Research

Understanding migration to protected area buffer zones in Costa Rica utilizing cultural consensus analysis

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ABSTRACT. Human migration to the world's protected areas' (PA) buffer zones is widely seen as a significant threat to conserving biodiversity. Research since 2005 has demonstrated some evidence for global migration trends but also highlighted the simultaneous need to understand the local, contextual factors that drive migration around individual PAs. Investigation into human migration patterns to these buffer zones has frequently relied on methods that do not accurately capture the calculus used by migrants in their decisions. The research presented here uses a mixed-methods, cognitive anthropological approach to assess the motivations of Costa Rican migrants to the buffer zones of three national parks. Employing cultural consensus analysis methodology in combination with a demographic analysis based on the Costa Rican census, this study was able to develop important insights into Costa Rican migrant motivations. Importantly, the research finds that there is not a single cultural model among the migrants surveyed regarding conditions driving their decisions. However, data collected indicate significant trends in migrants' evaluation of critical variables driving decisions, how they relate to one another, and their significance to these migrants. Thus, migrant assessments of the conditions of these variables in both previous and current communities reveal a more complex, contextual picture. This work demonstrates the potential of cognitive anthropological methods to help unpack migrant decision making and help conservation managers understand the factors that drive migration to surrounding communities. The analysis provides further evidence supporting calls for methods that help managers and communities understand the particularities of migration behavior in PA contexts.

Key Words: *buffer zones; conservation; Costa Rica; cultural consensus theory; cultural domain; migration; national parks; protected areas*

INTRODUCTION

The relationship between population growth in protected area (PA) buffer zones and its potential impacts upon biodiversity is a concern for conservation biologists, practitioners, policy makers, and social scientists (Ypsilantis 1992, Harmon and Brechin 1994, Scholte 2003, Hoffman 2017, Oglethorpe et al. 2007). The negative effects of habitat fragmentation on biodiversity resulting from population-induced pressure on resources within and outside PAs is a primary concern (Hansen and Rotella 2002, DeFries et al. 2005, Hansen and DeFries 2007). Fragmentation in human-dominated landscapes outside PAs can increasingly isolate plant and animal populations with concomitant impacts on genetic flow, decrease species resilience to changing environments and the effects of climate change, and lower species richness both outside PAs and inside PA borders (Sherbinin and Freudenberger 1998, Hansen and DeFries 2007, Estes et al. 2012, Bamford et al. 2014). Another issue derived from increasing human populations on the borders of PAs is the threat of direct consumption and trade in plants, trees, and wildlife (Bamford et al. 2014). It is, therefore, critically important for biodiversity conservation and conservation practitioners to understand the processes that drive population growth in PA buffer zones.

As with all human population growth there are two possible explanations of PA buffer zone population increases: localized birth rate increases or the arrival of new populations via migration. This paper engages the latter causal mechanism with the specific aim of investigating the ways that PAs and PA policies are linked, or not, to migrant decision making. George Wittemyer and colleagues' seminal paper in *Science* (2008) shows that excessive population growth measured on PA edges is rooted in

migration, not natural population growth. Their study, based on 306 PAs in Africa and Latin America, showed population growth in PA buffer zones exceeding that of comparable rural areas (Wittemyer et al. 2008). Further, Wittemyer et al. (2008) hypothesized that this migration was the result of the socioeconomic benefits created by the dominant conservation praxis of the late 20th century, specifically conservation and development projects. They suggested that migration-based growth is encouraged by PAs because conservation and development policies provide economic incentives (e.g., employment opportunities), ecosystem services (e.g., natural resources), and infrastructural benefits (e.g., roads) not present in similar rural locations, which "pull" migrants to PA buffer zones.

The Wittemyer et al. (2008) article is widely cited, often uncritically (Hoffman 2017). An analysis conducted in June 2020 showed over 350 citations according to Scopus and over 620 citations according to Google Scholar. That said, the findings and hypotheses from the article have been critiqued from several angles. First, some explicitly question the methods and analysis upon which their hypotheses are based (Joppa et al. 2008, 2009, 2010, Joppa 2012). Others caution that the hypothesized connection between PAs, conservation and development policies, and human migration to buffer zones is not fully supported when specific conservation contexts are examined (Davis 2011, Fay 2011, Hoffman 2011, Hoffman et al. 2011, Estes et al. 2012, Zommers and MacDonald 2012, Bamford et al. 2014, Salerno et al. 2014, Gupta 2015, Hartter et al. 2015, Ament and Cumming 2016, Brambilla and Ronchi 2016, Cripps and Gardner 2016). To their credit, Wittemyer et al. (2008) suggested that the hypothetical explanations based on their meta-analysis needed to

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be analyzed in specific contexts. Attempts have been made to produce explanatory models on the relationship between PAs and migration based on the synthesis of contextual, anecdotal information, or both (Oglethorpe et al. 2007, Scholte and De Groot 2010).

Since its publication, some work has explicitly explored the veracity of Wittemyer et al.'s hypotheses on the relationship between PAs and migration (Hoffman 2011, Levang et al. 2012, Guerbois et al. 2013, Baird 2014, Bamford et al. 2014, Salerno et al. 2014, Gupta 2015, Hartter et al. 2015). Most analyses are based upon a combination of demographic, geospatial, and interview / survey methods to determine the following: (a) demographic changes and migration patterns; (b) locations of demographic and ecological change; and (c) attitudes and/or motivations of migrants in communities within the buffer zones of PAs. The social science methodologies are dominated by focus group, survey, and oral history approaches, and only a few studies exclusively focus on understanding migrant perspectives. At regional or PA-level scales, these authors find some evidence to support Wittemyer et al.'s (2008) "attraction model," but state that refining the scale of analysis illuminates variation based upon demographics, environmental factors, and political-economic history. Yet, none of these studies explicitly utilize cognitive approaches to determine whether migrants to PA buffer zones think similarly about the relationship between migration and specific, contextual factors.

Thus far, the research on PAs, population growth, and migration has not demonstrated a singular pattern, and testing Wittemyer et al.'s hypotheses in relation to cognitive data explicitly derived from migrant perspectives and motivations was not yet attempted. In order to fill this gap in knowledge and test the hypothesized drivers or PA-buffer zone migration, we examine Costa Rican migrants' motivations for relocating to the 10-km buffer zones of three Costa Rican National Parks: Carara, Arenal, and Barra Honda. Ten km buffer zones were intentionally chosen in order to replicate the limits employed by Wittemyer et al. (2008). We combine cognitive anthropological methods, particularly cultural consensus analysis (CCA), to examine the relationship between PAs, human migration, and population growth in PA buffer zones. CCA tests the shared knowledge of a societal sub-group regarding a particular cognitive realm or "domain," in this case Costa Rican migrants and their motivations for migrating to PA buffer zones. It is important to note that this study specifically focused on the internal migration of Costa Ricans and not that of foreigners. By applying these methods to three different national park contexts in Costa Rica, we test whether a general cultural model of migration can be built and whether Costa Rican buffer zone migrants' motivations reflect the hypothesis proposed by Wittemyer et al. (2008).

METHODS

Rationale for parks selected
We intentionally selected Carara, Arenal, and Barra Honda national parks (see Fig. 1) out of the 26 national parks and the 160 PAs in Costa Rica for several reasons. First, it was important to maintain consistency by only investigating national parks. Costa Rica has various categories of PA ranging from those that

do not allow resource use (i.e., national parks) to those that integrate resource exploitation into its mandate (i.e., protected zones). Standardizing the park category ensured consistency and removed spurious correlations related to the potential for legal resource use within PA borders. Second, all three parks were included in the data set that formed the basis for Wittemyer et al.'s (2008) original analysis. Third, this approach differs from Wittemyer's indiscriminate use of PAs that failed to create a consistent and comparable sample for which they were already critiqued (see Hoffman 2011). Finally, earlier published research showed very divergent characteristics leading to different migration patterns in these parks (Hoffman 2011).

Fig. 1. Map of the study area. The study was set in the 10-km buffer zones (concentric lines) of three Costa Rican national parks (from left to right): Barra Honda National Park, Arenal Volcano National Park, and Carara National Park. The peninsula in the image is the Nicoya Peninsula found in the northwest of the country.
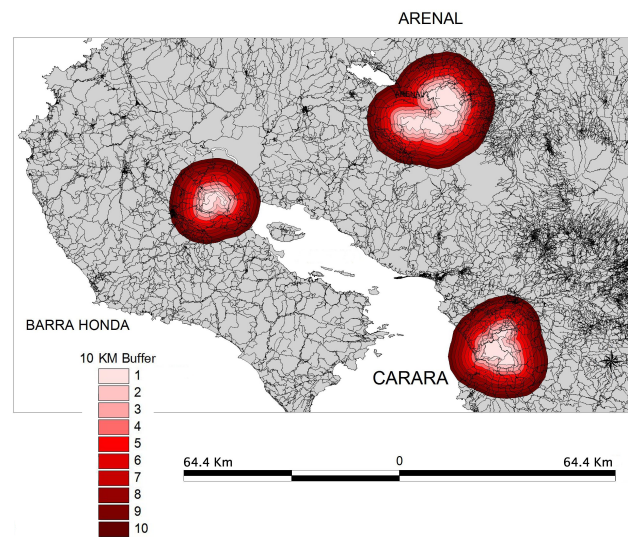
Carara is characterized by a buffer zone with explosive population growth due to internal migration, but this is largely unrelated to the park in itself and could be characterized as "incidental." Carara is located on the central Pacific coast and very close to several growing beach communities such as Jacó and Playa Herradura. Arenal was seen as the best fit for Wittemyer et al.'s "pull" model and potentially provided insight into migration to buffer zones that fit an idealized conservation and development paradigm. Arenal is famous for its picturesque namesake volcano and the ecosystem services it provides, such as hot springs, along with a diverse set of conservation and tourism development initiatives within a 40-km radius. Thus, the Arenal region supports a robust ecotourism-based regional economy in addition to strong agricultural production. Last, Barra Honda had virtually no population growth and very little internal migration to its buffer zone that enabled it to function as a "control" in which the link between development, migration, and the park is largely non-existent. Barra Honda offers its unique cave system for exploration, but there is little

other tourist attraction to the area, and the surrounding communities are characterized by a rural economy in decline for decades. It is precisely because of these marked variations in context that they were chosen.

Cultural consensus analysis
Cultural consensus analysis (CCA) allows social scientists to test whether a group of people has a set of knowledge or perceptions upon which there is agreement / consensus (Miller et al. 2004, Bernard 2017). CCA is a statistical method that grew out of cognitive anthropology and cultural consensus theory (CCT), which views culture as sets of knowledge that are shared by members of a society. From this perspective, it is the sharing of and consensus about this knowledge that forms the basis for what is commonly referred to as culture (d'Andrade 1984, Dressler et al. 2005, Copeland 2011). CCT assumes that groups share a single cultural model and that social scientists can determine the degree to which there is consensus in a group about a certain cultural domain via mathematical testing (Romney et al. 1986, 1987, Borgatti 1994). A domain is an organized set of words, concepts, sentences, all on the same level of contrast, that jointly refer to a singular conceptual sphere (Weller and Romney 1988). Thus, CCA allows researchers to probe variation within groups and to decipher cultural "truths" and the degree to which these truths are shared in a statistically meaningful, reliable, and replicable way (Strong and White 2020). By acknowledging informants' given answers as being probabilistic rather than inherently true, CCA searches for cultural truths not in individual responses but in the degree of sharing of these responses (Strong and White 2020).

