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PROGRAMME

Friday 31 October 2014

- 8:00-8:15** Participants welcome and registration
- 8:15-8:45** **Opening of the Symposium**
- 8:45-9:45** Keynote conference: **Campagnes océanographiques d'exploration des têtes de canyons de Méditerranée française – MedSeaCan & CorSeaCan** by **Boris DANIEL**, DAMIER E., FERRARI B., WATREMEZ P., Equipe Scientifique des campagnes MedSeaCan et CorSeaCan.
- Session 1: Current Knowledge of the deep habitats**
- 9:45-10:00** "Vulnerable habitats and species in the deep-sea Emile Baudot Escarpment (South Balearic Islands) surveyed by ROV" by **Ricardo AGUILAR**, SERRANO A., GARCÍA S., ALVAREZ H., BLANCO J., LÓPEZ J., MARÍN P., PASTOR X.
- 10:00-10:15** "Exploration visuelle des canyons et bancs rocheux profonds en Méditerranée française : apports à la typologie nationale des habitats profonds" by **Maïa FORT**, MICHEZ N., CHEVALDONNÉ P., GOUJARD A., HARMELIN J.G., VACELET J., VERLAQUE M., Equipe scientifique des campagnes MedSeaCan et CorSeaCan.
- 10:15-10:30** Discussion
- 10:30-11:00** *Coffee break*
- Session 1: Current Knowledge of the deep habitats (Continued)**
- 11:00-11:15** "French Mediterranean submarine canyons and deep rocky banks: a regional view for adapted conservation measures" by **Maïa FORT**, GOUJARD A., PEREZ T., VACELET J., SARTORETTO S., CHEVALDONNE P., the scientific team of the MedSeaCan and CorSeaCan cruises.
- 11:15-11:30** "Fishing impact on Italian deep coral gardens and management of these vulnerable marine ecosystems" by **Marzia BO**, ANGIOLILLO M., BAVA S., BETTI F., CANESE S., CATTANEO-VIETTI R., CAU A., PRIORI C., SANDULLI R., SANTANGELO G., TUNESI L., BAVESTRELLO G..
- 11:30-11:45** Discussion
- 11:45-12:30** **Poster Session (1 to 8)**
-
- 12:30-13:00** *Side event*
- Mission Canyons, voyage dans les vallées sous-marines de Méditerranée** by **Boris DANIEL**
-

13:00-14:00 *Lunch*

Session 2: Current Knowledge of undersea caves

14:00-14:15 "Submerged marine caves of Liguria: updating the knowledge" by **Martina CANESSA**, **MONTEFALCONE M.**, **CANOVAS MOLINA A.**, **COPPO S.**, **DIVIACCO G.**, **BAVESTRELLO G.**, **MORRIC.**, **BIANCHI C.N.**

14:15-14:30 "Mediterranean marine caves as biodiversity reservoirs: a preliminary overview" by **Vasilis GEROVASILEIOU**, **VOULTSIADOU E.**

14:30-14:45 "Unnoticed inhabitants of marine caves: amphipod assemblages in caves of the Alboran Sea" by **Carlos NAVARRO-BARRANCO**, **GUERRA-GARCÍA J.M.**, **SÁNCHEZ-TOCINO L.**, **GARCÍA-GÓMEZ J.C.**

14:45-15:00 "An ecosystem-based approach to evaluate the ecological quality of Mediterranean undersea caves" by **Pierre-Alexandre RASTORGUEFF**, **BELLAN-SANTINI D.**, **BIANCHI C.N.**, **BUSSOTTI S.**, **CHEVALDONNE P.**, **GUIDETTI P.**, **HARME LIN J.G.**, **MONTEFALCONE M.**, **MORRI C.**, **PEREZ T.**, **RUITTON S.**, **VACELET J.**, **PERSONNIC S.**

15:00-15:15 Discussion

15:15-15:45 Awards for best poster

15:45-16:15 *Side event*

The Lost Forest by **Simone BAVA**, **BETTI F.**, **BAVESTRELLO, G.**, **Marzia BO**, **CATTANEO-VIETTI R.**

