MUSEOLOGIA SCIENTIFICA nuova serie • 9: 83-90 • 2015 ISSN 1123-265X

Heritage enjoyment based on potential public demand: nature and history in the Salento Aquarium (Nardò, Le)

Marcello Emilio Posi

Laboratorio di Zoogeografia e Fauna, Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali (DiSTeBA), Università del Salento, Via Prov.le Lecce-Monteroni. I-73100 Lecce. E-mail: marcello.posi@unisalento.it

Anna Maria Miglietta

Museo di Biologia Marina "Pietro Parenzan", Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali (DiSTeBA), Università del Salento, Via A. Vespucci. I-73010 Porto Cesareo (Le). E-mail: anna.miglietta@unisalento.it

Genuario Belmonte

Museo dell'Ambiente MAUS, Dipartimento di Scienze e Tecnologie Biologiche ed Ambientali (DiSTeBA), Università del Salento, Via Prov.le Lecce-Monteroni. I-73100 Lecce. E-mail: genuario.belmonte@unisalento.it

ABSTRACT

An interdisciplinary front-end evaluation was performed in order to support the choice and theme of exhibits in the new Salento Aquarium (Nardò-Italy), in the framework of the EU Project "interdisciplinary Aquaria for the Promotion of Environment and History (A.Pr.E.H.)". A questionnaire among 1220 potential visitors, mainly from Puglia, served to identify the interests and knowledge of various "potential publics" and to set up the exhibits in accordance with the results. The respondents confirmed that aquaria and other similar educational institutions are sites where conservation, research, and educational content need to be supplemented with cultural, social and "fun" aspects. The interviewees asked for teaching activities (especially regarding shipwrecks, environmental protection and submerged caves), but also for guided tours and a multi-purpose garden. The aquarium is considered an effective enrichment of culture and tourism in the study area. The public is generally unaware of the existence of submerged wrecks along the seacoast of the Salento. The exhibits sought to respond to these suggestions and to the public's lack of awareness about many aspects of nature and history. This paper seeks to contribute to the improvement of social and cultural cohesion, the quality of life and environmental protection by means of a socio-economic study. The aquarium's potential for enrichment of culture and tourism will be confirmed through a subsequent "summative" evaluation.

Key words:
front-end evaluation, museum, aquarium, tourism management, heritage enjoyment.

RIASSUNTO

Fruizione del patrimonio culturale basata sulle aspettative del pubblico potenziale: natura e storia nell'Acquario del Salento (Nardò, Le).

Un'indagine pre-allestimento ha supportato la progettazione delle esposizioni dell'Acquario del Salento (Nardò-Italia), inaugurato nell'ambito del progetto europeo "interdisciplinary Aquaria for the Promotion of Environment and History (A.Pr.E.H.)". 1220 potenziali visitatori, provenienti principalmente dalla Puglia e riferibili a differenti tipologie di pubblico, sono stati intervistati attraverso un questionario che voleva porre in evidenza specifiche conoscenze e preferenze. L'indagine ha confermato che gli acquari pubblici, in linea con le altre agenzie culturali, sono percepiti come luoghi presso i quali la ricerca scientifica, la conservazione e l'educazione devono essere accompagnate da attività ricreative e di valorizzazione socio-culturale del territorio. Gli intervistati hanno manifestato interesse per i relitti sommersi, la protezione dell'ambiente e le grotte subacquee. L'acquario pubblico veniva considerato un valido strumento per l'arricchimento culturale e turistico dell'area oggetto di studio. Il pubblico, che spesso non conosceva l'esistenza di relitti sommersi lungo le coste del Salento, ha richiesto percorsi di visita guidata e un giardino attrezzato in cui trascorrere del tempo. Gli allestimenti hanno cercato di rispondere sia alle preferenze che alle lacune di conoscenza evidenziate. La presente indagine di carattere socio-economico si pone alla base di una nuova offerta culturale che intende stimolare la coesione sociale locale, la protezione dell'ambiente e la valorizzazione della qualità della vita. Una seguente indagine sommativa cercherà conferme dell'efficacia di questa proposta.

Parole chiave:
valutazione pre-allestimento, museo, acquario, valorizzazione turistica, fruizione del patrimonio.

