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

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2016

LAND USE POLICY_

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.

Key words: Anthropocentrism; Beach nourishment; Coastal protection; Conflict management strategies; Ecocentrism; Nature protection; Forestry; Nature and Landscape Conservation; Geography, Planning and Development; Management, Monitoring, Policy and Law

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

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). However, 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; Ariza et al., 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 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 (Figure 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 Airoidi, 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 minutes 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 categories and names for categories to flow from the data. Specifically, the following steps were taken in thematic content analysis: 1) reading all answers repeatedly to obtain a sense of the whole and familiarization with data; 2) highlighting an initial list of items from the answer with a reoccurring pattern and representing key concepts; 3) identifying labels for codes that represent more than one key concept; 4) searching for themes among codes by sorting, organizing, and grouping codes into meaningful thematic categories; 5) combining and organizing the thematic categories to create cohesive, mutually exclusive themes; 6) developing definitions for each thematic category.

3 Results

3.1 Stakeholders' perceptions of nourishments

The majority of the participants ($n = 8$) reported a favorable opinion about beach nourishment in the study site. Specifically, all the experts and the consumers/producers, except for near-shore fisherman, along with the Municipality of Ancona declared their support for the intervention.

The responses of all the participants, except for the near-shore fisherman, were reflective of polarized opinions such that they were divided into two opposite sides: either totally in favor, or totally against. Participants favoring beach nourishment in the study site clearly endorsed the view that beach would disappear without such intervention:

“This is one of the most beautiful places in Italy: without nourishment there would have been only water and this place would not exist.” (Beach user)

“Before nourishment, we almost did not have a beach and without a beach we cannot work.” (Restaurateur)

Participants who expressed opinions against beach nourishment in the in the study site either denied the problem of erosion and/or viewed such intervention as useless and detrimental:

“I think that beach nourishment is completely useless because there are not clear scientific evidence of erosion; in addition, it can cause damage to the ecosystem because the dredged materials are not always ‘natural’ given that they are ‘alien’ materials.” (Grass-root environmental group)

I am totally against capital beach nourishment because these interventions were and are still unnecessary. Sea and nature must run their course, we cannot stop sea storms by adding dredged materials. Sea storms are beneficial, our sea needs them. Sea storms feed beaches by eroding cliffs [...] it has been ages since sea storms exist. To avoid damages associated with sea storms, it is necessary to decrease the proximity of resort properties to the coastline. We cannot build facilities on the beach and then complain because the sea storms cause damages.” (Grass-root environmental group)

“We must be content with the world as it is, without contaminating the environment with extraneous materials; this intervention is useless and the damages to the natural environment enormously high because extraneous materials into a natural protected area cause an imbalance in the ecosystem.” (Park of Conero)

Concerning the strengths and benefits of nourishments, we identified three categories in participants’ responses: (a) mitigation of beach erosion, (b) survival or growth of tourism industry and recreational activities, and (c) no benefits (Table 2). The most reported category of response

was survival or growth of tourism industry and recreational activities. This was reported by seven participants who declared their support for the intervention and three participants who were against it. In the latter case, participants mentioned the economic interests and profits associated to wide beaches, while in the former case, the loss of tourism industry following beach erosion. We found reference to the category of mitigation of beach erosion in the responses of nine participants including all those favoring beach nourishment. The last category is “no benefits at all” and was reported by two of the five participants who were against the nourishments.

We identified three categories of weaknesses and costs of beach nourishment: (a) high economic costs of the intervention, (b) damages to the ecosystem, and (c) damages associated to interventions inconsistent with normally accepted standards and practices (Table 3). Eight respondents mentioned the high economic costs of the intervention. Six participants indicated in their response damages to the ecosystem among the weaknesses and costs of beach nourishment. Two respondents reported that the decision to undertake beach nourishment projects entails the risk of damages associated to interventions inconsistent with normally accepted standards and practices.

3.2 Proposed conflict resolution strategies

Respondents were asked about their proposed conflict resolution strategies. The responses have been classified in four categories: (a) information, (b) dialogue and contact, (c) compromise, and (d) no solution (Table 4). The most reported categories of responses were compromise and information. Concerning compromise, four participants reported this option. We identified reference to information as a strategy of conflict resolution strategies in four responses. In this case, information means that it is necessary, on the one hand, to collect more data to support the decision-making process, and, on the other hand, to provide the available information about relevant topics (e.g., erosion, costs of beach nourishment) to citizens to increase the transparency of the process. One participant reported that not only the dissemination of information is important but also the dialog between the stakeholders. Three respondents indicated dialogue and contact among parties as

a useful conflict resolution strategy. Finally, three participants did not believe that a solution to the conflict can be found by any means available.