16:15-17:00 **Closure of the Symposium**

PROGRAMME

Vendredi 31 octobre 2014

- 8:00-8:15** Accueil et inscription des participants
- 8:15-8:45** **Ouverture du Symposium**
- 8:45-9:45** Conférence introductive : **Campagnes océanographiques d'exploration des têtes de canyons de Méditerranée française – MedSeaCan & CorSeaCan** par **Boris DANIEL**, DAMIER E., FERRARI B., WATREMEZ P., Equipe Scientifique des campagnes MedSeaCan et CorSeaCan.
- Session 1 :** **Etat des connaissances sur les habitats profonds**
- 9:45-10:00** "Vulnerable habitats and species in the deep-sea Emile Baudot Escarpment (South Balearic Islands) surveyed by ROV" par **Ricardo AGUILAR**, SERRANO A., GARCÍA S., ALVAREZ H., BLANCO J., LÓPEZ J., MARÍN P., PASTOR X.
- 10:00-10:15** "Exploration visuelle des canyons et bancs rocheux profonds en Méditerranée française : apports à la typologie nationale des habitats profonds" par **Maïa FORT**, MICHEZ N., CHEVALDONNÉ P., GOUJARD A., HARMELIN J.G., VACELET J., VERLAQUE M., Equipe scientifique des campagnes MedSeaCan et CorSeaCan.
- 10:15-10:30** Discussion
- 10:30-11:00** *Pause café*
- Session 1 :** **Etat des connaissances sur les habitats profonds**
(Suite)
- 11:00-11:15** "French Mediterranean submarine canyons and deep rocky banks: a regional view for adapted conservation measures" par **Maïa FORT**, GOUJARD A., PEREZ T., VACELET J., SARTORETTO S., CHEVALDONNE P., the scientific team of the MedSeaCan and CorSeaCan cruises.
- 11:15-11:30** "Fishing impact on Italian deep coral gardens and management of these vulnerable marine ecosystems" par **Marzia BO**, ANGIOLILLO M., BAVA S., BETTI F., CANESE S., CATTANEO-VIETTI R., CAU A., PRIORI C., SANDULLI R., SANTANGELO G., TUNESI L., BAVESTRELLO G..
- 11:30-11:45** Discussion
- 11:45-12:30** **Session Posters (1 à 8)**
-
- 12:30-13:00** *Evènement parallèle*
- Mission Canyons, voyage dans les vallées sous-marines de Méditerranée** par **Boris DANIEL**
-

13:00-14:00 *Déjeuner*

Session 2 : **Etat des connaissances sur les grottes sous-marines**

14:00-14:15 **"Submerged marine caves of Liguria: updating the knowledge"** par **Martina CANESSA, MONTEFALCONE M., CANOVAS MOLINA A., COPPO S., DIVIACCO G., BAVESTRELLO G., MORRIC., BIANCHI C.N.**

14:15-14:30 **"Mediterranean marine caves as biodiversity reservoirs: a preliminary overview"** par **Vasilis GEROVASILEIOU, VOULTSIADOU E.**

14:30-14:45 **"Unnoticed inhabitants of marine caves: amphipod assemblages in caves of the Alboran Sea"** par **Carlos NAVARRO-BARRANCO, GUERRA-GARCÍA J.M., SÁNCHEZ-TOCINO L., GARCÍA-GÓMEZ J.C.**

14:45-15:00 **"An ecosystem-based approach to evaluate the ecological quality of Mediterranean undersea caves"** par **Pierre-Alexandre RASTORGUEFF, BELLAN-SANTINI D., BIANCHI C.N., BUSSOTTI S., CHEVALDONNE P., GUIDETTI P., HARMELIN J.G., MONTEFALCONE M., MORRI C., PEREZ T., RUITTON S., VACELET J., PERSONNIC S.**

15:00-15:15 Discussion

15:15-15:45 **Remise de prix pour le meilleur poster**

15:45-16:15 *Evènement parallèle*

The Lost Forest par **Simone BAVA, BETTI F., BAVESTRELLO, G., Marzia BO, CATTANEO-VIETTI R.**

16:15-17:00 **Clôture du Symposium**

KEYNOTE CONFERENCE

CONFERENCE INTRODUCTIVE

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CAMPAGNES OCEANOGRAPHIQUES D'EXPLORATION DES TETES DE CANYONS DE MEDITERRANEE FRANCAISE – MEDSEACAN & CORSEACAN

The numerous submarine canyons cutting across the Mediterranean continental shelf represent key habitats for understanding and managing the biodiversity of coastal areas and the continental shelf.