INTRODUCTION

Museums perfectly sum up the desire to preserve the legacy handed down to us by our ancestors, as well as the wish to maintain and select those assets which reflect the creativity and identity of a society (Del Barrio et al., 2009). They entertain and inform, they tell stories and construct arguments, they aim to please and to educate, they translate the otherwise unfamiliar and inaccessible into the familiar and accessible (Silverstone, 1994). Moreover, museums play a key role as repositories of cultural diversity, education, social cohesion and personal development (Brida et al., 2012). Bearing this in mind, while in the past visitors to museums were regarded merely as faceless figures to be counted, in the last few years they have become real users (Kotler & Kotler, 1999; Hooper-Greenhill, 1989) to whom we must pay attention if we are to achieve the main goals of the modern museum, which are primarily to inform and to educate (Posi et al., 2010). Knowledge of the demography and social characteristics of the various kinds of public ("publics"), as well as their motivations and expectations, are today essential elements for the effectiveness of cultural management (Merzagora & Rodari, 2007). In order to create, clarify or adapt a cultural project we need to take account of the characteristics of the real and/or potential public (MacDonald, 1992). Based on the analysis of accurate information, this approach allows decision-makers to reduce uncertainty and enhance the value of the cultural services on offer, making it more readable and attractive for a range of different types of visitor (Tobelem, 2003).

During the planning stage of a cultural proposal, the evaluation process is called "front-end evaluation". It aims to examine the visitors' familiarity with the topics that will be exhibited, as well as to identify elements linked to the experience of visitors and key concepts that will encourage them to visit, attracting attention and developing involvement. Among the methods used to conduct front-end evaluations, the most widely used tool is the structured questionnaire (Mazzolini, 2002), based on a few simple questions that are extremely clear to a large sample of subjects. The study described here is part of the strategy already started by the "Pietro Parenzan" Museum of Marine Biology managed by the DiSTeBA (University of the Salento) (Miglietta et al., 2005). All the information useful to the Salento Aquarium exhibition proposal was gathered by this approach.

REGIONAL BACKGROUND

The project named "interdisciplinary Aquaria for the PRomotion of Environment and History" (A.Pr.E.H.) is funded by the "Greece-Italy" European Territorial Cooperation Programme (2007-2013) which seeks to promote historical and natural submarine heritage on both sides of the Ionian Sea: the southern coastline of the Salento peninsula (SE Italy) and the Island of Cephalonia (NW Greece). The project has set up two small public aquaria, respectively at the localities of Santa Maria al Bagno (Nardò-Italy) and Lixouri (Cephalonia-Greece).

The two aquaria's mission is the promotion and presentation of both the marine ecosystem and the historical remains of shipwrecks, which have been lying on the seabed for up to 2,000 years. It was therefore decided that the Aquaria's tanks should contain natural submerged landscapes and archaeological-historical findings as models.

Nardò is a city of ~32,000 inhabitants, in the southern Italian region of Puglia. It has about 22 km of coastline which is protected by the presence of five terrestrial Sites of Community Importance (SIC-European directive n. 92/43/EC), a Natural Regional Park (NRP) and a Marine Protected Area (MPA). The "Porto Selvaggio e Palude del Capitano" NRP protects about 1100 ha with remarkable flora and fauna biodiversity. The area is home to a great deal of paleontological, prehistoric and historic heritage (Posi et al., 2011). Among the main attractions of the coastline of Nardò and the "Porto Cesareo" MPA are many underwater caves (e.g. "Grotta delle Corvine" and "Grotta Roversi") and submerged ancient (Greek/Roman) and modern (World War II) wrecks.

The *Salento Aquarium* was conceived as playing a key role in local cultural and economic policy (Alfonso et al., 2011), also contributing to urban restyling through the functional conversion of an unused public building. The aquarium has 17 tanks with volumes between 25 and 2500 litres, containing the marine life of the local marine biotopes, ranging from the sea surface down to a depth of 100 m, grouped into four main categories (Cinelli et al., 1998): photophilous populations of the hard substrata; sciaphilous populations of the hard substrata; marine phanerogams; psammophilous communities. Another theme of the aquarium is the wrecks, their history and their role as substrata for marine organisms. The wrecks can be seen as artificial caves, comparable to the abundant natural submarine caves in the area (at least 25) (Belmonte et al., 2011).

METHODS

Quantitative methods, based on a questionnaire, allow the classification of opinions into predetermined categories and make it possible to collect a large number of data on which to base statistical analyses and generalized conclusions (Miglietta, 2013). The knowledge and preferences of 1220 potential visitors (children and adults, students and tourists) were tested by means of a questionnaire.