Statistically, CCA works from a correlation matrix of respondents to estimate a linear function summarizing the similarities in their ratings (Dressler et al. 2018). There are two general approaches to operationalizing CCT theory in the form of CCA, the formal and informal model. This work uses the informal model, which is essentially a factor analysis (principal components analysis) of people (Weller 2007). In the informal model, each participant is given a competence score that tells the researchers how well each individual's responses correspond with those of the group. The informal model is, therefore, a set of statistical procedures that estimates both the answers to questions and respondent accuracy for answering those questions, which is calculated as a competence score (Weller 2007). A competence score is a measure of the degree to which participants' individual knowledge fits to that of the overall model developed from the entire group (Romney et al. 1986, Dressler et al. 2005, Copeland 2011). The correlations of individuals to the linear function provides their cultural competence, or the degree to which their understanding of the domain corresponds to the aggregated knowledge (Dressler et al. 2018). Individuals' responses can then be combined in a weighted average (weighted by each respondent's competence), which is referred to as the culturally correct answer key that is, in essence, how a culturally competent member of that society would answer those questions (Dressler et al. 2018). In sum, CCA facilitates the determination of the existence of a cohesive cultural domain, the cultural competence of each respondent, and the culturally "correct" answer key to the survey (Strong and White 2020).

Whether the data demonstrates a shared cultural model is dependent on several results from the analysis, which are processed using software packages. In this study, we utilized

Anthropac (4.98) for our CCA analyses. CCA literature consistently states that the standard thresholds and minimum requirements to indicate strong consensus are the following: (1) a 3:1 ratio of the first factor eigenvalue to the second factor eigenvalue; (2) an average competence score of 0.6 or greater; (3) no negative competence scores; (4) at least 20 questions or "factors"; and (5) a minimum number of 30 participants, although this last point can be surmounted by a higher average competence score indicating model validity (Weller 2007, Bernard 2017). There is broad agreement regarding these thresholds, but others note that they are merely "rules of thumb" and that their strict use for indicating consensus within a group can be challenged mathematically (Purzycki and Jamieson-Lane 2017). As long as the other requirements are met, an average competence score of 0.5 already indicates consensus and that anything above 0.66 indicates strong consensus among the group (Weller 2007). Last, it is "by custom" that we use the first eigenvalue being three times larger than the second to determine that shared culture is driving the answers (Weller 2007).

Ultimately, CCA provides researchers with the ability to systematically verify whether there is a shared set of knowledge, and how well that knowledge is shared, amongst a group (Gatewood 2012). It was precisely CCA's capability to detect shared knowledge that drove our decision to employ it in our analysis of human migration to the buffer zones of Costa Rican national parks. The thought was that we could prove or disprove the "attraction" hypothesis put forth by Wittemyer et al. (2008) by eliciting a set of core driving concepts / conditions and testing them for agreement using CCA. In so doing, CCA would help to identify whether there is a single set of factors driving migration to all three parks, or whether specific contextual factors specific to each park could be identified in migrants' thinking.

This study followed a three-staged research procedure commonly applied in CCA research (Boster 1986, Romney et al. 1986, Bernard 2017). First, we conducted free-listing to establish the domain. Second, we used pile-sorting to understand participants' categorization of terms within the domain. Third, we gathered ratings data on each of the terms within the domain to determine if there was consensus.

Freelisting
Freelisting is a common, proven, and statistically powerful way of establishing a group's shared knowledge or cognitive domain (Berlin 1992, Brewer 1995, Quinlan 2005). Successive freelisting is also a proven technique for eliciting explanatory models (Ryan et al. 2000). Freelisting with informants provides the "domain" of terms upon which the consensus analysis was subsequently based. Freelisting was conducted during a one-month research trip in May/June 2012. The primary author used convenience sampling and the snowball method to encounter migrants in the main communities in the 10 Km buffer zones of each of the three parks selected. However, during this stage there was neither an attempt to find more specific areas where migrant households were concentrated nor a method for identifying areas more likely to have recent migrants. In total, thirty migrants to each of the buffer zones (N = 90) were interviewed. In that group 55 were men and 35 were women, the average age was 44.4 years old, and they ranged from 21 to 77 years old with a standard deviation of 15.2. Participants had spent average of 11.7 years in their current community. Participants provided a free list of words or phrases

in response to the following questions concerning characteristics of previous and current communities, ideal communities, and why people would choose to relocate:

1. What are the characteristics of this place that are attractive or are positive for migrants?

2. What are the characteristics of this place that are not attractive or are negative for migrants?

3. What are the characteristics of the town from which you migrated that are attractive or positive for migrants?

4. What are the characteristics of the town from which you migrated that are not attractive or are negative for migrants?

5. What factors (of the place) does a migrant take into account to migrate to a place?

6. What factors (of the place) does a migrant take into account to migrate away from a place?

7. What are the characteristics of your ideal community?

These freelists resulted in thousands of terms and concepts, which were re-coded by hand to reduce the number of unique terms and facilitate the analysis of salience and frequency of terms. For example, if multiple terms were used to describe the concept of work (jobs, employment, work, work opportunities), they were condensed to a single concept (work). Appendix 1 shows an example of this transformation for a sample of 30 migrants' responses to the first question. After recoding, the resulting terms for each question were analyzed for salience using Smith's S in Anthropac (4.98). Salience is a measure that combines the frequency of a term in participants' lists and the rank order of the term in the freelist to determine the most relevant terms across the sample (Borgatti 1999, Ribeiro 2012). All terms from each of the questions with a Smith's S result of 0.2 or higher were included in the final domain for the next stage of analysis. In addition, we also used simple frequency of terms to determine whether there was a clear "break" point where responses belonged to a core set of ideas frequently found across participants' freelists (Borgatti 1994). In this case, an "elbow" in data indicating this break appeared at 10% frequency, so all terms found in 10% of participants' freelists were added to the domain. The truncated results of the freelist analysis are available in Appendix 2. As a result of these two steps, we identified an overall domain of 55 terms (see Table 1) deemed to be the most salient in migrants' assessments of community conditions driving movement to the buffer zones of Carara, Arenal, and Barra Honda National Parks.

Pile-sorting and ratings

The next step in the process was to conduct pile-sorting and ratings activities with a new set of participants. Unlike free-listing, our sampling strategy for this stage of data collection refined our focus with the intention of providing a more accurate picture of recent migration trends. The Development Observatory (*Observatorio de Desarrollo*, OdD) at the University of Costa Rica utilized the 2011 Costa Rican Census to determine the location of recent migrants and provide a sampling strategy for our fieldwork. To do this, the OdD needed to map the park boundaries, map 1 km concentric rings out to 10 km, determine the geostatistical minimum units (GMU, akin to a census tract) included in each ring, and analyze the population growth in each

Table 1. Freelisting terms determined to to be salient and belonging to the cultural domain and then used in rating and pile sorting exercises.

Number assigned	Terms
1	La seguridad (Security)
2	La gente (People)
3	La tranquilidad (Tranquility)
4	El trabajo (Work)
5	El clima (Climate/Weather)
6	La playa (Beach)
7	El ambiente social (Social Environment)
8	El turismo (Tourism)
9	El parque (The Park)
10	Los animales silvestres (Wild Animals)
11	La calidad de vida (Quality of Life)
12	El volcán (Volcano)
13	La paz (Peace)
14	Los ríos (Rivers)
15	Limpio (Cleanliness)
16	Lugar Bonito (Beauty)
17	La inseguridad (Insecurity)
18	Sano (Healthiness)
19	La violencia (Violence)
20	Los servicios (Services)
21	La cultura (Culture)
22	La educación (Education)
23	Las drogas (Drugs)
24	El desempleo (Unemployment)
25	Los precios (Prices)
26	Los servicios médicos (Medical Services)
27	El alcoholismo (Alcoholism)
28	El gobierno (Government)
29	La basura (Garbage)
30	La contaminación (Contamination)
31	El agua (Water)
32	La prostitución (Prositution)
33	Ser céntrico (Centrality)
34	La familia (Family)
35	Las comodidades (Amenities)
36	El transporte (Transportation)
37	El ruido (Noise)
38	Las áreas deportivas (Sports facilities)
39	La agricultura y la ganadería (Agriculture and Livestock)
40	El comercio (Business)
41	La comida (Food)
42	La delincuencia (Delinquency)
43	Sobrepoblación (Overpopulation)
44	Las carreteras (Roads)
45	La pobreza (Poverty)
46	El campo (Countryside)
47	El transito (Traffic)
48	Los robos (Robberies)
49	La economía (Economy)
50	La superación (Improvement / overcoming)
51	La recreación (Recreation)
52	La luz (Electricity)
53	El Banco (Bank)
54	La naturaleza (Nature)
55	El Supermercado (Supermarket)

ring based on census data (see Table 2 for measurement of growth per ring). This work then allowed the OdD to provide a sampling strategy for each park that was proportional to both the rings with the most population growth for each park and the overall target of 100 interviews across all three parks (see Table 3). Last, the OdD identified *zonas calientes*, "hot spots," which were GMUs with higher than average in-migration within the 10 km buffer zone (see Fig. 2 for map).

Table 2. Number of migrants and percentage of migrants in each buffer zone ring in each park based on the 2011 census.

Kilometers from PA border	Arenal		Barra Honda		Carara	
	N	%	N	%	N	%
1 km	90	2.60	57	2	72	2
2 km	195	5.60	69	3	165	4
3 km	168	4.80	122	5	181	5
4 km	488	14.00	125	5	175	5
5 km	296	8.50	96	4	173	5
6 km	328	9.40	106	4	743	20
7 km	468	13.40	232	9	359	10
8 km	180	5.20	235	9	491	13
9 km	483	13.80	628	25	677	18
10 km	796	22.80	837	33	691	19
Total	3492	100.00	2507	100	3727	100

Table 3. The Development Observatory (*Observatorio de Desarrollo*, OdD) sampling strategy used for pile-sorting and ratings exercise. This was based on analysis the 2011 census for migration-based population growth. OdD provided a target number for each 1-km buffer ring at sample sizes of 45, 60, and 100 interviews. 100 interviews was selected.

Buffer (in km)	Sample Size 45			Sample Size 60			Sample Size 100		
	Arenal	Barra Honda	Carara	Arenal	Barra Honda	Carara	Arenal	Barra Honda	Carara
4	3	2	0	3	2	0	6	3	0
6	0	0	11	0	0	15	0	0	25
7	3	0	0	5	0	0	8	0	0
9	4	3	3	5	4	4	8	6	6
10	9	4	4	11	5	6	19	8	10
Total sample needed	18	8	19	24	11	25	41	18	41

This "hot spot" approach enabled our small research team to focus fieldwork efforts on areas where it was likely for us to encounter recent migrants. Once we arrived at these hot spots, we often began our search with the proprietors of local stores, *pulperias*, to help us identify migrant households. Once identified and confirmed, we conducted the interview if they were willing as was indicated by prior, informed oral consent. To find more participants we used a snowball or "chain reference" approach by asking interviewees to identify other potential participants. Pile-sorting and scalar rating interviews were conducted over four weeks in May and June of 2013. The interviews were conducted primarily at places of residence and in Spanish. We interviewed 41 migrants in the buffer zone of Carara, 41 in that of Arenal, and 18 in that of Barra Honda. The demographic characteristics of our sample for each park and all three parks together can be seen in Table 4.

Interviews varied in length, but averaged approximately 30–45 minutes. The first task in the interview was an unconstrained pile-sort. All participants were presented with 55 laminated notecards for each of the terms from the domain. To reduce bias from the interviewers or previous participants' sorting, the terms were randomized and assigned a number and each of the participants received the notecards in the same order. In order to be "unconstrained," participants were asked to put the cards into piles / groups in any way that made sense to them, that there was no right answer to the number of piles or how the piles should be organized. Once the participants were satisfied with their sorting, the numbers for the terms in each pile were recorded and the cards were returned to numerical order.