In 2007, a review of the available data showed a severe lack of information, between a depth of 100 and 600 metres, in particular to implement the Barcelona Convention, to extend the Natura 2000 network offshore and to define new marine protected areas.

Through this programme, the French Agency of the marine protected areas has drawn up an inventory of habitats and species present in the Mediterranean canyon heads off the French coast. The study area stretches from the Spanish border to the border of Monaco (MEDSEACAN campaign) and includes the western coast of Corsica (CORSEACAN campaign).

The objective was to obtain a reference state of the ecosystems between a depth of 100 and 600 metres, including specific information about the presence and distribution of deep-sea corals and specific biological species (fish, crustaceans, cnidarians), and data about these ecosystems and the impact of human activities on these particularly vulnerable areas.

To compare the canyon heads and better understand the ecological importance of these entities, the exploration work was evenly distributed, with about ten days of work in each of the 13 predefined survey areas. The canyon slopes were explored using the same approach, with the same technical means implemented by the same scientific and technical teams. The description of the environment is based mainly on the acquisition of image data (photos, video) obtained from manned or unmanned submarines.

ORAL COMMUNICATIONS

COMMUNICATIONS ORALES

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VULNERABLE HABITATS AND SPECIES IN THE DEEP-SEA EMILE BAUDOT ESCARPMENT (SOUTH BALEARIC ISLANDS) SURVEYED BY ROV

Geological features like seamounts and canyons are known to be potential biodiversity hotspots due to the variety of bathymetric ranges, substrata, habitats and species that they can host. Escarpments share these characteristics and new findings show they can be considered as important biological hotspots.

*Remotely operated vehicle (ROV) dives between 100 and 1000 m depth carried out in the Emile Baudot Escarpment (Southern Balearic Islands) and the surrounding shelf-break have provided new data on the distribution of deep-sea habitats and species. The most important factor influencing species and habitats' presence is the nature of the substrate and the bathymetry. Although most of the area is heavily covered by sediment, rocky outcrops and overhangs show thanatocenoses of oysters and corals. Coral framework and oyster shells are colonized by other cnidarians, mollusks and sponges like *Caryophyllia calveri*, *Spondylus gussonii* or *Tretodictium tubulosum*. Some *Neopycnodonte zibrowii* individuals can even still be found alive. Important aggregations and communities of the crinoid *Leptometra phalangium* and the brachiopod *Gryphus vitreus* occupy a wide area on the shelf-break and on top of the escarpment. Different researches and international fora (like UNEP or FAO) include these communities in the classification of vulnerable, sensitive or essential habitats and ecosystems.*

Marzia BO, ANGIOLILLO M., BAVA S., BETTI F., CANESE S., CATTANEO-VIETTI R., CAU A., PRIORI C., SANDULLI R., SANTANGELO G., TUNESI L., BAVESTRELLO G.

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FISHING IMPACT ON ITALIAN DEEP CORAL GARDENS AND MANAGEMENT OF THESE VULNERABLE MARINE ECOSYSTEMS

Coral gardens have been internationally recognized as unique habitats characterized by numerous structuring species, generating complex and fragile ecosystems, which act as important oases of biodiversity in the deep realm. Deep corals are generally believed to constitute poorly resilient assemblages presenting a low recovery potential from the impact of destructive deep fishing activities. For these reasons, the international scientific community has recently proposed the inclusion of some of these species in many protection lists, recognizing their ecological value and their vulnerability to human activities.

A wide ROV video archive was used to characterize the fishing impact on numerous deep rocky shoals along the entire Tyrrhenian and Ligurian Seas (Italy). Lost fishing gears represent the great majority of the marine litter on the bottom, reported in the totality of the explored sites. Some regional differences were highlighted, with Liguria and Campania among the most impacted areas. Various features, such as the explored depth range, the accessibility of the shoals and the local fishing traditions play a synergistic role in defining the observed pattern. Additional indicators of impact have been identified in order to characterize the health status of the coral aggregations in heavily impacted fishing grounds.

