Does stakeholder participation increase the legitimacy of nature reserves in local communities? Evidence from 92 Biosphere Reserves in 36 countries

Alba Mohedano Roldán a, Andreas Duit a,b and Lisen Schultz c

aDepartment of Political Science, Stockholm University, Stockholm, Sweden; bPolitical Science Unit, Department of Business Administration, Technology and Social Sciences, Luleå University of Technology, Luleå, Sweden; cStockholm Resilience Centre, Stockholm University, Stockholm, Sweden

ABSTRACT
The aim of this paper is to investigate if stakeholder participation increases the legitimacy of nature reserves in the surrounding community. Most previous studies of the effects of stakeholder participation in natural resource management have relied on case studies, but in this paper we use a combination of panel data from a two-wave survey (2008 and 2013) of 92 Biosphere Reserves (BRs) in 36 countries and semi-structured interview data from 65 stakeholder respondents in a sub-sample of 10 BRs to systematically investigate the effects of stakeholder participation on the legitimacy of the nature reserve in the local community. The data cover four levels of stakeholder participation: (1) Information, (2) Implementation, (3) Involvement and (4) Representation. These levels roughly correspond to rungs on Arnstein’s ladder of participation, and the expected outcome is that the legitimacy of the nature reserve will increase in the surrounding local community as the degree of participation increases. However, findings suggest that there is no linear relationship between participation and legitimacy: climbing upwards on Arnstein’s ladder of participation does not uniformly enhance the level of legitimacy of the nature reserve in the local community. Instead, a practice-based form of participation is what seems to increase legitimacy.

Introduction: the problem of participation and legitimacy

Stakeholder participation is often put forward as an essential prerequisite for sustainable management of natural resources in general and nature reserves in particular (Andrade & Rhodes, 2012; Anthony, 2007; Brown, 2003; Pretty & Smith, 2004; Reed, 2008). Many have argued that the inclusion of stakeholders increases the legitimacy of the nature reserves, and thus improves compliance and implementation (Macnaghten & Jacobs, 1997; Schenk, Hunziker, & Kienast, 2007). There are several suggestions in the literature for how stakeholder participation can enhance the legitimacy of nature reserves: participation creates arenas for dialogue and deliberation and may lead to enhanced understanding of the views of other interests (Stringer et al., 2006); it enables power sharing and risk sharing arrangements, fostering a sense of co-ownership of the natural reserve (Hill et al., 2010); it allows for representation of a wide array of societal interests (Kelsey, 2003; Sandström, Crona, & Bodin, 2014) and knowledge in the management of the nature reserve (Kelsey, 2003); and it can decrease the perceived legitimacy of reasons for non-compliance (Jagers, Berlin, & Jentoft,
Critics of participation in public governance in general and natural resource management in particular point to well-known problems of elite capture (Platteau, 2004), tokenism (Arnstein, 1969), information asymmetries and principal/agent dynamics (Moe, 1984), and collective action problems (Ostrom, 1998). Challenges to legitimacy may also stem from differences in beliefs (Lundmark & Matti, 2015) and understandings (Treffny & Beilin, 2011) among different actors. As most participatory processes are founded in asymmetric power relationships in which one set of actors (typically conservationist officials) are trying to persuade another group of actors (typically stakeholders) to become active in the participatory process, critics argue that such problems are inherent to any participatory process and will, eventually, lead to the erosion of legitimacy.

We thus have two conflicting accounts of how participation might influence legitimacy. The aim of this paper is to investigate if stakeholder participation increases the legitimacy of nature reserves in the surrounding community. Most previous studies of the effects of stakeholder participation in natural resource management have relied on case studies, but in this paper we use panel data from a two-wave survey (2008 and 2013) of 92 Biosphere Reserves (BRs) in 36 countries as well as interviews with 65 stakeholders in 10 selected BRs to systematically investigate the effects of stakeholder participation on the legitimacy of the natural reserve in the local community.

Legitimacy and the degree of participation can be difficult to measure in a survey. However, like Font, Della Porta, and Sintomer (2012), we believe this is not a reason to shy away from survey analysis, but rather to complement it with a qualitative approach. We agree with them that combining quantitative and qualitative methods will enrich a field characterized by a lack of combination of methods and a prominence of case studies. The survey provides data on four different levels of stakeholder participation: (1) Information (the degree to which the BR informs and consults local actors about its activities), (2) Implementation (participation of local stakeholders in day-to-day management and monitoring efforts), (3) Involvement (the degree to which stakeholders partake in setting the goals for the BR), and (4) Representation (if local stakeholders are being represented in the BR’s steering committee or board). These levels of participation roughly correspond to the rungs on Sherry Arnstein’s ladder of participation (Arnstein, 1969). The survey also provides a set of measures of the degree to which the BR enjoys the support of different stakeholders in the local community.

We gathered data through semi-structured interviews with stakeholder representatives from a sub-sample of 10 BRs. The interview data serves two purposes: (1) assessing the similarity between managers’ and stakeholders’ views, and (2) exploring the experiences of stakeholders with participation in order to better understand the generic patterns encountered in the survey data.

On the basis of Arnstein’s classic ladder of citizen participation, we hypothesize that a higher degree of participation among local stakeholders will lead to an increase in legitimacy for the conservation program in the local community. In her seminal paper, Arnstein was primarily concerned with what she perceived was a misuse of participation in public governance as a way of covering up or even justifying social inequalities and power asymmetries. She made no assertions as to the expected effects of participation on social outcomes in general or legitimacy in particular, but in more recent scholarship on participation the assumption of social outcomes of participation is central. However, as we will show in the literature overview, this assumption is seldom exposed to systematic testing and much of the empirical evidence speaking in favor of such effects has been generated in small-n case studies or derived from normative rather than empirical analysis.

