Scienze della Terra e Geoambientali, Università degli Studi di Bari Aldo Moro
- * DIGE - Dipartimento di Matematica, Informatica e Geoscienze, Università di Trieste
- * Dipartimento MIFT, Università di Messina
- * Department of Earth Science, University of Benghazi
- * Ordine Regionale Geologi di Sicilia
- * UNESCO Chair on Karst Education, Vipava, Slovenia
- * ZRC SAZU Karst Research Institute, Postojna, Slovenia
- * TETIDE APS, Italy
- * Gruppo Grotte Cacyparis
- * Ente Fauna Siciliana

Scientific participations and patronages

Unesco Chair for Karst Education - University of Nova Gorica,
Karst Research Institute ZRC SAZU, Postojna, Slovenia
University of Catania, Dipartimento di Scienze Biologiche, Geologiche e Ambientali
* PNLS - Area Terza Missione Ufficio per la Gestione delle Riserve Naturali
University of Benghazi, Department of Earth Science, Libya
University of Tripoli, Department of Geological Engineering, Libya
University of Tobruk, Faculty of Natural Resources and Environmental Sciences, Libya
University of Yerevan Nuaca, Armenia
Università degli Studi Aldo Moro, Dipartimento di Scienze della Terra e Geoambientali
University of Messina, Dipartimento MIFT
University of Trieste, Dipartimento di Matematica, Informatica e Geoscienze
University of Palermo, Dipartimento di Scienze della Terra e del Mare
Museo Gemellaro Palermo - Sistema Museale di Ateneo
University of Bologna, Dipartimento di Scienze Biologiche, Geologiche e Ambientali

Cultural Patronages

SGI - Società Geologica Italiana
SIMP - Società Italiana di Mineralogia e Petrologia
IAH - Karst Commission of the International Association of Hydrogeologists
Assessorato del Territorio e dell'Ambiente Regione Siciliana, Dipartimento dell'Ambiente
ORGS - Ordine Regionale Geologi di Sicilia
SIGEA - Società Italiana di Geologia Ambientale
UIS - International Union of Speleology
FSE- Federation Speleologique Europeenne
IIS - Istituto Italiano di Speleologia
SSI - Società Speleologica Italiana
FFS - Fédération Française de Spéléologie (Scientific Commission)
FSRS - Federazione Speleologica Regionale Siciliana
ASC - Armenian Speleological Center
NUACA - National University of Architecture and Construction, Armenia



Organizing Committee

- **CIRS - Hyblean Center of Speleo-Hydrogeological Research, Italy**
Rosario Ruggieri, Iolanda Galletti, Giovanni Gianninoto, Antonello Ingallinera, Maurizio Frazzetto, Marco Dipasquale, Claudio Tornello, Riccardo Orsini, Peppe Scaglione, Nicola Bruno, Ignazio Gravina, Gianni Iurato, Peppe Cannizzaro, Antonello Capodicasa, Cettina Divita, Najla Hassen, Andrea Frazzetto, Melania Scrofani, Angela Maria Cocuzza
- **Dipartimento Regionale Sviluppo Rurale e Territoriale - Servizio 16 Siracusa**
Giancarlo Perrotta, Daniela Cataldo, Carmen Impelluso, Silvia Marsili, Sergio Currò
- **Gruppo Grotte Cacyparis:** Corrado Nastasi, Tiziana Di Benedetto.
- **Università di Catania**, Dipartimento di Scienze Biologiche, Geologiche e Ambientali
Rosolino Cirrincione, Rosalda Punturo.
- **Università di Trieste, DMG-UNITS**
Luca Zini, Chiara Calligaris
- **Ordine Regionale Geologi di Sicilia**
Paolo Muzzicato, Francesco Gregorio

Scientific Committee

- **Istituto Italiano di Speleologia**
Paolo Forti
- **CIRS ETS - Centro Ibleo di Ricerche Speleo-Idrogeologiche**
Rosario Ruggieri
- **Università di Catania**
Rosolino Cirrincione, Rosalda Punturo, Carmelo Monaco, Serafina Carbone.
- **Università di Messina**
Antonella Cinzia Marra
- **Università di Bari**
Giovanni Scicchitano, Mario Parise
- **Università di Trieste, DMG-UNITS**
Luca Zini, Chiara Calligaris
- **Institute of Karst Research, Postojna, Slovenia**
Tadej Slabe, Martin Knez
- **University of Benghazi**
Ahmed Muftah, Abdelsalam Elshaafi, Awad Bilal.
- **University of Tripoli**
Saleh Sadeq
- **University of Tobruk**
Mohamed Masoud



PRESENTATION AND AIMS

As part of the International Day of Caves and Karst proclaimed by UNESCO, CIRS ETS - Hyblean Center of Speleo-Hydrogeological Research, is organizing the fourth edition of Man and Karst in Sicily. The event will take place from September 13 to 19, 2026, in the magical natural setting of the *Vendicari Special Fauna Oasis Nature Reserve*, in the far southeastern corner of Sicily.

This magical natural location founded in March 1984 to allow birds to call in and nest and to permit conservation of the psammo-holophilous and Mediterranean vegetation, the reserve is the southeastern tip of Sicily in a vast area particularly characterized by a complex system of coastal marshes. It has a surface of 1235.7 hectares, 521.3 of which in Zone A and 714.4 in Zone B. It lies in the territory of the Commune of Noto, in Syrecuse province. The area has also been included among “Wetlands of international importance”, has been identified as Site of Community Interest (SCI) and Special Protection Area (SPA) and belongs to the important Bird Area (IBA) of the Vendicari Marshes and Capo Passero.

In this fascinating natural scenery, *Man and Karst 2026* in Sicily, like previous editions, aims to contribute to the understanding, promotion, and protection of karst landscapes and caves, including their ecosystems and cultural heritage. This effort supports scientific research, not just as an end in itself, but for the benefit of the entire community.

The event represents a unique opportunity to share knowledge and experiences, promote the conservation and sustainable management of these unique environments, and raise public awareness about the importance of preserving our natural and cultural heritage.

Furthermore, *Man and Karst 2026* provides an occasion to reflect on the challenges and opportunities related to the management of karst landscapes and caves, and to identify strategies and concrete actions to protect and enhance these natural and cultural treasures.

Rosario Ruggieri
President of Organizing Committee
Man and Karst 2026



PROGRAM

SUNDAY 13 SEPTEMBER

International Day of Caves and Karst

Riserva Naturale Integrale Grotta Monello - Welcome by the University of Catania - Area Terza Missione

Enrico Foti - Rettore Università di Catania

Margherita Ferrante - Delegata alla Terza Missione

Rosanna Branciforte - Dirigente Area Terza Missione

Rosolino Cirrincione - Direttore Dipartimento di Scienze Biologiche, Geologiche e Ambientali,

Michelangelo Giansiracusa - Presidente del Libero Consorzio Comunale di Siracusa

Scientific visit of Grotta Monello by *Sandro Privitera*, Director of Grotta Monello and *Rosario Ruggieri*, Karst Commission IAH

MONDAY 14 SEPTEMBER

Marianelli - Nature Reserve of Vendicari

8.30 - Registration & open of the Show stands

9.00 - **Institutional greetings**

* **Luca Sammartino**

Assessore Agricoltura, Sviluppo Rurale e Pesca Mediterranea

On. Vicepresidente Regione Sicilia

* **Rosalda Punturo**

Delegata Orientamento Dipartimento Scienze Biologiche, Geologiche e Ambientali.

Università degli Studi di Catania.

* **Paolo Forti**

Presidente Istituto Italiano di Speleologia, Università degli Studi di Bologna

* **Paolo Mozzicato**

Presidente Ordine Regionale Geologi di Sicilia

* **Dario Rocca**

Presidente Federazione Speleologica Regionale Siciliana

Presentation of Man and Karst 2026

* **Rosario Ruggieri**

President of CIRS ETS Ragusa

Opening of the Sessions

I SESSION: Karst landscape protection and valorization

Conveneers: Rosolino Cirrincione & Abdelsalam El Shaafi

9.45 - **Tourism valorisation of karst natural heritage in Croatia and perception of the local population**
Ivan Šulc

10.00 - **Key Geological Tourism Sites in the Karst Eastern Libya: From the Gulf of Bomba to the Bardi Region**
Mohamed Masoud and Belkasim Khameiss

10.15 - **The Regional Protected Natural Areas established for Geological Reasons and the Catalogue of Geosites of Sicily**
Picciotto F., Arini E., Occhipinti G.

10.30 - **The relationship between Man and Karst landscape in Sicily**
Vincenzo Sottosanti

10.45 - **Karst sedimentary traps as archives of distal volcanoclastic material in the Dinarides**
Nina Trinajstića, Vlatko Brčića, Tomislav Kurečića, Sanja Šuicab, Lara Wachaa, Filip Šarcc,
István Dunkld, Duje Kukoča, Marko Budića, Marija Horvata, Mihovil Brleka

11.00 - **Heritage Education at the Marianelli Exhibition Center: a dynamic process**
Federica M. C. Santagati, Rosolino Cirrincione, Gianpietro Giusso Del Galdo,
Giorgio Sabella, Carmelo Monaco

11.15 - **The Role of Karst Landforms in reinforcing the proposed Al Jabal al Akhdar Geopark in Northeast Libya**
Ahmed M. Muftah and Mohammed H. Al Riaydh

11.30 - **The karst Geosites of Sicily**
Rosario Ruggieri & Serafina Carbone

11.45 - Coffee break



II SESSION: Karst Geomorphology & Speleology

Conveners: Paolo Forti & Giovanni Scicchitano

12.00 - Geomorphological analyses of the karst features in the Trieste classical Karst

L. Zini, C. Calligaris, F. Cucchi, P. Rai

12.15 - A new cave in the "top 20" of Africa

Michael Laumanns

12.30 - Cave and landscape evolution in a mixed-lithology fluviokarst terrain of central Slovenia

Filip Šarc, Bojan Otoničar, Andrzej Tyc, Krzysztof Gaidzik, Marcin Błaszczuk, Tanguy Racine

12.45 - Lithomorphogenesis and Rock Relief of Tropical Karren in Cuba (Mogote in Viñales and at the Cueva Afan Cave)

Martin Knez, Tadej Slabe, Manuel Roberto Gutiérrez Domech.

