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Research Paper

Title: 'Questioning calls to consensus in conservation: a Q study of conservation discourses on Galápagos'

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Abstract

Efforts to frame conservation interventions in terms of idealised narratives of win-win outcomes for human wellbeing and biodiversity, and the rhetoric of consensus that often accompanies these, have been subject to some critique in recent years. Instead an acknowledgement of trade-offs between often incommensurable interests and perspectives, has been argued to be more democratic and transparent. This paper critically examines calls to consensus in conservation on the Galápagos Islands, where the population has been urged

to unite around a shared vision of conservation in order to secure a sustainable future. Q methodology was used to examine the discourses of conservation on the islands, and to assess whether a shared vision of Galápagos is either achievable or desirable. 33 participants carried out Q sorts about Galápagos conservation. Three discourses emerged from the analysis: Conservation of Galápagos as an international/global concern; Conservation with sustainable development; and Social welfare and equitable development. The results highlight the subjective and political nature of the different discourses, and the paper concludes that calls to consensus or shared visions, while seductive in their promise of harmonious cooperation for conservation, can be read as attempts to depoliticise debates around conservation, and as such should be treated with caution.

Keywords: Galápagos, consensus, democracy, discourse analysis, Q method, social perspectives, trade-offs

1. Introduction

Balancing the needs of biodiversity conservation with those of social and economic development is one of the key challenges faced by societies in areas of high biological diversity. Over the last few decades, alongside the rise of the global discourse of sustainable development, a range of people-centered approaches to conservation (variously referred to as community based conservation, integrated conservation and development projects, community based natural resource management etc.), have become ever more prominent features in the conservation landscape (Roe 2008). These approaches aim to achieve both development/poverty reduction and biodiversity conservation. However just as the global discourse of sustainable development has been subject to a great deal of critique (Sachs 1999; Thompson 1999; Adams 2009), a backlash has emerged against simplistic but persistent discourses that paint conservation and development in win-win terms. Some have argued that people-centered approaches to conservation have demonstrably failed to protect nature (Oates 1999; Terborgh 1999), while others have argued that these approaches often fail to deliver promised benefits to local populations (Schmidt-Soltau 2004; West 2006), or that although often participatory in name, many apparently participatory conservation projects are as

vulnerable to the influence of dominant power interests as non-participatory approaches (Peterson et al. 2005). Indeed it has been argued that international conservation experience over the last 20 years has demonstrated that 'initiatives that produce win-win outcomes appear to be the exception as opposed to the rule' (Mcshane et al. 2011 p. 968).

The ideal of a win-win outcome that benefits both conservation and society resonates with decision makers, project funders and publics alike, and as such these discourses are highly marketable and resilient. However, as well as being largely inaccurate descriptors of the outcomes of many conservation and development projects (Sunderland et al. 2008), it has been argued that these win-win discourses and the rhetoric of consensus that often accompanies them, can itself be considered a political strategy which reifies the status quo, acting to maintain existing hierarchies rather than change them, thus reinforcing bureaucratic state power (cf. Ferguson 1994; Buscher 2010). Others have argued that the emphasis on consensus in conservation is fundamentally undemocratic: it implies that reducing the plurality of discourses and opinions around conservation is both possible and desirable, but in fact the appearance of consensus is only achieved by masking conflict between participating groups and individuals, and hence is an illusion that is 'fatal to democracy because a healthy democratic process requires recognition of differing interests, and the recognition that open conflict about differing interests is legitimate' (Peterson et al. 2005 p. 764). Jasanoff has termed this push to build consensus as 'false universalism', arguing that it represents an attempt to deny or denigrate 'differences that should be respected and that legitimately matter to others' (Jasanoff 2011 p. 130). In reality the social contexts in which conservation and development take place are very rarely characterised by consensus and win-win outcomes, rather a range of different interests and perspectives exist all of which understand and define the situation differently. Work in the social and political sciences has pointed out that the very nature and meaning of 'the problem' is itself constantly being negotiated between actors in complex discursive struggles (Hajer 1997), and that different perceptions of what constitutes a problem are 'implicitly rooted in divergent inculturated beliefs about the appropriate state of the world and appropriate outcomes of management' (Mattson et al. 2006 p. 401).

As a result of a growing number of critiques there have been a number of calls for conservationists to move away from idealised win-win discourses and the search for consensus, towards more open acknowledgment of trade-offs in conservation and

development (Faith and Walker 2002; Sunderland et al. 2008; Mcshane et al. 2011). An important dimension of trade-off thinking is that choices need to be made between often incommensurable interests, perspectives and goals. Crucially these are not easy choices and in most cases involve significant losses. To understand what is at stake in decision making, different perspectives and framings of an issue need to be taken into account, and in order for this to happen, these diverse views need first to be made explicit. This thinking finds parallels in calls from policy studies for the need for research to focus on 'opening up' policy processes to the full range of discourses and framings around a given issue (Stirling 2008), in order to 'reveal the hidden social and cultural assumptions underlying apparently incommensurable world views' (Leach and Mearns 1996 p. 33).

In this paper, consensus based approaches to conservation and development on the Galápagos Islands are critically examined. A high profile conservation area and the site of significant conservation anxiety, the Galápagos Islands provide an interesting case study in which to explore these dynamics. Traditionally Galápagos has been the site of a win-win discourse around ecotourism, but in recent years tourism and its associated economic growth have become central features of a narrative of crisis on the islands (Taylor et al. 2006; Epler 2007; Watkins and Cruz 2007). However there are still efforts to couch conservation efforts in win-win terms and in particular to forge a societal consensus around a 'shared vision of conservation'. This paper examines these calls to consensus on Galápagos before applying an innovative methodology (Q method) to uncover the range of societal perspectives towards conservation, to ask how and why these differ, and to and ask what the existence of these diverse views means for the creation of a shared vision or consensus around conservation.