This paper seeks to contribute to the literature on stakeholder participation in four ways. First, we conduct an extensive test of the linkages between stakeholder participation and legitimacy in natural reserves using a two-wave panel data set that allows us to systematically investigate how changes in participation patterns affect legitimacy. Second, we empirically explore the linkages between participation and legitimacy among different types of stakeholders, rather than treating stakeholders as a unitary body of actors with identical preferences. Third, we use a diversified measure of participation in order to identify effects from different degrees of participation. Fourth, in order to overcome the limitations of survey methodology, we combine and triangulate survey data findings with interview data with different types of stakeholders from 10 field studies of Man and the Biosphere areas.
Previous research on stakeholder participation and legitimacy of protected areas

The establishment and continued existence of a protected area is many times an issue of sharp contestation in the local community. Protected areas often mean that access to land and usage of natural resources is restricted or regulated for humans in the interest of preserving or protecting the ecosystem within the protected area. For stakeholders in the reserve such regulations can have substantive impacts on their quality of life and livelihood (Kellert, Mehta, Ebbin, & Lichtenfeld, 2000). Protected areas are almost invariably imposed by external actors, such as government officials and scientists – grassroots initiatives for the establishment of protected areas are a rare thing indeed. Finally, protected areas are increasingly located in territories which have been used and populated by local communities for centuries – there are virtually no ‘pristine’ areas without a history of human presence left. Thus, establishing a protected area is only partly about managing nature – managing society is often the real challenge.

The notion that stakeholder participation in public governance arrangements breeds legitimacy is a cornerstone in contemporary research and democratic practice. In addition to providing legitimacy for public rule, stakeholder participation is expected to provide broader representation of different and disadvantaged social interests, collect better situational knowledge, foster norms of democratic citizenship, and allow for swifter and more effective implementation of policies (Fung, 2006).

There is some evidence suggesting that local communities are more likely to comply with and to commit themselves to long-term conservation strategies when their knowledge and opinions are incorporated into decision-making processes in protected areas (Mascia et al., 2003; Fu et al., 2004; Pretty & Smith, 2004; Gelich, Edwards-Jones, & Kaiser, 2005). For instance, a meta-analysis of 55 published case studies in developing countries found that the only variable significantly related to the level of compliance with protected area policies was local community participation in the decision-making processes. In general, the higher the level of participation, the higher the level of compliance (Andrade & Rhodes, 2012). A case study of three Natura 2000 sites in Scotland found that higher influence of stakeholders on management plans was linked to increased trust between stakeholders, which is one aspect of legitimacy (Young et al., 2013). A comparative meta-analysis of 47 case studies explored the ability of participatory decision-making to deliver environmental policy output, compliance and implementation. The quantitative analysis suggested that acceptance of public decisions increased with involvement, and more specifically with consideration of the positions held by non-state actors (Newig & Fritsch, 2009).

Legitimacy and participation

Drawing on Fung’s characterization of legitimacy of public actions, a nature reserve can be considered ‘legitimate when citizens have good reasons to support or obey it’ (2006, p. 70). The literature on legitimacy often follows Scharpf’s (1999) distinction between input and output legitimacy. Output legitimacy is linked to participation outcomes (Birnbaum, 2016); to how effectively the environment is managed through participation (Bäckstrand, Khan, Kronsell, & Lövbrand, 2010) or to how far stakeholder preferences are satisfied (Birnbaum, Bodin, & Sandström, 2015). Input legitimacy refers to legitimacy obtained by the process of participation (Birnbaum, 2016). It constitutes the focus of this study. Several characteristics of participation, like deliberativeness (ibid) or process fairness (Ansell & Gash, 2008), have been suggested as relevant to input legitimacy.

Inclusiveness and representativeness in participation are often considered to interact with legitimacy (e.g. Barnes, Newman, & Sullivan, 2007; Birnbaum, 2016; Leach, 2006). By including all relevant groups in policy-making, participation has the potential to avoid policies that benefit narrow interests and to keep policymakers connected with their constituencies (Fung, 2006). Nonetheless, it is often difficult to identify the relevant (and legitimate) groups for achieving representativeness (e.g. Barnes et al., 2007; Birnbaum, 2016). Thus, incorporating stakeholders in the management of natural reserves may increase legitimacy, but it may do so depending on who participates. Accordingly, this paper explores not only whether the participation of more stakeholders increases legitimacy, but also whether the participation of specific stakeholder types has that effect.
Power to influence policy-making is also hypothesized to increase legitimacy (Birnbaum et al., 2015). More power means more autonomy for stakeholders to regulate themselves (Jentoft, 2000), which in turn could generate legitimacy (ibid). The relationship between power and legitimacy, however, may not be linear (ibid, Birnbaum, 2016). For example, insufficient legitimacy for non-participants (Jentoft, 2000) can make stakeholder power counter-productive. To assess the relationship between power and participation, we will use a modified version of Arnstein’s ladder of participation.

**Sherry Arnstein’s ladder of participation**

Arnstein’s ladder of participation (1969) has been an influential typology of public participation and has, since it was published in 1969, inspired a range of categorizations (e.g. Biggs, 1989; Goetz & Gaventa, 2001; Pretty, 1995; Pretty, Gujt, Thompson, & Scoones, 1995; Reed, 2008). Arnstein’s ladder and similar approaches are not uncontroversial. For example, some scholars find that it does not capture the richness of current participatory approaches and that they simplify power imbalances (Ross, Buchy, & Proctor, 2002). Other critics such as Tittner and McCallum (2006) have pointed out that Arnstein’s ladder is based on an overly linear and simplistic conception of stakeholder involvement which overshadows the complexities of real-world instances of participation. The assumption that it is positive to empower citizens ‘that are not legal representatives’ has also been challenged (Webler, 1999, p. 61). While acknowledging such limitations, we see in Arnstein’s proposal a useful analytical device for characterizing degrees of involvement of stakeholder groups. Indeed, the ladder has been widely used and modified for empirical research (e.g. Euler & Heldt, 2018; Kotus & Sowada, 2017; Luyet, Schlaepfer, Parlange, & Buttler, 2012).