No active ecosystem-based fishery management of the deep Italian rocky shoals hosting these coral gardens has still been defined, if we exclude some local initiatives. A network of deep marine protected areas, that might apply experimental fishing restrictions, is here proposed for the Italian Seas.

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SUBMERGED MARINE CAVES OF LIGURIA: UPDATING THE KNOWLEDGE

Marine caves are priority coastal habitats according to the EU Habitat Directive, but they have received a comparatively lower attention with respect to other Mediterranean key coastal habitats, such as seagrass meadows and coralligenous reefs. This paper reviews and updates the existing knowledge on the underwater marine caves of Liguria, an administrative region in NW Italy. The available bibliographic information, retrieved from regional archives, grey literature and scientific publications, has been implemented with records by divers to build a database on the distribution and typology (both geological and biological) of marine underwater caves of Liguria. The database has been implemented on a GIS platform. Out of the 76 marine caves recorded along the coast, only 20 are submerged, reaching a maximum depth of 40 m. 21 caves are distributed in the Western Ligurian Riviera and 56 in the Eastern Riviera. Major caves are located in karst areas. Geological and morphological information is available for virtually all caves, whereas biological data are limited to 13 caves, and are rarely accompanied by historical series. This first attempt provides useful indications to focus future investigations, and could become a potential management tool for local administrations to protect these habitats.

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FRENCH MEDITERRANEAN SUBMARINE CANYONS AND DEEP ROCKY BANKS: A REGIONAL VIEW FOR ADAPTED CONSERVATION MEASURES

The MedSeaCan and CorSeaCan cruises aimed to provide a reference state of the ecosystem in the general context of deep-sea canyons. This included specific information about the presence and distribution of deep-sea habitats, deep-sea coral communities, commercial, vulnerable or poorly-known deep-water species, mesophotic assemblages and the impact of human activities in these areas. This was achieved through direct observation with submersible (ROV and HOV), and the collection of photographic, video and biological samples, all integrated in an Information System. After data treatment, five regional entities were defined by their geomorphology, substrates, habitats, species, different degrees of human impacts and vulnerability to specific human pressures.

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EXPLORATION VISUELLE DES CANYONS ET BANCS ROCHEUX PROFONDS EN MEDITERRANEE FRANÇAISE : APPORTS A LA TYPOLOGIE NATIONALE DES HABITATS PROFONDS

Les campagnes d'exploration MedSeaCan et CorSeaCan menées par l'Agence française des Aires Marines Protégées entre 2008 et 2010 ont largement contribué à une meilleure connaissance des habitats profonds et de l'étage bathyal dans la zone des canyons de la Méditerranée française. Les moyens d'exploration, essentiellement visuels complétés par des prélèvements, apportent des connaissances sur la distribution de la mégafaune et des communautés macrobenthiques en particulier de substrat dur et fournissent une information paysagère précieuse. La typologie nationale actuelle des biocénoses benthiques est une typologie bio-écologique, fondée sur l'étude des communautés macrobenthiques et la compréhension de leur répartition selon les conditions environnementales. En milieu profond, elle a surtout été élaborée à partir de prélèvements sur les fonds meubles et très peu d'observations directes avaient été effectuées jusqu'à présent pour la qualification des biocénoses de substrat dur. La typologie nationale étant le langage commun utilisé pour faciliter la mise en œuvre des politiques publiques de conservation des habitats marins benthiques, il est primordial qu'elle reflète l'état des connaissances actuelles. L'intégration de ces nouvelles informations a soulevé un certain nombre de questionnements et va permettre de compléter le référencement des habitats profonds bien que certaines zones d'ombre subsistent.