2. Methods

2.1 Study site The Galápagos Islands

The Galápagos Islands are a volcanic archipelago comprising around 18 islands situated in the Pacific straddling the equator, 928 km from Ecuador by whom they are governed. Famous for inspiring Darwin's theory of evolution, the islands are home to a range of charismatic endemic species such as the Galápagos giant tortoise (Geochelone elephantopus) and the Galápagos marine iguana (Amblyrhynchus cristatus). Despite a resilient narrative which depicts the islands as an uninhabited and pristine wilderness (Grenier 2007; Hennessy and McCleary 2011), the islands have been populated since the mid 19th century (Larson 2001; Quiroga 2009), and a population of around 25–27,000 people now inhabit five of the

islands (INEC 2010). Although officially 95% of the terrestrial surface of the islands and the surrounding areas within 40 nautical miles of the islands are protected as a national park and marine reserve, in recent years, the conservation of the archipelago has been the subject of a great deal of concern as evidenced by their temporary addition to UNESCO's list of World Heritage in Danger in 2007 (UNESCO 2007), and the issuing of an emergency decree by the Ecuadorian president Rafael Correa stating that the islands were in a state of risk (Presidential decree No. 270, 10/04/07). The islands have been experiencing consistently high economic growth, largely as a result of a successful tourism industry (Taylor et al. 2006; Epler 2007), and conservationists and others have raised fears that the current development trends are unsustainable, increasing pressure on natural resources through the growing demand for goods and services (González et al. 2008), and threatening the endemic species through increasing the risk of introduction of non-native species or diseases (Causton et al. 2006; Bataille et al. 2009). In 2011 over 180,000 people visited the Galápagos National park (GNP 2012), and although exact figures are unavailable, some estimates suggest that tourism is (directly and indirectly) responsible for 78 % of all employment on the islands (Epler 2007 p. 21).

The 'conservation imperative' (Wilshusen et al. 2003) of preventing further species extinctions on the islands is rarely in dispute in public debate on the islands, and indeed the anthropological work of Ospina (2004) illustrates the way in which conservationist language has become an important source of cultural legitimacy for a broad range of social actors in Galápagos, many of whom strive to present themselves as defenders of nature while seeking to cast aspersions on the motives and actions of other groups and individuals. Despite this, one of the key issues raised by the UNESCO mission was the lack of a 'common vision for Galápagos' among the local population (UNESCO 2007 p. 9), a situation which was felt to be hampering concerted conservation efforts. This sentiment was also expressed in the management plan of the Galápagos National Park, which called for the islands to unite around a shared vision of Galápagos as the 'road map to a sustainable future' (PNG 2005 p. 37, translated from Spanish), and was re-iterated in a number of other influential documents in the subsequent years (Tapia et al. 2009; CDF 2010). A diversity of perspectives towards conservation is thus widely recognised, but most frequently cast as a barrier to effective conservation. What is required, it has been argued, is the fostering of a shared 'cultural identity based on respect for natural capital' (CDF 2010 p. 180), to be achieved in part through increasing amounts of science, better tied to the needs of conservation and

sustainable development (Tapia et al. 2009); or more 'solid information'(Watkins and Cruz 2007), along with improved education of local people in order to change attitudes (Merlen 2007; Watkins and Cruz 2007). Through its examination of the diverse perspectives towards conservation on the islands, this paper will critically examine some of these calls to consensus in conservation, and unpick some of the assumptions upon which they are based.

2.2 Q Method

The method chosen for the systematic exploration of conservation discourses on Galápagos was Q method. Q method is a quali-quantitative technique that can be used to explore viewpoints or discourses about any topic that can be socially contested or debated. In recent years it has been successfully used to study discursive conflicts around natural resources in a variety of contexts (Mattson et al. 2006; Robbins 2006; Swedeen 2006), and has been highlighted as having the potential to facilitate an 'opening up' of environmental policy to reflexive appraisal (Ockwell 2008) as part of a move toward a more deliberative approach to environmental management (Niemeyer 2002; Dryzek and Niemeyer 2008). A Q study is typically divided into five distinct phases which will be briefly outlined below before being described in detail in the following paragraph: (1) a number of opinion statements are collected from a wide range of sources. This process is known as building a concourse, which can be defined as bringing together the 'volume of discussion' (Brown 1986 p. 58) on the topic of interest. (2) The concourse of statements is examined for themes and a sub-set of the statements selected in order to be presented to participants for rank ordering. This sub-set of statements is known as the 'Q sample' and ideally contains all the diversity of the broader concourse. (3) A diverse range of purposively selected participants is asked to rank the statements in the Q sample along a scale of 'most like my point of view' to 'least like my point of view'. This process is known as carrying out a Q sort. Q method is an intensive, 'small n' methodology, and the number of participants in a typical Q study is between 20 – 40 people (Brown 1980). (4) The results are statistically analysed in order to allow the extraction of a number of 'factors' representing generalised opinions or discourses present in the population. (5) The factors or discourses are interpreted using additional comments made by the participants and recorded at the time of carrying out the Q sorts.

In this study, the concourse was defined as 'opinion related to Galápagos conservation.' Statements were collected from a wide range of documents and websites as well as informal

interviews. Sources included academic and popular literature about Galápagos, grey literature (e.g. the Galápagos Park Management Plan (2005), and the Galápagos Regional Plan (2007)), the websites of various local institutions (e.g. local and regional councils, NGOs, tour operators, fishing cooperatives etc.), and comments made by speakers at an event organised by the Galápagos Conservation Trust (attended on 15/09/2009). In addition approximately 20 informal interviews were carried out with local people in Puerto Ayora, Santa Cruz Island, Galápagos, during October 2009, with interviewees being selected based on the researchers' appraisal of voices that appeared to be missing from the published literature on Galápagos (for example local farmers and fishermen, women and younger people). In order to guide the selection of a broad range of different types of statements, a sampling strategy was adapted from Dayton (2000) whereby statements were sought under the following thematic categories: environmental ethics/beliefs and 'visions' of Galápagos; causes and definitions of existing problems; social actors; policy prescriptions/solutions; the role of scientific knowledge. A total of 200 opinion statements, written in both English and Spanish, made up the original concourse.

The concourse was then narrowed down to a manageable number of statements (the Q sample) to be sorted by participants. In order to capture the diversity of the concourse approximately equal numbers of statements were selected from each of the thematic categories. While a structured approach to selecting the statements for the Q sample is considered good practice, as Brown points out, the meanings of the statements are not fixed, and thus not to be found solely in the categorizations of the researcher, but 'more importantly in the reflections of the individual as he or she sorts the statements' (Brown 1993 p. 101). Statements were translated into both Spanish and English by a professional translator, and checked by a bilingual Galápagos resident to ensure the vocabulary was appropriate to the context. A pilot study was carried out with 4 participants in order to ensure the clarity of the statements and the sorting instruction. Fifty-two statements made up the final Q sample (see Table 1).