In Arnstein’s original work, each rung of the ladder corresponded to the degree of citizens’ influence on the end result of the participatory process, and the underlying assumption was that higher levels should be preferred over lower ones.

In this study, we will use a slightly modified version of Arnstein’s original typology. The two lowest levels of the ladder, ‘Manipulation’ and ‘Therapy’, were considered cases of non-participation by Arnstein and were hence not included in this study. We have not found an example of Arnstein’s rung ‘Citizen Control’ in our data set, and for that reason this rung was also excluded from the analysis. In total, our survey provides data on four levels of stakeholder participation:

1. **Information** corresponds to Arnstein’s rungs ‘Informing’ and ‘Consultation’. In this level of participation, stakeholders are informed of the BR activities and decisions, but their responses (if invited) are not necessarily taken into account.
2. **Implementation** roughly corresponds to Arnstein’s ‘Placation’ rung, in that stakeholders are involved in carrying out day-to-day management and monitoring, hence influencing the implementation of decisions, while stakeholders are not necessarily involved in deciding what to manage or monitor.
3. **Involvement** corresponds to Arnstein’s ‘Partnership’ rung. Stakeholders are involved in setting goals for the BR, hence holding decision-making power over a sub-set of the BR activities.
4. **Representation**, corresponds to Arnstein’s rung ‘Delegated Power’ in that stakeholders are represented in the steering committee or board, meaning that they potentially hold decision-making power on the BR as a whole and over a longer term.

**Methods and data**

Biosphere Reserves are sites designated by UNESCO with the mission of ‘maintaining and developing ecological and cultural diversity and securing ecosystem services for human wellbeing’ (UNESCO, 2008, p. 8) in collaboration with a range of actors, often including local communities and scientists. Since the program was initiated in 1971, 669 Biosphere Reserves have been designated in 120 countries (UNESCO, 2017). In the 1970s and 1980s, the sites were mainly designated based on their biodiversity value and their capacity to support research
and monitoring (Ishwaran, Persic, & Tri, 2008), but since 1995, all Biosphere Reserves have been expected to fulfill three functions, stated in the Statutory Framework and the Seville Strategy (UNESCO, 1996): (1) conserving biodiversity, (2) fostering sustainable social and economic development, and (3) supporting research, monitoring, and education. Furthermore, all BR sites are required to have a core zone within which the actual protected area is located, a buffer area surrounding the core area in which some development activities are allowed and even encouraged, and a transition area in which even more invasive activities are allowed. The combination of different areas and the emphasis on managing both social and ecological development make BRs good sites for studying stakeholder participation in natural reserves: virtually all BRs have stakeholder populations and the BR designation requires managers to consider social as well as ecological conservation goals. The UNESCO designation process also ensures a degree of comparability between BR sites, which facilitates comparative analysis (Schultz, Duit, & Folke, 2011).

Survey data

We rely on a two-wave survey (2008 and 2013) sent out to managers of Biosphere Reserves in 55 countries. The first wave targeted all (then) existing 531 BR areas, of which 143 responded. The second wave carried out in 2013 targeted the 143 BR areas that responded in 2008 and received a total of 100 responses. Responses for both waves are available for a total of 92 BRs in 36 countries (see online Appendix 2 for the list of reserves included). In 2008 the survey was carried out using a combination of an online survey and physical questionnaires, and in 2013 the survey relied on telephone interviews.

While legitimacy on a conceptual and theoretical level is often thought to be about the consent of the subjects of a particular regime, we will in this study operationalize legitimacy in terms of ‘support’ for the BR. The main reason for this is that legitimacy is a scientific and not a vernacular concept, and it is therefore not appropriate to construct survey questions using the word legitimacy. This approach is in line with social legitimacy studies, which emphasize how public policies and institutions are perceived by different social actors, rather than with so-called normative approaches that seek to assess the fairness, legality, or justness of a given institutional order (Birnbaum, 2016). Although operationalizing legitimacy as support does not capture all dimensions of legitimacy, this strategy has been used before (e.g. Birnbaum et al., 2015; Turner et al., 2016). The dependent variable (DV) in this paper – legitimacy of the protected area in the surrounding community – is measured through two different operationalizations of the survey questions ‘Which ones of the groups below do you consider supportive of the BR objectives and processes in your BR?’ and ‘Which ones of the groups below help you in raising support for BR objectives and processes?’ Respondents were then able to make multiple selections from a list of nine different actors. The first operationalization is a measure of general legitimacy in the local community and consists of the total number of local actors (local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; local government administrators not related to conservation) listed as being supportive of and/or raising support for the BR by the respondent. This yielded an index with a maximum value of 8 (all four groups listed on both questions), and with a mean of 3.7.

The second operationalization of the DV was intended to measure the legitimacy of the BR in specific groups. Here we used the same questions as for the general legitimacy measure, but collected responses for five distinct stakeholder types: scientist, NGOs and volunteers, resource users (local farmers, fishermen, foresters, or hunters), local environmental administration, and inhabitants (other people living or working in the BR). All variables have a maximum score of 2, and a mean of 1.48 for scientists, 1.50 for NGOs, .85 for resource users, .88 for inhabitants, and 1.2 for the local environmental administration.