4 Discussion

We assessed stakeholders' perceptions regarding beach nourishment and conflict management strategies in a study area in Italy. Differently from previous studies (Ariza et al., 2014), respondents not only reported different perceptions, values, and interests but also their main goals were dissimilar. The conflict between the antagonistic value systems shared by the stakeholders (e.g., coastal protection and nature conservation) was associated with quite opposed perceptions of the problem (i.e., coastal erosion) and efficacy and harmfulness of the solution (i.e., beach nourishment). Specifically, we found polarized opinions concerning the issue of coastal erosion and beach nourishment. Compared to participants who were against the beach nourishment, respondents who supported beach nourishment were more likely to emphasize the negative consequences of erosion (e.g., disappearance of the beach and the tourism industry) and to deny or minimize the negative impact of this intervention. A different pattern was observed among those respondents who were against the beach nourishment: they stated that attraction of tourists should not be seen as a priority of beach management, although they were aware of the importance of beaches for the economy. Thus, the perceptions of the respondents can be organized into two major categories to recognize their different views, interests, and solutions. At their extremes, these categories reflect two of the philosophical views of the human-environment relationship: ecocentrism versus anthropocentrism (Dunlap and Van Liere, 1978; Gagnon Thompson and Barton, 1994). On the one hand, the ecocentric view denotes a nature-centered, as opposed to human-centered, system of values, and includes concern for nonhuman objects, like animals, ecosystems, and the biosphere even if conservation of them involves human sacrifice. In other words, nature has intrinsic value. Participants who endorsed this system of beliefs clearly stated that the priority was to preserve the ecosystem and that the managers of restaurants and baths as well as tourists should adapt their needs and interests to the play rules of nature (e.g., by decreasing the proximity of

facilities to the beach). In addition, nature should be protected against destruction (e.g., bringing dredged materials) by human beings. On the other hand, anthropocentric view holds nature exists primarily for human use and has no inherent value: nature has moral consideration only to the extent that it harms or benefits human beings. In our study, respondents who hold this view stated that the priority is to protect the interests and needs of tourists and the tourism industry. Therefore, beaches have been artificially nourished and man-made structured by fighting the nature because of its destructive powers. This conflict of values and interests between ecocentrism and anthropocentrism seems to fit only partially the distinction between the coastal protectionist's perspectives and the nature conservationist's perspectives (Striegnitz, 2006). In the current study, respondents who endorsed coastal protection efforts tended to report that coastal protection is not important per se, rather it is instrumental for the possibility to preserve and increase the recreational activities of tourists and the tourism industry. Therefore, there is a dilemma between the importance of beaches to the tourism industry and the need to protect such resources (Phillips and Jones, 2006). We recognize that ecocentric and anthropocentric views are extremes in a continuum that are worth considering in order to walk toward an integrated and participatory coastal zone management.

Apart from conflicting interests (e.g., economic or environmental interests) and values, the polarization of opinions, either totally in favor, or totally against beach nourishment, in the study site seems to suggest that participants were more exposed to attitude-consistent media and social network and less to counterattitudinal exposure (Kelly Garrett et al., 2014). One implication is that depolarization can be expected if both sides invest a lot of time and effort in the confrontation. Indeed, some participants advocated dialog and contact as the conflict management strategy of choice.

Among the proposed conflict resolution strategies, information and dialog and contact represents a more optimistic option. These strategies may be considered preliminary steps for implementing a collaborating strategy (Thomas, 1992): exchanging information, generating and evaluating options, and examination of differences to reach an effective solution acceptable for all

the parties. The rationale is that a dialogue between the parties can allow them to better understand different perspectives and values. These steps may lay the foundations for creative solutions of the problem. Some participants, however, reported that previous efforts of exchanging information between stakeholders did not produce the expected effect, and this could discourage further efforts and investment in this direction.

Respondents who indicated compromise as a useful conflict resolution strategy thought that goals of parties were mutually exclusive and consensus could not be reached. The rationale is that there are not new solutions and each party must give up something to reach a solution that strikes a balance between competing interests.

