



Public perceptions of beach nourishment and conflict management strategies: A case study of Portonovo Bay in the Adriatic Italian Coast



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ABSTRACT

Conflicting interests, goals, and value often shape the stakeholders' positions concerning coastal erosion management strategies. Analyses of stakeholders' perceptions of beach nourishment and conflict management strategies are lacking. Since the involvement of key stakeholders is crucial to ensure successful integrated coastal management, the aim of the current study was to investigate the stakeholders' perceptions of beach nourishment and conflict management strategies in the community of the Portonovo Bay in the Adriatic Italian coast. During 2013, detailed, semi-structured interviews were conducted with members of the community and stakeholders regarding beach nourishment and related conflict management strategies at Portonovo Bay. The results revealed that respondents not only reported different perceptions, values, and interests but also their main goals were dissimilar. We found polarized opinions concerning antagonistic value systems shared by the participants, which were associated with quite opposed perceptions of existence and severity of the problem and efficacy and harmfulness of beach nourishment. The perceptions of the respondents were categorized into two major categories that reflect two of the philosophical views of the human-environment relationship: ecocentrism versus anthropocentrism. Four categories of proposed conflict resolution strategies were identified: (a) information, (b) dialogue and contact, (c) compromise, and (d) no solution. The adoption of a participatory approach and the implementation of conflict management skills and technique can be considered important elements of coastal management.

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1. Introduction

Beaches are considered one of the prime sites for human recreation and, because of that, are important for coastal economies (Klein et al., 2004). However, erosion affects more than 70% of the world's beaches (Defeo et al., 2009) and the rising sea levels globally are likely to exacerbate coastal erosion (FitzGerald et al., 2008). Beach nourishment has increasingly been used to combat shoreline erosion and improve the recreational experience for beach users (Defeo et al., 2009). Beach nourishment is the practice of placing sand dredged from another location directly on an eroding beach to elevate it and extend it seaward. The preference for beach nourishment to combat shoreline retreat was based primarily on both economic and conservation grounds (Gopalakrishnan et al., 2011; Hinkel et al., 2013; Parsons and Powell, 2001). How-

ever, beach nourishment can cause ecological damage (Defeo et al., 2009; Speybroeck et al., 2006) even if there is uncertainty about the nature and extent of impacts (Peterson and Bishop, 2005).

Coastal erosion management strategies have social and political implications (Cooper and McKenna, 2008). Decisions concerning coastal management actions should be based using the best available science but also taking into consideration stakeholder perspectives (Ariza et al., 2008, 2014; Lozoya et al., 2014; Shipman and Stojanovic, 2007). Stakeholders may have conflicting views about coastal erosion management strategies. Optimal policy decisions require the resolution of such conflicts arising between coastal protection and development, environmental and nature conservation, and social traditions (Ariza et al., 2014; Striegnitz, 2006). To this end, coordinated participation of different stakeholders on many primary beach management issues is needed as part of effective management practices (Ariza et al., 2010; Schmidt et al., 2013). In addition, such participatory processes are crucial for truly sustainable outcomes (Milligan et al., 2009; Schmidt et al., 2013). The protocol on integrated coastal zone management in the Mediterranean (UNEP/MAP, 2008) highlighted the need to deal

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with an Ecosystem approach perspective when managing coastal issues in an integrated way. The Convention for Biological Diversity (CBD, 2001) states that the implementation of the Ecosystem approach should be based on 12 guiding principles for the achievement of “conservation, sustainable use and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources.” Principle 12 is explicit in requiring societal participation and consideration of stakeholders’ views. Specifically, it states that: “The ecosystem approach should involve all relevant sectors of society and scientific disciplines. Most problems of biological-diversity management are complex, with many interactions, side-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.” Therefore, the analysis of stakeholder perspectives can improve beach management policies and is required by the Ecosystem approach.

In Italy, coastal management is fragmented and conflicting between different levels of government and, only in few cases, planning policy was attempted. Moreover, a traditional legal and administrative framework is used for beach management and there is a lack of coordinated participation of different stakeholders (Markandya et al., 2008). Given that the involvement of key stakeholders is crucial to ensure successful integrated coastal management (Moksness et al., 2009; Post and Lundin, 1996; Roca and Villares, 2012), the aim of the current study was to investigate stakeholders’ perceptions of beach nourishment and conflict management strategies in one case study area in Italy—Portonovo bay in the Adriatic Italian coast.