In order to operationalize the rungs on Arnstein’s ladder (i.e. levels of participation), we constructed four different measures from the survey data. The first level of participation is information (part of the larger category of ‘Tokenism’ forms of participation in Arnstein’s model) and this is measured by the survey question ‘Who does the BR inform regularly?’ Response alternatives consisted of 10 stakeholder categories and the maximum score was consequently 10 with a mean of 4.48. The second level of participation is implementation, which roughly corresponds to the lowest level of Arnstein’s category ‘Citizen Power’; ‘Partnership’. This rung is operationalized
through three survey questions: ‘Who is involved in implementing projects in the BR?’; ‘Who is involved in day-to-day management?’; and ‘Who is involved in monitoring ecosystems within the BR?’ Again, the response alternatives were a list of stakeholder categories. This index has a maximum score of 17 and a mean of 7.82.

The third level of participation is involvement, measured by the two questions ‘Who is involved in setting BR goals?’ and ‘Who is involved in designing BR projects?’ Involvement corresponds to Arnstein’s ‘Delegated Power’ category. Here the maximum score is 16 (eight stakeholder categories) and the mean is 7.13. The final and highest level of participation is representation, which is operationalized through the survey questions ‘Who is represented on the BR coordination team?’ and ‘Who is represented on the BR steering committee?’ The maximum score is 16 (eight stakeholder categories) and the mean is 5.52. Finally, stakeholder-specific measures of participation for the information-representation measures described above were also calculated for the five stakeholder categories (scientists, NGOs, inhabitants, resource users, and local environmental administration).

We rely primarily on OLS and ordered logistic estimators using difference scores (DS) \( t_2 - t_1 \). As we only have two waves of the survey, DS offer a practical way to estimate how changes over time in explanatory factors are affecting dependent variables. Being essentially first-differenced variables, DS have the added advantage of handling autocorrelation issues that may arise in panel studies. The advantages and disadvantages of DS (sometimes referred to as change scores) in regression analysis have been a topic of debate among scholars for some time. Some suggest that DS are discarding too much information from the panel data, and therefore constitute unnecessarily conservative measures, whereas others argue that any inefficiency of difference scores is outweighed by their (relative) unbiasedness (Johnson, 2005). Another concern has been about ‘regression to the mean’ in experimental studies, but this is less of a problem for observational panel data (Allison, 1990).

While difference score models in a two-wave panel is equivalent to a fixed effects regression model, we nevertheless include a set of controls (some of which are virtually time-invariant): (1) the overall size of the BR (hectares), (2) a dummy indicating whether the BR is primarily a pristine natural area or a cultural landscape, (3) the income level of the country in which the BR is located (according to the World Bank classification of countries into four categories of economic development (World Bank, 2008)), and (4) the age of the BR (years since designation).

**Interview data**

The survey targeted managers of BRs, and as such, it suffers from a bias in the sense that there is reason to think that managers have an interest in portraying their BR as having higher levels of both local legitimacy and stakeholder participation. Other than to note that most variables seem to be normally distributed over all response alternatives (which indicates the absence of severe bias), very little can be done to correct this bias in the survey data through technical measures. Moreover, nuances of what occurs during participatory activities, such as exclusion of certain groups of participants, power dynamics, and the meanings that participants attach to their participation (see Peterson, 2011), cannot be captured. For this reason, we also complement the survey data with stakeholder interview data collected from field studies in 10 BRs using the same semi-structured interview guide. These 10 BRs are: Bosque Mbaracayú, Cape West Coast, Doñana, Isla de El Hierro, Kruger to Canyons, La Palma, Menorca, Noosa, Sumaco, and Mornington Peninsula and Western Port. These reserves were selected to cover a diverse range of environmental and socio-economic contexts, sustainable development strategies, and governance systems (West, 2016). To select interviewees, interviewers asked reserve managers for participatory projects in their BR, both successful and unsuccessful, as well as implementation and decision-making projects. Interviewers then contacted the leaders of these projects in order to identify stakeholder participants that could take part in the study. Snowball sampling was then used with participants to further identify respondents (see online Appendix 3 for a list of interviewees). It is possible that this selection strategy under-represented stakeholder groups that were not participating in the BR. However, identifying non-participating stakeholders would have required objective criteria for what should count as a stakeholder group, as well as comprehensive searches with uncertain outcomes for such ‘latent’ stakeholders in the field study areas. As our selection strategy did allow us to capture both positive and negative experiences of participation (including situations of exclusion during participation), as well as different degrees of participation among stakeholders, we remain convinced that our interview results are not skewed.
The interview data was coded and analyzed using Nvivo 11 Pro and MS Word (see online Appendix 1 for a description of the coding rules). Interviewees were classified into five categories: scientists, NGOs, inhabitants, resource users, and local administration. Managers’ interviews are also coded to assess how far their opinions differ from those of stakeholders. As the typical interview lasted about one to two hours, only interview topics pertaining to general evaluations of participation and the reserve were analyzed: outcomes and challenges of participation, opinions on what makes a successful participatory project, opinions on the effectiveness of the reserve, and rationale for participating. Out of 153 interviewees, 140 replied to questions under those topics. Excluding BR project leaders and people working for the BR, UNESCO, and the national administration left 94 interviewees.