For the second task of the interview, participants were asked to rate the conditions / state of each of the 55 terms (Likert scale of 1–5) first for the community from which they had moved (hereafter referred to as the "previous" community) and then again for their current location within the buffer-zone of the national park (hereafter referred to as the "current" community). The number 1 represented very poor conditions, 3 average conditions, and 5 indicated very good conditions. Respondents were asked to rate each term for both their previous and current community. For example, we asked "How would you rate the people there (here)?" "*¿Como calificaría la gente allí (aquí)?*" This wording was somewhat confusing for participants and they were at times unclear if we were asking for how they personally saw the conditions, or how the conditions were perceived in general. Because we were aware that CCA is dependent on general answers and not individual, personal opinion, we clarified that we sought out ratings "in general" (*por lo general*).

ANALYSIS AND RESULTS

Pile sorting: MDS and consensus

Pile sort data were compiled and entered into Visual Anthropac and were analyzed using multi-dimensional scaling (MDS), clustering and consensus. The MDS analysis produces a visualization, often referred to as a "cognitive map," of the collective pile-sorting of a sample. Because the research team was interested in attempting to construct a cognitive model of migration for the entirety of migrants to all three parks' buffer zones, MDS was performed on all 100 of the interviewees' pile-sorts. The resulting images (see Fig. 3 for MDS by number and Fig. 4 for MDS by term) provide a two-dimensional representation of participants' pile-sorting; the closer together terms are on the MDS the more frequently they were piled together and vice-versa. In addition, hierarchical clustering demonstrates the ways in which participants clustered items in their pile-sorting. As can be seen on the MDS images, five clusters were established: (1) negative / urban (blue); (2) government and business services (pink); (3) essentials for improving oneself (orange); (4) social/community conditions (black); and (5) natural resources and amenities (green).

Because pile-sort data must be converted from its multiple dimensions to fit into a two-dimensional rendering, MDS runs the risk of misrepresenting the data. Anthropac provides a "stress" value to indicate how well the image represents the original data; the closer to zero the stress value the more accurate the map is (Copeland 2011). In addition, acceptable maximum values for stress have been standardized based on the number of

Fig. 2. Each parks' 10-km buffer zones, minimum geostatistical units (GMU), and those GMU determined to be hot zones (*zonas calientes*) for recent migration highlighted in green. From left to right the parks are: Barra Honda National Park, Arenal Volcano National Park, and Carara National Park.

Zonas Calientes para la aplicación de las Encuestas
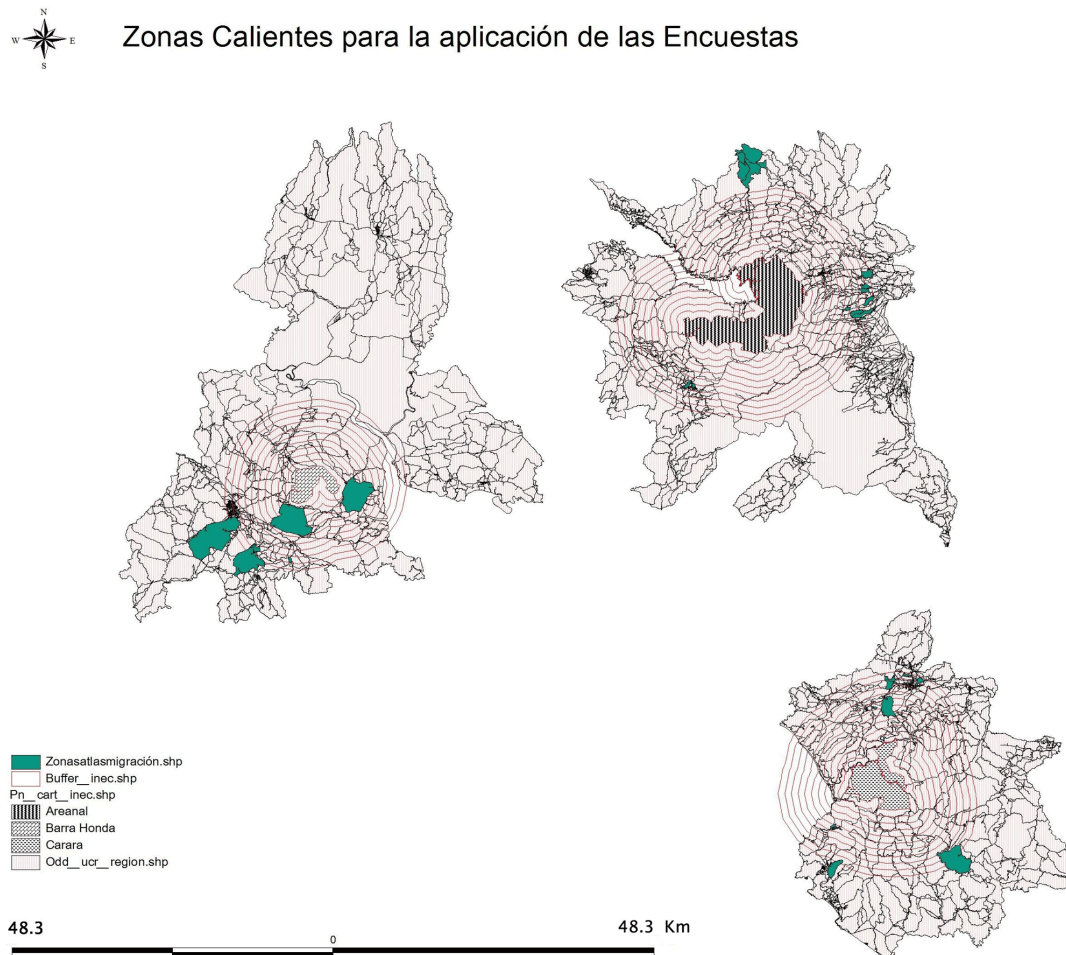
items to be sorted (Sturrock and Rocha 2000). For our MDS, the stress value was 0.151, which is well below the threshold of 0.372 for a domain of 55 terms as established by Sturrock and Rocha (2000).

Further, Anthropac enables users to test pile-sorting data for consensus by comparing each participants' pile sorts against all others via a factor analysis. As discussed above, the eigenratio should be 3:1 to indicate strong consensus. In our case, the pile sort data produced an eigenratio of 11.647, which indicates a strong fit to the consensus model. This means that there was strong agreement amongst our participants regarding how these terms are related to one another cognitively, and thus it can be assumed that the group shares a cultural understanding about how the terms within the specific domain relate. Put simply, our informants indicated a shared understanding of how to group these terms.

Rating task: consensus analysis
To further test consensus, we used Anthropac (4.98) to analyze the 100 participants' ratings of 53 terms within the domain for both the previous and current community. Upon realizing that

the terms "beach" and "volcano" were not found in or relevant to many participants' previous or current location we removed those ratings and conducted our analysis on the remaining 53 terms. We tested for consensus on various subsets of the data in order to understand whether the contexts of individual parks, and/or how the communities from which participants migrated, potentially impacted consensus. First, we tested all of the ratings data for all three parks and for both the previous and current community together. Second, we analyzed the ratings of just the previous and just the current communities for all three parks combined. Third, we conducted analyses on previous, current, and the combined data sets for each of the parks separately.

By parsing the analysis in this way, we intended to differentiate whether these sub-groupings differed in terms of the existence and/or strength of consensus. In so doing, we intended to test the ratings data for the following: (a) consensus around an overall cultural model for the entire sample; (b) consensus around a model for each individual park context; and (c) differences in consensus on ratings of previous versus current communities for both the total sample and for each individual park's buffer zone. The consensus results are shown in Table 5, which also includes

Table 4. Basic demographic and migration history data of the 100 participants in our pile sort and rating exercises.

	Arenal (N = 41)			Carara (N = 41)			Barra Honda (N = 18)			Total (N = 100)		
	Age	Years in previous	Years in current	Age	Years in previous	Years in current	Age	Years in previous	Years in current	Age	Years in previous	Years in current
Mean	43.7	21.8	7.8	41.2	23.5	5.2	43.4	17.8	6.2	42.6	21.8	6.4
Median	42	22	4.5	40	22	4	41.5	15.5	6	41	21	5
Mode	41	30	4	33	30	10	42	20	6	33	30	3
Max	78	43	25	72	58	15	76	43	15	78	58	25
Min	20	2	0.0055	18	4	0.005	20	0.66	0.019	18	0.66	0.005

Fig. 3. Multi-dimensional scaling (MDS) and clusters for all 100 participants' pile sorting. Numbers correspond to numbers assigned to each term found in Table 1.
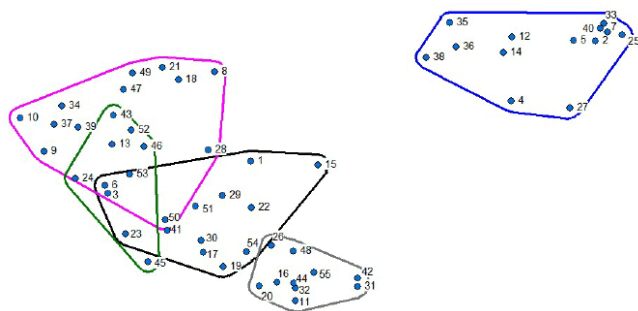
the number of participants, factors (questions), and negative competence scores for each of the analyses. In addition, Appendix 3 provides the culturally correct answer key—what the consensus analysis identifies as the most likely "correct" answer amongst our participants—for the only parsing that meets the standard thresholds for consensus: the ratings of current community conditions by migrants to the buffer zone of Carara National Park.

In brief, consensus analysis performed on the ratings data from all three parks combining both previous and current communities fails to meet the standards for consensus, which means there is not a single, shared cultural model for the entire data set. As well, there is no consensus in our data when results for the entire sample from all three parks are parsed and analyzed by previous or current community (e.g., "All Parks Previous" or "All Parks Current" in Table 5). When the data is broken down by individual park, there is also no consensus when both previous and current community ratings are combined (e.g., "Carara combined"). In addition, all of these analyses have at least one negative competence score, and some of them have many negative scores, which further demonstrates the lack of a single cultural model. When the individuals with negative scores were identified, there were no obvious or discernable patterns amongst them (e.g., age, occupation, gender). Although most of the negative scores were found in the 1 km rings furthest from the parks (km 9 and km 10), each parsing contained several individuals at the same distance that had positive competence scores. Put simply, our results indicate that there is little agreement and not a single cultural model of migration to national park buffer zones amongst our sample of migrants in Costa Rica.

However, our analysis does indicate that there is evidence for consensus amongst our informants in their ratings of conditions in their current community within the buffer zone of Carara. In addition, the current community ratings for Arenal National Park are very close to meeting standard thresholds discussed above. With an average competence score of 0.49, Arenal informants' ratings come very close to the threshold of 0.5, but they do not quite meet 3:1 eigenvalue ratio expected. It is tempting to say that the Barra Honda results are approaching the standards for consensus. However, they do not because of the more stringent standards required for a sample size below 30 individuals (Weller 2007). In sum, the ratings data indicate that, for one out of three parks, there was a shared cultural model among recent migrants regarding their current community.