The survey was conducted in the following tourism structures and educational/cultural institutions:
- Museum of Marine Biology of the University of the Salento (Porto Cesareo),
- "N. Moccia" High School (Nardò),
- "Polo II" and "Polo III" Secondary Schools (Nardò),
- "Costa del Sud" diving centre (Nardò),
- "Orca" diving centre (Porto Cesareo),
- "Masseria Nucci" historic residence (Nardò),
- "Sasa Sub" diving centre (Porto Cesareo),
- "Chalet del Mar" B&B (Porto Cesareo),
- "University of the Three Ages" cultural association (Nardò),
- "Avanguardie" environmental agency (Nardò),
- www.portadimare.it (Nardò).

The survey did not consider children studying at the primary schools of Nardò because this would have required a specific approach, producing data that were not statistically comparable.

The interviewees were mainly from Puglia, but a few dozen questionnaires were filled in by tourists from 12 other Italian regions and 3 foreign countries. The most frequently indicated holiday destinations were: Nardò (71.9%), Porto Cesareo (15.2%), Gallipoli (5.3%), Lecce (4.1%), others (3.5%).

The questionnaire, limited to one page (Dierking & Pollock, 1998) and organized into different thematic areas (Losito, 2004), was filled in by each interviewee anonymously, using a maximum time of 15 minutes.

The questionnaire begins with some simple introductory questions, then addressing more specific topics (Ortalda, 1998), providing a range of response options.

On the back of the sheet, interviewees are asked to state the date and their gender, residence, age, school and school year, level of education, occupation and the place in the Salento (south Puglia), where they are staying for their summer holidays.

Questions:

• What kind of tourist or cultural amenity would enrich your holiday locality? a cinema; a theatre; a museum; an information point; public announcements; a public aquarium; guided visits; a tourist association. (Q1)

• Along the Salento coastline can you find: marine Protected Areas? regional Natural Parks? shipwrecks? submarine caves? archaeological sites? ancient coastal towers? (Q2)

• Which of the following topics would you like to know more about? living organisms (Flora and Fauna); protection of the natural environment; shipwrecks; submarine caves; archaeological sites; ancient coastal towers. (Q3)

• What kind of exhibition would you like to see? small-scale nature in aquaria; nature in real scale; 3D models and virtual renderings of living organisms and landscapes; archaeology via real finds; videos and pictures (Q4)

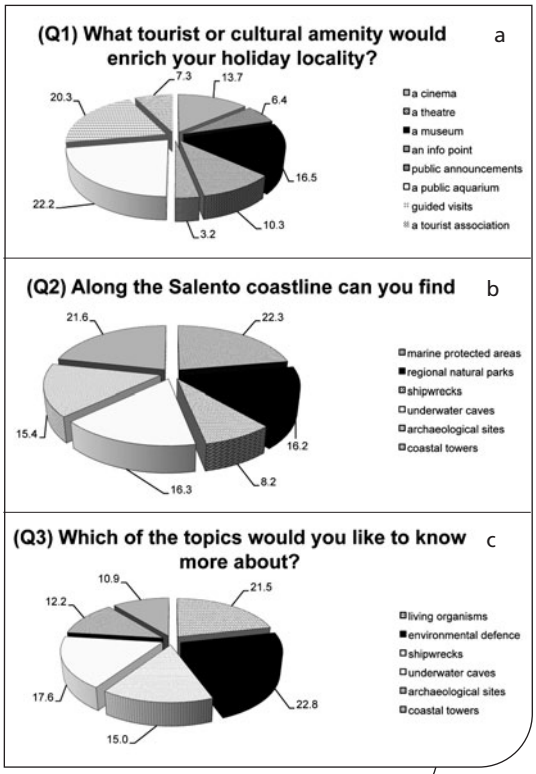

Fig. 1. Percentages for Q1 (a), Q2 (b), Q3 (c).

• How do you like to obtain information on your favourite topics? With the aid of an expert guide; from information signs and panels; by watching videos where historical characters talk about your topics. (Q5)

• What would you like to find in a tourist resort? a coffee bar; a souvenir shop; an internet point; a library; a garden/park. (Q6)

Types of questions:

• Closed-response with multiple-choice (Q1 and Q3), with a maximum of 3 answers to be specified;

• Closed-response (Q2), with 2 answer options (YES/NO);

• Closed-response with multiple-choice (Q4, Q5 and Q6), with only one answer to be specified.