The aforementioned interview topics were coded inductively. This study analyzes fragments coded as ‘evaluation of participation’. Based on the data, three types of evaluation were established: reluctance to evaluate (similar to ‘Don’t know’ responses in surveys), unsatisfied, and positive. Unsatisfied evaluations are criticisms to participation, negative assessments of participation, or expressions of wishes for improvement. For example: ‘I wonder how much value it does because, you know, after a lot of years of these meetings it just doesn’t have – it hasn’t captured the imagination of … ’ (W-Scientist5). Positive evaluations include praise for participation, positive assessments, or descriptions of progress. For example: ‘And of course, we love participating, first, to be aware of what is going on in Menorca, and second, to give our opinion’ (M-Scientist9). The data in these two types of evaluations was further coded as referring to information, implementation, involvement, and representation. Because interviewees’ participation was often limited to specific projects within the BR, representation was often about decision-making in single projects rather than the general BR. Since projects tended to cover more than one rung of participation and some participants were involved in multiple projects, statements were only coded if interviewees explicitly mentioned one of the four levels of participation, and/or interviewees referred to a project involving one single type of participation. These conditions maximized validity at the cost of some data loss. The analysis then includes interviewees’ opinions on each form of participation as well as general opinions on participation from stakeholders involved in projects belonging exclusively to one rung of participation. Of the 94 interviews coded, 65 evaluated at least one of the four rungs of participation.

Following Braun and Clarke’s method for thematic analysis (2006), the content of the evaluations was summarized. Summaries were assigned codes derived from the material. These codes were grouped into themes. Ritchie and Spencer (2002) suggest continuing the analysis through an interviewee-theme matrix, setting interview content in cells. Inspired by this, a matrix was generated, but with a different structure. Codes and themes constituted the rows of a table, with stakeholder types in columns. Rather than interview content, interviewees were placed in the cell marked by the codes and themes spoken about and the type of stakeholder interviewees were. Codes, themes, their distribution across stakeholders as indicated in the matrix, and the interview fragments are the basis for the analysis.

**Results**

We begin by estimating models using indicators for general legitimacy and participation patterns (see Table 1). These models use the general index for local-level legitimacy as dependent variable and the overall level of stakeholder participation in Arnstein’s four rungs (Model 1), as well as overall frequency of different types of stakeholders (Model 2) as predictors. Both models in Table 1 display OLS coefficients from first-differenced data (hence the reduced number of observations). Model 1 indicates a strong effect of information on overall legitimacy: BRs informing a broader set of stakeholders are also experiencing higher levels of support from the local community. It can also be noted that the size of the coefficient decreases as we climb Arnstein’s ladder: information has the largest effect on legitimacy and representation the smallest. Model 2 in Table 1 displays OLS coefficients from a DS model (hence the reduced number of observations). Here, there are two significant effects: involving more stakeholders in information activities is associated with an upward change in general BR legitimacy, and involving more scientists is significantly associated with a reduction in BR legitimacy in the local community.

Model 2 in Table 1 also uses the general level of legitimacy of the BR in the local community as dependent variable, but the predictors are now the total number for each of the five different stakeholder types participating on all rungs of the ladder (information-representation). The objective here is to see if the inclusion of a
particular stakeholder category has an effect on overall BR legitimacy. Judging by this model, having more resource users, inhabitants, and local environmental administrators involved seems to be associated with a higher level of BR legitimacy. In other words, engaging more resource users and local administrators is associated with a significant change in BR legitimacy in the local community. The involvement of resource users has the strongest effect on BR legitimacy: one additional resource user raises the legitimacy index by almost half a point (.49). However, Model 2 also contains one important difference: involving more scientists is significantly associated with a reduction in levels of legitimacy in the surrounding society. On average, involving one more scientist in a BR leads to a reduction by about a quarter of a point on the 8-point legitimacy measure.

In order to check for the possibility that BR legitimacy is determined by a certain type of stakeholder participating in a certain capacity (e.g. resource users participating in decision-making), models containing interaction terms between all types of stakeholders and levels of participation were run (not shown). However, the first-level effects displayed in Model 1 and Model 2 in Table 1 remain rather intact and no significant interactions were detected.

The next step of the analysis abandons the general measures of participation and legitimacy in favor of an analytical strategy that aims to match participation rates and legitimacy within specific stakeholder groups. We use the same survey questions as in the preceding analysis to estimate legitimacy, but since we break it up over single stakeholder categories, the dependent DS variable now ranges from −2 to 2 for each stakeholder category. This necessitates the use of an ordered logistic estimator. Table 2 below displays the results from models 6–10 which use the DS legitimacy score for five different stakeholder categories as dependent variable.

The degree of participation does not seem to matter for how scientists and NGOs perceive the legitimacy of the BR. As scientists and NGOs typically are external rather than local stakeholders, this result is, in a
sense, in line with theoretical expectations: participation of external actors can be assumed to have less impact on legitimacy. In contrast, the models for local stakeholders (inhabitants, users, and local environmental administration) do display connections between participation and legitimacy. In the case of inhabitants, this is manifested in significant effects of participation in representation, involvement and information on perceived BR legitimacy. People living or working in the BR area are thus more likely to be supportive of the BR if they are represented in the BR, participate in involvement, and are informed on a regular basis. Participating in implementation efforts does not, however, build legitimacy among inhabitants. For resource users, the pattern is the opposite: representation, involvement, and information does not increase legitimacy, but implementation does. Finally, BR legitimacy in the eyes of the local environmental administration is increased by representation and information, but not by intermediate categories of participation (involvement and implementation).

**Participation and legitimacy from the point of view of stakeholders**

The survey data suggest that participation is linked to BR legitimacy, albeit with differences between forms of participation and types of stakeholder. We now turn to interview data in order to shed further light on this relationship.