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MEDITERRANEAN MARINE CAVES AS BIODIVERSITY RESERVOIRS: A PRELIMINARY OVERVIEW

Marine caves constitute a typical feature of the Mediterranean coastline, yet knowledge on their biodiversity is scattered and geographically fragmented. In order to assess the overall diversity of the Mediterranean cave biota, an overview of 307 studies was combined with data obtained from previously unexplored marine caves of the Aegean Sea. A total of 2167 taxa were recorded from 350 caves in 15 countries. Our analyses showed that research has mainly taken place in semi-submerged and shallow caves from the northern Mediterranean. Species richness varied among areas, reflecting variability in research effort and in the number of caves, which are more abundant on the rocky coasts of the northern basin. The Tyrrhenian Sea (822 taxa), Ionian Sea (696), and French coasts (650) presented the highest species richness and research effort. The biodiversity overview revealed that marine caves harbour a considerable proportion of the total Mediterranean fauna for particular phyla, especially for brachiopods, bryozoans and sponges. However, gaps of knowledge emerged regarding certain areas, groups of biota, assemblages, and cave types. It is suggested that Mediterranean marine caves constitute significant biodiversity reservoirs deserving further scientific research and conservation actions.

Carlos NAVARRO-BARRANCO, GUERRA-GARCÍA J.M., SÁNCHEZ-TOCINO L., GARCÍA-GÓMEZ J.C.

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UNNOTICED INHABITANTS OF MARINE CAVES: AMPHIPOD ASSEMBLAGES IN CAVES OF THE ALBORAN SEA

Amphipod species seem to be widespread in marine cave benthic communities, both in hard and soft substrates. For many years, this fauna had attracted the attention of taxonomists, who described many new taxa. However, the ecology of caves' epifaunal and infaunal communities in general, and its amphipod fauna in particular has been often overlooked. Are these communities different from those present in open habitats? What are their abundance or diversity patterns? Can we find general and constant trends? What do marine cave amphipods feed on? Are cave environments easy to colonize? The amphipod fauna of nine different marine caves in the Alboran Sea was surveyed and more than fifty different species were identified. Species composition and structure of the communities was highly variable among caves, so that it was difficult to extract general and consistent ecological patterns. Amphipods were one of the dominant groups of mobile epifauna in all the substrates studied, both in abundance and number of species. Regarding their trophic structure, outside the caves detritivores were the dominant feeding group, while amphipods mainly played the role of carnivores inside the caves. There was a marked decrease in diversity toward the inner part of the caves; this community impoverishment should be attributed to factors such as the decrease in the trophic supply, rather to a limitation in the ability of propagules to reach the internal part of the caves. Experimental studies also pointed out the little rate of change and slow succession in epifaunal communities, which supports the actual consideration of marine caves as very sensitive habitats.

Pierre-Alexandre RASTORGUEFF, BELLAN-SANTINI D., BIANCHI C.N., BUSSOTTI S., CHEVALDONNE P., GUIDETTI P., HARMELIN J.G., MONTEFALCONE M., MORRI C., PEREZ T., RUITTON S., VACELET J., PERSONNIC S.

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AN ECOSYSTEM-BASED APPROACH TO EVALUATE THE ECOLOGICAL QUALITY OF MEDITERRANEAN UNDERSEA CAVES

A theoretical model of structure and functioning was constructed for the marine underwater cave ecosystem of the Mediterranean Sea. This model integrates almost all representative components of the cave ecosystem and gives an idea of their faunal composition, characteristics and related interactions. This model constitutes the basis of an Ecosystem-Based Quality Index (EBQI) which aims at evaluating the ecological quality of an ecosystem. This method is based on four crucial and complementary elements: i) each component was weighted in accordance with its importance in determining the structure and functioning of the cave ecosystem; ii) a suite of relevant parameters were defined to assess the ecological state of each component of the cave ecosystem; iii) these parameters were aggregated into one relevant index, the Cave EBQI (CavEBQI), to summarise the quality evaluation for each cave site; iv) each value of ecological state is accompanied by a confidence index which is a measure of its reliability. The power of such an ecosystem ecological quality assessment is that it is based on almost all its components, rather than on few species, and that it is complemented by a measure of the reliability of this evaluation. CavEBQI allows the monitoring of the ecological state of caves and the effects of disturbances over large geographic and temporal scales. Application of the same method to other ecosystems can provide an integrated view that is essential when addressing questions about protection, conservation and restoration.