13.00 - Unusual karst features on an exhumed Jurassic fault escarpment: the Le Cuto site (Sibillini mountains, central Italy)

Sandro Galdenzi

13.15 - Karst of Cyrenaica: 2025/2026 Second Phase of Research on Al Jabal Al Akhdar, North-East Libya.

Rosario Ruggieri, Antonello Ingallinera, Claudio Tornello, Giovanbattista Mazzara, Luigi Fontana, Vincenzo Sottosanti, Abdelsalam Elshaafi, Awad Bilal, Fathi Salloum, Saad El-Shari, Saad El Ebaidi

13.30 - Karst Landscapes of Oklahoma: Examples from the Arbuckle Mountains Ozark Plateau, and Western Gypsum Terranes

Belkasim Khameiss, Kevin Blackwood, Mohamed Masoud

13.45 - Lunch break – Welcome by Dipartimento Regionale dello Sviluppo Rurale e Territoriale

III SESSION: Biospeleology & Biodiversity

Conveners: Antonella Cinzia Marra & Tadej Slabe

15.00 - Under the surface, under the radar - global assessments of selected EDGE species from Dinaric karst, with special emphasis on the Dinaric Cave Tube-Worm *Marifugia cavatica* (Annelida: Serpulidae)

Tvrtko Dražina, Ana Komerički, Branko Jalžić

15.15 - Predicting the invasion risk of the red swamp crayfish (*Procambarus clarkii*) in European and Mediterranean karst systems

Fabio Blaso, Mattia Iannella, Francesco Maurano, Gabriele Catoni,
Ferdinando Didonna and Giuseppe Amatulli

15.30 - The current knowledge of subterranean fauna and its conservation in Eastern Sicily

Giuseppe Nicolosi, Giorgio Sabella, Elena Amore, Salvatore Costanzo, Renzo Ientile,
Sandro Privitera, Giovanni Sturiale, Rosolino Cirrincione

15.45 - Moonmilk: a living speleothem

Teresa Rinaldi

16.00 - Novel Perspectives of Cave Biome Research in Armenia

B. Babayan, S. Shahinyan, S. Bagdasaryan, T. Yesayan, G. Sevoyan, A. Yesayan

16.15 - Coffee break



IV SESSION: Mines and old aqueducts in Karst areas

Conveners: Luca Zini & Martin Knez

- 16.30 - **Galermiti aqueduct (Siracusa, Sicily, Italy): an experience in 3D modeling with iPhone *LiDAR***
Sophie Bouffier & Graziano Ferrari
-
- 16.45 - **Natural and artificial hypogea in the Passo dell'Orco area (Nocera Inferiore, Campania, Italy): caves, an aqueduct, an old railway tunnel**
Graziano Ferrari & Raffaella Lamagna
-
- 17.00 - **San Cataldo: A Journey through the History of Sulphur, through the Restoration and Enhancement of Ancient Sulphur Mines**
Angelo La Rosa, Rosalda Punturo, Rosolino Cirrincione
-
- 17.15 - **The Carbide mines of Bustamante cave and the genetic mechanism allowing the development of these rare anthropogenic speleothems**
Mónica Grissel Ponce González, Rosa Lina Tovar Tovar, Paolo Forti
-
- 17.30 - **The Assoro Mines (Enna, Sicily): A Proposal for Cultural Heritage Itineraries**
Rosalda Punturo, Rosolino Cirrincione, Alessandro Pisanu, Angelo La Rosa
-
- 17.45 - **Inside the Peloritani Mountains strike-slip fault corridor: speleological exploration of polymetallic mineralization**
Fazio E., Ortolano G., Ruggieri R., Fiannacca P., Viccaro M. Cirrincione R.
-
- 18.00 - **Yarmouk - Decapolis Tunnel In Jordan: The Longest World-Wide yet Discovered Water Tunnel System in Human History**
Ahmad Al-Malabeh and Stephan Kempe

TUESDAY 15 SEPTEMBER

Marianelli - Natural Reserve of Vendicari

V SESSION: Geology and Karst hazard

Conveners: Rosalda Punturo & Saad El-Shari

- 9.30 - **Deciphering Episodic Structural Reactivation and recent Karst-Related Surface Instability Revealed by Remote Sensing Techniques: The Jifarah Plain, Northwestern Libya**
Khalifa Eldursi, Essam Said, Charles Gumiaux
-
- 9.45 - **New Collapse, old story. Raveo's sinkhole part of two of a site of scientific importance**
C. Calligaris, I. Yakoob, A. Busetti, M. Ferneti, D. Martinucci, E. Forte P. Lollino, and L. Zini
-
- 10.00 - **The new sheet No. 646 Siracusa at 1:50,000 scale as part of the CARG Project: geological-structural implications on the karst processes**
Carbone S., Barreca G., Gambino S., Monaco C., Ruggieri R.
-
- 10.15 - **Coastal cliff instability and sinkhole development in Carbonate coastal areas of Southeastern Sicily**
Messina A., Mineo S., Pappalardo G.



10.30 - **Geological Assessment and Geohazard Characterization of Karstified Eocene Carbonate Rocks in the Bab Shiha Area, Northern Darnah, Northeastern Libya**
Abdelsalam Elshaafi, Saad El Ebaidi , Ghassan El Gehan

10.45 - **Sinkhole and Cliff failures along the Coastal Karst of Apulia (Se Italy)**
Isabella Serena Liso & Mario Parise

11.00 - **Engineering Geological Assessment of Subsidence and Karst Hazards in the Awlad Abu Aisha Region, South of Tripoli, Libya**
Saleh Sadeg & Abdelsalam Elshaafi

11.15 - **The Night the Sea Rose, The 1343 Tsunami of Naples, Geology, History and Divine Justice**
Ann Pizzorusso

11,30 - Coffee break

VI SESSION: Karst hydrogeology & Vulnerability
Conveneers: Ann Pizzorusso & Ahmed Muftah

11.45 - **Hydrodynamical and Hydrogeochemical Evaluation of three Eocene Karstic Springs in Ras Al-Hilal Area, Libya**
Saad M. El-Shari & Fathi M. Sallom

12.00 - **Hydrogeological and Ecological Significance of The Natural Park “Syri I Kaltër” Blue Eye Spring (Albania)**
Albina Sinani & Romeo Eftimi

12.15 - **Karstification phenomena of Benghazi Plain, East-Libya: Environmental and Geochemical Approach**
Mohamed S. Al Faitouri and Osama A. El Fallah

12.30 - **Hydrogeology of Tobruk City: a general overview (North-East Libya)**
Mohamed Masoud

12.45 - **Geostructural and hydrogeological model of the Oro - Scribano Misericordia karst system: an emblematic case of pollution in south-eastern Sicily**
Rosario Ruggieri

13.00 - Lunch break

VII SESSION: Archaeology and Paleontology in Karst caves
Conveneers: Saleh Sadeg & Mario Parise

14.00 - **Polished Stone Axes from the Classical Karst**
Alessio Fabbriatore & Donatella Cergna

14.15 - **Grotta Lazzaro (Rosolini - Sicily). Neolithic occupation. The ceramics of the Modica wall**
Giovanni Di Stefano

14.30 - **New archaeological and planimetric data on the Cave Sbrilia (Noto, South-East Sicily)**
Laura Falesi, Eleonora Listo, Rosario Ruggieri

14.45 - **Due grotte inedite nella Cava di Bauli (Noto): la Grotta dell’Ansa a piastra bifida e la Grotta Scala Addauru**
Laura Falesi, Giuseppe Libra and Corrado Martorana



15.00 - **A Complex Organic Preparation in an Early Bronze Age Cup from Buco del Fico-Monte Kronio: archaeobotanical and Biomolecular Evidence**
Domenica Gulli, Claudia Speciale, Giulia Germinario, Milena Primavera

15.15 - **Beyond the Lacustrine Model: Karst-Controlled Collapse and Reworking of the Acquedolci *Hippopotamus* Deposits (NE Sicily)**
Antonella Cinzia Marra

15.30 - **Agostino Scilla: Baroque Painter and Early Investigator of Fossils in the Carbonate Strata of the Strait of Messina**
Ann Pizzorusso

15.45 - **New Evidence on the Hypogeum of Monte Rotondo (Giarratana, South-East Sicily)**
Nicolò Bruno, Rosario Ruggieri, Antonello Ingallinera

16.00 - **Morphological Survey of the “Grotta Barone” Cave in Sant’Angelo Muxaro (Central Sicily)**
Giovanni Buscaglia, Domenica Gulli, Antonio Bambina,
Francesco Bambina, Marco Mariano Interlandi

16.30 - 17.00 POSTER SESSION I

Conveners: Albina Sinani & Fatlinda Shkurti

- **Karst Groundwater Protection in Croatia: the Dretulja Spring Case Study**
Biondić, Ranko; Meaški, Hrvoje; Loborec, Jelena; Plantak, Lucija

- **The Hydrogeological differences between Deep and Shallow Karst in the Northern Croatian Dinaric Karst**
Ivana Boljat, Josip Terzić, Jasmina Lukač Reberski, Ana Selak, Ivan Kosović