Participant selection aimed to incorporate as diverse a group of people as possible. The stakeholder analysis of Oviedo (1999) was helpful in outlining some of the main stakeholder groups within Galápagos society (conservation/research, fishing/farming and public administration) and in guiding selection of an initial group of participants from these different sectors. It is common practice in Q method to seek the participation of a number of 'decision-makers and opinion leaders' (Webler et al. 2009 p. 21), as these people are likely to have an

220 important role in the production of different discourses. A conscious effort was therefore
221 made to seek out participants that were influential in some way (for example the heads of
222 various local and international NGOs, local government and national park decision makers,
223 heads of fishing cooperatives, a teacher and other influential local figures were included). In
224 order to ensure that local knowledge of the social landscape was appropriately incorporated
225 into the selection of participants, once the Q process had started, a snowballing approach was
226 also adopted whereby participants were asked to identify other potential recruits with
227 opinions different from their own. A total of 33 individuals completed Q sorts on the main
228 inhabited islands of Santa Cruz (14 individuals), San Cristobal (13 individuals), and Isabela
229 (6 individuals), between November and December 2009. Twenty-four of the participants
230 were Ecuadorian nationals, of whom nine were born on Galápagos. The remaining nine
231 participants were international visitors or long-term residents of the islands. The
232 incorporation of international visitors in the participant group was based on the rationale that
233 it is international visitors (for example visiting researchers or journalists, short term staff and
234 volunteers of international NGOs etc.) who are often some of the more prominent voices in
235 conservation debates about the islands at the international level and thus it was felt that a
236 description of the discourses on the islands would not be complete without incorporating the
237 views of these people. The professions with which the participants self-identified are given
238 in Table 2.

239 Participants were asked to sort the cards onto a pre-prepared chart according to how like or
240 unlike their point of view they were, with +4 being most like their point of view and -4 being
241 least like their point of view. The way in which each participant ranks the statements is
242 referred to as that person's Q sort. In some Q studies participants are asked to sort the
243 statements into a forced quasi-normal distribution, however as this is un-necessary for the
244 technique to work (Brown 1971; Burt 1972; Barry and Proops 1999; Watts and Stenner
245 2005), pragmatic considerations (regarding the familiarity or otherwise of participants with
246 taking part in research, and their levels of formal education) meant that a quasi-normal
247 distribution was not used in this case. Participants were encouraged to respond to the
248 statements and explain their sorting during the exercise. With participant consent these
249 comments were recorded and transcribed to aid interpretation of the factors.
250
251 **2.3 Analysis**

The 33 Q sorts were analysed using the freely available PQ method software (Schmolck 2002). The software generates a correlation matrix comparing each of the 33 sorts with every other, and illustrating the level of correlation between these. Next principal components analysis was carried out on the correlation matrix, with the aim of identifying which participants' Q sorts clustered together. In order to explain this clustering a number of factors were generated. A factor is 'a dimension or construct which is a condensed statement of the relationship between variables'(Kline 1993 p.5). In order to find the simplest structure in the data and to explain the greatest amount of variance, the original factors were then rotated using a varimax rotation such that each individual tended to be associated with just one factor (McKeown and Thomas 1988).

There is not necessarily one objectively correct or 'mathematically superior' final solution regarding the number of factors that emerge from a Q study (Watts & Stenner, 2005a p.80), and the final solution needs to consider simplicity, clarity, distinctness and stability (Webler et al. 2009 p.31). In this study the outputs obtained when different numbers of factors were rotated were compared, and a solution was sought which maximised the variance explained and the number of participants loading significantly on just one factor, minimised the number of confounders (participants loading on more than one factor) or non-loaders (participants not loading on any factor), and ensured that each factor contained at least 2 sorts that loaded on that factor alone (Watts and Stenner 2005 p. 81). Based on these criteria, a 3 factor solution was selected as the optimum.

Individuals whose sorts correlate significantly with a given factor are called loaders. Sorts loading at >±0.36 on a given factor were considered significant at the $p<0.01$ level. This was based on the equation: $2.58(1/\sqrt{n})$, where n=the number of statements in the Q sample: $2.58(1/\sqrt{52})=0.36$ (cf. Brown 1980 p. 283). The weighted average of the loaders' sort patterns for a factor were used to calculate an idealised sorting pattern for that factor along the original response scale (-4 to +4). These idealised sorting patterns are illustrated in Table 1. The degree to which each participant's sort correlated with each of the factors is given in Table 2. Details of the degree of correlation between the factors, the percentage variance explained by each factor and the number of sorts loading on each factor alone at $p < 0.01$ are given in Table 3.

3. Results

[Insert Tables 1, 2 & 3]

The 3 factors that emerged from the analysis represent discourses about conservation, and for the sake of clarity will be referred to as such for the remainder of this paper. Labels were given to each discourse, intended to act as an abbreviated storyline (cf. Hajer 1997) capturing some essence of the larger narrative. The discourses were labelled Discourse A: 'Conservation of Galápagos as an international/global concern'; Discourse B: 'Conservation with sustainable development'; and Discourse C: 'Social welfare and equitable development'.

It is important to note that these discourses represent hypothetical constructs, and that actual participants will often share elements of all three discourses as evidenced by the correlations of their Q sorts with each discourse (Table 2). In addition, although the discourses are described as separate narratives, they are all correlated to a degree (see Table 3). In the descriptions that follow, numbers in square brackets refer to the number of the statement on which the analysis is based (see Table 1), quotes in italics are explanatory comments made by individuals whose sorts correlated significantly with the discourse being described, and quotes marked with an asterisk have been translated from Spanish.

3.1 Discourse A: 'Conservation of Galápagos as an international/global concern'.

For proponents of this view, the needs of the native and endemic flora and fauna of the Galápagos are the primary concern[14]. As one participant commented, 'their right to exist and to reproduce as species should be paramount' and maintaining the native and endemic biodiversity should be 'absolutely primary'. In addition, the current human population of Galápagos should consider it a 'privilege' to live in such a unique place[5], with one participant expressing the view that if people don't like what they have in Galápagos they should '*go move to the continent'*. Viewed through this lens there is serious cause for concern in Galápagos[30], as 'all trends are going in the wrong direction', largely as a result of the perceived incompatibility of economic development and conservation[37], with immigration a key concern, as one participant put it 'more people caused by more development creates more problems'. One of the drivers of what is considered an unsustainable level of development on Galápagos, is understood to be the ongoing growth in tourism beyond the 'carrying capacity' of the islands[10]. The outright number of tourists, the changing nature of tourism and the types of tourists visiting Galápagos are all of concern,

hence the relatively higher score awarded to statement 50. Anxiety about population growth is a common feature of this discourse[46]. One participant felt that Galápagos has a 'very worrisome demographic profile in terms of a very young population, having children'.

