Supplementary Material

Exploring Park-People Conflicts in Colombia Through a Social Lens

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This supplementary material document provides additional information to support and/or clarify info provided in the publication.

**Park-people conflicts and their causal factors**

Despite their importance, NPAs suffer from loss of biodiversity and degradation of their ecosystems all over the world. Degradation of protected areas are exceedingly linked to increasing demographic pressures, mounting rural poverty, unsustainable extraction and use of natural resources, and (violent) conflicts (Chape *et al.* 2008; Lockwood *et al.* 2006; Nolte 2015). The detrimental impact of humans on conservation areas across the world has led to implementation of exclusionary conservation policies. These policies exclude people from conservation areas in order to achieve better environmental protection. As a result, park-people conflicts have surged around the world in recent years *(*Adams *et al. 2004;* West *et al.* 2006). They are initiated by a variety of causal factors, including:

1. forced displacement (Adams *et al.* 2004; Brockington *et al.* 2006; Lele *et al.* 2010);
2. social exclusion (Brockington *et al.* 2006; Brondo & Bown 2011; Lele *et al.* 2010; Vedeld *et al.* 2012);
3. deficient community participation processes (Brondo & Bown 2011; Lele *et al.* 2010);
4. denial of ancestral territorial rights (Brondo & Bown 2011; Cisneros & Mcbreen 2010);
5. restrictions on community resource use priorities (Cisneros & Mcbreen 2010; Lele *et al.* 2010; Vedeld *et al.* 2012; West *et al.* 2006);
6. negative impacts of conservation measures on community resources (Brockington *et al.* 2006); and
7. impoverishment accompanying all of the above (Adams *et al.* 2004; Brockington *et al.* 2006; Vedeld *et al.* 2012; West *et al.* 2006)

**Further information on access and use restrictions in Colombia´s NPAs**

In Colombia, environmental legislation prescribes non-compatibility between NPAs and resource use and extraction activities. Decree 622 of 1977 (MAVDT 1977, art. 30) declares that any activity, including timber extraction, fishing, agriculture or cattle ranching can be prohibited by the NPA administration. The latter is offically recognised as the governmental agency in charge of the daily management of NPAs (El Congreso de Colombia 1993). Access restrictions resulting from this legal framework are a significant source of conflict in all visited NPAs. Furthermore, the legislation brings about conflicts related to restrictions to local development. These include limitations on building projects in Colorados, the denial of tourist infrastructure development projects in Tayrona, and the obstruction of local gas and electricity adduction in the lowlands of the Sierra Nevada de Santa Marta.

By law, both indigenous territories that co-exist with NPAs, and Afro-Colombian communities predating the establishment of the NPAs in which they are located, have the right to continue traditional production practices and income-generating use of renewable natural resources. However, NPA administration often restricts these rights, arguing that certain activities are incompatible with conservation objectives as established by the NPA administration of a particular area (El Congreso de Colombia 1993, Art. 22; MAVDT 1977, Art. 7). An example of constraints on traditional practices is where Afro-Colombian families are forbidden to undertake their customary fishing activities in some of the Pacific regions’ NPAs, such as in Utria and Sanquianga. Restrictions on indigenous and Afro-Colombian traditional productive practices are a clear human rights violation, according to the International Labour Organisation convention of 1989. The latter was ratified by Colombia in Law 21 of 1991.

**Additional Information on the Impairment Framework**

Scholars have long struggled to find an adequate method for proper conflict analysis. There is no single school of thought on (the analysis of) conflict. However, conflict is traditionally conceptualised as differences between people in goals, perceptions or interests (Coser 1957; Miller *et al.* 2002; Pruitt *et al.* 2003). According to this classic view, differences should be adequately addressed to reach effective conflict management. The defining of conflict as ‘differences’ has been applied in many contexts including in conflict situations dealing with common pool resources, such as those concerning fishing grounds and protected areas. However, scholars have increasingly argued that this traditional view fails to bring lasting solutions to various natural resource-related conflicts (Buckles 1999; Yasmi *et al.* 2006). It fails to do so because it does not distinguish an actual conflict situation from its underlying causes (Bude *et al.* 2015; Marfo and Schanz 2009; Yasmi *et al.* 2006). In response to these shortcomings, the impairment approach was developed (Glasl 1999; Marfo & Schanz 2009), whereby conflict is a state of affairs in which an actor feels “impairment” from the behaviour of another due to their own perceptions, emotions and interests. According to this theory, conflict consists of three distinctive features. At its core, conflict is a two-actor situation in which one actor (an individual or organisation), the “proponent”, acts to impair another actor, the “opponent” (Marfo & Schanz 2009). Second, the experience of an actor’s behaviour/action as impairment is the only defining element used to distinguish conflict from non-conflict situations (Glasl 1999; Marfo & Schanz 2009). Third, factors or conditions that generate or provoke such behaviour should not be confused with concrete conflict manifestations. They are the “sources of impairment” that trigger or induce impairing behaviour (Marfo & Schanz 2009). Here we build on the impairement approach for conceptualizing park-people conflicts.