- **Hydrochemical assesement of karst spring in Vlora County, Albania and sustainable Development**
Fatlinda Shkurti & Marinela Muco

- **The occasional prehistoric mountain shelters of Sperlinga di San Basilio and Rocca di San Marco (Messina)**
Rosario Abbate

- **Current knowledge of karst on the ionian side of the Peloritani Mountains (Messina)**
Rosario Abbate, Gaetano Consalvo & Salvatore Smedile

- **Climate-driven habitat loss for *Meta menardi* in Mount Etna lava caves**
Giuseppe Nicolosi, Marco Di Lorenzo, Marco Isaia, Giorgio Sabella

- **Documentation of *Potamon fluviatile* (Herbst, 1785) Crab from a Karstic Pool in Carosello valley, SE Sicily**
Ahmed M. Muftah

- **Current knowledge of cave-dwelling bats in the province of Syracuse (South-Eastern Sicily)**
Emanuela Bazzoni, Gaetano Fichera, Mauro Mucedda, Ermanno Pidinchetta,
Maria Teresa Spina, Rosario Grasso



17.00 - 17.30 POSTER SESSION II

Conveners: Isabella Selena Liso & Elvira Bollobani

- **Karst Resources in Mount Tomorr, Albania; Their Value and Use in Tourism**
Elvira Bollobani (Dodoveci) & Mirela Tase

- **Monitoring CO₂ concentrations in cave atmosphere: results from the C6 project**
Paolo Madonia, Marianna Cangemi, Giulia Casamento, Cipriano Di Maggio, Rosario Di Pietro, Marco Interlandi, Gianfranco Barraco, Roberto D'Aleo and Francesco Di Trapani

- **Montagna Grande: a study of hypogenic karst and reconstruction of the hydro-structural arrangement**
Roberto Grammatico, Rosario Bonventre, Luigi Fontana

- **From Sulphur to Potash: The History, Exploitation, and Environmental Legacy of the San Cataldo Potash Mine (Central Sicily)**
Angelo La Rosa, Rosalda Punturo, Rosolino Cirrincione

- **The Historical Timeline and Rediscovery of *Typhlocaris lethaea***
Abdeladim M. Asheibi

- **Radon as a Tracer of Coupled Ventilation and Groundwater Processes in an Active Karst Cave: Insights from Vrelo Cave (Croatia)**
Filip Šarc, Nina Trinajstić, Gordana Žauhar, Franci Gabrovšek, Uroš Novak, Marija Čargonja, Nenad Buzjak, Jagoda Ravlić Gulan, Ivana Rogić

- **Two Years of High-Frequency Monitoring at the Gorgazzo Karst Spring (Cansiglio–Monte Cavallo Massif, NE Italy): Hydrodynamic Behaviour, Thermal Signatures, and Flood Response of a complex karst Aquifer**
Alberto Riva and Carmela Vaccaro

- **Fossil Elephants from the Middle Pleistocene "Messina Gravels" (Southern Italy): Chronostratigraphic and Paleogeographical Significance**
Antonella Cinzia Marra

- **Visit to the "Centro Ibleo di Ricerche Speleo-Idrogeologiche" Tobruk City, Libya, 2025**
Mohamed Masoud

18.30 - Evening journey of Baroque Monuments of Noto (see program in the last session of this booklet)

20.30 - Cantina Sperimentale:

Welcome by *Corrado Figura*, Mayor of Noto

Terramater duo by *Alfonso Lapira* (guitar and vocals) and *Corrado Confalonieri* (accordion)



Wednesday 16 September: full day excursion

- 9.30 / 11.30 Field trip to the Vendicari Nature Reserve
Welcome by Giorgio Sabella, President of Ente Fauna Siciliana
Field trip guided by Marco Mastriani
- 15.00 / 18.00 Field trip to the Capo Passero island
Welcome by Rachele Rocca, Mayor of Portopalo di Capo Passero
Excursions in the Capo Passero island and visit the Spanish Fort
by *Alessandra Fabretti* of the Association 96010
- 19.00 / 20.00 - Visit of the ancient Tuna fishery in the Marzamemi sea village
by *Antonio Campisi*, President of Proloco Marzamemi
- 20.00 Gala party of conclusion Man and Karst 2026

PRE & POST CONFERENCE EXCURSIONS of 13th - 16th - 17th - 18th - 19th *

*See program in the last session of this booklet



SESSION OF EXCURSIONS



EXCURSIONS

Program of the guided tour 13 September: “*Grotta Monello Strict Nature Reserve*” by Sandro Privitera

Locations and time of departure:

Noto - Departure Bus Terminal in Via Pola at 8.30 am

Duration: 6 hours: from 10.00 to 16.00 pm

Difficulty: easy tour, normal physical condition.

Requirement: trekking clothes, shoes and hat, sunglass.

Participation fee: included in the Conference registration fee.

Grotta Monello one of the most beautiful caves in Sicily

The Grotta Monello Strict Nature Reserve is located in the Syracuse area, in the Perciata district, in the eastern sector of the Hyblaean plateau. Its origins are linked to the various stages of the karst dissolution process caused by rainwater infiltrating the subsoil, which consists of calcarenites from the Climiti Mountains formation. The Grotta Monello Reserve, covering a total area of approximately 60 hectares, was established by Decree No. 615 of November 4, 1998, issued by the Sicilian Regional Department of Land and Environment, and its management was entrusted to the University of Catania. The Reserve area is subject to landscape protection under the former regional decree. Law 1497/36 (articles 1, 3, and 4) established as part of the “*Restriction of the Cassibile River, Bosco di Bauli, Cava Giorgia, Cava Sture, and Cava della Contessa.*” Monello Cave, discovered in 1948, extends for approximately 540 meters on multiple levels; it is famous for its phantasmagorical concretionary structures, consisting of thousands of tubes, stalactites, and stalagmites of various shapes, as well as hundreds of columns, vaults, and concretionary flows.

The cave was included in the list of geosites of regional interest by the Sicilian Region with Decree No. 106 of April 15, 2015. The cave is home to a cave fauna characterized by the presence of troglobitic invertebrates and vertebrates. Among the former, of particular interest is the terrestrial isopod *Armadillium lagrecai*, an endemic species exclusive to Monello Cave. The cave also hosts the diplopod *Glomeris dionysii* and the pseudoscorpions *Chtonius multidentatus* and *Roncus siculus*. In 2019, during monitoring activities conducted by the management body, a new species to science was discovered: the troglobitic beetle *Tychobythinus inopinatus*. Among the vertebrates, the bat *Rhinolophus ferrumequinum* Schreber, commonly known as the Greater Horseshoe Bat, has been observed in small groups in the cave.

The reserve's upper reaches are characterized by the typical landscape of the Hyblaean plateau, where extensive flat areas are cut by ravines and deep gorges with vertical walls, such as the Vallone Moscasanti, which borders the protected area to the northwest. Residual patches of scrub forest vegetation with *Euphorbia dendroides* and a splendid holm oak forest with large specimens of *Quercus ilex* survive. Near the cave, the extremely rare nettle (*Urtica rupestris*) and the distinctive *Ferula nodosa*, both endemic to the Hyblaean Mountains, are found. The flat areas are characterized by olive, almond, and carob trees. The Reserve's headquarters, located at Via Spinagallo 77, houses the Hyblaean Karst Museum, which houses an interesting collection of rocks, minerals, and fossils from the Hyblaean plateau.

Managing body:

Università degli Studi di Catania – Area della Terza Missione

Ufficio per la Gestione delle Riserve Naturali

Via S. Nullo 5/I – 95123 Catania

terza.missione@unict.it



Program of the guided tour of 15 September: Noto: *"Garden of Stone"* by Tiziana Di Benedetto

Locations and time of departure:

Noto - Departure Bus Terminal in Via Pola at 18.00 pm

Duration: 2 hours: from 18.00 to 20.00 pm

Difficulty: easy tour, normal physical condition.

Participation fee: included in the Conference registration fee.



Neas for the Sicels, Neaiton for the Greeks, Netum for the Romans, Nut for the Arabs. Today, New Noto, once the Ingenious City, is known as the Capital of the Baroque, Garden of Stone, City of Gold: so many names for this small Sicilian town rebuilt in the 18th century on a new site, after the devastating earthquake of 1693 razed the ancient city to the ground on Mount Alveria, a few kilometers from the current site. To the visitor who sees it rising on the slope of Colle Meti, Noto reveals all its imposing appearance, arousing amazement, wonder, curiosity, dream, illusion.

In 2002, Noto was recognized as a World Heritage Site and included in the UNESCO World Heritage Site "The Late Baroque Cities of the Val di Noto," along with seven other cities, all affected and rebuilt after the earthquake. The decision to move the site and rebuild Noto elsewhere came 10 years later. From a shortlist of seven sites, Colle Meti was chosen. On the hillside, architects, master builders, stonemasons, and craftsmen devoted themselves to the construction of the so-called "factories," the monuments that today are emblems of the local late Baroque. They worked and decorated Pietra di Noto, a soft, golden-colored limestone quarried not far from the city. When we talk about "late Baroque reconstruction," we cannot fail to mention architect Rosario Gagliardi, who designed the Churches of San Domenico, the Crocifisso, Santa Chiara, and San Francesco all'Immacolata, to name just a few. Gagliardi is also credited with the initial design of the Cathedral, developed and completed by Vincenzo Sinatra. Today, Noto is a vibrant center that hosts international events and is visited by thousands of tourists every year, because Noto is not only art, architecture, and culture, but also local specialties: the expertly cultivated agricultural products and vast expanses of vineyards, citrus groves, olive groves, carob and almond trees, the sea, and canyons, make it a top destination in the Sicilian tourist landscape.