POSTERS

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DISTRIBUTION OF THE DEEP-DWELLING GORGONIAN *VIMINELLA FLAGELLUM* IN THE ITALIAN WESTERN MEDITERRANEAN SEA BY MEANS OF MULTI-YEAR ROV SURVEYS

The whip-like gorgonian Viminella flagellum (Alcyonacea, Ellisellidae) is an Atlantic-Mediterranean species living in temperate and subtropical waters. Past knowledge about species occurrence in the Mediterranean Sea was limited to the surrounding of Gibraltar Strait and the Balearic Sea. A multi-year ROV video surveys allowed updating the distribution of this species in the Italian waters and obtaining information about its occurrence, abundance and associated species. V. flagellum dwelled in rocky environments at 100-250 m depth, from the Ligurian Sea to the Sicily Channel. It may form very dense monospecific meadows or show a sparse distribution associated with highly diversified coral benthic assemblages, forming a so called “coral garden”. The availability of appropriate technical devices allowed us to obtain more specific information about this species and its distribution. The high species richness of the assemblages hosting V. flagellum, together with their vulnerability to human activities, should motivate the adoption of conservation measure for these deep environments.

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THE DECLINE OF TOP PREDATORS IN DEEP CORAL REEFS

*During seven years of ROV exploration of mesophotic and dark habitats conducted in more than 500 sites around Italy we have had the opportunity to observe the presence and the behaviour of deep groupers (*Polyprion americanus*, *Epinephelus caninus* and *Hyporthodus haifensis*) and sharks (*Hexanchus griseus*). Interviews conducted in the Ligurian Sea with fishermen give us the possibilities to estimate, on the basis of log books and pictures of significative catches, the relative historical abundance of these species. Since the end of 70's these large groupers and sharks were so abundant that a single fisherman could catch, with a long line armed of 70 hooks, more than 800 kg of fishes, comprise 20 large *Polyprion* and 3 *Hexancus*. In only 10 fishing expeditions where captured of 125 large groupers weighed between 20 and 37 kg. After only two years of fishing activities, the groupers disappeared from seamounts and the mainly target was constituted only by large Blackspot seabream (*Pagellus bogaraveo*). Nowadays the professional fishing activity abandoned these targets due to a collapse of resource, but recreational activities that can utilize expensive and sophisticated equipment continue to target these species probably causing the drop of population at unrecoverable levels.*

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SPATIAL HETEROGENEITY OF BENTHIC COMMUNITIES IN A MARINE CAVE OFF LESVOS ISLAND (AEGEAN SEA)

Spatial heterogeneity of benthic communities was surveyed in a marine cave off Lesvos Island (Aegean Sea, Eastern Mediterranean). Quadrats were photographed along 3 transects: one along the cave ceiling and two along the opposing vertical walls. Analyses revealed a rich fauna of 64 taxa belonging to 9 taxonomic groups. Sponges were the dominant group in terms of species richness, followed by bryozoans and cnidarians. Species richness and biotic coverage decreased towards the interior. Three distinct assemblages were identified: the coralligenous entrance where encrusting rhodophytes, sponges, and anthozoans prevailed, the middle semi-dark zone dominated by sponges, and the dark interior dominated by serpulids. Topographic features of the cave had a significant effect on the structuring of the community, highlighting the role of cave topography in the observed patterns.

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THE INFORMATION SYSTEM ZOODEX, A TOOL FOR THE TREATMENT OF IMAGE DATA

The exploration of dark deepwater zones has until recently been mainly undertaken on the basis of blind sample collection (grabs, dredges, trawls, etc.). Since the sixties, direct observation by diving saucer or submarine has been developed in the Mediterranean. Currently, relatively inaccessible deepwater zones down to 1 000 m depth are increasingly being explored by Remotely Operated Vehicles (ROV) or submarines and the recording of images of the explored sea bottom has become widespread. But processing the data and correlating them is often complex and takes up a great deal of storage space. During the MedSeaCan and CorSeaCan campaigns, carried out by the “Agence des aires marines protégées”, the information system ZOODEX (ZOOlogical Data Exploitation system) was developed for the purpose of optimising biological analysis on images in a systematic and homogeneous way, banking all the data, facilitating their interconnection, consulting and retrieving the information.