The data provided by the answers to all questions were subjected to descriptive statistical analysis (frequencies and percentages).

Question 2 (Q2) was subjected to inferential analysis (ANOVA one way analysis of variance, Tukey HSD and Bonferroni post hoc tests). With 6 response options, the sum of responses offered by each interviewee formed an overall score (OS) which was compared by one way ANOVA to test the differences between groups of respondents distinguished by gender (male and female) and by age group: 10 to 13 years; 14 to 18 years; 19 to 84 years. The age groups were also subjected to the

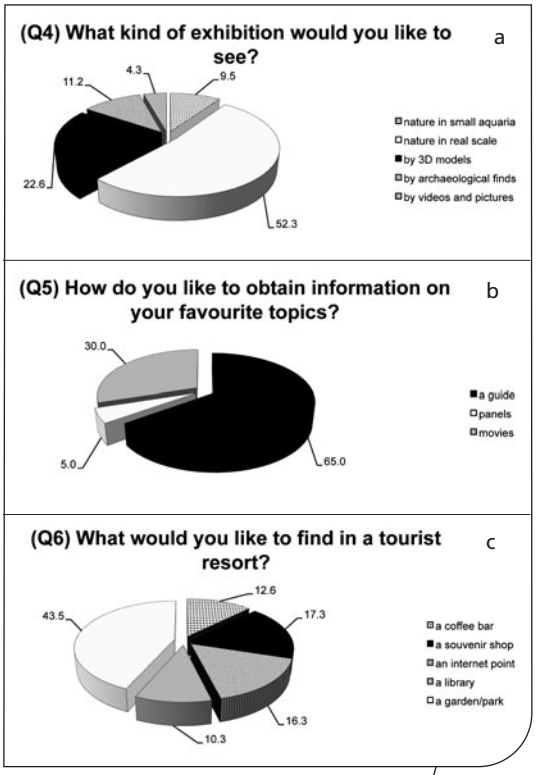

Fig. 2. Percentages for Q4 (a), Q5 (b), Q6 (c).

post hoc Tukey HSD and Bonferroni tests, using IBM SPSS Statistics 20.

Hierarchical cluster analysis was performed on the preferences using IBM SPSS Statistics 20 in order to identify groups of individuals that are similar to each other but different from individuals in other groups. The aim here was to target different "publics", to whom appropriate exhibits and educational contributions can be proposed. A presence-absence matrix was prepared only for questions about preferences (Q1, Q3, Q4, Q5, Q6) whose possible answers were considered as variables (27 variables in total), each interviewee considered as a case (921 cases in total). The cases were labelled so as to encode all the main personal information (rear side of the questionnaire), thus making it possible to derive the classification rules based on the variables and to propose group memberships.

RESULTS

Most interviewees (59.0%) believe that the cultural and tourist services on offer in the Salento would be significantly enhanced (Q1) through the creation of a cultural and tourist amenity such as a public aquarium (22.2%), guided tour services (20.3%), a museum (16.5%) (fig. 1a).

The public is generally unaware of the existence of submerged wrecks along the seacoast of the Salento (8.2% of the sample). More common is knowledge of the Marine Protected Area (22.3%) and coastal towers (21.6%) (fig. 1b).

The topics about which the interviewees would like to know more are the protection of the natural environment (22.8%), living organisms (21.5%) and submarine caves (17.6%) (fig. 1c).

The preferred exhibition content clearly involves the use of natural scenarios and real scale observations (52.3%). 3D reproductions are in second place (22.6%) (fig. 2a).

The support of an expert who guides the visitor is considered essential (65.0% of the opinions) (fig. 2b). Many interviewees (43.5%) also appreciated the opportunity to spend time in an outdoor garden adjoining the Museum/Aquarium, as well as the chance to buy a souvenir (17.3% of preferences for the souvenir shop) (fig. 2c).

Looking at the overall scores of the interviewees for question 2, it is clear that males (mean=3.89; variance=1.89) are more aware than females (mean=3.61; variance=2.00), despite a mean age of 18.9 years old for males and of 20.6 for females. The differences (tested using one-way analysis of variance) were statistically significant ($P<0.001$). The overall score rises with age, but it increases substantially only in the over-19 group. Indeed, combined with the post hoc "Tukey HSD" and "Bonferroni" tests, the one-way analysis of variance shows statistically significant differences ($P<0.001$) between the 10-13 group (mean=3.53; variance=1.73) and the over-19 group (mean=4.37; variance=2.27), and between the 14-18 group (mean=3.73; variance=1.82) and the over-19 group. The hierarchical cluster analysis performed on preferences (Q1, Q3, Q4, Q5, Q6) yielded no statistical response, suggesting that no group of similar individuals can be based on these.