Our tour begins at the Porta Reale (also known as Porta Nazionale or Porta Ferdinanda) and follows Corso Vittorio Emanuele, the city's key thoroughfare lined with the main monuments.

The Porta Reale was built in 1841 based on a design by architect Orazio Angelini on the occasion of King Ferdinand II's visit to the city. The Trigona family of the Marquises of Cannicarao contributed financially to the construction of the gate, and their coat of arms is affixed inside the gate, opposite the coat of arms of the City of Noto. Must-sees include a visit to the Church of

Santa Chiara with its panoramic terraces (tickets are subject to a fee) and the Cathedral of San Nicolò (tickets are subject to a fee). Afterwards, head to Via Nicolaci to admire the exterior of Palazzo Nicolaci dei Principi di Villadorata (with its baroque balconies considered the most beautiful in the world!) and from there, up Via Cavour (the street of noble palaces). We then head back down Corso Vittorio Emanuele for a break, to reach Piazza XVI Maggio, where the Tina Di Lorenzo Municipal Theater (1860) and the Church of San Domenico with its adjoining convent stand.

Program of the guided tour of 16 September: *Tour of the Vendicari Wildlife Reserve* by Marco Mastriani

Locations and time of departure:

Noto - Departure Bus Terminal in Via Pola at 8.30 am

Duration: 2 hours;

Difficulty: easy tour, normal physical condition.

Requirement: trekking clothes, shoes and hat, sunglass.

Participation fee: included in the Conference registration fee.



9.30 - Meet at the TORRE VENDICARI entrance to the nature reserve to begin the guided tour. We'll reach the Pantano Grande (former salt pan), where we'll learn about the importance of salt production, the Vendicari Bay, and the historic tuna fishery. We'll visit the former fishermen's houses, now a visitor center and Ecomuseum, and the tuna processing and canning plant. We'll recount the history and importance of tuna fishing in Sicily and Vendicari, which operated until 1944.

The Vendicari Wildlife Oasis Nature Reserve (by Daniela Cataldo)

The name Vendicari conceals an ancient and fascinating history, but its origins are still unclear: for centuries, this name has appeared in various forms, and one of the oldest known references dates back to the 12th century. In his *Libro di Ruggero*, the Arab geographer al-Idrīsī described a place along the southeastern coast of Sicily called *Dahlat 'Ibn Dikani*, which the notes in the modern edition identify with the area of present-day Vendicari. However, "Vindicari" has been mentioned with certainty since at least 1558, when Tommaso Fazello, in his *De rebus Siculis decades duae*, published in Palermo, wrote:

Phoenic(us) portus est Ptolemaeo, Naustathmus Plinio, Vindicaris hodie dictus, Macharensis proculdubio olim sinus..."

That is: "It is the port Phoenicus of Ptolemy, the Naustathmus of Pliny, today called Vindicari; without a doubt it is the ancient Gulf of Maccara..."

Thus a very interesting fact emerges: that Vendicari was already an important port on the southeastern coast of Sicily. In the following centuries Indeed, it is referred to as a port and loading dock, that is, as a point from which agricultural produce and other local products were loaded onto ships and transported by sea. Vendicari was therefore a hub of trade, commerce, and navigation for centuries.

It's intriguing to consider that behind a word we now immediately associate with marshes, flamingos, beaches, and protected nature lies the history of a territory that has known:



Greek and Roman Sicily, Arab and Norman rule, medieval trade, navigation, fishing, tuna fishing, salt pans, and finally modern nature conservation—not just a geographical location but the linguistic trace of the territory's historical stratification.

The Establishment

The establishment of the Reserve was a complicated and multifaceted process, involving expropriations and appeals. While the process was underway, in 1984 Vendicari was listed as a wetland of international interest under the Ramsar Convention, covering an area of approximately 1,450 hectares.

Subsequently, Vendicari was recognized, under EU legislation, as:

- Special Protection Area, identified pursuant to the EU Directive on the Conservation of Wild Birds, with code ITA090029;
 - Site of Community Importance, code ITA090002, due to the presence of important habitats and priority species.
- Furthermore, the marine area in front of it was included in the "Fondali di Vendicari" protection system, code ITA090027, designated as a SCI due to the presence of a vast meadow of *Posidonia oceanica*.

Subsequently, in 1995, the area of Contrada Marianelli, comprising rural buildings totaling 2,865 square meters and approximately 20.4356 hectares of agricultural land, was acquired by the Regional Forestry Department. With funding from the POR Sicilia 2000/2006, a Regional Center for the Conservation of Agricultural and Forestry Germplasm was established there.

Today, the Vendicari Wildlife Oasis officially covers 1,512.43 hectares and falls entirely within the Municipality of Noto. It is managed directly by the Department of Rural and Territorial Development of the Sicilian Region, the regional body that replaced the original State Forestry Agency.

The Reserve extends along approximately 8 km of coastline, from the mouth of the Tellaro River southward, encompassing a succession of diverse environments: rocky and sandy shores, Mediterranean scrub, marshes, environments characterized by varying salinity and water availability, and a valuable historical and archaeological heritage, testifying to human presence throughout the various historical periods:

- the Eloro site;
- the San Lorenzo building complex;
- the Balata di Vendicari;
- port facilities;
- remains of buildings and constructions;
- Greek artifacts;
- necropolis;
- evidence of the Byzantine period;
- the Swabian Tower;
- the tuna fishery;
- the salt pans.

This long coastline, as it moves inland, gives rise to plant populations that vary depending on the distance from the sea and salinity, including those characteristic of dune environments and wetlands. Just as the vegetation diversifies from Mediterranean scrub to marshland and dune environments, the birdlife and macro- and micro-invertebrate populations also follow this diversification.

Advancing south along the coastline, three marshes are found: Pantano Piccolo, Pantano Grande, and Pantano Roveto, the largest.

These areas are of fundamental importance for both resident and migratory birds that stop here for food and rest: more than 200 species are present, of which over 40 are listed in Annex I of the Birds Directive 79/409.

The flora of Vendicari includes shrubby scrub and garrigue vegetation, represented by a dense network of junipers, mastic trees, and fragrant myrtle. Where these thin out, colorful *helichrysum* and aromatic rosemary cover the surfaces. and also the hygrophilous and halophilous reefs with colorful blooms of *Limonium*, the psammophilous *Cakile* with delicate purple flowers, the submerged and marshy ones, a patchwork of diverse environments characterized by high biodiversity that reaches its peak with the spring flowering of splendid wild orchids: *Ophrys garganica*, *Ophrys biancae*, *Ophrys calliantha*, *Ophrys apifera*, *Serapias vomeracea*, *Serapias parviflora*, *Himathoglossum robertianum* and many others. These are accompanied by endemic or rare flora such as *Lymonium syracusanum* and *Aristolochia altissima*.



Geologically, the Vendicari system represents, in a few meters of difference in altitude, the entire morphological sequence of a karst-coastal landscape "fossilized" by the Holocene transgression; this rocky substrate made up of Pleistocene calcarenites, particularly vulnerable to karst dissolution processes, essentially gave rise to the entire coastal system of the marshes, when the sea level was significantly lower than today.

The avifauna of Vendicari includes the plover, the shelduck (symbol of the Reserve), the reed warblers, the little grebes, the waders, the sandpipers and magnificent flamingos which all together are only a small part of the wonder that can be observed in Vendicari.

The non-bird fauna includes the typical mammals of the Iblean Mediterranean scrub: fox, hedgehog, porcupine and wild rabbit; among the reptiles the snake snake, the leopard snake and the Sicilian marsh turtle (*Emys trinacris*), an endemism of considerable interest. Another very important fact is the presence of the *Caretta caretta* turtle.

The invertebrate fauna is not negligible, mainly consisting of arthropods such as crustaceans, insects, myriapods and arachnids; The presence of small crustaceans, an integral part of the food chain that attracts flamingos, is significant and supportive for the maintenance of the trophic function of the Pantani.

Today Vendicari is not just a manifestation of history, archeology and nature, written and rewritten over the millennia, today its value is also expressed through the ever-increasing flows of visitors who pass through not only the main entrance of Torre Vendicari, but also those who lead to the wonderful beaches from the entrances of Cittadella, Calamosche and Eoro. Among these flows, from March to June, the daily presence of school groups deserves particular attention, transforming Vendicari, season after season, into an open-air educational laboratory.

And as will happen from 13 to 19 September, the Reserve will welcome this event at which you will be present, with the clear intention of demonstrating that the governance of protected areas includes interdisciplinary moments and projects, knowledge and exchange.

Nature protection is not closure, it is sharing, respect and clear objectives.



Tour of the island Capo Passero *by Alessandra Fabretti*

Duration: from 15.00 to 18.00 pm

NOTES ON THE ISLAND OF CAPO PASSERO

by Antonello Capodicasa

Capo Passero Island, located opposite the town of Portopalo, at the southernmost tip of Sicily, covers approximately 35 hectares and is separated from the mainland by a narrow, shallow stretch of sea. Protected as a Site of Community Importance for its important flora and fauna, the island is also worth a visit for its unique geomorphological, lithological, and paleontological features. Furthermore, on the easternmost tip stands a beautiful, well-preserved Spanish fortress dating back to the early 17th century. To reach the island, you can take a motorboat ferry service departing from Portopalo, Scalo Mandrie, from the small beach below the fishermen's cottages. A ten-minute crossing takes you to the western shore of the island, near the old tuna fishery buildings.