Ratings tasks: statistical comparison of previous and current
The lack of consensus was somewhat surprising considering the consistency in explanations the research group knew qualitatively from discussions with migrants. Thus, we subjected the ratings data to a separate statistical analysis to see whether there were identifiable and significant trends in migrants' assessments of these 53 terms for previous and current communities. In order to determine which ratings demonstrated statistically significant differences between prior and current communities, we compared the previous and current ratings data of the 53 terms for the entire sample. In this analysis, we used the non-parametric Wilcoxon signed-rank test (Wilcoxon 1945). Because this approach involves multiple comparisons, we applied a Bonferroni correction (Bonferroni 1936) to the significance level, which reduces the probability of a Type I error.

We found that 23 of the variables had a statistically significant change in rankings (marked with a * in Table 6). Overall, this analysis shows that many terms that are associated with the negative realities of urban living were not only improved, but in a statistically significant way. Thus, migrants indicated significant improvement in conditions like insecurity, contamination, delinquency, traffic, contamination, noise, violence, and overpopulation. The same can be said for most terms associated with the ability to live life with peace, tranquility, beauty, and security. Third, terms associated with rural life and livelihoods (nature, beauty, animals, rivers, agriculture and livestock, tourism, and the park) are also significantly improved.

Interestingly, a number of terms that were generally rated as improved when looking simply at their means were not different in a statistically significant way. Many of these are related to social ills that are not unique to urban settings such as poverty, drugs, prostitution, and alcoholism. As well, the lack of a significant

Fig. 4. Multi-dimensional scaling (MDS) and clusters for all 100 participants' pile sorting labeled with the actual terms from Table 1.
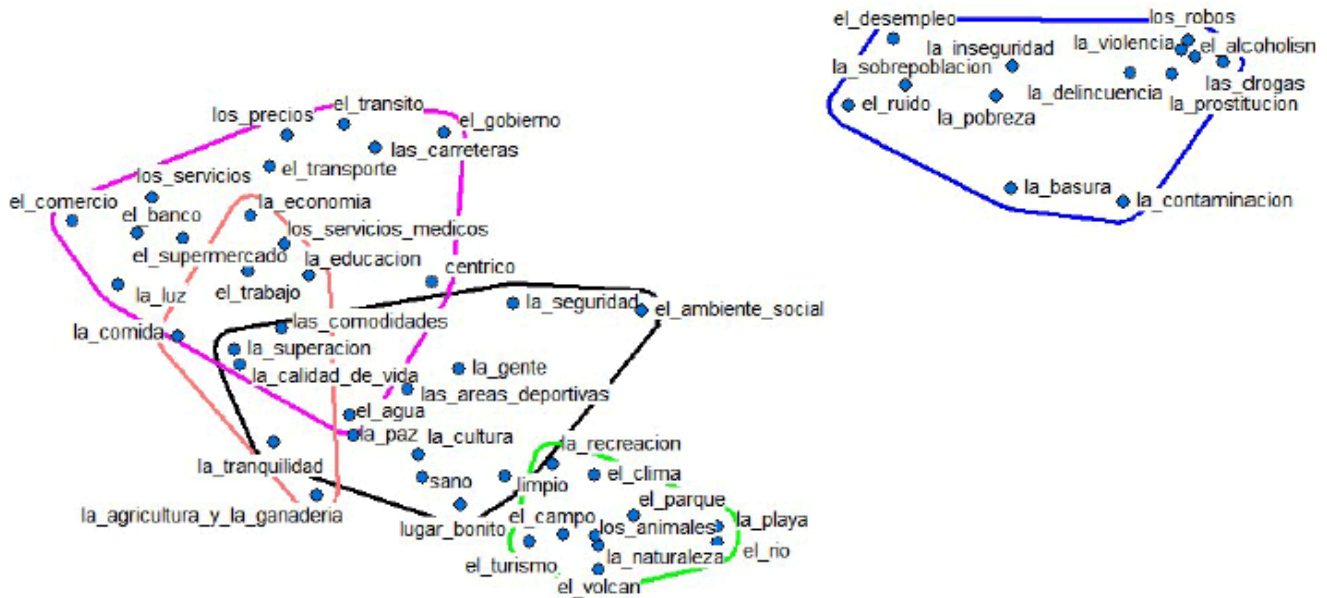
difference between ratings on terms like garbage and roads indicates that the perception is that these government services are poorly managed across the country. Last, the lack of a statistical difference in their ratings of healthiness, cleanliness, social environment and people indicates that migrants see these socio-environmental conditions as stable across the country, that buffer zones of national parks do not provide a difference in these areas. However, the fact that there is a statistically significant difference in ratings on the overall quality of life indicates that park buffer zones do provide an overall sense of improved life conditions that are attractive to Costa Rican migrants.

Our results show that only four terms were perceived as significantly worse in buffer zone communities (see Table 6). These negative ratings for three of these terms are found in services that are impacted by geographic isolation and/or the integration of these communities with tourism-based economies. First, prices were seen as significantly worse, which is a phenomenon that is frequently associated with tourism-based economies and isolation. Further, migrants perceived that access to transport was significantly worse in the buffer zones. Third, migrants rated medical services as significantly poorer, which is again the reality for rural Costa Rica especially in comparison to the facilities and treatments available in urban and suburban San José. Last, climate was the one term that was rated as significantly poorer. This is attributable to the fact that all three parks were in warm, lowland climates that were being compared to the urban, highland, and cool areas like the capital of San José from which many migrants had moved.

DISCUSSION
The findings uncovered via our work in Costa Rica contribute important, migrant-centered, contextual data that illuminates what factors drive migration decisions to PA buffer zones. Our

research was designed to use a CCA approach to see whether there is consensus amongst migrants' motivations, which could be further used to test the singular "pull" model put forth by Wittemyer et al. (2008). In so doing, our work adds the following to the conversation regarding PAs and human migration: (1) CCA results further complicate the hypothesized direct links between PAs, integrated conservation and development, and population growth proposed by Wittemyer et al. (2008); (2) results contribute to the numerous studies that highlight the importance of understanding local contexts, as well as concerns regarding scale, representativeness of sample populations, and accuracy of conclusions; (3) we add new methods and resulting insights into what role PAs play in driving migration to the existing literature on human migration to PA buffer zones; and (4) a unique demographic methodology that supports existing critiques of the Wittemyer et al. methodology and findings.

As was stated at the outset of this paper, some studies have criticized the methods by which Wittemyer et al. (2008) derived their evidence, as well as their hypothesized, generalizable, worldwide drivers for the results they observed (Joppa et al. 2009, 2010, Hoffman et al. 2011, Joppa 2012). Because of the lack of consensus in our study, we join others in demonstrating that, even within a single country, the social, political, economic, and ecological contexts surrounding every park are unique and must be taken into account when explaining the patterns of human population growth found there (Fay 2011, Hoffman 2011, Guerbois et al. 2013, Hartter et al. 2015, 2016). Importantly, our deployment of cultural consensus analysis offered a unique perspective from which to assess migrant motivations. Disagreement shown in the lack of cultural consensus for previous and current community conditions across the entire sample suggests that a singular explanation or causal mechanism for migration to PA buffer zones is unlikely. In fact, the lack of

Table 5. Consensus analysis results on ratings data. The minimum requirements for consensus are (1) a 3:1 eigenvalue ratio; (2) average competence of 0.6 or greater; (3) no negative competence scores; (4) at least 20 items; and (5) a minimum number of 30 participants.

Park and community	Number of interviewees	Number of items	Eigenvalue ratio	Average competence score	# of negative competence scores	Negative scores
All parks combined	100	106	2.68	0.43	12	(-0.13, -0.18, -0.17, -0.28, -0.08, -0.10, -0.01, -0.20, -0.12, -0.13, -0.22, -0.14)
Carara combined	41	106	2.52	0.45	5	(-0.10, -0.20, -0.15, -0.24, -0.01)
Arenal combined	41	106	2.05	0.42	5	(-0.07, -0.12, -0.06, -0.02, -0.18)
Barra Honda combined	18	106	4.24	0.52	2	(-0.08, -0.02)
All parks previous	100	53	2.46	0.43	18	(-0.13, -0.03, -0.49, -0.13, -0.42, -0.39, -0.52, -0.19, -0.07, -0.07, -0.22, -0.04, -0.23, -0.34, -0.22, -0.01, -0.51, -0.27)
Carara previous	41	53	3.32	0.43	8	(-0.19, -0.08, -0.01, -0.53, -0.17, -0.46, -0.39, -0.52)
Arenal previous	41	53	1.85	0.42	6	(-0.13, -0.01, -0.20, -0.13, -0.28, -0.14)
Barra Honda previous	18	53	2.88	0.57	1	(-0.14)
All parks current	100	53	2.70	0.49	2	(-0.03, -0.22)
Carara current[†]	41	53	2.94	0.53	0	
Arenal current[‡]	41	53	2.24	0.49	0	
Barra Honda current	18	53	3.29	0.47	1	(-0.23)

[†] Meets standards.
[‡] Approaching standards.

consensus within almost all our analytical subsets, apart from the Carara "current" community, can be seen as evidence that singular explanations are unhelpful.

The lack of consensus for the combination of both previous and current communities is likely due, in part, to the variation in previous communities from which migrants arrived to the parks' buffer zones. Although there were a few locations that "sent" multiple migrants, both our overall sample for each park and for individual parks showed incredible diversity in sending communities. Clearly, the diversity of previous communities impacted the consensus results for the "previous"-only analyses. This same variation in ratings of their previous communities is what likely lead to the lack of consensus for the "combined" analyses. Ultimately, the near complete lack of ratings consensus shows that despite some level of agreement among migrants (seen in the free listing, pile sorting, and comparison of means results), migration to PA buffer zones is complex and contradictory.

The statistical analysis of respondents' ratings illuminates those terms found within the domain that are seen by migrants as notably different between their previous and current communities. First, a number of the negative elements usually associated with urban living like overpopulation, noise, violence, delinquency, poverty, and insecurity are rated as improved. Second, themes associated with the ability to live life with peace, tranquility, beauty, cleanliness, and security are all seen to be improved in their current communities. Not surprisingly, many of these themes are the opposite of negative conditions that our participants frequently associated with their previous, often urban, communities. Third, terms associated with the rural life and livelihoods based on natural resources (nature, beauty, animals, rivers, agriculture and ranching, tourism) were rated as significantly better. Statistical analysis shows that those terms with positive improvement can be interpreted as "pull" conditions in the current buffer zones, especially when seen in relation to their previous communities and the "push" conditions found in those locations. Overall, this provides insight into the conditions that migrants have sought out and support the earlier conclusion

particular to Costa Rica (Hoffman 2011, Hoffman 2020) that, despite some sacrifices in convenience and services, the peace, security, natural amenities, and overall quality of life in the buffer zones play an important part in the attraction of migrants to their current communities.

Overall, the statistical analysis of the overall ratings between previous and current conditions shows migrants saw some elements typically associated with conservation and development projects (i.e., tourism) as a draw to their current community. However, a large number of the significant terms have little to do with the opportunities directly provided by PA-based development and, therefore, contradicts the explanation put forth by Wittemyer et al. (2008). Thus, our work further supports the conclusion of Guerbois et al. (2013), that it is critical to approach this question with methods and analyses that document people's livelihoods, histories, education, perceptions of conservation and PAs, and the natural resources used in each context. Thus, we reinforce the need to combine census and demographic data with social science methods such as surveys, interviews, and focus-groups to disentangle the localized complexity of migration (Salerno et al. 2014, Hartter et al. 2015). We add to this by not only combining geospatial and demographic analyses with traditional social science research methods but also providing insight into the viability of employing consensus analysis as a tool for understanding and uncovering migrants' motivations.