Table 3 reports frequencies of unique interviewees giving unsatisfied and positive evaluations of each form of participation. Although interviewees address matters of participation to varying degrees, all stakeholder categories tend to evaluate information more positively than negatively, whereas representation tends to exhibit the opposite pattern. Evaluations of implementation and involvement are more evenly distributed. Despite managers’ enthusiasm with involvement, the overall similarity between managers’ and other stakeholders’ evaluations strengthens our confidence in the survey data – managers do not seem to speak about participation in a manner significantly different from how other stakeholders talk about participation. The interviewees’ evaluations of each participation rung are described below.

**Table 2. BR legitimacy and participation among stakeholder categories.**

|                       | Model 6 (Scientists) | Model 7 (NGOs) | Model 8 (Inhabitants) | Model 9 (Users) | Model 10 (Administration) |
|-----------------------|----------------------|----------------|-----------------------|-----------------|---------------------------|
| ΔRepresentation       | 1.331                | 1.144          | 1.700                 | 1.484           | 1.684                     |
|                       | (1.28)               | (0.60)         | (2.21)*               | (1.36)          | (1.99)*                    |
| ΔInvolvement          | 0.948                | 1.600          | 1.587                 | 1.426           | 1.132                     |
|                       | (0.22)               | (1.75)         | (1.98)*               | (1.43)          | (0.38)                     |
| ΔImplementation       | 0.909                | 1.123          | 1.014                 | 1.850           | 1.298                     |
|                       | (0.46)               | (0.61)         | (0.08)                | (3.02)**        | (1.52)                     |
| ΔInformation          | 1.918                | 1.702          | 2.326                 | 1.920           | 3.005                     |
|                       | (1.83)               | (1.40)         | (2.26)*               | (1.51)          | (3.16)**                   |
| N                     | 92                   | 92             | 92                    | 92              | 92                        |
| Wald $\chi^2$         | 7.19                 | 11.43*         | 21.99**               | 18.18**         | 33.12**                    |
| Pseudo R2             | .023                 | .052           | .095                  | .158            | .126                       |

Note: Table shows odds ratios and robust standard errors.

\* $p < 0.05$; \** $p < 0.01$

**Table 3. Frequency of unsatisfied (U) and positive (P) evaluations of participation by stakeholder type and form of participation.**

|               | Information | Implementation | Involvement | Representation |
|---------------|-------------|----------------|-------------|---------------|
| Managers      | U, P        | U, P           | U, P        | U, P          |
| NGOs          | 2, 4        | 3, 2           | 1, 3        | 3, 3          |
| Scientists    | 5, 7        | 1, 3           | 0, 3        | 2, 2          |
| Administration| 3, 5        | 1, 1           | 1, 1        | 3, 2          |
| Inhabitants   | 1, 2        | 0, 3           | 1, 1        | 2, 1          |
| Users         | 3, 6        | 8, 9           | 1, 0        | 3, 3          |
| TOTAL         | 16, 28      | 14, 19         | 5, 9        | 14, 12        |
Information

Stakeholders of all categories enjoyed giving input on BR matters and valued the information received from the BR. For a participant in Menorca, receiving inputs is crucial for legitimacy: ‘Many ideas are missing if there is no direct contact among people (…) trying to involve a broad range of stakeholders has made the LIFE-Boscos a consistent project. All the outcomes from this project will be legitimized’ (M-NGO1). Diffusion of information also sparks support by bringing the advantages of projects to light. Moreover, several managers and NGO representatives thought that information exchanges led to better participation.

Nevertheless, expressions of full satisfaction were rare. Stakeholders from all types criticized one or another aspect of the BR's information activities. Some found information exchanges to be challenging. A user questioned the quality of politicians’ inputs and a manager said participants attended meetings ‘to complain about other issues’ (Manager4). In Mornington Peninsula and Western Port, a scientist felt contributions were wasted and an administrator complained information was insufficient for contributing properly. Stakeholders wanted more communication, or better organized and resourced participation. But the biggest source of dissatisfaction was the level of inclusiveness, especially among local actors. Some argued that more or better information diffusion was needed to improve inclusiveness, which would lead to richer inputs and more direct communication.

Although some perceived that the effectiveness of information in attaining goals was mixed, outcomes like learning, problem-solving, environmental preservation or understanding others were linked to information activities appreciated by managers, NGOs and local actors. Despite the complexity of information activities, then, interviewees from almost all stakeholder types pointed to its inherent and instrumental value.

Implementation

Although all stakeholder types spoke about implementation, resource users were the ones who spoke about it the most. A few respondents discussed the relevance of participation for implementation and vice versa. For instance, an inhabitant from Isla de El Hierro argued that participation improved monitoring (E-Inhabitant5). A manager, on the other hand, saw participation in implementation activities as crucial for maintaining interest in the reserve. Additionally, locals’ general evaluations of implementation experiences were mostly (but not only) positive.

Stakeholders, many of which users, were satisfied with participants’ attitudes and relationships and, a few, with the process of implementation. However, the support received, the organization and conditions of implementation activities, the degree of implementation, or how implementation projects and participation had been developed were criticized – mostly by locals. Attitudes and relationships also dissatisfied some. In a reserve, conflicts had consequences beyond specific projects, for ‘the word spreads very quickly and the next time (…) nobody’s interested in supporting you’ (Manager4). As with information, locals (and one manager) considered the level of inclusion insufficient.

The efficiency of implementation received mixed evaluations. Nevertheless, users, inhabitants and one NGO listed some positive implementation outcomes, including economic gains, learning or improvements in farming or the landscape. For instance, an inhabitant from Sumaco involved in a project for growing mushrooms explained: ‘I like it, because as a woman I needed to work (…). This has made me realize how a woman can live here’ (S-Inhabitant2). As was the case with information activities, evaluations of implementation processes vary. Yet most interviewees seem to view the outcomes of participating in implementation processes as satisfactory, especially when it comes to resource users.