Mostly flat and rocky, the island has very jagged edges. On the northern and southeastern sides, it is bordered by high cliffs overlooking the sea, dotted with caves formed by marine erosion; some cavities are of karst origin and were only subsequently reshaped by the erosive action of the sea. The rocky surfaces closest to the coastline, constantly subjected to the fury of the surf, are devoid of vegetation and display an extremely rugged morphology, where chemical corrosion also plays a significant role. Toward the interior, the rocky plateau is rather uniform and covered in dense, lush scrubland with dwarf palms. In the southwestern part lies the only sandy beach, of limited size, whose profile is modified year after year by sea currents. On the opposite shore, a large inlet opens up, known as the salt pans, characterized by a myriad of small rocks emerging from a shallow seabed and calm waters.

Along the southeastern coast, above the limestone cliffs, fossil potholes of marine origin can occasionally be seen, still containing large rounded pebbles. In the southern sector, there are coastal dunes, partially stabilized by natural vegetation, consisting of elongated, thin sand masses. The seabed surrounding the island is rocky, except for the short stretch in front of the beach, which is sandy; these contain very unique habitats that shelter rich plant and animal communities.

Geologically, the island is composed primarily of limestone rocks resting on a volcanic basement. The oldest deposits are found in basaltic lavas that outcrop along the northern coast. The eruptions date back to the Cretaceous period and began approximately 80 million years ago from a seabed several hundred meters deep. The lavas are overlain by tough, gray-havana fossiliferous limestones, forming large banks that are horizontal or gently sloping toward the southeast. These reef limestones, with abundant macrofauna of rudists, corals, and large gastropods, date back to the Late Cretaceous period (65 million years), and extend over much of the island, reaching a thickness of over 20 meters.

The fossil sites of rudists, now extinct bivalve mollusks, are of particular paleontological interest; most specimens are attributable to the genus *Sabinia*, as they feature large, elongated, conical, curved shells. Equally interesting are the fossil remains of corals and giant gastropods of the genus *Actaeonella*. Along the southeastern coast, Cretaceous limestones give way to grayish-white limestones from the Eocene period (50 million years old), with clearly stratified layers and large quantities of *Nummulites*, small, unicellular, disc-shaped marine organisms.

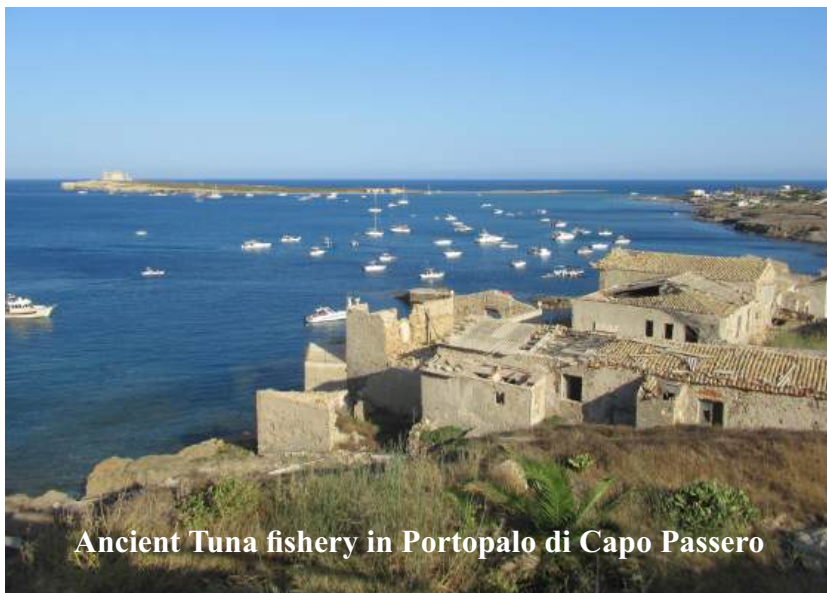
Two submerged caves are of particular interest for underwater speleology: the *Bathsabea Cave* along the southeastern coast and the *Enfasi Cave* near the Maltese Rock.

Vegetation is influenced by the island's unique environmental conditions and the variations in soil and salinity. A common denominator is its remarkable ability to adapt to arid conditions. The garrigue of dwarf palm (*Chamaerops humilis*), typical of rocky soils, is particularly developed and dense, occupying the central part of the island, far from the spray of the waves. Its considerable size is the island's most notable peculiarity, so much so that it has attracted the attention of authoritative scientific bodies that have long recommended its protection. Among the palm trees, the occasional mastic tree (*Pistacia lentiscus*), an evergreen shrub with red flowers and fruit, can be found. South of the palm grove, the garrigue of *Spinaporci* (*Sarcopoterium spinosum*) extends, consisting of dense, low, branchy, thorny bushes, which towards the east gives way to a cover of basilisk (*Cachrys sicula*). In the southernmost part, near the sand dunes, halophilous vegetation resistant to high salinity levels can be found, consisting of beach grass (*Agropyron junceum*), sea daffodil (*Pancratium maritimum*), saltwort (*Salsola kali*), spurge (*Euphorbia paralias*), and sea rocket (*Cakile maritima*). Restharrow (*Ononis ramosissima*), a herbaceous plant with yellow, bell-shaped flowers, is widespread behind the dunes. The rocky northeastern coast is rather sparsely vegetated, frequently battered by winds and high waves. Rupicolous species such as sea lavender (*Limonium sinuatum*), sea fennel (*Crithmum maritimum*), and glasswort (*Arthrocnemum glaucum*) appear here.

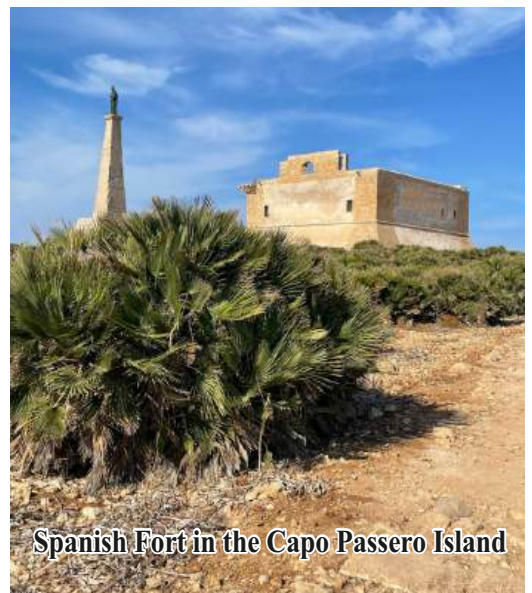
The seabed vegetation is dominated by brown algae of the genus *Cystoseira*; Further offshore, meadows of *Posidonia oceanica* extend, hosting countless ecological niches.

From ancient times until the 18th century, the island was connected to the mainland by a narrow sandy isthmus that connected it to Spiaggia del Collo, near the village of Portopalo. In ancient maps, Capo Passero was depicted as a rocky promontory forming a narrow peninsula jutting out to the east. Subsequently, the play of currents caused the sandy strip to be dismantled, creating a small channel, just over 200 meters wide.

At the highest point of the island, approximately 21 meters above sea level, stands a Spanish fort built between 1599 and 1635 as a bulwark against the raids of Barbary pirates. It features a unique stylistic and architectural configuration unmatched anywhere else in Sicily. The building has a square perimeter with 35-meter sides and a sloped base resting on the tenacious limestone rock. The entrance, above which stands the coat of arms of King Philip III of Spain, faces east and was once equipped with a drawbridge. Along the path leading to the fort, you can also see the ruins of a small 17th-century church dedicated to Our Lady of Mount Carmel, which was long used as a cemetery.



Ancient Tuna fishery in Portopalo di Capo Passero



Spanish Fort in the Capo Passero Island



Tuna fishery in Marzamemi sea village



Tour of the Marzamemi sea village

Duration: from 19.00 to 20.00 pm

THE MARZAMEMI TUNA FISHERY FROM THE CALASCIBETTA TO THE NICOLACI OF VILLADORATA

by Antonello Capodicasa & Federico Fazio

Located between the Gulf of Vendicari and the islet of Capo Passero, Marzamemi is known for its charming seaside village, a major tourist destination, especially in the summer.

The history of Marzamemi is closely linked to the tonnara of the same name, whose activity dates back to the early 17th century, when Andrea Nicolaci, son of Calabrian Nicolò Giacomo Nicolaci, obtained the relevant concession from the Royal Court in 1627. On March 11 of that year, Andrea Nicolaci subleased the facility to his brother Pietro and six other partners, who purchased all the equipment from the Bufuto tonnara (located near Vendicari and the bay of Calamosche), which had recently been abandoned due to the unhealthiness of the site.

The first document attesting to the existence of a fishing settlement in Marzamemi dates back to August 1630, when the jurors of Noto sent a letter of reprimand to Pietro Nicolaci because they had received news that "various vessels and boats were entering the Marzamemi tuna fishery without carrying permits," the so-called health permits, in violation of the viceroy's orders aimed at preventing the contagion and spread of the plague. It is certain that Pietro Nicolaci (1586-1671) maintained the tuna fishery tax at least until 1650.

In 1655, the Marzamemi tuna fishery, along with those of Vendicari, Fiume di Noto, and Santa Panagia, was purchased by the Palermo judge Simone Ignazio Calascibetta, a native of Piazza, now Piazza Armerina. However, management of the Marzamemi tuna fishery remained the prerogative of the Nicolacis, who held the title of expert rais. After Pietro's management, the tuna fishery tax passed first to his son Mariano, who was a tax collector in 1658 (but who died after his father's death), and then to his other son Giacomo.

In 1681, Giacomo Nicolaci obtained the Marzamemi tuna fishery tax for eight years; this tax was renewed in 1689 for another eight years, but in December 1692, Giacomo died, and a month later, a terrible earthquake struck, destroying much of southeastern Sicily and causing serious damage to the tuna fishery.