DISCUSSION

The Salento Aquarium in Santa Maria al Bagno (Nardò-Italy) and its associated educational activities represent a substantial enrichment of culture and tourism in the area for 59.02% of the sample. The A.Pr.E.H. project promotes this aspect in full harmony with the opinion of its potential public. Since only 8.2% of the interviewees knew that the Salento coastline has many wrecks on the seabed, it was considered educational to propose this aspect. Informative activities regarding this form of heritage have been coupled with those regarding protection of the natural environment (22.8% of preferences), with particular attention to the threats to living organisms (21.6%) and submerged caves (17.6%) (fig. 3) from human activities.

For these reasons, based on previous research by Marine Biologists and Submarine Archaeologists

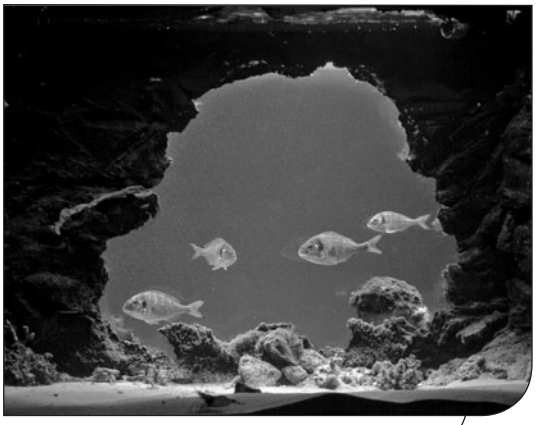

Fig. 3. Cave and open water habitats

from the University of the Salento, the scientific results of studies of Submerged Caves Ecology and ancient shipwrecks are now on display at the Aquarium as Interdisciplinary Multimedia products and detailed histories for guided visits. Moreover, new scientific results are expected to arise from research activities designed to compare and contrast the biological and ecological characteristics of submerged natural and anthropogenic environments. Earlier studies of Mediterranean marine caves have shown that these habitats have unique faunal and ecological features (Pérés & Picard, 1964; Riedl, 1966; Bianchi et al., 1996; Harmelin, 1997). Surprisingly, in spite of the vast literature describing their species composition and ecological features, few quantitative frameworks (Gili et al., 1986; Chevaldonné & Lejeusne, 2003) have been developed for testing hypotheses on the temporal variation of sessile assemblages. Moreover, artificial submerged cavities such as amphorae, as well as "iron submarine caves" represented by ships, offer a precious reference for comparison, helping to ascertain not only the role of substrate quality, but also the role of time in the colonization of dark confined environments. Understanding how human disturbance combines with natural processes in determining biodiversity patterns is another research priority. Indeed, recent work has provided important insight into how species and assemblages are structured and how anthropogenic impacts might best be managed (Benedetti-Cecchi et al., 1996; Castilla, 1999, 2000). The information is, however, still confined to a small number of habitat types (e.g. rocky intertidal areas). Here again, submarine caves could represent a paradigmatic example. More knowledge about the species, biological communities and chemical-physical variables of confined environments will allow the assessment of risk factors in managing the environment. Indeed, coastal submerged caves and wrecks are high-value biodiversity refuges whose relationship with biological recruitment (from the wider area outside them) could facilitate coastal environmental management and could be linked to international or local institutional heritage defence activities. The *Salento Aquarium*, in accordance with the modern Museum policy defined by the International Council of Museums (ICOM), has arranged a small-scale proposal for combining human history and biological research activities for the enjoyment of Cultural Heritage in an interdisciplinary framework.

The use of 3D environments (preferred by 22.7% of interviewees) (fig. 4) in the tanks, reproduced in their natural size, also meets the interviewees' demand for natural size live observations (52.3%). Based on these results, the Aqarium has 4 "living dioramas" representing the main focus of two exhibition rooms with life-size representations of parts of four wrecks on the seabed of Nardò. A 2nd century BC Roman ship with its cargo of amphorae (fig. 5), and three 2nd World War wrecks: a German Junker 88 air fighter, an Italian cargo ship (Caterina Madre) (fig. 4) and an English destroyer (Quail).