In our analysis, people’s perceptions of conflicts are the main determinant to distinguish conflict and non-conflict situations. These perceptions do not necessarily reflect the reality on the ground (Brewer 2000). For example, people may perceive access conflicts in a context where NPA administration does not actually impose any restriction measures on access and use of NPAs and their resources. Local perceptions may be fuelled by rumour and based on incorrect information. However, since impairment involves emotional perceptions, social interests and their combination (Glasl, 1999), rumors are similarly valid causes of conflict as, for example, unjust legislation or absence of park funds. In fact, suspicion and distrust generating rumors have been identified before as principal sources of impairment as a conflict escalates (Glasl 1999; De Pourcq *et al.* 2017) and also require interventions to be solved.

**Additional information on the interview process**

Permission to undertake the study was obtained at organised community assemblies in each study community. First interviews with community leaders (e.g. presidents of the community councils, teachers, traditional leaders, etc.) helped us to understand the relationship between community members and the NPA administration, and the existence of any conflicts. Subsequent individual interviews were conducted with representatives of different interest groups, including different ethnic groups; men and women; young and old; those with different livelihood strategies (e.g. fishermen, miners and farmers); and people living in the village center and edges (see De Pourcq *et al.* 2017). The latter respondents were selected according to random sampling, which is considered to be the purest and most straightforward probability sampling strategy (Gravetter & Forzano 2008). All conversations were recorded in writing during interview sessions. Audio recordings were not used and data was treated anonymously and confidentially.

**Table S1. Explanatory variables that were used for this study and their meaning**

|  |  |
| --- | --- |
| **Explanatory variable** | **Meaning** |
| NPA | The NPA where the respondent lives |
| Residency | Whether the respondent lives *within* or *outside* that particular NPA |
| Length of residency | The length of residency within a particular NPA |
| Gender | Whether the respondent defines him or herself as male or female |
| Ethnicity | Whether the respondent defines him or herself as indigenous, Afro-Colombian, settler or any other defined ethnic group |
| Position within the community | Whether the respondent occupies a leadership position within the community or not  |
| Income level | The monetary income of the respondent (no income, less than the mínimum wage, a mínimum wage or more than the mínimum wage) |
| Education | The level of education of the respondent (no education, primary school, secondary school, susequent studies) |
| Household size  | The household size of the respondent |
| Age | The age of the respondent |
| Productive and/or extractive activities | Whether the respondent engages in productive and/or extractive activities for subsistence within the NPA (e.g. fishing, hunting, agricultura, etc.) |
| Economic activities | Whether the respondent undertakes income-generating activities within the NPA (e.g. fishing for sale, tourism, mining, etc.) |
| personal or collective landf tenure | Whether the respondent holds personal or collective ownership of land within the NPA.  |
| Employed by NPA administration | Whether the interviewee has ever been employed by the NPA administration |
|  |  |
|  |  |

**Table S2 The sixteen best logistic generalized linear models with a binomial distribution and experience of conflict (yes/no) as response variable selected based on AICc with i<2**