In 1694, the tax was granted to Eleonora Magnano, Giacomo Nicolaci's widow, who obtained a substantial loan from the Calascibettas to be used for the reorganization and maintenance of the tuna fishery. After her, the tax passed to Corradino Nicolaci (1686-1717), son of Giacomo, who in 1701, although a minor, acquired the title of Baron of Bonfalà. Following Corradino's untimely death, management of the tuna fishery returned to his mother Eleonora, and later passed to Corradino's sons, Giacomo (1711-1760) and Ottavio (1712-1767).

The Nicolacis, therefore, together with the Calascibettas, were the architects of the socio-economic development of Marzamemi, which over time became a permanently inhabited village with intense maritime activity. An even more incisive push for this development, including urban planning, was given by Baron Bernardo Calascibetta Landolina (1717-1764), who inherited the tuna factory in 1737, after the death of his paternal uncle Giovanni.

Between 1752 and 1755, Don Bernardo enlarged the tuna factory, entrusting the work to Syracusan craftsmen under the direction of master builder Carmelo Bonajuto, known as *Carancino* (1707-1782), who organized the large loggia overlooking the sea and several warehouses arranged around a large walled field. In addition to the factory, the Calascibetta family's mansion (now known as the *Palazzo del Principe di Villadorata*) was built, which served as the backdrop to a large open space (now Piazza Regina Margherita). This was bordered on one side by the 18th-century church dedicated to the Madonna del Carmelo (recently restored) and on the other by the fishermen's cottages, as well as a tavern and a room used as a bread oven.

The Marzamemi tuna fishery church (now incorrectly called the Church of San Francesco di Paola) was defined in 1776 as "ecclesia vulgo di Marzamemi sub invocazione Beatissime Virginis" (the vulgar church of Marzamemi, invoking the Most Blessed Virgins Montis Carmeli" and was occasionally used for the burial of the deceased: on March 18, 1800, a sailor from Syracuse, Salvatore Bottaro, aged 40, was buried there, having died in a shipwreck near the tuna fishery, " cuius cadaver sepultum fuit in ecclesia eiusdem timnarie Marzamemi tuna fishery under the title Beatissime Marie Virginis de Monte Carmelo."

Don Bernardo Calascibetta died in 1764 and, as he had no children, his brother Giovanni (1722-1798) inherited the estate. Invested with the title of Duke of San Nicolò on January 13, 1784, Don Giovanni Calascibetta Landolina ran the Marzamemi tuna fishery at full speed, which at the time generated an annual income of one hundred thousand scudi.

The intense trade towards Malta also contributed to the development of the nearby town of Pachino. Marzamemi, in fact, was a must-see stop on Mediterranean routes, thanks to the wide availability of fresh tuna and the salted tuna packaged in barrels produced in large quantities in the Calascibetta tuna fishery.

The increase in activity necessitated the expansion of the town southward, with a system of warehouses arranged along the inlet near the marshes, which had long been converted into salt pans. Consequently, Marzamemi became an important logistics center for the storage and sale not only of tuna, but also of agricultural products from the Scibini fiefdom. For example, in 1798, a significant quantity of tuna (over 100 quintals) was recorded for sale to the *padron di barca* Gregorio Callipo, ancestor of the current owners of the famous Callipo company in Pizzo Calabro.

After the death of the Duke of San Nicolò, his widow, Duchess Emanuela Beltrano (1757-1835), commissioned master builder and royal surveyor Gaspare Garrano in 1799 to carry out some extraordinary maintenance work on the church and the main floor of the palace, which were in precarious condition (in the meantime, the tuna tax had passed to the Ispica baron Don Vincenzo Bruno).

The entire tuna fishery complex was later inherited by Salvatore Calascibetta (1795-1843), son of Giovanni and the last Duke of San Nicolò, who intensified trade relations around the tuna fishery, leading to Marzamemi being elevated to a second-class customs post by Royal Decree of March 17, 1829. At that time, under the direction of the engineer Bernardo Labisi from Noto, the restoration of the malfaraggio and the reconstruction of some fishermen's houses, destroyed by a storm in 1821, were carried out.

During the reign of Ferdinand II, by decision of the Pachino Decurionate, the road (now Provincial Road No. 19) was built, ensuring the connection between Marzamemi and Pachino, sparking a relationship of economic interdependence between the two towns (1847). In those very years, even before the "promotion" of Favignana, the Marzamemi tuna fishery was at the centre of the interests of the Calabrian entrepreneur Vincenzo Florio (1799-1868), who intended to advance the expenses for the 1843 fishing campaign. Unfortunately, after the death of Duke Calascibetta in Palermo on 14 September 1843, the entire Marzamemi factory, due to the debts accumulated by the family, was put up for auction.

Thus, the Nicolaci family took over, acquiring the tuna fishery's carats, or shares, and managed the facility continuously until the second half of the twentieth century. The new owner, Corrado Nicolaci Trigona, Prince of Villadorata (1805-1872), expanded fishing in Marzamemi, halting the operations of the Fontane Bianche and Fiume di Noto tuna fisheries, which he had already managed. Thanks to the resourcefulness of the prince, who at the time had an annual income of 9,200 ducats, the Marzamemi tuna fishery managed to sell large quantities of fresh and salted fish, generating significant economic benefits. In 1863, Don Corrado donated the factory to his son Ottavio Nicolaci Di Lorenzo (1845-1918), on the occasion of his marriage to Eleonora Landolina Trigona (1843-1917), a member of the Marquises of Sant'Alfano.

Gifted with a strong entrepreneurial spirit, Ottavio Nicolaci was president of the Board of Directors of the Banca Mutua Popolare Notinese (1873), mayor of Noto (1876), and a member of the Parliament of the Kingdom of Italy (1882). However, due to economic difficulties, the Marzamemi tuna fishery experienced a period of crisis. It was during the "glorious" administration of Corrado Nicolaci Landolina (1862-1902) that, between 1893 and 1895, the catch reached almost 3,000 quintals; the excellent performance consequently required the modernization of the old factory. On January 14, 1900, an agreement was finally signed with the Carlo Muratorio company of Diano Marina (Imperia), which provided for the construction of a modern plant for the production of tuna in oil, to be built behind the Villadorata Palace (the same one built in the mid-18th century by the Calascibetta family).

The plant occupied the area of the "large field," bordered by Viale Jonio on the Balata marina, Via Marzamemi to the north, and Via Letizia to the east, which leads into Piazza Regina Margherita. Spacious buildings were constructed for packaging the tin cans, as well as several warehouses, staff quarters, a large canopy supported by pillars, and boilers with their chimneys (one of which collapsed due to Allied air raids during World War II). In the early 1900s, the Marzamemi tuna fishery achieved remarkable results: its catch increased from 2,296 to 4,372 quintals, establishing it as the second most important tuna fishery in Sicily after that of Favignana.

The new industrial facility commissioned by the Nicolaci family of Villadorata contributed to the economic and demographic growth of Marzamemi, the stabilization of several families, and the expansion of the fishing village. Thus began the modern history of Marzamemi.

Program of the guided tour of 17 September: *The Pantalica, Valle dell'Anapo and Torrente Cava Grande Nature Reserve (Unesco World Heritage Site)* by CIRSETS

Locations and time of departure:

Noto - Departure Bus Terminal in Via Pola at 8.30 am

Duration: 8 hours

Difficulty: medium-easy tour, normal physical condition.

Requirement: trekking clothes, shoes and hat, sunglass.

Participation fee: 80 €.

The Pantalica, Valle dell'Anapo and Torrente Cava Grande Reserve is a Regional Nature Reserve in the Hyblean Mountains, in the Province of Syracuse. It is crossed by the Anapo and Calcinara rivers that flow through spectacular and evocative fluviokarst canyons. Within the reserve there are also two karst caves, the Grotta dei Pipistrelli (bats cave) and the Trovato Cave.

The Civilization of Pantalica: a brief historical note

In the first half of the 13th century B.C., a profound change in the economy and in the anthropic geography of eastern Sicily took place. At the time the people of Eastern Sicily, under the pressure of people coming from the sea, abandoned the coastal belt to settle on the most rugged hills, in places difficult to access; here they also used pre-existing caves to bury their dead, giving life to a few large settlements. Among these, PANTALICA is one of the most evocative settlements of the entire Sicilian prehistory.

"A large city full of caves, artificially quarried, where there's more to see than a door of the city facing Ferla, a ruined fortress, a ruined Church and olive groves" (as Fazello describes it in "Historia di Sicilia" - 1558).

The necropolis of Pantalica is a vast and evocative archaeological naturalistic area that well deserves a visit. The name Pantalica derives from the Arabic *buntarigah*, which means caves, due to the presence of innumerable artificial and natural caves. In 2005 the site was declared by the UNESCO as World Heritage Site.