The Aquarium offers guided visits to the exhibitions, in accordance with the wishes of 65.0% percent of the sample (fig. 5). Although tour guides are often believed to have an exceptionally simple role, leading an audience around a building and pointing out artefacts or natural specimens, interviewees still ask for them and they illustrate the organisation's strategic aims through their moment-by-moment actions. They should be regarded as strategic actors who play a key role in audience engagement (Best, 2011; Tran & King, 2007; Samra-Fredericks, 2010).

In relation to the interest in a garden (43.5% of votes), the initial project (Denitto et al., 2012) was improved with a 700 m^2 green recreational area where visitors can connect to the web through free internet hot-spot. This request of the potential Public confirms that Aquaria and similar Institutions are complex sites where conservation, research, and educational proposals are supplemented with cultural, social, and recreational aspects, so that visitors may experience intellectual, emotional and spiritual growth (Pekarik, 2008). As a consequence, understanding visitors' perceptions represents an increasingly complex task, involving various fields of study (Miglietta & Boero, 2012).

All visits start and end with the souvenir shop and bar where visitors can see something at the entrance and buy souvenirs before leaving. The multi-purpose room, mostly devoted to educational and multimedia content, will be the starting point of the guided tour where visitors can enjoy multimedia content but also take part in seminars, temporary exhibitions and conferences. Before entering Exhibition Room 1, visitors see a double aquarium (fig. 3) representing one of the main themes of the

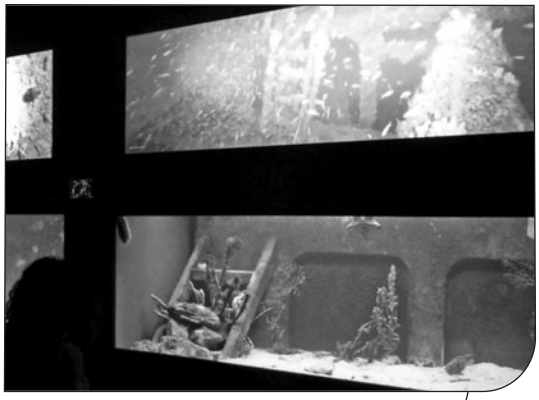

Fig. 4. 3D scenery (*Caterina Madre*)

institution: the submerged cave environment and the open water from its entrance, making the visitors feel as if they are inside the cave. In Exhibition Room 1, four aquariums reproduce depths ranging from the sea surface to a depth of 20 m. The visitor-explorer continues the imaginary dive in Room 2, devoted to a "living diorama" that reproduces parts of a 2nd century BC Roman ship before and after its sinking. In this room, 7 aquaria with 25 to 200 litres of water are used to highlight single species. In Room 3, three aquaria describe fauna living at depths of 30 to 100 m but also illustrate the history of three "modern" wrecks along the Salento coastline.

Small monitors near the aquarium tanks show pictures of the specimens living in the described Mediterranean habitats, accompanied by their scientific, Italian and English names. Large monitors in front of the aquaria show photographic descriptions of the sinking of the described wrecks, accompanied by short textual contributions written in a narrative style.

CONCLUSIONS

As modern museum studies suggest, the survey here described has supported and guided the choices of the curator and will continue to contribute significantly to the management of a useful cultural product, clear and attractive for visitors.

The Salento Aquarium is the result of an original and interdisciplinary approach to underwater landscapes and wrecks, whose immediate goal is the enhancement of environmental education, encouraging correct behaviours among citizens, especially young people. It will also expand the range of tourist services on offer in the area, with clear indirect positive effects on the economy. Indeed, from a socio-anthropological perspective, environmental and cultural heritage should be regarded as a set of tangible and intangible assets.

Fig. 5. Guided visit to the "living diorama".

The interdisciplinary approach adopted here also has to consider the local economy, businesses and laws (especially the Italian Code of Cultural Heritage and Landscape-Legislative Decree 42 of 22 January 2004) when developing a descriptive model for cultural and natural heritage. Crucially, it is possible to emphasize and advertise the importance of heritage to the public by relating its natural, historical and cultural values to the local society and to the economic operators working in the area, with one aim being to boost the economy (Uhlaner, 1989). Through this approach, economic and social life can receive tangible as well as financial benefits (Delle Rose et al., 2014) as a result of cultural and creative appropriation of symbolic heritage values (Bordieu, 1986), and aquaria can well contribute to such a promotion strategy.