The consensus data derived from our targeted sampling strategy for pile sorting and rating tasks supports the suggestion that selecting an appropriate scale of analysis is critically important because of the high levels of variability within all of these potential drivers that exist in the buffer zones of individual parks (Salerno et al. 2014, Salerno 2016). The collaboration with OdD and targeted "hot spot" methodology allowed us to focus our interviews in the places where migration was most prevalent rather than being distracted by existing population centers or anecdotal evidence. By answering Salerno et al.'s call for employing appropriate scales as determined by a combination of geospatial and demographic analyses as the basis for our work, we were able

Table 6. Results of Wilcoxon signed-rank test. This test compared all 100 participants' average ratings of conditions in their previous and current communities for each of the salient terms.

Term	Average rating		Difference	P-value
	Previous	Current		
Tranquility*	3.05	3.96	0.91	6.835E-06
Security*	2.7	3.41	0.71	0.0000828
Peace*	2.99	3.88	0.89	5.097E-07
Quality of life*	3.13	3.78	0.65	8.953E-06
Insecurity*	2.39	3.14	0.75	0.00002703
Contamination*	2.62	3.16	0.54	0.0004219
Delinquency*	2.17	2.82	0.65	0.00001636
Overpopulation*	2.52	3.17	0.65	0.00005139
Traffic*	2.69	3.33	0.64	0.000374
Robberies*	2.27	2.84	0.57	0.001102
Noise*	2.67	3.56	0.89	0.0000245
Violence*	2.5	3.16	0.66	0.0003886
Agriculture and livestock*	3.09	3.77	0.68	0.0002256
Park / protected area*	3.26	4.21	0.95	6.2E-08
Beauty*	3.7	4.23	0.53	0.0006063
Countryside*	3.36	4.06	0.7	0.000564
Wild animals*	2.89	4.06	1.17	9.6E-09
Nature*	3.29	4.2	0.91	1.575E-06
Tourism*	2.7	3.9	1.2	1E-10
Rivers*	2.86	3.65	0.79	0.0001143
Poverty	2.28	2.6	0.32	0.02063
Drug problem	2.04	2.4	0.36	0.01951
Prostitution	2.53	2.97	0.44	0.01072
Alcoholism	2.15	2.44	0.29	0.03408
Garbage	2.65	3.06	0.41	0.008153
Roads / highways	2.82	2.97	0.15	0.3513
Cleanliness	3.1	3.52	0.42	0.006371
Healthiness	3.21	3.52	0.31	0.03887
Social environment	3.39	3.55	0.16	0.1869
People	3.52	3.68	0.16	0.2781
Prices*	2.92	2.34	-0.58	0.00003631
Medical services*	3.55	2.91	-0.64	0.00005871
Climate*	3.83	3.23	-0.6	0.0001793
Transport*	3.63	2.99	-0.64	0.00009063
Comforts	3.6	3.29	-0.3	0.03377
Economy	2.98	2.93	-0.05	0.4342
Ability to improve oneself	3.21	3.07	-0.14	0.3565
Water	3.66	3.72	0.06	0.827
Sports areas	3.38	3.23	-0.15	0.3893
Recreation	3.26	3.29	0.03	0.9237
Electricity	3.84	3.63	-0.21	0.0279
Bank services	3.66	3.31	-0.35	0.04136
Commerce	3.74	3.31	-0.43	0.0009853
Food	3.71	3.69	-0.02	0.2781
Supermarkets	3.65	3.26	-0.39	0.7834
Centrality	3.5	3.15	-0.35	0.02678
Family situation	3.87	3.84	-0.03	0.7789
Government	2.68	2.68	0	0.9802
Services	3.55	3.22	-0.33	0.01815
Culture	3.48	3.42	-0.06	0.5733
Education	3.77	3.49	-0.28	0.01877
Jobs	3.09	3.04	-0.05	0.8372
Unemployment	2.6	2.63	0.03	0.9574
Beach	not analyzed			
Volcano	not analyzed			

* Statistically significant.

to disentangle the context-dependent relationship between PAs and migration. In so doing, our work further supports Gupta's (2015) point that conclusions about migration and PAs are dependent on the scale at which data is analyzed. Our analysis concurs with her suggestion that even when a 10 km-scale shows growth, localized analyses show more variability. Indeed, the lack of consensus on current community conditions points out that

there are important differences in migrants' evaluations even within a single park's buffer zone communities.

Furthermore, the methodology employed here provides rare insight into the specific mindsets of recent migrants that further illuminates the contextual complexities of the PA-migration nexus. Our study is relatively unique in its explicit focus on recent migrants to the PA buffer zones (cf. Salerno 2016). Many studies survey or interview all groups living on the edges of PAs (e.g., Guerbois et al. 2013, Bamford et al. 2014) and/or use interview data from elders to elicit thoughts on how buffer zones have changed over longer periods of time (e.g., Hartter et al. 2015). Others, such as Levang et al. (2012) used targeted methods to find areas that are likely to have new migrants, but deployed interviews and questionnaires among both recent and longer term, second-generation immigrants to PA buffer zone. Although there is no doubt that these studies were able to elicit important information regarding the conditions within PA buffer zones and their relationship to population growth and in-migration, they do not concentrate specifically on relatively recent migrants and their perceptions of buffer zone social, economic, political, and environmental conditions.

Our work joins Salerno (2016) in engaging migrants via mixed field methodologies with the explicit intent of eliciting a model to understand, as well as potentially predict, what motivates migrant decisions. The fact that our data point to factors such as tranquility, safety, and factors outside of resources typically associated with the natural or development-induced resources corroborate Salerno's findings that migrant decision making to PA buffer zones is driven by a complex mix of factors that go beyond simplistic anecdotes about the attraction of land and natural resources. Our work parallels Salerno (2016) in the use of free-listing with actual migrants to elicit the primary categories driving migrant decisions. Salerno's (2016) findings offer a very different picture of migration drivers for the radically different context of western Tanzania, which further demonstrates the need for the types of studies we have conducted.

Last, the demographic and mapping work carried out by the OdD supports the critiques of the demographic methods and data sets used by Wittemyer et al. (Joppa et al. 2009, 2010, Hoffman et al. 2011, Joppa 2012). We did not set out with the specific intent of analyzing the spatial relationship between population growth and PA borders, but the OdD analysis further supports Joppa et al.'s (2009) critical re-analysis of the demographic and spatial data in regard to the relationships between parks and migration-driven population growth. As Joppa et al. (2009) point out, if the park and its resources / development were the main draws for population growth one would expect that the areas of greatest population growth would be in closer proximity to the park boundaries. Joppa et al.'s (2009) re-analysis observed that growth could more likely be an outgrowth of the population expansion of nearby towns and urban centers. Our finer scale census analysis based on GMU supports this position by showing that in-migration numbers and "hot spots" are not located within the first few kilometers of the park boundaries (see Table 2 and Fig. 2) for the chosen Costa Rican parks. Instead, the areas of greatest migrant growth were located between 3–5 km and 9–10 km from the park boundaries. This is in part driven by the conditions of the buffers closest to the parks in that they tended to be the least

developed, had fewer public services, and were likely to be highly sloped lands unattractive for agriculture. Ultimately, this further complicates the notion that it is access to the parks' resources, natural or infrastructural, that drives migration.

CONCLUSION
Overall, our research adds further evidence to existing discussions of how to measure the effects of PAs on migration and what evidence would be expected if PAs and their resources were the primary driver of migration decisions. The analyses presented contribute to larger discussions about PAs, human migration, and the effectiveness of conservation and development policies as a strategy for biodiversity conservation. Costa Rican migrants' perceptions of conditions in the buffer zones of three Costa Rican National Parks both supports and contradicts the connections between PAs, conservation and development, and human migration put forth by Wittemyer et al. (2008). Certain conditions in buffer zones were consistently and significantly rated higher by migrants and could be interpreted as conditions that attracted migrants. However, it is critical to note that it seems as if migration decisions were often related to conditions and resources that are not directly produced or provided by the PA or conservation and development policies. Thus, our analyses supports existing qualitative work in these contexts that question whether conservation and development in Costa Rica creates population growth in buffer zones due to in-migration (Hoffman 2011, Dehler 2015, Arends 2017, Hoffman 2020). In so doing, this work provides important contextualization of the relationship between PAs, migration, and population growth, as was suggested by Wittemyer et al. (2008). More specifically our work provides empirical data in response to the call for "more real-world examples of immigration to protected areas ... along with information on the reasons for the immigration and the benefits that may be provided by the protected area, such as income or natural resources" (Bamford et al. 2014:504).

This study reinforces the conclusions of many scholars regarding the need to base conservation policies upon the specific and varying social-ecological conditions found within the buffer zones of individual PAs. We concur with the others that there is a need to base conservation decisions on the political ecology, policy, and socioeconomic factors and history of individual PA development (Bamford et al. 2014, Levang et al. 2012, Salerno et al. 2014, Hartter at el. 2015). Unfortunately, many PA administrators, national conservation authorities, and NGOs often do not have the skills or the resources, especially time and labor, to conduct such fine-grained analyses in order to understand the ways in which PAs (and other local factors) affect migration and have potential impacts upon the biodiversity they are established to protect. Instead, they are forced to rely on generalizations and anecdotal information to guide policy decisions.

In sum, our work further stresses the need to engage with and understand the impacts of conservation efforts upon local people as has been repeatedly emphasized by social scientists (West et al. 2006, Büscher and Fletcher 2019, Agrawal et al. 2021). This is particularly relevant in light of the forceful debates about creating more extensive conservation efforts to combat the continued decline of global biodiversity such as the Half Earth (Wilson 2016) or protecting 30% for nature proposals (Waldron et al. 2020). Our methods provide another potential pathway (cf. Salerno 2016) for analyzing how PAs interact with local social, economic, and political conditions to impact migrant decision making that are critical for understanding the trade-offs necessary for attending to the needs of both biodiversity and local human populations.

Responses to this article can be read online at:
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Appendix #1: Freelist Conversion Example

Original Responses	Recoded Responses
# Respondent1	# Respondent1
turismo	el turismo
montana arenal	la montana
la catarata	la catarata
aguas termales	aguas termales
# Respondent2	# Respondent2
oportunidades de trabajo	el trabajo
mucho que ver	mucho que ver
muchas cosas que hacer	muchas cosas que hacer
el ambiente	el ambiente
ambiente sano	sano
# Respondent3	# Respondent3
centro turistico	el turismo
belleza	la belleza escenica
volcanes	volcanes
rios	el rio
canopy	canopy
andar en kayak	la recreacion
el lago	el lago
anda en bicicleta	anda en bicicleta
ir a pescar	la pesca
# Respondent4	# Respondent4
trabajo	el trabajo
el ambiente	el ambiente
me ha permitido vivir	la calidad de vida
pueblo lindo	un pueblo lindo
puelbo precioso	pueblo precioso
gente muy bonita	la gente
mi familia	la familia
hijos nacieron aqui	hijos nacieron aqui
turismo trae dolar	el turismo
# Respondent5	# Respondent5
naturaleza	la naturaleza
facilidades laborales	el trabajo
gente amistosa	la gente
gente compartida	gente compartida
vivo tranquilo	la tranquilidad
no hay policia que molestan	no hay policia que molestan
la policia	la policia
un lugar tranquilo	un lugar tranquilo

tender ropa en el patio   tender ropa en el patio
muy poca delicuencia   la delicuencia

Respondent6   # Respondent6
turistas   el turismo
dinero   dinero
pueblo lindo   un pueblo lindo
pueblo encantador   pueblo encantador
todo comparta   la gente
pueblo pequeno   un pueblo pequeno
muchos servicios   los servicios
3 bancos   el banco
6 supermercados   el supermercado
4 farmacias   4 farmacias
un pueblo prospero   un pueblo prospero