Involvement

For a manager ‘projects that fall from above without local participation, have little success’ (Manager3). Indeed, common goals were considered valuable for management and participation and absence of
participation in goal setting was problematic. Managers and NGOs are the actors most likely to highlight such positive values of involvement.

The identities of stakeholders are more diverse when it comes to unsatisfied evaluations of involvement activities. In fact, only a few interviewees expressed satisfaction with their experience in involvement activities. For one user, other actors’ unwillingness to participate made gathering inputs difficult. Others reported that goal setting through participation was not always possible and more coordination and better procedures were called for. A scientist in Mornington Peninsula and Western Port explains: ‘we tried to be everything to everybody (…) consequently we have never been able to narrow down’ (W-Scientist1). Nevertheless, some (mostly non-locals) reported progress in defining goals and satisfaction with participation’s capacity to build coordination. No interviewee linked involvement to positive outcomes, while some complained that participation without focus was inefficient.

The benefits of involvement, then, are experienced by few of the interviewees, and only two of those were locals. While involvement was considered potentially valuable by most, the depth of participation that it presupposes was limited in practice. Moreover, silence reigned around the instrumental value of involvement.

**Representation**

Evaluations of decision-making in participation were characterized by criticisms of the disempowered nature of participatory bodies and insufficient active decision-making: ‘I got the impression that the meetings were addressed to achieve something in particular, and later, they tried to convince participants that they had chosen this on their own’ (M-Administration6). One inhabitant considered ‘the major challenge [of participation] is to reach conclusions’ (E-Inhabitant3). Moreover, the levels of decision implementation displeased and some people were considered unfit for managing the reserve (although this is a minority perspective). Two managers (Manager8, Manager5) thought inclusiveness should be improved. Conflicts, politicization, and insufficient time to hear everyone out contributed to the list of complaints about participation in decision-making activities. Unsuitable chairmen, fuzzy discussions, and unsatisfactory attitudes, such as dominating behavior, also tainted decision-making.

Some were nonetheless satisfied with participants’ behavior and participatory methods and recognized progress in reaching decisions. Several locals and NGO members advocated the desirableness of representation. For a user in La Palma ‘all the decisions should be taken together. We are all different, but we are all under the same BR’ (L-User3).

Only one user described decision-making as efficient and conducive to positive outcomes. Meanwhile, managers saw it as incapable of satisfying everyone (Manager4) or inefficient (Manager5). Locals are more present in evaluations of representation, positive and negative, in contrast to involvement. However, like involvement, the value of representation is more theoretical than experienced.

**Concluding remarks**

Does stakeholder participation lead to increased legitimacy for natural reserves? The results from our study suggest that participation is linked to higher levels of legitimacy among stakeholders and in the local community in general. We have found evidence of a general effect in the sense that a broader information strategy on the part of the BR seems to be linked to a higher level of overall BR legitimacy in the local community. We also found that more involvement of specific stakeholder categories such as resource users and local environmental administration officers is associated with an increase in general BR legitimacy, whereas the opposite is true for scientists. In addition to an increase in BR legitimacy in the local community, we also found that the involvement of three stakeholder categories (local inhabitants, resource users, and local government administrators) was associated with increases in BR legitimacy within these groups.

While we did find support for a linkage between more engagement with the local community and increased legitimacy, the expectation that more ‘genuine’ participation will lead to higher legitimacy did not receive support in the data. Although we found several instances in which different types of participation were linked to
legitimacy gains, we were not able to produce evidence in support of a linear relationship between ‘deeper’ forms of participation and increases in legitimacy. Instead, we typically find the strongest effects of participation on lower rungs on the ladder, and among resource users and local inhabitants. Climbing Arnstein’s ladder does not seem to increase legitimacy.

A caveat is in place here. While the findings from our study are clear on this point, it is still possible that we have failed to include cases of truly ‘genuine’ participation in our sample. It might be the case that even our instances of ‘deep’ participation in decision-making and involvement processes in our survey and interview data were only token participation, which would lead us to erroneously conclude that shallower forms of participation outperform deeper types. There is no formal way of addressing or assessing this problem of truncated range of our key independent variable, but since at least some of our interviews are with stakeholders that seem to be engaged in genuine and deep forms of co-management with the BR we nevertheless believe that this is a limited bias. For example, despite difficulties, stakeholders in Kruger to Canyons or Mornington Peninsula and Western Port described how their BRs were working actively with involvement and joint decision-making.

The interviews highlighted the difficulties of conducting any form of participation, as stakeholders and managers found sources of dissatisfaction with how participation was organized, how it developed, and how effective it was. However, interviewees also saw value in the inclusion of stakeholders in the BR, be it through information, implementation, involvement, or decision-making. Even though this value is common to all forms of participation, the higher we climb the ladder, the rarer satisfaction with the core activity of each rung becomes. Many were satisfied with how information exchanges enriched them and allowed them to express their opinion, and many evaluated implementation activities positively. However, positive assessments of involvement and representation were less frequent and several built on the desirability of these forms of participation rather than on their experience. This desirability suggests that stakeholders are not valuing information and implementation out of conformism, but out of higher performance. Moreover, the instrumental value of involvement and representation was weak, in comparison to that experienced from information and implementation, especially by locals. Consistently with the survey, then, less intense forms of participation seem more rewarding. Alternatively, it may be easier to realize their potential.