The APrEH project was aimed at developing such an integrated approach to environmental protection, sustainable management of natural resources, biodiversity-ecosystems defence and promotion of cultural heritage as a driver of social cohesion and an economic resource for regional growth and new job opportunities. Thanks to these scientific efforts, the Salento Aquarium in Nardò is able to positively tackle the above-mentioned challenges of educational institutions. By means of a permanent evaluation process, its functioning will be further tested and corrected.

ACKNOWLEDGEMENTS

The present work was conducted within the framework of the Greece-Italy European Territorial Cooperation Programme 2007-2013, co-funded by the European Union and governments of Greece and Italy, Priority Axis 3 "Improving the quality of life, protection of the environment and enhancement of social and cultural cohesion"; Specific Objective 3.1 "Promotion of cultural and natural heritage".

We are grateful to all the tour operators and educational/cultural institutions that contributed to the evaluative survey.

The authors wish to thank F. Denitto (University of the Salento) and A. Lupiccio (Hobby & Fauna) for the Mediterranean aquarium scenarios; R. Auriemma and A. Dell'Anna (University of the Salento) for their help with the history of the ancient shipwrecks; and C. Falangone, M. Natalizio, L. Siciliano and M. Livieri (Municipality of Nardò) for the building work.

REFERENCES

Alfonso C., Auriemma R., Belmonte G., Denitto F., Miglietta A.M., Posi M., 2011. Biologia marina e archeologia subacquea per un'idea di acquario a Nardò (LE). *L'Idomeneo, 13:* 61-70.

Belmonte, G., Costantini, A., Sorrentino, F., Licchelli, C., Poto, M., Onorato, R., 2011. Le grotte sommerse dell'area marina protetta "Porto Cesareo". *Thalassia Salentina, 33(1):* 15-38.

Benedetti-Cecchi L., Airoldi L., Abbiati M., Cinelli F., 1996. Exploring the causes of spatial variation in an assemblage of benthic invertebrates from a submarine cave with sulphur springs. *Journal of the Experimental Marine Biology and Ecology,* 208: 153-168.

Best K., 2011. *Strategy in practice: re-categorising tour guides as strategists*. Academy of Management conference , 12-16 August 2011, Texas, USA.

Bianchi C.N., Cattaneo-Vietti R., Cinelli F., Morri C., Pansini M., 1996. Lo studio biologico delle grotte sottomarine del Mediterraneo: conoscenze attuali e prospettive. *Boll. Mus. Ist. Biol. Univ. Genova, 60-61:* 41-69.

Bourdieu P., 1986. *Forms of capital*. In: Richardson J.G. (ed.), Handbook of theory and research for the sociology of education. New York, Greenwood, pp. 241-258.

Brida J.G., Meleddu M., Pulina M., 2012. Factors influencing the intention to revisit a cultural attraction: The case study of the Museum of Modern and Contemporary Art in Rovereto. *Journal of Cultural Heritage, 13:* 167-174

Castilla J.C., 1999. Coastal marine communities: trends and perspectives from human-exclusion experiments. *Trends Ecol. Evol., 14:* 280-283.

Castilla J.C., 2000. Roles of experimental marine ecology in coastal management and conservation. *J. Exp. Mar. Biol. Ecol., 250:* 3-21.

Chevaldonné P., Lejeusne C., 2003. Regional warming induced species shift in north-west Mediterranean marine caves. *Ecol. Lett., 6:* 371-379.

Cinelli F., Cognetti G., Grasso M., Mongelli V., Pagliai A. M., Orlando E., 1998. *Studio ecologico dell'area marina di Porto Cesare.* Congedo Ed., Galatina, 188 pp.

Del Barrio M.J., Herrero L.C., Sanz J.A., 2009. Measuring the efficiency of heritage institutions: A case study of a regional system of museums in Spain. *Journal of Cultural Heritage, 10:* 258-268

Delle Rose M., Desideri D., Patianna M., Posi M.E., Renzulli A., Zanchetta G., 2014. Carbonate accretion processes, conservation and enjoyment of the "Mannute Caves" geoheritage site (Salento, Southern Italy). *Geoheritage Journal, Springer*. DOI 10.1007/s12371-014-0117-9

Denitto F, Alfonso C, Auriemma R, Belmonte G, Dell'Anna A, Miglietta A, Posi M.E., 2012. *An interdisciplinary Aquarium project for the promotion of natural and historical heritages in Italy and Greece.* In: 8th IAC proceedings on line publication http://www.iac2012.co.za/images/uploads/Francesco_Denitto_POSTER.pdf

Dierking L.D., Pollock W., 1998. *Questioning Assumption - An Introduction to Front-End Studies in Museums*. Association of Science - Technology Centers, 132 pp.