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CONTRIBUTION TO THE KNOWLEDGE OF RARE AND ENDANGERED HABITATS - MARINE CAVES (MONTENEGRO, SOUTH EAST ADRIATIC COAST)

Marine caves are considered as a biodiversity hotspot and they are listed in Annex I of the EU Habitats Directive as an important and endangered habitat. The Montenegrin coast (about 300km in the South-East Adriatic Sea) mainly consists of a variety of rocks, among them vast karst areas. Although the karstic nature of the wider area is well known, marine caves along the country's coastline have never been studied systematically.

In September 2013, we systematically surveyed the marine caves with an entrance above sea level in the northern part of Montenegro (cape Arza to cape Platamuni, ca. 40km). We registered a total of 20 marine caves. Only few had a relatively deep submerged area (up to 30m depth) while most of them were a few meters deep. Some of them had a small pebble or sandy beach and in some of them cave rock formations were found. Here, two characteristic caves are presented in detail. Besides marine caves we registered 24 holes which were less than 5m long but still important for some rare and endangered species. During the survey, 7 marine protected species were registered and also 2 species of protected terrestrial plants, 5 species of protected birds and 1 mammal (bat). A part of the surveyed area belongs to the future MPA Platamuni, planned to be established by the responsible Montenegrin authorities. Our results will contribute to the better protection and management of endangered marine and coastal species and habitats. Furthermore, they will substantially contribute to the creation of the urgently needed Marine Caves' Register in Montenegro.

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THE IMPACT OF ANTHROPOGENIC ACTIVITIES ON COLD WATER CORALS IN THE EASTERN IONIAN SEA FROM ROV OBSERVATIONS

*Information related to cold water corals (CWC) abundance, bathymetry and health were collected using observations from ROV video transects. Sampling was carried out off the coasts of Cephalonia Island in the E. Ionian Sea at depths ranging between 300 and 850 m in June and October 2010. Eight species of corals, *Antipathes dichotoma*, *Leiopathes glaberrima*, *Parantipathes larix*, *Isidella elongata*, *Swiftia pallida*, *Desmophyllum dianthus*, *Funiculina quadrangularis* and *Pennatula phosphorea* were reported. The depth distribution of CWC ranged between 300 and 810 m depth. Most of the corals were live. However, in many cases, *I. elongata* and *L. glaberrima* were impacted most probably from fishing activities. Most of the corals were found off the south-western Cephalonian coast, which implies the presence of a moderate concentration CWC area, the only such known area in the Eastern Ionian deep waters. It should therefore be given a high level of protection.*

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BRYOZOANS FROM SHALLOW-WATER SUBMARINE CAVES OF ITALIAN MARINE PROTECTED AREAS

Bryozoans from 42 samples collected from 10 shallow-water submarine caves in 3 Italian Marine Protected Areas in Sicily (Plemmirio: PL; Pelagian Islands: PEL) and Sardinia (Capo Caccia: CC) have been investigated. A total of 113 species was identified, including 90 Cheilostomes, 22 Cyclostomes and 1 Ctenostome. Only 25, usually infrequent species, are shared by all the areas but not by all the caves. Other species, relatively frequent and abundant, are restricted to all the caves in a single area. In contrast, most species, often with a few or single colonies, are restricted to single areas/caves, and even to single sites. Main compositional affinities have been observed for the PL-CC and PL-PEL couples of areas. Conversely, PEL and CC areas show the lowest affinity. Results seem related to setting and features of caves, and possibly also to their geographical location in relation to the areal distribution of species.

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BRYOZOAN AND SERPULID DISTRIBUTION PATTERN ON A DEEP-WATER SLAB (BARI CANYON, ADRIATIC SEA)

The distribution of bryozoans and serpulids colonising a large carbonate slab from the Bari Canyon (280 m) has been investigated. The two relatively platy opposite larger faces of the slab are remarkably different: one is mud-covered, whereas the other one is mud-free, and colonised by encrusting organisms. Bryozoans and serpulids are present on both surfaces with a comparable number of species but the number of specimens is relatively higher on the mud-free surface than on the opposite one. Interestingly, a few species are selectively present on one face only and, even species shared by both surfaces, show a polarity for their abundance. In particular, flexible erect bryozoans are restricted to the mud-covered surface. Sediment smothering is suggested as the main cause for this polarity.