In terms of solutions to the problems facing Galápagos, this discourse reflects some pessimism about the success of conservation initiatives such as the participatory management system implemented in the Marine reserve[51]. To a degree, the attitudes of the local fishermen in particular are felt to be a barrier to effective conservation[25]. Education, strong regulation, and control of the population, are seen as the keys to effective conservation of the islands (views that are for the most part shared with Factor B proponents)[8,2,48], and there is a sense that this control is inadequate due to ineffective/inconsistent policing and/or corruption[31]. Given the global importance of Galápagos wildlife, the involvement of the international community in the protection of Galápagos is seen as absolutely crucial[36]. As one participant put it, local people should 'have a significant say, but obviously they need assistance'. To this end, the use of conceptually powerful international tools such as UNESCO's 'World Heritage in Danger' category is considered necessary to raise awareness and funds for conservation[32]. Compounding the need for international involvement on Galápagos is the perception of a degree of 'mediocrity' of the professionals from Galápagos[44]. While on the one hand international links and involvement are seen as crucial, on the other hand, the increasing number of international linkages and the decreasing geographical isolation of Galápagos are understood to be ecologically unsustainable, and hence this discourse reflects a degree of agreement that a partial 'disconnection' of the islands from the rest of the world is necessary[12]. As one participant put it: 'there needs to be improved controls and quarantine systems and a reduction of all kinds of transport flows *into the archipelago … basically a reduction in tourism*'*.

With regard to the role of science on Galápagos, although on the surface there appears to be a broad consensus between the three discourses that science is important to conservation and should be steered by management needs, discourse A exhibits a lesser degree of agreement with statement 19 than the other two discourses, and participant comments pointed to a possible tension beneath this apparent consensus. As one participant put it: 'to be perfectly honest I think there's a role for science beyond the immediate management and conservation *problems… I think there's a role for science to look beyo*nd the horizon'. Another commented: 'I think that we should allow pure science, pure science is good for humanity, I believe in pure science, and pure science in the end will help us with conservation'. Also in

relation to the role of science on Galápagos, discourse A illustrated a degree of disagreement with the idea that the practice of science should be the 'main priority'[7], and indeed was neither positive nor negative regarding the need for more science to address conservation challenges[4]. As one participant put it: 'they [the scientists/conservationists] know what the *problems are, they know more or less what the solutions are, it's just a matter of doing it,* that's the problem'. There is however, evidence that an acceptance of the findings of science, especially with regard to the theory of evolution, should be a prerequisite for working as a guide in the National Park, and thus that holding creationist beliefs is incompatible with this role[28]. As one participant put it: 'You should be able to answer the questions that people ask you about evolution and if you don't believe in evolution then it makes it very difficult'.

3.2 Discourse B: 'Conservation with sustainable development'

One of the key differences between discourses A and B is the agreement that the latter appears to reflect concerning the idea that 'development' (left deliberately undefined in the concourse) and conservation can be mutually beneficial[37]. Supporting statements underlined that what was required was 'sustainable development' or as one participant put it: '*development in terms of an improvement in people's quality of life, not just in terms of* growth', but in principle at least, this type of development was believed to be both possible, and compatible with conservation's aims. From this point of view, the primary route to sustainability is through the development of a sustainable tourism industry, which itself relies on the 'ecological integrity' of the islands[52]. As one participant said: 'either you manage tourism properly and allow the economy to move, or you evict the population. The second *option isn't possible, you have to manage tourism… [it's] the only non*-extractive activity that, properly managed could become sustainable'*. Given the centrality of tourism to sustainability amongst participants with this point of view, 'partially disconnecting' Galápagos through limiting travel to the islands[12], is not appropriate. As one participant said: '*transforming Galápagos into a 'ghetto' isn't going to solve anythin*g'*.

Within this discourse the conservation of Galápagos is framed in terms of a management challenge, in which both practical/technical conservation measures, and education are considered to be crucial[8,3]. Similarly, science has a key role to play: more science is required to point to sustainable solutions on Galápagos[4], and research priorities should be tightly linked to conservation management needs[19]. Despite the key role of science for proponents of this view, there is considered to be no conflict between holding creationist

beliefs and being a park guide[28]. And in fact within this discourse there is space for the possibility that creation of all nature was by God for the benefit humanity[41].

In line with discourse A, these restrictions and regulation are understood to be necessary and reasonable to ensure effective conservation[2,48], but unlike discourse A, it is not felt that local fishermen disregard legislation[25]. This discourse appears to reflect a higher degree of optimism about participatory conservation management strategies undertaken in the marine reserve [51], and of the prospects for Galápagos conservation in general[21]. In agreement with the other discourses, it is felt that living on Galápagos is a privilege[5], however, where discourse A highlights the 'extraordinary' nature of the place, participant comments on this statement highlight more practical considerations: 'the peace, the security'*, compared with continental Ecuador. The ability of local professionals[44] and the integrity and independence of local institutions is maintained, and there is disagreement with the idea of widespread corruption on the islands[23], or of close links between conservation organisations and the tour industry[27]. There is evidence of a degree of ambivalence about international involvement in Galápagos as evidenced by the zero score awarded to statement[36]. As one participant explained, conservation requires a degree of international input from 'scientists and other experts,' but he went on to voice frustration with the stream of outsiders giving views on Galápagos conservation: 'people from outside always think they are right, that they know how to manage Galápagos'*. Within this discourse local professionals are not perceived of as any less able than internationals[44]. There is discomfort with the idea of maintaining an international image of 'threatened Galápagos' in order to raise awareness and funds[32].

3.3 Discourse C: 'Social welfare and equitable development'

Within this discourse Galápagos conservation is framed less in terms of concepts such as biodiversity or endemism and more in terms of personal ties to Galápagos. As one participant put it: 'we understand what conservation is, we know because we love the place where we grew up, where we are, and we want our children to enjoy this'*. The statements awarded the highest and lowest scores concern the issues of social welfare[47] and changes in tourism[1]. Participant comments highlighted the notion of inequity when describing the relative benefits gained from different types of tourism. Non-traditional forms of tourism such as kayaking and surfing holidays[1] or artesanal fishing tours[17] could provide much needed redistribution of benefits. As one participant put it, 'these small activities have helped

lots of families – this is tourism with a local base'*. From this point of view continued growth in tourism could potentially be a positive thing, as the more neutral scores for statements [10] and [34] seem to suggest. There is a perception that it is the big tour operators and cruise ships (the so-called 'floating hotel' model) that are supported by the science and conservation sectors[27], which do little social or environmental good[29]. As one participant commented: 'some of them have some small projects to give back to the community, but it pretty much comes down to building an information centre here or there every 3 years, or giving a few local students a week on board their ships. But in reality all they do is come here drop tourists off and leave the rubbish behind, and all the money goes back to the *continent...'*

This discourse therefore appeared to be broadly in line with discourse A in terms of reflecting a belief that conservation and development were not mutually beneficial[37], but participant comments suggest that this is because conservation is felt not to provide benefits for development not vice-versa. As one participant commented: 'conservation is not beneficial'*.