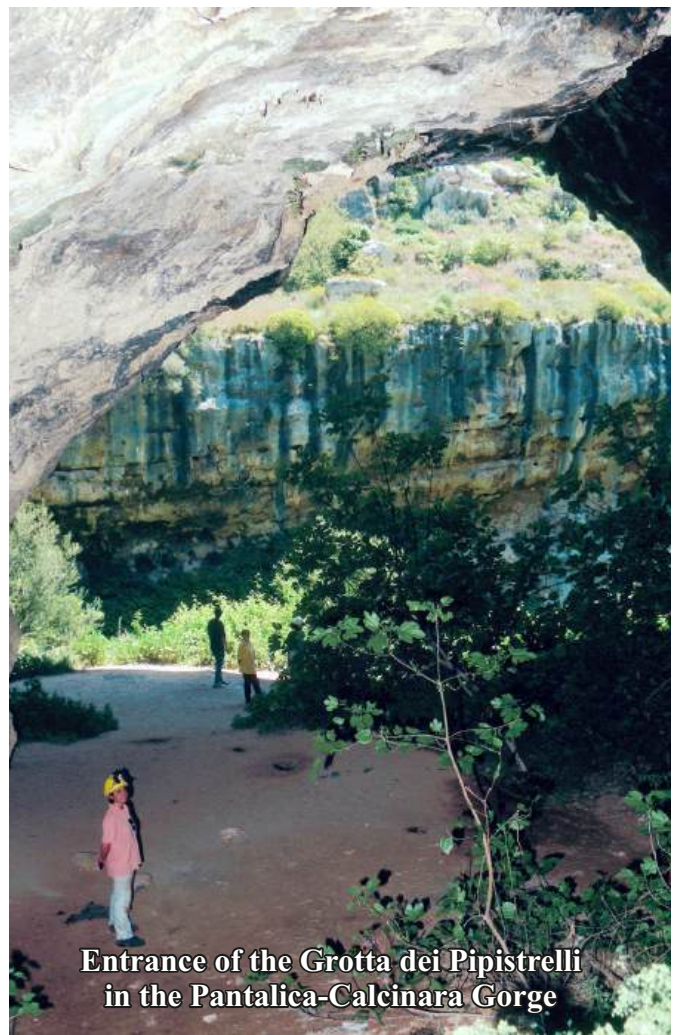
The Anapo Natural Reserve: The deep fluviokarst canyon. On the left, the Necropolis along the Calcinara fluviokarst gorge, with its high vertical cliffs extensively affected by tombs of the late Bronze Age; on the right, the gorge along the Calcinara river.



Anapo Valley (Unesco World Heritage)



**Pantalica
Calcinara Gorge**



**Entrance of the Grotta dei Pipistrelli
in the Pantalica-Calcinara Gorge**



View of the large entrance of the Grotta dei Pipistrelli along the Pantalica-Calcinara Gorge

Program of the guided tour of 18 September: *Field trip to Cava Grande del Cassibile - Grotta dei Briganti*
by Corrado Nastasi and Tiziana Di Benedetto

Welcome to partecipans by Rossana Cannata, Mayor of Avola city

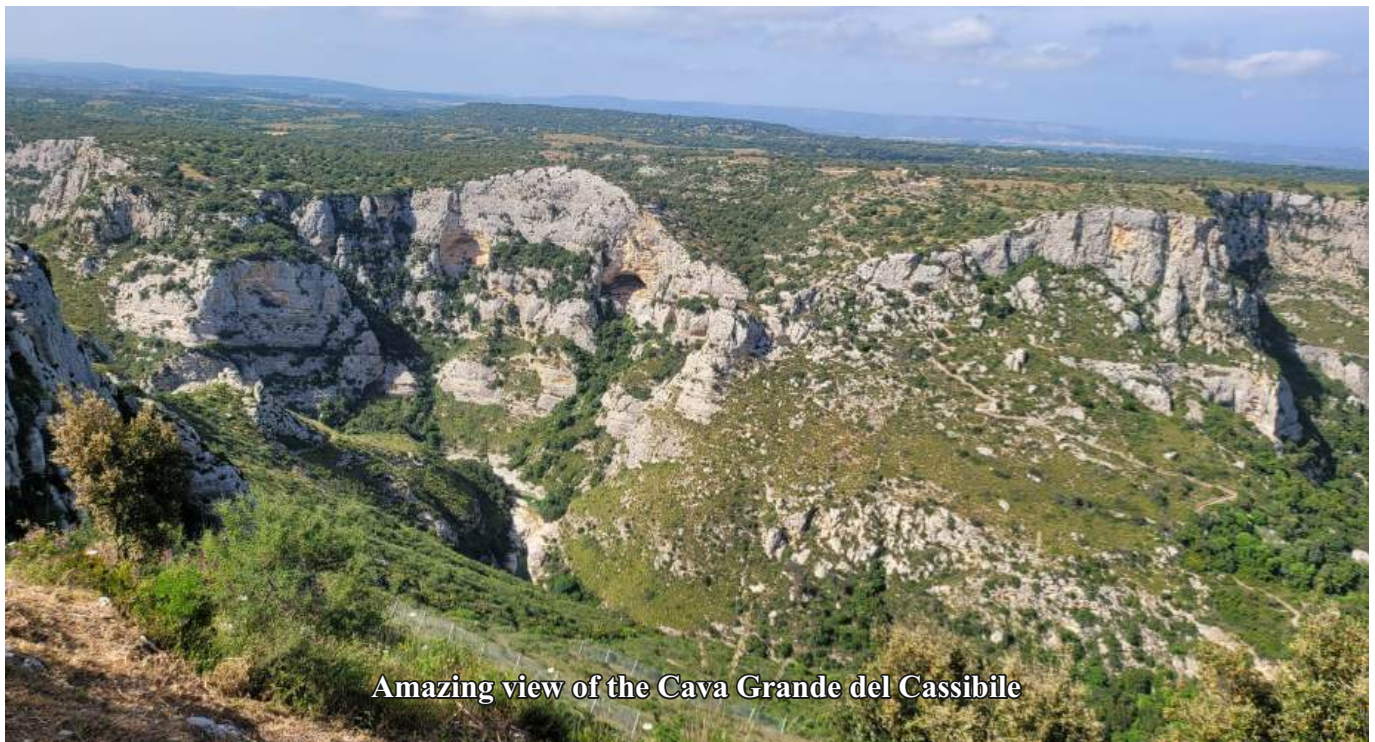
Locations and time of departure:

Noto - Departure Bus Terminal in Via Pola at 8.30 am

Duration: 7 hours: from 9.30 to 16.30 pm

Difficulty: medium-high tour, normal physical condition.

Requirement: trekking clothes, shoes and hat, sunglass.



Amazing view of the Cava Grande del Cassibile

EXCURSION TO THE "GROTTA DEI BRIGANTI" - CAVA GRANDE DEL CASSIBILE

The rock complex of the "Grotta dei Briganti" is located on the left bank of Cava Grande and is clearly visible from the panoramic viewpoint of Avola Antica. The settlement is also known as the "Grotta della Cunsiria," or "Tannery Cave," due to the presence of several rooms used for tanning hides. Surveys of the settlement revealed that only a couple of rooms retain the typical structures of a tannery, with water basins, drains, and related channels. The settlement is accessed by a steep staircase completely carved into the rock.

The large cave, resembling a large dome that contains approximately half the settlement (20 completely enclosed rooms), has a maximum height of 18 meters and an area of 770 m². It features numerous regularly arranged holes that likely served to accommodate the beams of superstructures leaning against the walls.

An additional fifty rooms, totaling approximately 1,100 m², are located to the sides of the main cave along the rock face facing downstream. In many of these rooms, structures resembling troughs carved into the rock are visible. Along the path leading to the cave complex, a room located in an elevated position can be seen, suggesting a guard post.

Recurring artifacts in the settlement include "aedicules" and "niches" of various sizes and shapes.

The cave complex's water supply consists of a large cistern found as you ascend the steps leading to the main cave. The cistern is arranged on three levels, including a high room with a well about 8 meters deep, carved into the rock that leads to a large chamber where water drips and collects. The rock carving in the "Grotta dei Briganti" appears more crude than in the "Dieri" caves. The excursion continues to the bottom of the quarry, where you can bathe in the beautiful lakes.



Useful information:

Comfortable hiking shoes and clothing (long pants);

Light backpack, gloves (optional), water;

Elevation gain: approximately 100 meters to the "Brigands' Cave"; 200 meters to the valley floor;

Length: approximately 5 km round trip, including the "lakes" on the valley floor.

Hike duration: approximately 5-6 hours;

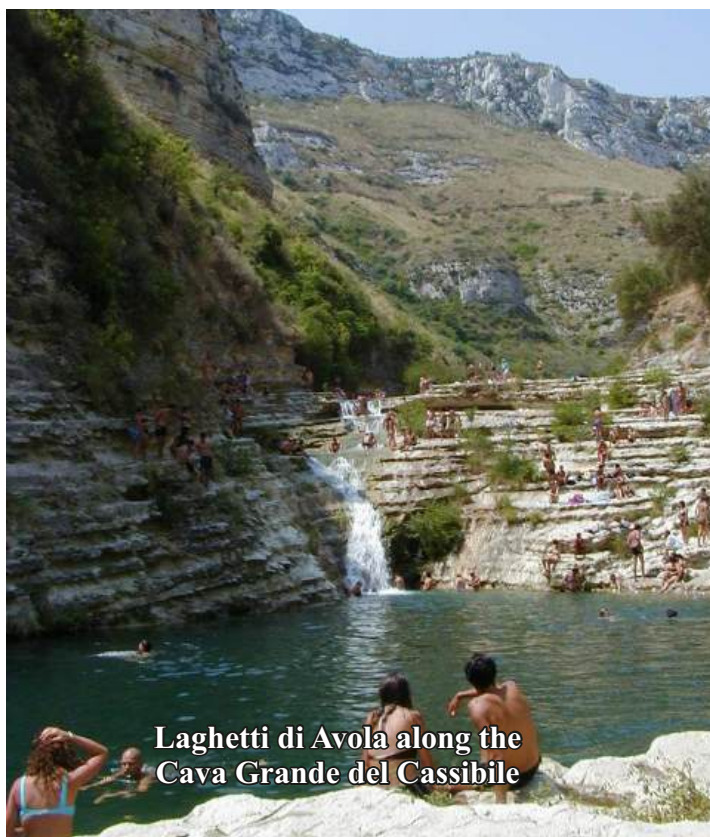
Difficulty: medium-high

Access: Cassibile exit from the Siracusa-Gela highway; head towards Floridia and after about 250 meters, turn left onto the S.P. 73 Cugni-Stallaini; After taking the SP 73 and traveling about 10.6 km uphill, you'll come to a clearing on the left with a sign for the Cava Grande del Fiume Cassibile Nature Reserve; park in an orderly fashion and from here the dirt road that will lead you to the "Brigands' Cave" begins. GPS coordinates (start of trail):