2. Material and methods

2.1. Study site

The study site is located in Portonovo bay within the Conero Promontory in the North Adriatic Sea (Fig. 1). The study area lies within the Monte Conero Regional Park. Nourishments were conducted between 1997 and 2013 at five beaches. Tourism activities are mainly located near the first, second, and fifth beaches. The local government carried out beach nourishment with the aim of protecting the shore and unstable cliffs during storm periods and mitigating longer-term erosion trends. In addition, given that the economy of the area thrives on tourism, another goal of beach nourishment was to increase the area of dry beach available for recreational activities during the summer. The success of these interventions was limited in terms of increasing the width and area of the dry beach and preventing erosion (Harley et al., 2013). Moreover, beach nourishment in this area was related to changes in the biotic and abiotic environment, including an enhanced natural instability of the rocky bottom and a decline of the subtidal forests of canopy-forming algae of the genus *Cystoseira* (Perkol-Finkel and Airoldi, 2010). Finally, and more relevant to this study, conflicts between different stakeholders have arisen concerning beach nourishment.

The decision to undertake beach nourishment projects was based on traditional top-down and technocratic approaches. Local community was not involved in the decision making process. Different stakeholders, including the Monte Conero Regional Park, expressed their contrariety to the project, emphasizing its environmental costs, while others (e.g., grass-root environmental groups) doubted its utility. Experts were consulted from Regional authorities in order to show the legitimacy of the intervention based on a cost-effectiveness evaluation. Opponents started a communication campaign against the project, showing that public authorities were supporting it with fake evidence and amplifying the economic

and the environmental costs for the community. The conflict had escalated into legal actions and public resentment.

2.2. Choice of stakeholders

We used archival data to identify the key stakeholders (Chevalier and Buckles, 2008; Reed et al., 2009). Archival data included technical reports and newspaper articles concerning beach nourishment in Portonovo Bay. Specifically, we collected and analyzed the articles of the previous five years concerning beach nourishment of three local newspapers (i.e., “Il Messaggero”, “il Resto del Carlino”, and “Corriere Adriatico”). The analysis of local newspaper articles revealed that four groups of stakeholders reflect the variety of opinions and concerns in the community: political institutional actors, experts, grass-root environmental groups, and consumers/producers (i.e., people deriving their living from the area or living or using the area such as community members and visitors). We decided for a small scale study, assuming that we would be able to retrace milestones and cornerstones with a limited number of stakeholder’s representatives. We decided to have some representative of each group of stakeholders, from two to six, depending on the voice they had in the debate. We chose to have less participants from the most “powerful” stakeholders (political and institutional actors/experts) and more participants from the consumers/producers group, who were those with less chance to have voice (compared to experts and institutional members). Consumers/producers were chosen according to the principle of theoretical sampling: due to their social position in the local context, they could have different (relative unexplored) perspectives on the topic under analysis. Concerning grass-root organizations, we decided to consider one representative for each organization, based on the assumption that each one had fully fledged the organization’s perspective on the issues examined. The sample consisted of 13 participants: one restaurateur, one beach user, one hotelier, one life-guard, one member of the near-shore fishermen association, one local journalist, a biologist, one geologist who worked with the local municipality, three members of three grass-root community groups aimed at the protection of the marine/local environment, one representative of the local municipality, and the president of the natural park of the Conero area (see Table 1). Some respondents referred to different strengths and benefits of nourishments as well as more than one proposed conflict resolution strategy. Table 1 includes the number of coded responses for every consulted person concerning strengths and benefits of nourishments and proposed conflict resolution strategies.

2.3. Interview and data analysis

To capture a wide range of views concerning stakeholders’ perceptions of beach nourishment and conflict management, we chose qualitative methods. Qualitative methods are more likely to provide a deep understanding of stakeholders’ perceptions compared to quantitative methods. We used semi-structured interviews. The interview consisted of two parts. In the first part, interviewees were asked to report their perception of the beach nourishment in the study site, its strengths and weaknesses, benefits and costs. The second part involves questions aimed at investigating the perceived conflict resolution strategies.

Interviews lasted around 50–90 min and were audio-recorded and transcribed. Informed consent was collected before interviewing participants. The authors analyzed the results of the interviews through thematic content analysis, which can be defined as “a method for systematically describing the meaning of qualitative material. It is done by classifying material as instances of the categories of a coding frame” (Schreier, 2012). Content analysis is described as inductive category development since it allows the

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