Within discourse C there is a sense that local people should be deciding on the development direction taken by Galápagos[36]. In line with discourse B, there is evidence for disagreement with the pragmatic use of the UNESCO 'World Heritage in Danger' category for international awareness and fundraising purposes[32]. One participant commented: '*someone who doesn't know Galápagos, who just reads what they publish on the internet, that person's going to say 'what is going on in Galápagos? Those people are destroying* everything!'*. From this perspective the motives and actions of some conservation organisations and individual scientists are somewhat suspect[6,16,9], neither more science to steer conservation strategies[4], nor more money for conservation management[11] are felt to be really necessary. One participant commented: 'nobody's doing any meaningful work that *furthers the quality of our existence… I've had enough of scientists coming here to study the* turtles, study the marine iguanas*…'*. The same participant continued: 'there's plenty of money available, they're just doing the wrong thing with it'. Perhaps linked to the suspicion about international organisations, there is also ambivalence toward the idea and project of environmental education to generate a 'conservation consciousness' as evidenced by the zero score awarded to statement[8]. As one participant commented: 'nobody can come here to give me consciousness'*.

In general within this discourse there is evidence for a level of agreement with the other two discourses that living on Galápagos is a privilege[5] and that certain restrictions and responsibilities are necessary to a degree[2]. However, the relatively lower scores awarded to these statements by this discourse illustrate that this agreement is less pronounced than for the other two. Indeed many of the prohibitions and restrictions are felt to be excessive and to a degree irrational[42, 48]. As one participant commented: '*they restrict you but they don't give you opportunities, they don't offer you anything*'*. Where legislation exists (for example in the case of fishing regulations) it is not felt that many people disregard these laws[25], and there is strong disagreement with the idea that people living on Galápagos simply aren't interested in nature[45], with some of those loading on this discourse maintaining that nature was created to be of benefit to humankind[41]. As one participant put it: 'God gave us the *authority to administer his creation… we also have to look after it, but look after it for* everybody. And also look aft*er his people'*.

4. Discussion

The three discourses uncovered by this study point to fundamentally different ways of thinking about Galápagos conservation and largely support the claims that there is no shared vision of Galápagos conservation. However, rather than downplaying or obscuring the political nature of these debates through recourse to the 'anti-political' language of shared visions and consensus, it is argued that a more deliberative (Dryzek and Niemeyer 2008) or argumentative (Hoppe 1999) approach to policy making, which shifts the focus away from the search for consensus and is based instead on 'acknowledgment of conflicting views and interests… [in order to] facilitate deliberation and concerted negotiation' (Hirsch et al. 2011 p. 260), is both more democratic and realistic. It is also arguably likely to lead to better environmental outcomes than if individuals and institutions attempt to carry out conservation interventions built on false assumptions of consensus, as these are likely to be much less able to 'effectively mediate the complex political dynamics they encounter during implementation' (Buscher 2010 p. 29).

Although the three discourses uncovered cannot claim to be the only discourses about Galápagos conservation on the islands (and it is not possible from the data gathered to indicate what proportion of the population subscribes to a given discourse), they can at least

be said to be influential given the inclusion of a number of decision makers and other prominent local figures in the participant group. Although the participation of additional participants might have revealed additional alternative discourses, this would simply add another layer of complexity to the picture, but would not challenge the existence and structure of those discourses already revealed (Brown, 1980 p. 67).

The necessarily small sample sizes in a Q study mean that apparent patterns regarding the characteristics of the participants that loaded on each discourse must be treated with caution, and if certain characteristics appear to correlate with a particular discourse these can only be treated as 'working hypotheses' (Ockwell 2008 p. 278), indicating possible avenues for future research. In this case, one such hypothesis might be that the birthplace of participants influences which discourse they load on, hence participants loading on discourse A were predominantly born outside Ecuador, while those loading on discourses B and C were predominantly born in Galápagos or mainland Ecuador. That this should be so is perhaps unsurprising, as McShane and colleagues put it, the views that people hold about the relationship between people and nature are 'strongly influenced by where they are raised, how they are educated, their life experiences and the survival conditions and options they have faced' (Mcshane et al. 2011 p. 969), and previous work has shown a significant link between variables such as amount of formal education and perceptions of conservation (King and Peralvo 2010). An additional observation is that to an extent the divisions between discourses can be seen to map different sectorial divisions in Galápagos: for example nearly half the participants loading on discourse A are associated with international NGOs, while the majority of those loading on discourse B are associated with the National Park, local government and local businesses, and half of those loading on discourse C are associated with fishing and agriculture. However it is perhaps more interesting to note that these divisions aren't absolute, hence the appearance of a fishing cooperative leader and an international NGO leader both associated with discourse B, local government officials associated with both B and C, and tour guides spread between the three discourses. This highlights the importance of a discursive approach such as that adopted here that looks beyond an analysis of the views of different sectors or interest groups, in order to understand the discourses which 'help constitute identities and their associated interests' (Dryzek and Niemeyer 2008 p. 5).

While the existence of diverse views on Galápagos has been widely recognized over a number of years (Watkins and Cruz 2007; Tapia et al. 2009), this diversity has tended to be framed as a problem to be overcome. It has been argued that disagreements 'result more from differences in perspectives rather than from real differences' (Watkins and Cruz 2007 p. 4), and that what is required is an increase in 'solid information' and education. Implicit in these calls is the idea that perspective differences are in some senses not real, and would likely be reduced or disappear in the light of more scientific data. However this idea, though widespread in diverse policy domains has been thoroughly critiqued (cf. Collingridge and Reeve 1986; Collins and Yearley 1992; Pielke 2007). As Sarewitz points out, despite the creation of bodies of scientific knowledge specifically aimed at resolving political dispute, in areas as diverse as climate change, nuclear waste disposal and biodiversity conservation, rather than resulting in increasing consensus around appropriate policy, this process has often been accompanied instead by growing political controversy and gridlock (Sarewitz 2004, p. 386). The results of this study suggest that increasing the amount of information available, is unlikely to lead to societal consensus around conservation as the problem is not an information deficit, but genuinely divergent perspectives about subjective topics such as the nature of Galápagos, the role of people on the islands, and the desired pathway of development.

The view that more science is necessary on Galápagos (statement 4) and that science should be tightly tied to conservation management needs (statement 19) are features of discourse B, and are widely expressed in publications about Galápagos (Tapia et al. 2009). However, in addition to the fact that science cannot overcome value disputes, calls by scientists for more science can be seen to have political implications, leading to a generally more conservative stance. As Bocking (2004) explains: 'When societal problems are defined as technical, the view of science as objective and free of particular political values rules out political change as an option, thereby disallowing alternative political visions….[and] rejecting all but minor adjustments in the social order' (Bocking 2004 p. 39).