36°58'59.39" N - 15° 5'33.47" E



Grotta dei Briganti



**Laghetti di Avola along the
Cava Grande del Cassibile**

Program of the guided tour of 19 September: *Vallone del Ponte (Sant'Angelo Muxaro)*
by Gruppo Speleologico Kamikos

Locations and time of departure:

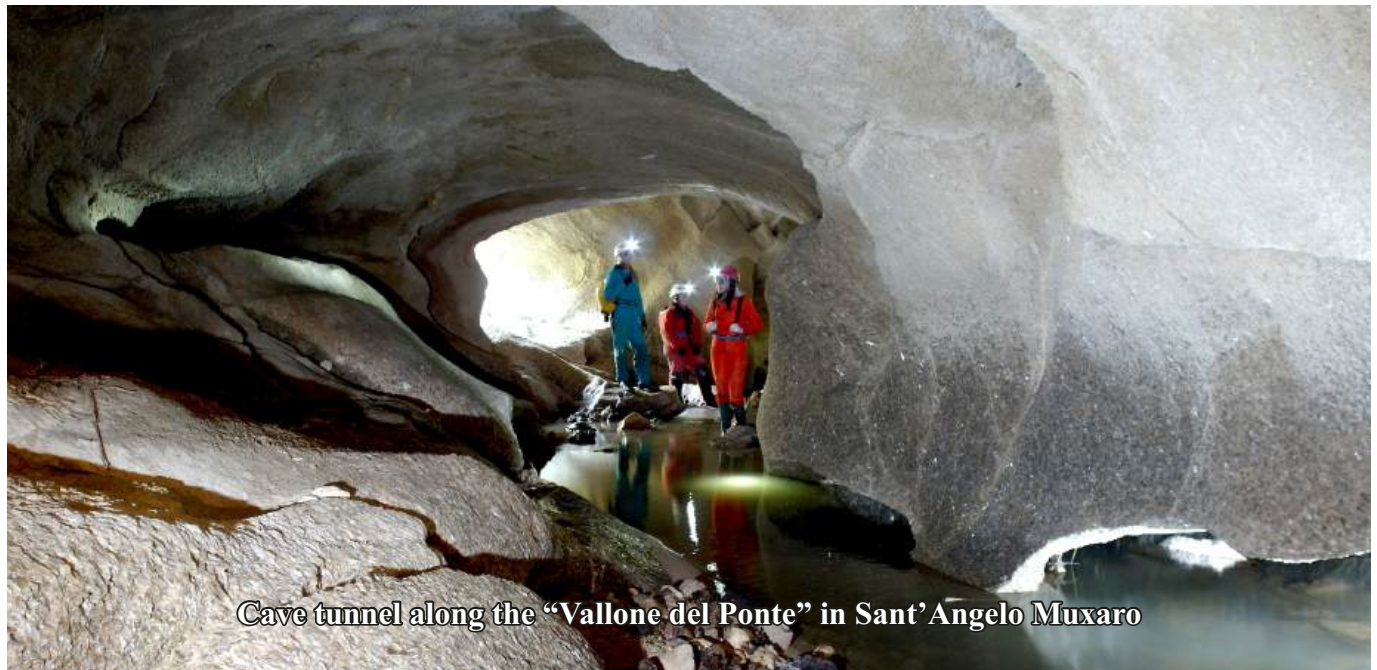
Noto - Departure Bus Terminal in Via Pola at 7.30 am

Duration: 9 hours

Difficulty: easy tour, normal physical condition.

Requirement: trekking clothes, shoes and hat, sunglass.

Participation fee: 80 €.



Cave tunnel along the “Vallone del Ponte” in Sant’Angelo Muxaro

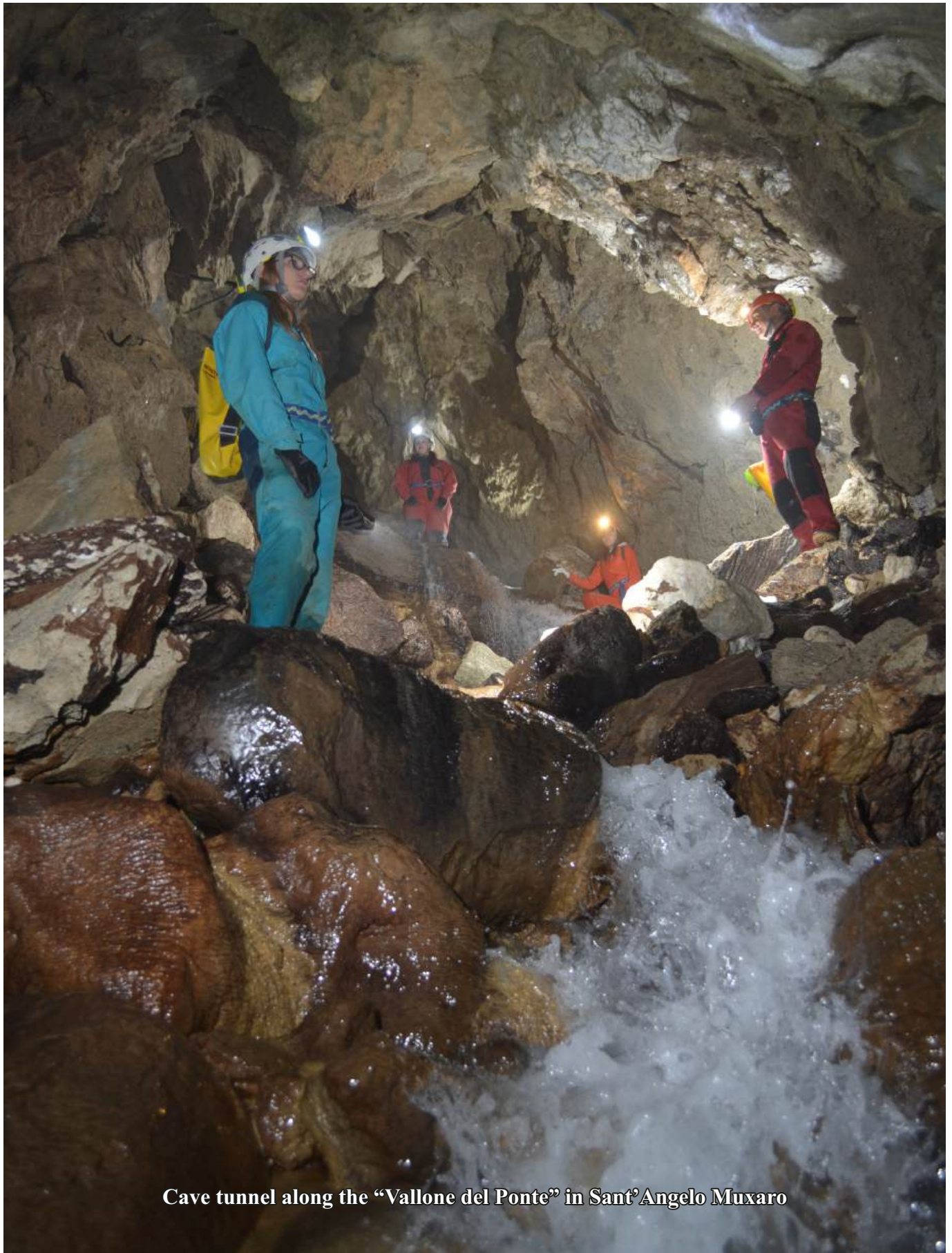
The Vallone del Ponte is a naturalistic area of extreme interest, adjacent to the Grotta di Sant'Angelo Muxaro Nature Reserve; the site is currently not protected and enhanced; this area was included in a project to expand the current boundaries of the reserve. The access path to the bed of the Vallone del Ponte (has a length of approximately 250 metres, and is characterized by breaks in slope and steepness; it develops on rocky terrain and on a dirt road, in some sections it is characterized by the presence of lush vegetation to make it easier to overcome some differences in level, a rope is sometimes placed as a handrail. Along the riverbed of Vallone Ponte, given the lack of fixed structures (walkways, handrails, etc.) it is necessary to walk on a surface characterized by disconnected chalky boulders alternating with muddy stretches. Along the bed of the Vallone del Ponte you cross dry epigeal stretches characterized by lush and varied vegetation, including thorny plants such as brambles; and some caves (underground environments), characterized by the presence of disconnected chalky rocks; in some cases it is necessary to cross tunnels and/or get wet (these crossings are optional, the group can decide to avoid them and limit themselves to visiting only the less impervious areas and with shallow water).

To visit the Vallone del Ponte it is necessary to be: aware of visiting areas in epigeal and underground environments, characterized by natural processes, such as erosion, karst, etc., which can determine the instability of the rock masses and episodic collapse and overturning; in conditions suitable for sports and in particular not having joint problems.

For the visit we recommend:

- long trousers;
- t-shirt/sweatshirt with long sleeves (optional work gloves);
- shoes with rubber soles or rubber boots or trekking boots;
- complete change including shoes, to be worn at the end of the speleological visit (the clothing used during the speleological visit may be wet and muddy).

The helmet and the lighting system are provided by the managing body. for the visit large accessories are left in the cars.



Cave tunnel along the “Vallone del Ponte” in Sant’Angelo Muxaro



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Università
di Catania
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INTERNATIONAL SCIENTIFIC CONFERENCE
SEPTEMBER 13th - 19th Special Nature Reserve
Oasi faunistica di Vendicari (SIRACUSA) ITALY