Respondent7   # Respondent7
seguro   la seguridad
abundancia en agua   el agua
muy lindo   un pueblo lindo
pueblo pequeno   un pueblo pequeno
muy diferente   muy diferente
seguridad   la seguridad
naturaleza   la naturaleza

Respondent8   # Respondent8
volcan   el volcan
encontrar trabajo   el trabajo
pueblo turistico   el turismo
personas diferentes   personas diferentes
personas de otros paises   personas de otros paises
se relaciona con ellos   la gente
la relacion al pueblo   la relacion al pueblo
observar el volcan   observar el volcan

Respondent9   # Respondent9
centros turisticos   el turismo
mucho trabajo   el trabajo
la gente muy amable   la gente
la gente se relaciona mucho   la gente se relaciona mucho
somos muy amables   somos muy amables
el parque   el parque
colegio deportivo   las areas deportivas
lugar recreativo   la recreacion
escuela muy buena   la educacion

educacion muy buena   educacion muy buena
mucha vigilancia   mucha vigilancia
casi no hay robos   los robos
pocos borachillos   el alcoholismo

Respondent10   # Respondent10
zona rural   el campo
espacio libre   espacio libre
agua potable   el agua
servicios   los servicios
luz electrica   la luz
supermercados   el supermercado
centros deportivos   las areas deportivas
desparcimiento   desparcimiento
turismo   el turismo
fuente de trabajo   el trabajo
familia viene para pasear   familia viene para pasear
compartimiento familiar   compartimiento familiar
mi proyecto de retiro   mi proyecto de retiro
vida tranquila   la tranquilidad
empresarios locales   el comercio
apertura comercial   la economia
financimiento bancario   el banco
buen manejo de basura   limpio
reciclan   reciclan
desarrollo personal   la superacion

Respondent11   # Respondent11
volcan   el volcan
tours   el turismo
caminatas   la recreacion
rios   el rio
canopy   el turismo
rafting   rafting
muy tranquilo   la tranquilidad
muchos turistas   muchos turistas
muy bonita   lugar bonito
muy calmado   muy calmado
no hay mucha delicuencia   la delicuencia

Respondent12   # Respondent12
oportunidad de trabajo   el trabajo
mercado que no esta saturado   las oportunidades
posibilidad de innovacion   posibilidad de innovacion
buen ambiente para vivir   el ambiente social

no hay mucha delincuencia	la delincuencia
es seguro	la seguridad
servicios primarios acesibles	la infraestructura
poco trafico de carros	el transito

Respondent13

el turismo	el turismo
aguas termales	aguas termales
el volcan	el volcan
los tours	los tours
catarata	catarata
el rio	el rio
sendero el silencio	sendero el silencio
el parque	el parque
rio del agua caliente	rio del agua caliente

Respondent14

la gente	la gente
el turismo	el turismo
turismo de aventura	turismo de aventura
belleza escenica	la belleza escenica
gente amable	la gente
gente sonrian al turista	gente sonrian al turista

Respondent15

volcan arenal	el volcan
rio fortuna	el rio
rancho hostel la luna	los hoteles
amistades	la gente
finceros	la agricultura y ganaderia
lugar mas sano	sano
bonito	lugar bonito
estar solo	estar solo
ir a pasear	ir a pasear
buscando aguacates	buscando aguacates
fruta	fruta
frutas de pan	frutas de pan
cosecha	cosecha
buena gente	la gente
le saluden	le saluden

Respondent16

el empleo	el trabajo
oportunidad diferente	las oportunidades
prosperar	la superacion

opciones variadas
propia empresaria
belleza escenica
hacer plata

opciones variadas
propia empresaria
la belleza escenica
hacer plata

Respondent17
volcan
los hoteles
el parque
mucho turismo
mas posibilidades de empleo
la gente
la gente muy humilde
la gente muy tranquila
lugar muy tranquilo

Respondent17
el volcan
los hoteles
el parque
el turismo
el trabajo
la gente
la gente muy humilde
la gente muy tranquila
la tranquilidad

Respondent18
turismo
el volcan
aguas termales
naturaleza
cataratas
mucha verde
otras facilidades
la tranquilidad
no esta todo saturado
no hay tanto trafico
no hay tanto humo
no hay tanto ruido
no hay tanto urbanizacion
vivir con grandes areas verdes
vive mas sano

Respondent18
el turismo
el volcan
aguas termales
la naturaleza
cataratas
la vegetacion
la infraestructura
la tranquilidad
la sobrepoblacion
el transito
la contaminacion
el ruido
no hay tanto urbanizacion
vivir con grandes areas verdes
sano

Respondent19
seguridad
trabajo
salud
mejores condiciones de vida para la familia
belleza escenica

Respondent19
la seguridad
el trabajo
la salud
la calidad de vida
la belleza escenica

Respondent20
los servicios basicos quedan cerca
salud
pagos de servicios
agua

Respondent20
los servicios
la salud
pagos de servicios
el agua

luz	la luz
cable	cable
aceso al trabajo	el trabajo
limpio	limpio
el parque	el parque
bonito para salir	bonito para salir

# Respondent21	# Respondent21
volcan	el volcan
la catarata	la catarata
el lago	el lago
los souvenir	los souvenir
la iglesia	la iglesia
la gente	la gente
la gente muy carinoso	la gente muy carinoso
la gente muy amistosa	la gente muy amistosa
la gente confiable	la gente confiable
desarrollo	el desarrollo
se preocupa por el turismo	el turismo
hosteles	los hoteles
restaurantes	los restaurantes
aptos para turista	aptos para turista
el clima	el clima
la tranquilidad	la tranquilidad
encontramos de todo	centrico
ropa	ropa
zapatos	zapatos
comida	comida
servicio de bus	el transporte
servicio de agua	el agua
servicio de cable	servicio de cable
fuente de trabajo	el trabajo
aqua pura	aqua pura

# Respondent22	# Respondent22
montanas	la montana
rios	el rio
riqueza de la tierra	riqueza de la tierra
mucho extranjero	mucho extranjero
zona rica de ingreso de los dolares	la economia
paisaje	el paisaje

# Respondent23	# Respondent23
la tranquilidad	la tranquilidad
la seguirdad	la seguirdad

no hay ladrones
limpio
organizacion
mejor organizado que muchos lugares en Cos
la pesca

Respondent24
turismo
gente calida
naturaleza
campo

Respondent25
volcan
muy concentrado
muy cerca
banco
bien organizado
hoteles y souvenires duenos son ticos
el clima
la gente
tranquilo
sano
buena gente
el trabajo
practica de ingles

Respondent26
el paisaje
la riqueza de los suelos
la buena calidad de las aguas
la buena calidad de los suelos
facilidades para las comunicaciones
centro de comunicacion
gran centro
comunicaciones importante
muchas salidas
infraestructura buena
seguridad ciudadana buena
gente deseosa de crecer
gente deseosa de tener mejor calidad de vida
oportunidades para poder capacitar
oportunidades para mejorar
aprovechar los abilidades

no hay ladrones
limpio
organizacion
mejor organizado que muchos lugares en Costa
la pesca

Respondent24
el turismo
la gente
la naturaleza
el campo

Respondent25
el volcan
centrico
muy cerca
el banco
bien organizado
los hoteles
el clima
la gente
la tranquilidad
sano
buena gente
el trabajo
practica de ingles

Respondent26
el paisaje
la agricultura y la ganaderia
el agua
la buena calidad de los suelos
facilidades para las comunicaciones
centro de comunicacion
centrico
el transporte
las carreteras
la infraestructura
la seguridad
la gente
gente deseosa de tener mejor calidad de vida
la superacion
oportunidades para mejorar
aprovechar los abilidades

Respondent27

la naturaleza	la naturaleza
forma de ser de las personas	la gente
confianza	el ambiente social
buen trato	buen trato
costumbrosmo	la cultura
humilde	la gente
seguridad ciudadana	la seguridad
seguridad turistica	seguridad turistica
policia se trata muy bien	la policia
precios	los precios
variedad de clima	el clima
el clima calido	el clima calido
naturaleza con mucho cuidado	la naturaleza
consciente de andar la basura	limpio
manejo de basura	la basura
tarifas no son muy caras	los precios
gente muy sana	sano
el aire	el aire
bastante esta libre de contaminacion	bastante esta libre de contaminacion
se conserva flora	la vegetacion
se conserva fauna	los animales
preparacion para turistas	la educacion
conocimiento de flora y fauna	conocimiento de flora y fauna
se tratan bien al turismo	se tratan bien al turismo
volcan	el volcan
playa artificial	la playa
paz	la paz
cordial	cordial
seguro	seguro

Respondent28

el ambiente	el ambiente
el turismo	el turismo
el trabajo	el trabajo
las personas	la gente
tienen otra mentalidad	tienen otra mentalidad
actitud positiva	actitud positiva
anda feliz	anda feliz
anda tranquilo	la tranquilidad
un karma diferente	el ambiente
por lo tranquilo	por lo tranquilo

Respondent29

fuentes de trabajo	el trabajo

lugar tienen mucho paz	la paz
la gente muy amable	la gente
muy productivo	muy productivo
muy natural	la naturaleza
mucha naturaleza	mucha naturaleza
el clima muy bueno	el clima
vive la familia	la familia
aqui conoci a Dios	aqui conoci a Dios
hay oportunidades de estudio	la educacion

# Respondent30	# Respondent30
la vista escenica	la belleza escenica
panoramas	panoramas
el volcan	el volcan
la actividad con la gente	la recreacion
gente muy activa	la gente
mas ambiente	el ambiente social
trabajo con personas	el trabajo
relacionar con la gente	relacionar con la gente
los servicios	los servicios
actividades	actividades
limpio	limpio
no es sucio	no es sucio
seguridad	la seguridad
confiado	la gente
comunidad organizada	comunidad organizada

# Respondent31	# Respondent31
tranquilo	la tranquilidad
oportunidades desarrollarme	la superacion
el ambiente	el ambiente
el clima	el clima
la ciudad como tal	la ciudad como tal
cerca de playa	la playa
tengo de todo cerca	centrico
no estoy encerrada	no estoy encerrada

# Respondent32	# Respondent32
playas	la playa
costas	costas
montanas	la montana
costumbres culinarias	la cultura
la amabilidad	la gente
sencillez	sencillez
cordialidad	cordialidad

dicharachos
forma de hablar
sus palabras
admiro gente vieja
solidaridad
gente ayudante
ayuda mucho
gente amable
nos ayuda mucho
hospitalidad

Respondent33
familiar
tranquilo
la religion mas catolica
cultura
va la familia a actividades culturales
la tranquilidad

Respondent34
campana
vida mas rural
mas tranquilo
menos hetereo
calidad de vida
mas saludable
muy tranquilo
aislado
vivimos con mascote
libertad de movimiento
no hay preocupacion como en la ciudad

Respondent35
el clima
la gente
la tranquilidad
mas despacio
menos congestionada
gente muy amable
gente muy sencilla
les gusta ayudar
les gusta colaborar

Respondent36
la gente

gente amistad   gente amistad
gente acogedora   gente acogedora
gente amistosa   gente amistosa
playas   la playa
tipo de agricultura   la agricultura y ganaderia
forma de siembra   forma de siembra
lugares atractivos   lugar bonito
parques   el parque
caminar   la recreacion

Respondent37
la tranquilidad   la tranquilidad
el no movimiento de carros   el transito
tipo de gente   la gente
gente amable   gente amable
verde   la vegetacion
arboles   arboles
playas   la playa
familiares   la familia

Respondent38
poca poblacion   la sobrepoblacion
poca delicuencia   la delicuencia
corto plazo todos los conocemos   el ambiente social
gente bastante friendly   la gente
hay movimiento positivo sobre el cuido del m el ambiente