However, for discourse C it is changes in the social order that are called for, in particular a redistribution of benefits from tourism (e.g. statements 1, 17, 27, 29 & 34). Although discourse C appears to be the most overtly political discourse in its expression of resistance to some of the ideas and practices of conservation, an examination of the values and assumptions underlying the other two discourses reveals that these are no less value laden.

For example, the discourse A's framing of the issue of Galápagos' conservation in terms of the global importance of the islands, acts to legitimate the absconding of power and control over resources to the so-called 'international community', a tendency underscored by its emphasis on the role of global institutions such as UNESCO. Similarly this discourse's vision of the islands as un-inhabited and its related preoccupation with population growth (statement 46) reveals a particular vision of the islands in which centralised control of the population is key. Indeed, at one extreme, it is possible to find people working in the conservation sector in Galápagos who express the view that the human population should be forcibly controlled: for example, one discourse A participant joked that: 'we have a spay and neuter programme for the cats and dogs, I think we need to implement it for the human population'. These views can be traced back to conservationist discourses that define the ideal state of Galápagos as the ecological state that existed prior to human discovery of the islands. For example, a report published by the Charles Darwin Foundation in 2002 outlines a 'Biodiversity Vision' for Galápagos which states that: '[t]he baseline (what was Galápagos like prior to 1535) … provides both a benchmark and the basis for the ultimate long-term aspiration for biodiversity conservation' (Bensted-Smith 2002 p. 8, parentheses in original). As Hennessy and McCleary point out, these efforts to return the islands to their pre-human past are 'the epitome of a closed politics… [in which there is no space] …for people or political debate' (Hennessy and McCleary 2011 p. 151). Discourse C rejects this view of the human population as the problem on Galápagos, re-framing the conservation debate around the question of 'conserve for whom' as the following quote from a discourse C participant illustrates: 'They told me to conserve for future generations, I am the future generation, my parents *already worked… and my daughter, she's 21, now they're going to tell her that she* has to conserve for future generations; and in the meantime what?'

For proponents of discourse C, there is a sense that rather than population growth on the islands, it is 'outsiders' of various types (international tour operators, industrial fishing fleets from the mainland, international NGOs or continental bureaucrats) that are the real problem. As one participant associated with discourse C put it: *'Galápagos' problem isn't here, Galápagos problem is outside, in the big companies, the big decisions, the big ministries…Is the fact that my neighbour has three kids a problem for Galápagos? No!'* This view resonates with academic literature that has highlighted the necessity of understanding the broader political and economic drivers of change in Galápagos (Grenier 2007), rather than focusing narrowly on the local population. However there may also be a degree of what has

been called ‘ideological amplification’(Sunstein 2007) that takes place on all sides, and a danger of self-stereotyping of the local population as helpless victims fighting distant but powerful outsider interests, including conservationists ‘in their comfortable offices, in their *mansions on the continent…* [telling the people] *don’t touch this, don’t touch that*’ (discourse C participant).

The ideal development pathway for Galápagos is another divisive issue on the islands. While discourse A appears to consider conservation and development as essentially incompatible, Discourse B frames the challenge as one of achieving ‘sustainable development’ through the appropriate application of science to conservation management challenges, and in particular the appropriate management of tourism. This focus on tourism is not new and has been the subject of discussion since the industry’s beginnings on Galápagos in the 1960s (Snow and Grimwood 1966). However, the tension between Galápagos’ current economic reliance on tourism and ecological need for isolation means that many observers suggest that the Galápagos is living a fundamental contradiction (e.g. Ospina 2004), caught between two apparently opposing currents, a state which presents a serious challenge to ‘appropriate management’. Discourse B does not consider the basic model of an economy built on tourism to be inherently unsustainable but rather considers the challenge to be one of formulating and implementing policies that control tourism and limit numbers of tourists, maintaining ‘high value, low numbers tourism, not cheap mass tourism’ (statement 34), and focusing efforts on the control and eradication of non-native species (statement 3). In this sense Discourse B appears to be a fairly typical example of the policy discourse that has been labelled ‘ecological modernization’ which maintains ‘that environmental problems can be solved in accordance with the workings of the main institutional arrangements of society’ (Hajer 1997 p. 3), a view that while popular with policy makers worldwide, has been broadly critiqued by various authors (e.g. Torgerson 2001) who suggest that this way of thinking cannot conceive of the more radical changes potentially required in order to address current social and environmental problems. However, others might counter that is simply a pragmatic approach to an intractable problem, and that without the sort of approach offered by the discourse of ecological modernization we are simply ‘reduced to wishful thinking about how things might be different’(Dryzek 1997 p. 232).

5. Conclusion

In revealing the different societal discourses around conservation on Galápagos, and subjecting the range of values and assumptions upon which these are built to critical scrutiny, the material in this paper hopes to contribute to a deliberative process whereby conflicts can be 'addressed more openly, rather than remain concealed in hegemonic environmental readings and policy' (Leach and Mearns 1996 p. 467), or masked in the 'discursive blur' (Buscher 2008 p. 230) of calls for consensus and a shared vision. There are various ethical and substantive reasons why the opening up of policy process to multiple discourses should be preferable to the unquestioned dominance of a given discourse or narrative. Dryzek and Niemeyer highlight the normative undesirability from the perspective of accountability within a democracy of allowing a network to be dominated by a single discourse (Dryzek and Niemeyer 2008 p. 13). Others highlight the partiality of all knowledge claims and point out that 'a single and final understanding of a sufficiently complex issue is inherently over simplistic' (Hirsch et al. 2011 p. 263), and that therefore other understandings or discourses could always claim relevance. Others stress the fact that there are times when transformation or more radical social change may be desirable, and argue that this is not facilitated by a focus on consensus which 'further legitimizes continuity or stability' (Peterson et al. 2005 p. 766). By revealing these different discourses it is hoped that work in this vein may facilitate a more open and honest communication between proponents of the various views, and ultimately a more appropriate approach to conservation.

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639

640 **7. Table legends**

641 Table 1. Statements that made up the Q sample with idealised sort patterns for each discourse
642 (factor). Letters A, B and C represent the 3 different discourses that emerged from the
643 analysis; sort patterns represent the way in which a hypothetical individual loading 100% on
644 a given discourse would have sorted the statements along the original scale (where -4 means
645 'least like my point of view' and +4 means 'most like my point of view').

646 Table 2. Participant list and the degree of correlation of each participant's Q sort with each
647 discourse (factor).