|  |
| --- |
|  |
| **Models** |  **K** |  **logLik** |  **AICc** |  **i** |  **wi** | **Deviance****explained** |
| NPA or subarea + contracted Park Admin+productive activities+gender | 17 | -199.57 | 438.99 | 0.00 | 0.01 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender+ethnicity | 19 | -197.75 | 439.77 | 0.78 | 0.01 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender+age | 18 | -198.87 | 439.80 | 0.80 | 0.01 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender+native to area | 18 | -199.07 | 440.21 | 1.21 | 0.01 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+ethnicity | 18 | -199.17 | 440.39 | 1.40 | 0.01 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender+economic activities | 18 | -199.18 | 440.42 | 1.42 | 0.01 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender+native to area+ethnicity | 20 | -196.97 | 440.43 | 1.44 | 0.01 |  0.34 |
| NPA or subarea + contracted Park Admin+productive activities | 16 | -201.39 | 440.45 | 1.45 | 0.01 |  0.32 |
| NPA or subarea + contracted Park Admin+productive activities+gender+NPA inhabitant | 18 | -199.38 | 440.82 | 1.83 | 0.00 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender+native to area + age | 19 | -198.29 | 440.85 | 1.86 | 0.00 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender + ethnicity + economic activities | 20 | -197.20 | 440.89 | 1.90 | 0.00 |  0.34 |
| NPA or subarea + contracted Park Admin+productive activities+age | 17 | -200.52 | 440.90 | 1.91 | 0.00 |  0.32 |
| NPA or subarea + contracted Park Admin+productive activities+gender + ethnicity +age | 20 | -197.20 | 440.90 | 1.91 | 0.00 |  0.34 |
| NPA or subarea + contracted Park Admin+productive activities+ native to NPA + ethnicity | 19 | -198.33 | 440.93 | 1.93 | 0.00 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+gender + personal or collective land rights | 18 | -199.46 | 440.99 | 1.99 | 0.00 |  0.33 |
| NPA or subarea + contracted Park Admin+productive activities+economic activities + etnicity | 19 | -198.36 | 440.99 | 1.99 | 0.00 |  0.33 |
| Log-likelihood the overall model fit with no adjustment for the number of parameters, K the number of parameter estimates in the model, wi the Akaike weight, representing the model’s relative strength compared to other best models |

**Table S3 Effects of explanatory variables in model solutions with** i **<2 on people´s perception of access conflicts after model averaging**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Attribute** | **Estimate** | **Adjusted SE** |  **Confidence interval** | **Relatiove importance** |
| **(Intercept)** | 18.28 | 2805.76 | -5480.90 | 5517.46 |  |
| **NPA Colorados** | -18.29 | 2805.76 | -5517.47 | 5480.89 | 1.00 |
| **NPA Flamencos - Palaima & Cari Cari** | 6.28 | 3923.54 | -7683.72 | 7696.28 | " |
| **NPA Flamencos - Perratpu** | -10.58 | 2993.41 | -5877.56 | 5856.40 | " |
| **NPA Flamencos - Tocoromana**  | -28.32 | 3476.35 | -6841.84 | 6785.20 | " |
| **NPA Paramillo - Indigenous** | -13.27 | 2993.41 | -5880.25 | 5853.71 | " |
| **NPA Purace - Indigenous** | -10.37 | 2993.41 | -5877.35 | 5856.61 | " |
| **NPA Sierra Nevada de Santa Marta - indigenous** | -29.80 | 3271.96 | -6442.71 | 6383.12 | " |
| **NPA Sierra Nevada de Santa Marta -settlers** | -17.61 | 2805.76 | -5516.80 | 5481.57 | " |
| **NPA Tayrona - settlers** | -17.11 | 2805.76 | -5516.29 | 5482.07 | " |
| **NPA Uramba Afro Colombian** | -19.66 | 2805.76 | -5518.85 | 5479.52 | " |
| **NPA Utria - Indigenous** | -9.53 | 2993.41 | -5876.51 | 5857.45 | " |
| **NPA Utria Afro Colombian** | -17.33 | 2805.76 | -5516.51 | 5481.86 | " |
| **NPA Yaigojé-Apaporis** | -14.62 | 2993.41 | -5881.60 | 5852.36 | " |
| **contracted by NPA administration** | -2.08 | 0.72 | -3.49 | -0.67 | 1.00 |
| **productive activities in NPA** | 1.39 | 0.34 | 0.71 | 2.06 | 1.00 |
| **gender**  | 0.50 | 0.29 | -0.06 | 1.07 | 0.73 |
| **ethnicity - Indigenous** | -16.79 | 1645.79 | -3242.48 | 3208.90 | 0.40 |
| **ethnicity - Settler** | 0.19 | 0.80 | -1.37 | 1.76 | " |
| **Respondent age** | 0.32 | 0.27 | -0.21 | 0.85 | 0.23 |
| **Native to NPA**  | 0.40 | 0.36 | -0.30 | 1.11 | 0.23 |
| **Economic activities in NPA**  | 0.36 | 0.34 | -0.32 | 1.03 | 0.16 |
| **Respondents lives in NPA** | 0.24 | 0.40 | -0.54 | 1.02 | 0.05 |
| **Personal or collective land rights** | 0.23 | 0.51 | -0.77 | 1.24 | 0.05 |
|  |  |  |  |  |  |

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