Respondent39
comercio   el comercio
trabajo   el trabajo
las calles   las calles
hospital mas cerca   los servicios medicos
mas ambiente de fiesta   el ambiente social
mas se puede socializarse   mas se puede socializarse
mas gente   la gente

Respondent40
playa   la playa
comercio   el comercio
atraccion turistica   el turismo
parques   el parque
reservas biologicas   reservas biologicas
mucho mas avenzado   el desarrollo
mas trabajo   el trabajo

Respondent41

seguridad social
la comunidad
interaccion comunal
tranquilidad
no hay polucion
no hay contaminacion
el clima
estabilidad economica

Respondent42

tranquilidad
poca chusma
los rios
playas
fiestas de toros
carreras de cintas a caballo

Respondent43

pueblo cristiano
tranquilo
no es conflictivo
la gente humilde
la gente solidarios
economia equilibrada
cada quien tiene su manera de vivr
es una zona comercial
hay una educacion publica
se comparten la cultura
gente son muy trabajadores
la base es mas sobre la agricultura

Respondent44

calma
tranquila
clima de invierno muy bonito
fauna agradable
flora
las personas
amigos
vecinos con platos de comida
rio
comidas de tipico

Respondent45

Respondent41

seguridad social
la gente
interaccion comunal
la tranquilidad
no hay polucion
la contaminacion
el clima
la economica

Respondent42

la tranquilidad
poca chusma
el rio
la playa
fiestas de toros
carreras de cintas a caballo

Respondent43

pueblo cristiano
la tranquilidad
la paz
la gente
la gente solidarios
la economia
la calidad de vida
el comercio
la educacion
la cultura
gente son muy trabajadores
la agricultura y la ganaderia

Respondent44

calma
la tranquilidad
el clima
los animales
la vegetacion
la gente
amigos
vecinos con platos de comida
el rio
la cultura

Respondent45

la seguridad | la seguridad
la calma | la tranquilidad
el rio | el rio

Respondent46

la naturaleza | la naturaleza
la gente le gusta el pueblo | la gente
la forma de pueblo | el ambiente social
montanas | la montana
libre de contaminacion | limpio
libre de fabricas | la industria
libre de humo de vehiculos | libre de humo de vehiculos
aire puro | aire puro
la relacion humana | la relacion humana

Respondent47

menos presion | el estres
menos contaminacion | limpio
menos problemas sociales | el ambiente social
menos rinas | menos rinas
menos pleitos | menos pleitos
solvente | solvente
respiran mejor | respiran mejor
no esta contaminada la zona | sano
paz | la paz
vitrinas turisticas | el turismo
playas limpias | la playa
playas sanas | playas sanas
son personas que puede confiar | la gente
son personas amables | son personas amables
son personas respetuosas | son personas respetuosas
son personas educadas | son personas educadas

Respondent48

la paz | la paz
la amabilidad | la gente
mas segura | la seguridad
menos violencia | menos violencia
tranquilidad | la tranquilidad

Respondent49

tranquilidad | la tranquilidad
pueblo tranquilo | pueblo tranquilo
naturaleza que rodea | la naturaleza
la gente muy amistosas | la gente

Respondent50

muy tranquilo	la tranquilidad
la gente muy cordial	la gente
la gente muy amable	la gente muy amable
lugar muy limpio	limpio
tienen sus patios muy limpios	tienen sus patios muy limpios
tienen sus patios solar muy limpio	tienen sus patios solar muy limpio
son muy trabajadores	son muy trabajadores
pueblo muy organizado	pueblo muy organizado
reciben mucha ayuda del gobierno	el gobierno
reciben mucha ayuda de otras instituciones	reciben mucha ayuda de otras instituciones
reciben mucha ayuda de donaciones	reciben mucha ayuda de donaciones
la gente es muy longeva	la gente es muy longeva

Respondent51

la gente noble	la gente
la gente carinoso	la gente carinoso
pueblo de amistad	la ambiente social
colegio	la educacion
IVAIS	los servicios medicos
iglesia	la iglesia
calidades	la calidad de vida
agua potable	el agua
luz electrica	la luz
telefonica	telefonica
todos los servicios	los servicios
todo centrico	centrico
acceso a Nicoya	acceso a Nicoya
servicio de buses	el transporte
el clima	el clima
invierno y verano	invierno y verano
ventoso	ventoso
bonito	lugar bonito

Respondent52

muy amistoso	la gente
vive mi hija	la familia
participo en grupos	participo en grupos
trabajo para adultos mayores	el trabajo
iglesia tambien	la iglesia
campo	el campo
la gente	la educacion
colegio	los servicios medicos
IVAIS	farmacia

farmacia
solidaridad

el ambiente social

Respondent53
la tranquilidad
poca delincuencia
se puede dejar cosas afuera
pueblo rural
paz
conoce todo el mundo
se logra vivir monetariamente
el clima agradable
costumbres
nadie se estresa
camina
anda
gente fiestera

Respondent53
la tranquilidad
la seguridad
se puede dejar cosas afuera
el campo
la paz
el ambiente social
la calidad de vida
el clima
la cultura
nadie se estresa
la recreacion
anda
la gente

Respondent54
ganando salario
siembra teca
muy tranquilo
vivimos tranquilos
la gente estimo
la gente tranquila
no se meten en las cosas de vivir
pueblo tranquilo
no se ha metido con nos

Respondent54
la calidad de vida
la agricultura y la ganaderia
la tranquilidad
vivimos tranquilos
la gente
la gente tranquila
no se meten en las cosas de vivir
pueblo tranquilo
no se ha metido con nos

Respondent55
tranquilidad
buen ambiente
la calidad ambiental
comidan deliciosa
la cultura
el clima
la biodiversidad

Respondent55
la tranquilidad
el ambiente
la calidad ambiental
la comida
la cultura
el clima
la biodiversidad

Respondent56
tranquilo
paz
dormir tranquilo
era mas barata
el barato

Respondent56
la tranquilidad
la paz
la seguridad
los precios
el barato

Respondent57
la naturaleza
la cultura
la gente
humilidad
el trabajo
las personas les ayuda mutualmente

Respondent57
la naturaleza
la cultura
la gente
la gente
el trabajo
las personas les ayuda mutualmente

Respondent58
lo tranquilo
zona verde
parque
totalmente diferente
la tranquilidad
se come mas natural

Respondent58
la tranquilidad
la vegetacion
el parque
totalmente diferente
se come mas natural

Respondent59
la naturaleza
su gente
gente alegre
gente buena
la paz
el clima
los animales
naturaleza

Respondent59
la naturaleza
la gente
gente alegre
gente buena
la paz
el clima
los animales
la naturaleza

Respondent60
la vegetacion
calidad humana
mas aire puro
menos contaminacion
animales
toda preciosa
servicio
amabilidad
trato con ser humano

Respondent60
la vegetacion
la gente
mas aire puro
limpio
los animales
lugar bonito
los servicios
amabilidad
el ambiente social

Respondent61
saludable
seguro
amigable
tranquilo
bonito
prospero
estable economicamente

Respondent61
sano
la seguridad
la gente
la tranquilidad
lugar bonito
la economia
la estabilidad

desarrollable

el desarrollo

crecimiento

crecimiento

Respondent62

Respondent62

playa

la playa

buena gente

la gente

hay trabajo

el trabajo

familia

la familia

Respondent63

Respondent63

se encuentra trabajo

el trabajo

mas tranquilo

la tranquilidad

ambiente

el ambiente

menos contaminacion

limpio

amable

la gente

se ayudan

se ayudan

colaborar

el ambiente social

Respondent64

Respondent64

tranquilo

la tranquilidad

bonito

lugar bonito

alquileres son baratos

los precios

cerca de la playa

la playa

Respondent65

Respondent65

tranquilidad

la tranquilidad

todo esta cerca

centrico

la escuela

la educacion

IVAIS

los servicios medicos

policia

la policia

gente amable

la gente

Respondent66

Respondent66

hay mucho trabajo

el trabajo

mas supermercados

el supermercado

playa

la playa

muchas montanas

la montana

animales

los animales

familia

la familia

tenemos casa

tenemos casa

tiene trabajo

tiene trabajo

Respondent67

Respondent67

bonito

lugar bonito

intorno

intorno

montanas	la montana
parque que rodea	el parque
la paz	la paz
la tranquilidad	la tranquilidad
espiritualmente mas con uno mismo	espiritualmente mas con uno mismo
trato de estar unido con mio mismo	trato de estar unido con mio mismo
dificil estresarse	la tranquilidad

# Respondent68	# Respondent68
clima	el clima
la gente amable	la gente
la montana	la montana
la cercania animales	los animales
vivis en la natorleza	la naturaleza
la aguas del rio limpios	el agua
sentirse mucho mejor una	sentirse mucho mejor una
confianza en la gente	confianza en la gente
respeta al propiedad privada	el ambiente social
cercania a Jaco	cercania a Jaco

# Respondent69	# Respondent69
tranquilidad	la tranquilidad
la actividad social	la ambiente social
el espacio	el espacio
el rol diario de vida	la calidad de vida
la vida cotidiana	la vida cotidiana
cambio de alimentacion	cambio de alimentacion
cambio de actividad trabajo	la superacion
cambio total de forma de vida	cambio total de forma de vida

# Respondent70	# Respondent70
la naturaleza	la naturaleza
el campo	el campo
terreno	terreno
sanitas	sanitas
tranquilo	la tranquilidad
diversidad de aves	los animales

# Respondent71	# Respondent71
el clima	el clima
la amplitud de terreno	el campo
la poca densidad	la poca densidad
la tranquilidad	la tranquilidad
espacio	espacio
la idiosyncrasia de la gente	la gente

Respondent72

muchas lapas	los animales
viene turistas	el turismo
aves	los animales
manglar	manglar
cocodrilos	cocodrilos
90 clases de aves	90 clases de aves
cerca del mar	cerca del mar
la pesca	la pesca
vivimos de la pesca	vivimos de la pesca
el parque	el parque
ecologia	la naturaleza
cosas indigenos	la cultura
se esta cuidando	se esta cuidando
tranquilo	la tranquilidad
vive con confianza	la seguridad
negocio	el comercio
muchas vias de comer	los restaurantes

Respondent73

la paz	la paz
turismo	el turismo
viajes de tur	viajes de tur
ver los cocodrilos	los animales
ir a conocer carar	ir a conocer carar
el parque	el parque
companerismo humano	el ambiente social
acogedor	la gente
se preocupa por uno	se preocupa por uno
se preocupa por ellos	se preocupa por ellos
plaza de deportes	las areas deportivas
futbol cinco parque	futbol cinco parque
parquecito para ninos	la recreacion
servicio de luz	la luz
servicio de agua	el agua
servicio de telefono	servicio de telefono

Respondent74

la tranquilidad	la tranquilidad
el mar	el mar
la gente	la gente
mucha prosperidad	la calidad de vida
hay trabajo	el trabajo
mucho turismo	el turismo

esta centrico
mucha facilidad de escuela
las aves

Respondent75
era la pesca
hotelera
turismo

Respondent76
turismo
playas
vienen a ver las lapas
tucanes

Respondent77
clima caliente
ambiente de pueblo
contacto con naturaleza
se vive con menos plata
tranquilidad

Respondent78
ambiente bonita
la gente
el clima
bueno todo
zona de donde se saca fruta
bonito
tranquila la gente
muy sana
no roban
no matan
andar tranquilo
trabajo
gana poquito mejor
sale de todo