648 Table 3. Discourse (factor) correlations, % variance explained by each discourse and the
649 number of sorts loading on each discourse alone at $p<0.01$.

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651 **8. References**

652 Adams, W. M. (2009). Green Development. Abingdon, Routledge.
653 Barry, J. and J. Proops (1999). "Seeking sustainability discourses with Q methodology."
654 Ecological Economics **28**(3): 337-345.
655 Bataille, A., A. A. Cunningham, et al. (2009). "Natural colonization and adaptation of a
656 mosquito species in Galápagos and its implications for disease threats to endemic
657 wildlife." Proceedings of the National Academy of Sciences **106**(25): 10230 - 10235.
658 Bensted-Smith, R. (2002). A biodiversity vision for the Galápagos Islands. Puerto Ayora,
659 Province of Galápagos, Ecuador, Charles Darwin Foundation.
660 Brown, S. (1971). "The forced-free distinction in Q technique." Journal of Educational
661 Measurement **8**(4): 283-287.
662 Brown, S. (1986). Q technique and method: Principles and procedures. New tools for social
663 scientists: Advances and applications in research methods. W. D. Berry and M. S.
664 Lewis-Beck. Beverly Hills, Sage**:** 57–76.
665 Brown, S. R. (1980). Political subjectivity: Applications of Q methodology in political
666 science. New Haven, CT, Yale University Press

667 Brown, S. R. (1993). "A primer on Q methodology." Operant Subjectivity **16**(3/4): 91-138.
668 Burt, C. (1972). The reciprocity principle. Science, psychology and communication. S. R.
669 Brown and D. J. Brenner. New York, Teachers College Press.
670 Buscher, B. (2008). "Conservation, neoliberalism, and social science: a critical reflection on
671 the SCB 2007 annual meeting in South Africa." Conservation Biology **22**(2): 229 -
672 231.
673 Buscher, B. (2010). "Anti-politics as political strategy: neoliberalism and transfrontier
674 conservation in Southern Africa." Development and Change **4**(1): 29-51.
675 Causton, C. E., S. B. Peck, et al. (2006). "Alien insects: Threats and implications for
676 conservation of Galapagos Islands." Annals of the Entomological Society of America
677 **99**(1): 121-143.
678 CDF (2010). Galapagos Report 2009 - 2010 (CDF, GNP, and Governing Council of
679 Galapagos). Puerto Ayora, Galapagos, Ecuador.
680 Collingridge, D. and C. Reeve (1986). Science speaks to power: the role of experts in policy
681 making. London, Frances Pinter.
682 Collins, H. M. and S. Yearley (1992). Epistemological Chicken Science as practice and
683 culture
684 A. Pickering, University of Chicago Press**:** 301 - 326.
685 Dayton, B. W. (2000). Policy Frames, Policy Making and the Global Climate Change
686 Discourse. Social discourse and environmental policy: an application of Q
687 methodology. H. Addams and J. Proops. Cheltenham, UK, Edward Elgar Publishing,
688 Inc.
689 Dryzek, J. and S. Niemeyer (2008). "Discursive representation." American political science
690 review **102**(04): 481-493.
691 Dryzek, J. S. (1997). The politics of the earth. Environmental Discourses., Oxford University
692 Press Oxford.
693 Epler, B. (2007). Tourism, the economy, population growth and conservation in Galapagos.
694 Puerto Ayora, Santa Cruz Island, Galapagos Islands, Ecuador, Charles Darwin
695 Foundation.
696 Faith, D. P. and P. Walker (2002). "The role of trade-offs in biodiversity conservation
697 planning: linking local management, regional planning and global conservation
698 efforts." Journal of biosciences **27**(4): 393-407.
699 Ferguson, J. (1994). The anti-politics machine. 'Development', depoliticization, and
700 bureaucratic power in Lesotho. Minneapolis, MN, University of Minnesota Press.

González, J. A., C. Montes, et al. (2008). "Rethinking the Galápagos Islands as a Complex Social-Ecological System: Implications for Conservation and Management." Ecology and Society **13**(2): 13.

Grenier, C. (2007). Conservación contra Natura: Las Islas Galápagos, Instituto Francés de Estudios Andinos.

Hajer, M. A. (1997). The Politics of Environmental Discourse: Ecological Modernization and the Policy Process. Oxford, Oxford University Press.

Hennessy, E. and A. McCleary (2011). "Nature's Eden? The production and effects of 'pristine' nature in the Galapagos Islands." Island Studies Journal **6**(2): 131 - 156.

Hirsch, P., W. M. Adams, et al. (2011). "Acknowledging conservation trade-offs and embracing complexity." Conservation Biology **25**(2): 259-264.

Hoppe, R. (1999). "Argumentative turn. Policy analysis, science and politics: from 'speaking truth to power' to 'making sense together'." Science and Public Policy **26**(3): 201 -210.

INEC. (2010). "http://www.inec.gob.ec/cpv/ (Accessed 18/06/2012)."

Jasanoff, S. (2011). Cosmopolitan knowledge: climate science and global civic epistemology. The Oxford Handbook of Climate Change and Society. J. S. Dryzek, R. B. Norgaard and D. Schlosberg. New York, Oxford University Press.

King, B. and M. Peralvo (2010). "Coupling community heterogeneity and perceptions of conservation in rural South Africa." Human Ecology **38**(2): 265-281.

Kline, P. (1993). "An easy guide to factor analysis."

Larson, E. J. (2001). Evolution's workshop: God and science on the Galápagos Islands. London, Penguin Books.

Leach, M. and R. Mearns (1996). Environmental change and policy: challenging recieved wisdom in Africa. The lie of the land: challenging recieved wisdom on the African environment. M. Leach and R. Mearns. Oxford, James Currey**:** 1 - 33.

Mattson, D., K. Byrd, et al. (2006). "Finding common ground in large carnivore conservation: mapping contending perspectives." Environmental Science and Policy **9**(4): 392-405.

McKeown, B. and D. Thomas (1988). Q methodology. Newbury Park, Sage Publications Inc.

Mcshane, T. O., P. D. Hirsch, et al. (2011). "Hard choices : Making trade-offs between biodiversity conservation and human well-being." Biological Conservation **144**: 966-972.

Merlen, G. (2007). Conserving the Galapagos. Galapagos: the islands that changed the world. P. Stewart. London, Yale University Press.