Gili J.M., Riera T., Zabala M., 1986. Physical and biological gradients in a submarine cave on the Western Mediterranean coast (North-East Spain). *Marine Biology, 90:* 291-297.

Harmelin J.G., 1997. Diversity of Bryozoans in a Mediterranean sublittoral cave with bathyal-like conditions: role of dispersal processes and local factors. *Marine Ecology Progress Series, 153:* 139-152.

Hooper-Greenhill E., 1989. *Si contano i visitatori o sono i visitatori che contano?* In: Lumely R. (ed.), L'industria del museo: nuovi contenuti, gestione, consumo di massa. Costa & Nolan, Genova, 288 pp.

Kotler N., Kotler P., 1999. *Museum strategy and marketing: Designing mission building audiences generating revenue and resources.* Jossey-Bass, San Francisco, 511 pp.

Losito G., 2004. *L'intervista nella ricerca sociale*. Editori Laterza, 148 pp.

MacDonald S., 1992. Cultural imagining among museum visitors: a case study. *The International Journal of Museum Management and Curatorship, 11(4):* 401-409.

Mazzolini R.G. (ed.), 2002. *Andare al museo: motivazioni, comportamenti e impatto cognitivo*. Quaderni Trentino Cultura, Trento, 251 pp.

Merzagora M., Rodari P., 2007. *La scienza in mostra: Musei, science center e comunicazione*. Mondadori ed., 131 pp.

Miglietta A. M., Belmonte G., Boero F., 2005. Conoscere il pubblico potenziale per allestire una sala museale. *Museologia Scientifica, 20(2):* 217-234.

Miglietta A.M., 2013. La valutazione delle esposizioni museali. Ragioni, metodi e tempi. *Museologia Scientifica Memorie, 10:* 146-151.

Miglietta A.M., Boero F., 2012. Museum management and visitors book: there might be a link? *Museologia Scientifica n.s., 6(1-2): 91-98.*

Ortalda F., 1998. *La survey in psicologia*. Carocci Editore, Roma, 312 pp.

Pekarik A.J. 2008. Studying Visitors and Making Museums Better. *Curator, 50(1):* 131-134.

Pérès J.M., Picard J., 1964. Nouveau manuel de bionomie benthique de la Mer Méditérranée. *Recueil des Travaux de la Station Marine d'Endoume, 31:* 5-137.

Posi M.E., Belmonte G., Boero F., Miglietta A.M., 2010. Una sala come piace a te. Front-end evaluation per la realizzazione di una nuova proposta espositiva. *Museologia Scientifica, 4(1-2):* 152-159.

Posi M.E., D'Errico D., Guidetti P., Imperiale F., 2011. *Ambienti ipogei: aspetti biologici e culturali in una strategia di divulgazione integrata ed innovativa*. In: Storie di speleologi e di altri frequentatori di grotte. Ed. Salentina, Galatina, pp. 153-171

Riedl R., 1966. *Biologie der Meereshöhlen.* Paul Parey, Hamburg and Berlin, 639 pp.

Samra-Fredericks, D. 2010. *Researching everyday practice: the ethnomethodological contribution.* In: D. Golsorkhi, L. Rouleau, D. Seidl E. Vaara. (eds.), Cambridge. Handbook of Strategy as Practice. Cambridge: Cambridge University Press.

Silverstone R., 1994. *The medium is the museum.* In: R. Miles, L. Zavala (eds.), Towards the Museum of the Future, Routledge, London/New York, pp. 161-176.

Tobelem J. M., 2003. *Utilisation des études de publics et stratégie de développement des organisations culturelles*. In: Le(s) Public(s) de la culture. Presse de Sciences Po, Paris, 393 pp.

Tran, L.U., and King, H., 2007. The professionalization of museum educators: the case in science museums. *Museum Management and Curatorship, 22(2):* 131-149.

Uhlaner C.J., 1989. Relational goods and participation: incorporative sociability into a theory of rational action. *Public Choice, 62:* 253-285

Submitted: August 17th, 2015 - Accepted: November 19th, 2015
Published: December 9th, 2015