An obvious question regarding conflict resolution is “what is the best strategy?” A body of theory and empirical findings (Thomas, 1992) has indicated that a collaborative strategy is more likely to produce better conflict outcomes for relationships between parties (e.g., trust, respect, and friendliness) and for the quality of the decision making process (e.g., more open exchange of information and more mutually beneficial outcomes). Nevertheless, the contingency theory of conflict management (Rahim, 2002) challenges this view by indicating that to successfully manage conflicts one style may be more appropriate than another depending upon the situation. According to this theory, a collaborative strategy is to be considered appropriate in this situation: (1) issues are complex and there is not unique or best solution, (2) synthesis of ideas can enable better solutions, (3) it is possible to use the skills, information, and other resources possessed by different parties, and (4) time is available for decision-making process. Therefore, to our opinion, such strategy may be helpful to address the issue. However, this strategy takes a lot of time and efforts because all the parties should be engaged in all the steps of the decision-making process such as defining and analyzing the problem, identifying all the potential options, choosing the best option, implementing the decision, and evaluating the outcomes. Although collaboration may not be harmonious, the outcome is achieved differently than the other conflict-management strategies by being focused on joint problem-solving through a participatory approach. A participatory integrated assessment

process (Rockloff and Lockie, 2004), such as social multi-criteria evaluation (Garmendia and Gamboa, 2012; Garmendia et al., 2010), has been found useful in integrating multiple interests and perspectives in the effort to provide sustainability in integrated coastal zone management projects.

In case of failure of the collaborating strategy because mutually beneficial outcomes or creative solution of the problem cannot be identified, compromising can be considered a good secondary option following the contingency approach because: (1) goals of parties have become mutually exclusive and (2) consensus cannot be reached. In addition, one participant also mentioned a neutral third party acting as a mediator. A mediator can be useful either to build compromise solutions or to reach consensus agreements by bringing the parties together and support collective problem solving (Striegnitz, 2006). Successful mediated negotiation processes are based on the principles of representation, participation, legitimacy, and accountability (McCreary et al., 2001). If conflict is already established and parties mistrust each other, it is difficult to find a third party that is equally perceived neutral, legitimate, and accountable by all parties involved. Building trust is one of the most effective and important elements of participatory processes (Schmidt et al., 2014).

Finally, the application of function analysis in a participatory conflict analysis can be useful to address the typical conflict situation in which most stakeholders see other stakeholders as their opponents and each group concentrates on maximizing single-function use (de Groot, 2006). Function analysis is based on the concept of ecosystem functions defined as “the capacity of natural processes and components to provide goods and services that satisfy human needs, directly or indirectly” (De Groot, 1992). Based on the work of Van der Maarel (1979) and De Groot (1992), four main categories of ecosystem functions were identified: production functions, carrier functions, information functions, and regulation functions. In an application of function analysis in a participatory conflict analysis on a case study done in the Dnestr delta (Ukraine), de Groot (2006) delivered to the stakeholders an overview of the four functions to present the different stakeholders’ positions and their linkages and to facilitate discussion of different perceptions and common interest. The final aim was to try to find consensus on the main problems and possible solutions.

Although this has not been applied in the present study, future research will be enhanced by adopting a function-analysis and valuation approach that facilitates the structured assessment of ecological services and socio-economic benefits of natural and semi-natural ecosystems and landscapes (de Groot, 2006). In the present study, we found to be difficult to reconcile nature conservation with the interest of the local community. A function-analysis and valuation can be a useful tool to take decisions on trade-offs between different land use options.

4.1 Conclusion

The literature on coastal management recommends that management actions should adequately reflect the best available science and fully consider stakeholders' perspectives. We note that the importance of participatory processes has been established in the protocol on integrated coastal zone management in the Mediterranean (UNEP-MAP, 2008) which emphasizes the adoption of an Ecosystem Approach perspective.

Our results, built on qualitative data collected in a small Italian coastal community, show what happens when these criteria, and, in particular, attention to stakeholders' perspectives is not fully met: conflict radicalizes and positions become stronger and less flexible. Our stakeholders, with only few exceptions, revealed different positions and values, as expected, but were also unable to identify common overarching goals. This calls for the implementation of conflict management skills and technique in any coastal management project. In addition, it would be recommendable that stakeholders work together to define a common vision (Leslie and McLeod, 2007). If consensus on a general vision does not exist, different stakeholder visions can develop into conflicts.

Radicalization of conflict in our study seems a consequence of the technocratic top down approach adopted to the coastal management of the in the study site, and suggests the adoption of a participatory approach, where stakeholders and potential opponents are involved at the very beginning of the planning and decisions as a legitimate strategy for conflict prevention.

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Table 1

List of interviewed participants.