735 Niemeyer, S. (2002). Deliberation in the wilderness: transforming policy preferences through
736 discourse, Australian National University.
737 Oates, J. F. (1999). Myth and reality in the rain forest: how conservation strategies are failing
738 in West Africa, Univ of California Pr.
739 Ockwell, D. G. (2008). "'Opening up'policy to reflexive appraisal: a role for Q
740 Methodology? A case study of fire management in Cape York, Australia." Policy
741 Science **41**(4): 263-292.
742 Ospina, P. (2004). Galápagos, naturaleza y sociedad. Actores sociales y conflictos
743 ambientales en las islas Galápagos, Ecuador. Ciudad de México, Universidad
744 Iberoamericana. Masters Thesis.
745 Oviedo, P. (1999). The Galapagos Islands: conflict management in conservation and
746 sustainable resource management. Cultivating peace: Conflict and collaboration in
747 natural resource management
748 D. Buckles, IDRC/ World Bank
749 Peterson, M. N., M. J. Peterson, et al. (2005). "Conservation and the myth of consensus."
750 Conservation Biology **19**(3): 762-767.
751 Pielke, R. A. (2007). The honest broker: making sense of science in policy and politics.
752 Cambridge, Cambridge Univ Press.
753 PNG (2005). Plan de Manejo del Parque National Galapagos: Un pacto por la conservacion y
754 el desarollo sustentable del Archipelago. Puerto Ayora, Santa Cruz, Galapagos,
755 Parque Nacional Galapagos**:** 347.
756 Quiroga, D. (2009). Galapagos, laboratorio natural de la evolucion: una aproximacion
757 historica. Ciencia para la sostenibilidad en Galapagos: el papel de la investigacion
758 cientifica y tecnologica en el pasado, presente y futuro del archipielago. W. Tapia, P.
759 Ospina, D. Quiroga, J. A. González and C. Montes. Puerto Ayora, Galapagos, Parque
760 Nacional Galapagos.
761 Robbins, P. (2006). "The politics of barstool biology: Environmental knowledge and power
762 in greater Northern Yellowstone." Geoforum **37**(2): 185-199.
763 Roe, D. (2008). "The origins and evolution of the conservation-poverty debate: a review of
764 key literature, events and policy processes." Oryx **42**(04): 491-503.
765 Sachs, W. (1999). Sustainable development and the crisis of nature: on the political anatomy
766 of an oxymoron. Living with nature. Environmental politics as cultural discourse. M.
767 Hajer and F. Fischer. New York, Oxford University Press.

768 Schmidt-Soltau, K. (2004). "The costs of rainforest conservation: local responses towards
769 integrated conservation and development projects in Cameroon." Journal of
770 Contemporary African Studies **22**(1): 93-117.
771 Schmolck, P. (2002). PQMethod 2.11. Downloaded from http://www.lrz-
772 muenchen.de/~schmolck/qmethod/downpqx.htm.
773 Snow, D. W. and I. R. Grimwood (1966). Recommendations of the administration of the
774 proposed Galapagos National Park and the development of its tourist potential
775 (English Summary).
776 Stirling, A. (2008). "" Opening up" and "closing down": Power, participation, and pluralism
777 in the social appraisal of technology." Science, Technology and Human Values **33**(2):
778 262 - 294.
779 Sunderland, T., C. Ehringhaus, et al. (2008). "Conservation and development in tropical
780 forest landscapes: a time to face the trade-offs?" Environmental Conservation **34**(4):
781 276 - 279.
782 Sunstein, C. R. (2007). "Ideological amplification." Constellations **14**(2): 273-279.
783 Swedeen, P. (2006). "Post-normal science in practice: A Q study of the potential for
784 sustainable forestry in Washington State, USA." Ecological Economics **57**(2): 190-
785 208.
786 Tapia, W., P. Ospina, et al., Eds. (2009). Ciencia para la sostenibilidad en Galapagos: el papel
787 de la investigacion cientifica y tecnologica en el pasado, presente y futuro del
788 archipielago., Parque Nacional Galapagos. Universidad Andina Simon Bolivar,
789 Universidad Autonoma de Madrid y Universidad San Fransisco de Quito. Quito
790 2009.
791 Tapia, W., P. Ospina, et al. (2009). Entendiendo Galapagos como un sistema socioecologico
792 complejo: implicaciones para la investigacion cientifica en el achipielago. Ciencia
793 para la sostenibilidad en Galapagos: el papel de la investigacion cientifica y
794 tecnologica en el pasado, presente y futuro del archipielago. W. Tapia, P. Ospina, D.
795 Quiroga, J. A. González and C. Montes. Quito, Ecuador, Parque Nacional Galapagos.
796 Tapia, W., J. Rodriguez, et al. (2009). Ciencia para Galapagos: una propuesta de estrategia y
797 agenda de investigaciones prioritarias para la sustentabilidad del archipielago. Ciencia
798 para la sostenibilidad en Galapagos. W. Tapia, P. Ospina, D. Quiroga, J. A. González
799 and C. Montes. Quito, Parque Nacional Galapagos. Universidad Andina Simon
800 Bolivar, Universidad Autonoma de Madrid y Universidad San Fransisco de Quito.

Taylor, J. E., J. Hardner, et al. (2006). "Ecotourism and Economic Growth in the Galápagos: An Island Economy-wide Analysis." Davis, CA, USA, Giannini Foundation of Agricultural Economics, Department of Agricultural and Resource Economics, University of California, Davis.

Terborgh, J. (1999). Requiem for nature, Shearwater Books.

Thompson, M. (1999). Security and Solidarity: An Anti-Reductionist Analysis of Environmental Policy. Living with Nature. F. Fischer and M. Hajer. Oxford, Oxford University Press**:** 135 - 150.

Torgerson, D. (2001). "Limits of the administrative mind: the problem of defining environmental problems." Debating the Earth. The Environmental Politics Reader: 110-127.

UNESCO (2007). Report of the reactive monitoring mission, 8 - 13th April, Galapagos Islands (Ecuador) UNESCO.

Watkins, G. and F. Cruz (2007). Galápagos at risk: a socioeconomic analysis of the situation in the archipelago. Puerto Ayora, Province of Galápgos, Ecuador, Charles Darwin Foundation.

Watts, S. and P. Stenner (2005). "Doing Q methodology: theory, method and interpretation." Qualitative Research in Psychology **2**(1): 67-91.

Webler, T., S. Danielson, et al. (2009). Using Q Method to Reveal Social Perspectives in Environmental Research, Report number SERI.

West, P. (2006). Conservation is our government now: the politics of ecology in Papua New Guinea. Durham, Duke University Press.

Wilshusen, P. R., S. R. Brechin, et al. (2003). Contested nature: conservation and development at the turn of the twenty-first century. Contested nature: promoting international biodiversity with social justice in the twenty-first century. S. R. Brechin, P. R. Wilhusen, C. L. Fortwangler and P. C. West. Albany, State University of New York press. **1:** 1 - 24.