Respondent79
trabajo de aqricultura
terreno
productiva
zona industrial
empresas
teca

centrico
la educacion
los animales

Respondent75
era la pesca
hotelera
turismo

Respondent76
el turismo
la playa
vienen a ver las lapas
los animales

Respondent77
el clima
el ambiente social
la naturaleza
los precios
la tranquilidad

Respondent78
lugar bonito
la gente
el clima
bueno todo
la superacion
bonito
la tranquilidad
sano
los robos
la seguridad
andar tranquilo
el trabajo
los precios
sale de todo

Respondent79
la agricultura y la ganaderia
terreno
productiva
la industria
empresas
teca

somos unidos	la gente
hermitaneos	hermitaneos
escuela bien	la educacion
carretera	las carreteras
pueblo unido	el ambiente social
trabajan	trabajan
hay de todo	centrico

# Respondent80	# Respondent80
cercania de la costa	la playa
le gente	la gente
la unidad	la ambiente social

# Respondent81	# Respondent81
centro economico	la economia
contro comercial	el comercio
comunidades alrededor vienen a comprar	comunidades alrededor vienen a comprar
alrededor vienen a comprar	alrededor vienen a comprar
desarrollado	el desarrollo
seguro	la seguridad
termino medio entre ciudad y pueblo	termino medio entre ciudad y pueblo
seguridad	seguridad
tranquilo	la tranquilidad
servicios muy cercanos	los servicios
tiene lo basico	la calidad de vida
media sociables	el ambiente social
todos tiene su independencia	todos tiene su independencia
gente amable	la gente

# Respondent82	# Respondent82
clima	el clima
trabajo	el trabajo
te va uno a turistear	el turismo
turismo	turismo
entra comerciante	el comercio
se queda y no se va	se queda y no se va
aguantan los que estan en licor	aguantan los que estan en licor

# Respondent83	# Respondent83
el clima	el clima
su gente	la gente
la naturaleza	la naturaleza
buenas vias de transporte	el transporte
cercania con la capital	cercania con la capital
cercania con Jaco	cercania con Jaco

gente amable   gente amable
gente servicial   gente servicial
gente muy comunicativa   gente muy comunicativa

Respondent84   # Respondent84
lugar bonito   lugar bonito
naturaleza   naturaleza
rios bonitos   el rio
playa   la playa
montana   la montana

Respondent85   # Respondent85
turismo   el turismo
playa   la playa
embocador del rio Tarcoles   embocador del rio Tarcoles
la pesca   la pesca
el negocio   el comercio
naturaleza   la naturaleza
animales   los animales
mani gordo   mani gordo
mapuchin   mapuchin
lapas   lapas
cocodrilos   cocodrilos
mueve mas el dinero   la economia

Respondent86   # Respondent86
zona esta llena de droga   las drogas
muchas oportunidades   las oportunidades
deportes   las areas deportivas
la gente comunitaria   la gente
la gente muy serviciales   la gente muy serviciales
hacen muchas actividades la recreacion
centro diurno para gente de tercer edad   centro diurno para gente de tercer edad
pueblo mas superado   el desarrollo
los negocios ayudan a la gente   los negocios ayudan a la gente
servicios   los servicios
policia   la policia
municipalidad   el gobierno

Respondent87   # Respondent87
la playa   la playa
el tur de cocodrilo   el turismo
el parque carara   el parque
la plaza de deportes   las areas deportivas
el trabajo   el trabajo

Respondent88

el parque
las fuentes de empleo
los servicios publicos
internet
transporte
vivienda

Respondent89

los cocodrilos
la playa
el rio
pesca
trabajan en hoteles
grupo de jovenes de la iglesia catolica

Respondent90

comunidad segura
seguridad
no hay tanta delincuencia
tranquilo
suave
despacio
hay trabajo
necesitan mi servicio
clima
paisaje
el mar
el parque nacional
la selva
lo que no tenia
cambio de vida
mas calidad de vida

Respondent88

el parque
el trabajo
los servicios
el internet
el transporte
vivienda

Respondent89

los animales
la playa
el rio
la pescael trabajo
la iglesia

Respondent90

la seguridad
seguridad
la delincuencia
la tranquilidad
suave
despacio
el trabajo
necesitan mi servicio
el clima
el paisaje
el mar
el parque
la selva
lo que no tenia
cambio de vida
la calidad de vida

Appendix #2: Truncated freelist frequency & Smith's S results

Question #1

Item	Frequency (%)	Average Rank	Salience
la_gente	56.7	5.06	0.342
la_tranquilidad	45.6	4.46	0.308
el_trabajo	32.2	4.72	0.216
el_turismo	26.7	3.42	0.212
el_clima	21.1	5.63	0.138
la_playa	18.9	4.76	0.123
el_ambiente_social	17.8	6.25	0.088
la_naturaleza	17.8	4.69	0.114
la_seguridad	16.7	5.8	0.102
el_parque	14.4	6	0.077
los_animales	14.4	6.15	0.075
la_calidad_de_vida	12.2	6.27	0.068
el_volcan	11.1	3.9	0.097
la_paz	11.1	6	0.076
el_rio	11.1	3.9	0.067
limpio	11.1	7.4	0.06
lugar_bonito	11.1	5.8	0.066
los_servicios	10	6.89	0.054
la_cultura	10	6.78	0.05
la_educacion	10	9	0.04

Question 2

Item	Frequency (%)	Average Rank	Salience
las_drogas	34.4	2.87	0.271
el_desempleo	22.2	3.5	0.146
el_clima	21.1	3.11	0.164
la_gente	18.9	3.41	0.129
los_precios	17.8	4.38	0.113
los_servicios_medicos	17.8	7.81	0.074
la_educacion	16.7	6.4	0.089
el_alcoholismo	15.6	4.71	0.098
el_gobierno	13.3	3.5	0.098
la_basura	12.2	4.45	0.085
la_contaminacion	12.2	4.82	0.075
la_inseguridad	11.1	8.8	0.045
la_prostitucion	11.1	5.3	0.047

Question 3

Item	Frequency (%)	Average Rank	Salience
la_gente	31.1	5.21	0.181

Item	Frequency (%)	Average Rank	Salience
el_clima	26.7	3.88	0.192
el_trabajo	26.7	4.25	0.179
la_tranquilidad	22.2	3.65	0.162
centrico	22.2	4.4	0.13
la_familia	21.1	4.79	0.121
las_comodidades	20	3.61	0.143
el_transporte	18.9	5.47	0.101
la_educacion	17.8	4.94	0.093
la_agricultura_y_la_ganaderia	17.8	3.44	0.13
el_comercio	16.7	5.2	0.104
lugar_bonito	15.6	4.07	0.107
la_cultura	15.6	5.79	0.094
la_comida	14.4	6.62	0.07
los_servicios_medicos	13.3	5.75	0.069
los_servicios	12.2	5.45	0.071
el_supermercado	10	5.44	0.048

Question #4

Item	Frequency (%)	Average Rank	Salience
las_drogas	33.3	4.23	0.211
el_trabajo	26.7	2.96	0.194
la_inseguridad	26.7	4.08	0.195
el_desempleo	20	3.33	0.15
la_contaminacion	18.9	5.35	0.115
la_delincuencia	17.8	3.5	0.117
la_sobrepoblacion	16.7	4.33	0.101
el_transito	16.7	6.2	0.092
las_carreteras	16.7	5.8	0.078
la_educacion	14.4	4.54	0.099
la_pobreza	14.4	6	0.08
los_robos	13.3	5.33	0.076
el_alcoholismo	12.2	3.64	0.086
el_ambiente_social	11.1	4.1	0.07
la_gente	11.1	5.4	0.057
el_transporte	11.1	4.5	0.056
el_gobierno	10	4.44	0.061

Question #5

Item	Frequency (%)	Average Rank	Salience
el_trabajo	71.1	2.03	0.62
la_tranquilidad	33.3	3.33	0.247
la_educacion	31.1	6.32	0.149
la_gente	26.7	4.25	0.172

Item	Frequency (%)	Average Rank	Salience
los_servicios	25.6	5.26	0.153
la_seguridad	23.3	4.19	0.143
la_superacion	17.8	4.88	0.115
la_recreacion	17.8	6.56	0.086
los_servicios_medicos	16.7	5.2	0.1
la_economia	16.7	4	0.107
el_clima	14.4	3.77	0.089
la_familia	13.3	5.92	0.078
la_calidad_de_vida	13.3	3.5	0.1
el_transporte	12.2	7.64	0.049
la_paz	12.2	4.91	0.078
el_comercio	11.1	4.7	0.067
sano	10	8.33	0.037
centrico	10	8	0.035
la_luz	10	7	0.043

Question #6

Item	Frequency (%)	Average Rank	Salience
el_desempleo	51.1	1.93	0.436
el_trabajo	31.1	2.71	0.23
la_educacion	25.6	3.78	0.143
la_inseguridad	23.3	3.14	0.166
la_familia	20	3.78	0.123
la_economia	15.6	4.29	0.089
la_calidad_de_vida	15.6	4.36	0.093
la_superacion	12.2	3.73	0.064
las_drogas	11.1	5.4	0.044
la_gente	11.1	3.7	0.069
los_robos	11.1	4.2	0.072
el_ambiente_social	10	3.22	0.076

Question #7

Item	Frequency (%)	Average Rank	Salience
la_educacion	55.6	6.38	0.359
la_gente	48.9	5.3	0.345
el_trabajo	43.3	5.59	0.248
los_servicios_medicos	35.6	8.38	0.191
la_seguridad	26.7	5.92	0.169
el_transporte	25.6	9.17	0.127
las_carreteras	23.3	7.52	0.126
el_agua	22.2	9.35	0.113
las_drogas	20	6.61	0.137
la_tranquilidad	20	4.94	0.144
las_areas_deportivas	17.8	9.69	0.092

limpio	17.8	6.63	0.116
los_servicios	16.7	6.13	0.103
la_recreacion	15.6	8.21	0.081
el_supermercado	13.3	10.83	0.06
el_parque	13.3	8.17	0.072
la_naturaleza	13.3	8.42	0.068
la_luz	12.2	10	0.061
el_clima	11.1	9	0.059
el_banco	11.1	6.3	0.069
el_comercio	11.1	9.3	0.048
la_cultura	11.1	9.8	0.055
el_gobierno	11.1	6.3	0.081
centrico	10	8.67	0.04
la_economia	10	6.22	0.06

Appendix #3: Culturally Correct Answer Key for Carara National Park Current Communities

People	Tranquility	Opportunities	Tourism	Climate	Social Env.	Nature	security	Park/ protected area	Wild animals	quality of life	Encounter Peace	Rivers	Cleanliness	Beauty	Services	culture	education	drug problem	unemployment	prices	medical services	Alcoholism	Government	Garbage	Contamination	Insecurity	Prostitution	Centrality	Family situation	Comforts	Transport	Agriculture and ranching	Commerce	Food	Supermarkets	Deliquency	Overpopulation	Traffic	Roads/highways	Poverty	Robberies	Economy	Ability to improve oneself	Water	Sports Areas	Recreation	Electricity	Bank Services	Healthiness	Noise	Violence	Countryside
3.85	3.94	3.16	3.94	3.32	3.38	4.33	3.46	4.20	4.20	3.78	3.87	3.81	3.70	4.43	3.05	3.52	3.51	2.35	2.68	2.14	2.79	2.17	2.68	3.01	3.28	3.09	2.64	2.88	3.77	3.00	2.82	3.96	3.28	3.87	2.90	2.73	2.95	3.30	2.68	2.49	2.61	2.85	2.99	4.21	2.98	3.16	3.65	3.22	3.54	3.48	3.14	4.27