Participant type	Participant interviewed	Number of responses provided	
		Strengths and benefits of nourishments	Proposed conflict resolution strategies
Political institutional actor	Park of Conero	2	2
	Municipality of Ancona	4	1
Expert	Biologist	3	1
	Geologist	2	1
Grass-root environmental group	Comitato Mare Libero	2	1
	Comitato Mezzavalle	3	1
	Libera		
	Legambiente	2	1
Consumer/producer	Beach user	3	1
	Restaurant	3	1
	Hotel	4	1
	Beach lifeguard	3	1
	Journalist	3	2
	Near-shore fisherman	3	1

Table 2

Inductively developed thematic categories of strengths and benefits of nourishments

Thematic category	Examples
Mitigation of beach erosion	<p>“Without beach nourishment, beaches will disappear in the next few years.” (Journalist)</p> <p>“Beach nourishment is the best choice to mitigate beach erosion.” (Expert)</p>
Survival or growth of tourism industry and recreational activities	<p>“What we see is that managers of restaurants and baths want places for beach loungers and tables to protect their interests and profits. I do not see anything else.” (Grass-root environmental group)</p> <p>“If we do not take the necessary precautions, the sea is going to ‘eat away’ restaurants and other business.” (Restaurateur)</p>
No benefits at all	<p>“There are no benefits at all to the activities of nourishment implemented in this way, without scientific evidence of efficacy.” (Grass-root environmental group)</p>

Table 3

Inductively developed thematic categories of weaknesses and costs of beach nourishment

Thematic category	Examples
High economic costs of the intervention	<p>“I think that the only disadvantage is high costs of the intervention” (Restaurateur)</p> <p>The costs are estimated at hundreds of thousands of euros: since the beginning of the nourishment in the beach of Portonovo, the costs for the intervention amount were about 700,000 euro.” (Grass-root environmental group)</p> <p>“It’s inconceivable that every year we spend a lot of money for beach nourishment. We need to find a more durable solution.” (Journalist)</p>
Damages to the ecosystem	<p>“I know that there are a lot of people that are against such intervention and are trying to awaken citizens’ awareness regarding its environmental impact. I think they have their reasons; otherwise, they would not have stood in the way of such intervention for such a long time.” (Beach lifeguard)</p> <p>“The environmental costs are high: beach nourishment entails the risk of damages to the marine flora and fauna.” (Park of Conero)</p>
Damages associated to interventions inconsistent with normally accepted standards and practices	<p>“Environmentalists should not fight beach nourishment per se, but instead beach nourishment projects and implementations that are inconsistent with normally accepted standards and practices and typically lead to legal argument and contestation. When beach nourishment have negative consequences because are inconsistent with normally accepted standards and practices, we should not give</p>

up and say not to all beach nourishment projects, but instead we should look for errors in the chain of project design and implementation.” (Expert)

Table 4

Inductively developed thematic categories of proposed conflict resolution strategies

Thematic category	Examples
Information	<p>“It seems to me that more clarity on the issue is due, we must conduct a scientific study to determine what the sea is actually doing now. I am sure that the experts of the National Research Group for Coastal Environment issues will agree on the need to decrease the size of the dock and to the proximity of resort properties to the coastline. I believe that such information will shed light on the way economic resources have been used in the last years.” (Grass-root environmental group)</p> <p>“It is necessary to disseminate scientific knowledge relating all the aspects of the issue” (Expert)</p> <p>“It is necessary to put the interests of the community first by providing more information and make clear the goals of the intervention.” (Park of Conero)</p>
Dialogue and contact	<p>“We could foster developing a policy of constructive dialogue and do that which is right and just for the site and good. It must not only focus on the economy interests.” (Grass-root environmental group)</p> <p>“The conflict for the parties can be addressed by increasing the opportunity of meeting, because nobody is against anybody.” (Park of Conero)</p>
Compromise	<p>“The common interest must take priority over private interests. We can achieve this outcome by looking for a compromise and a balance between the competing interests.” (Municipality of Ancona)</p>

	<p>“It is necessary to have an institutional third party. We need a steering committee which examines this matter carefully and is able to find the nexus of the different positions.” (Journalist)</p>
No solution	<p>“It is not possible that all the parties can reach an agreement” (Beach user)</p> <p>“We have attended numerous meetings and conferences on beach nourishment; sometimes we organized them too. However, the discussion on nourishment went awry and even legal actions have been initiated.” (Grass-root environmental group)</p>



Fig. 1. Location of the study area.