Previous studies have associated legitimacy with empowered types of participation (Gundelach, Buser, & Kübler, 2017), but also found evidence that purely expressive participation can contribute to acceptance (if the process is seen as fair) (Kochskämper, Challies, Newig, & Jager, 2016). Our results seem closer to the latter. Taken together, our findings about the connections between participation on lower rungs of Arnstein’s ladder and BR legitimacy among resource users and inhabitants and the higher satisfaction of stakeholders with participatory experiences in these rungs suggest that legitimacy is primarily generated through various forms of practice-based participation. This relates to Fung and Wright’s (2003) practical orientation principle for empowered participatory governance, which holds that participation ought to solve problems, and thereby provide goods for the stakeholders involved. In our study, it is mainly through information and implementation that participation becomes instrumental in fulfilling practical goals for stakeholders.

Another conclusion is that while stakeholders want to be consulted and listened to by conservation officials, and are often willing to participate in concrete implementation activities on the ground, they do not necessarily have a desire to be represented in the BR or involved in BR decision-making processes. Why this is the case is a matter for further research. However, empirical studies have suggested that achieving outcomes valued by stakeholders is crucial for legitimacy (Arnesen, 2017; Birnbaum et al., 2015) and can lead to acceptance (Kochskämper et al., 2016). For instance, Arnesen (2017) found that getting desired outcomes was more relevant than influence for acceptance among participants in a survey experiment. This is consistent with our survey findings as well as with indications in the interviews that outcome satisfaction dominates lower rungs of participation.

Notes

1. These were: Scientists; non-profit organizations and volunteers; local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; local government administrators not related to conservation; national governmental administrations; politicians; and UNESCO.
2. Scientists; non-profit organizations and volunteers; local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; local government administrators not related to conservation; national governmental administrations; politicians; UNESCO; and the public.

3. For implementing projects: Scientists; non-profit organizations and volunteers; local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; local government administrators not related to conservation; national governmental administrations. For day-to-day management: Scientists; non-profit organizations and volunteers; local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; national governmental administrations.

4. Scientists; non-profit organizations and volunteers; local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; local government administrators not related to conservation; national governmental administrations.

5. Scientists; non-profit organizations and volunteers; local farmers, fishermen, foresters, or hunters; other people living or working in the BR; local government administrators related to conservation; local government administrators not related to conservation; national governmental administrations; politicians.

6. Interviews in Bosque Mbaracayú, Doñana, Isla de El Hierro, La Palma, Menorca, and Sumaco were conducted in Spanish (quotes in the analysis have been translated into English ex-post). In the remaining reserves the interviews were in English.

7. L-Administration4, W-Administration10, M-Scientist9.

8. Manager2, Manager9, D-User3, D-User6, L-User2, M-NGO1, K-NGO13, K-NGO15, M-Scientist9, W-Scientist2, W-Scientist5.

9. E-User6, S-User4, Manager9.

10. Manager1, Manager2, B-NGO2, S-NGO5.

11. See L-Inhabitant9 for satisfaction with the participatory methods and overall experience.

12. K-NGO18, D-NGO1, B-User12.

13. L-User2.

14. W-Scientist5, W-Administration9.

15. D-User6, L-Inhabitant9, L-Administration1, L-NGO7, K-NGO13.

16. L-Scientist5, L-NGO7, L-Inhabitant9, K-NGO9.

17. D-User6, W-Administration8, Manager2, L-Inhabitant9, L-Administration1, L-NGO7.

18. D-User6, L-Administration1.

19. Manager2, D-User6.

20. L-Administration1, L-Inhabitant9.

21. D-User3, D-User4, L-User2, S-User4, N-Inhabitant4, K-Administration6, M-Administration6, Manager2, Manager10, D-NGO1, K-NGO13, L-NGO7, M-NGO1.

22. See Manager2 for a claim on participation as key for implementation.

23. Positive overall evaluations: D-User3, D-User5, L-Administration4. Unsatisfactory: C-User11.

24. C-User7, D-User3, D-User4, D-User5, K-NGO13, N-NGO6, K-Scientist2.

25. D-User3, L-User6, L-User2 saw improvements in organization.

26. B-User10, K-Scientist22, L-Administration4. See also Manager2.

27. K-Scientist22, C-User11.

28. D-User3.

29. D-User4, D-User5, M-User3.

30. C-User11, D-User7, N-NGO6.

31. Manager8, L-Administration4, L-User6, D-User3, D-User5.

32. It was inefficient for C-User11; efficient for L-User3; mixed for L-User6.

33. B-User21, D-User3, D-User4, D-User5, M-User8, B-Inhabitant19, S-Inhabitant2, D-NGO1.

34. See also Manager2, K-NGO15.

35. L-Administration4, S-NGO5.

36. Manager2.

37. N-Inhabitant7 enjoyed partaking in organizing procedures for goal setting. Manager6 expressed satisfaction with goal setting methods.

38. L-User3.

39. W-Scientist1, L-User3.

40. L-Administration1, N-Inhabitant7.

41. N-Inhabitant7, W-Scientist1.

42. K-NGO13, K-NGO15.

43. W-Scientist1, L-User3.

44. Manager8, M-User5, L-Administration1, W-Scientist1, W-Scientist7.
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Notes on contributors

Alba Mohedano Roldán has completed her doctoral studies in political science at Stockholm University.

Andreas Duit is professor of political science at Stockholm University and guest professor of political science at Luleå University of Technology.

Lisen Schultz leads the research stream Biosphere Stewardship at the Stockholm Resilience Centre (SRC), Stockholm University. She is also the Director of the Executive Programme in Resilience Thinking hosted by the SRC. Lisen holds a PhD in Natural Resource Management and has studied management and governance of UNESCO Biosphere Reserves since 2005. Her research interests include leadership, facilitation, collaboration and learning in ecosystem management.

ORCID

Alba Mohedano Roldán http://orcid.org/0000-0002-2037-1664

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